ANTECEDENTS AND CONSEQUENCES OF ACHIEVEMENT GOALS

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ABSTRACT

ANTECEDENTS AND CONSEQUENCES OF ACHIEVEMENT GOALS

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This study aimed to investigate the antecedents and consequences of achievement goals. While self efficacy, task value, fear of failure, perceived parents' and teachers' achievement goals were investigated as antecedents of achievement goals in science, students' metacognition and coping strategies were examined as consequences of achievement goals in science. In this investigation, a model of the potential associations among these variables was proposed and tested by using path analysis.

977, 7th grade, elementary students participated in the study. According to the results, students' higher levels of task value, perceived parents' mastery goals, and perceived teachers' mastery goals were positively related to mastery approach goals. Additionally, students' higher levels of perceived parents' mastery goals, fear of shame and embarrassment, fear of devaluing one's self-estimate were positively related to mastery avoidance goals. Concerning to performance goals, the model suggest that higher levels of self efficacy and perceived parents' performance goals were positively related to performance approach goals. Furthermore, students' higher

level of task value, perceived parents' performance goals and fear of upsetting important others were positively related to performance avoidance goals.

The path model also suggest that students who adopt mastery approach goals tend to use more adaptive coping strategies, and less maladaptive coping strategies than others. Besides, students who adopt mastery avoidance goals tend to use maladaptive coping strategies when they face an academic failure in science. Moreover, students' performance approach goals are related to both adaptive and maladaptive coping strategies. Lastiy students' performance avoidance goals positively associated to metacognition.

Keywords: Achievement Goals, Fear of Failure, Perceived Parents' and Teachers, Achievement Goals, Metacognition, Coping Strategies,

ÖZ

HEDEF YÖNELİMİNİN SEBEPLERİ VE SONUÇLARI

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Bu çalışma, ilköğretim öğrencilerinin Fen Bilgisi dersindeki hedef yönelimlerini incelemeyi amaçlamıştır. Öz yeterlilik inancı, değer verme, başarısızlık korkusu, aileler ve öğretmenlerden algılanan hedefler, öğrencilerin hedef yönelimini etkileyen faktörler olarak ele alınırken; öğrencilerin üst biliş stratejileri ve akademik sorunlar ile başa çıkma stratejileri, hedef yöneliminin sonuçları olarak ele alınmıştır. Çalışmada, bahsedilen değişkenler arasındaki olası ilişkileri gösteren bir model öne sürülmüş ve bu model path analizi kullanarak test edilmiştir.

Çalışmaya, 977, 7 sınıf, ilköğretim öğrencisi katılmıştır. Bulgulara göre, değer verme, ailelerden ve öğretmenlerden algılanan ustalık hedefleri ile öğrencilerin ustalık yaklaşma hedefleri arasında pozitif bir ilişki vardır. Ailelerden algılanan ustalık hedefleri ve başarısızlık korkusu ise ustalık kaçınma hedefleri ile pozitif bir ilişkiye sahiptir. Başarım hedefleri açısından bakıldığında ise, model, öz yeterlilik inancının ve ailelerden alıgılanan başarım hedeflerinin öğrencilerin başarım yaklaşma hedefleri ile ilişkili olduğunu; öğrencilerin verdiği değerin, ailelerinden algıladıkları başarım hedeflerinin ve başarısızlık korkusunun, başarım kaçınma hedefleri ile ilişkili olduğunu önermektedir.

Hedef yöneliminin sonuçlarına bakıldığında ise modele göre ustalık yaklaşma hedefine sahip öğrenciler daha çok pozitif baş etme stratejilerini ve daha az olumsuz baş etme stratejilerini kullanmaya yöneliyor. Ustalık kaçınma hedefine

sahip olan öğrenciler ise akademik bir sorunla karşılaştıklarında başarıyı görmezden gelmek, başkalarını veya kendi yeteneklerini suçlamak gibi olumsuz stratejiler kullanıyorlar. Başarım yaklaşma hedeflerinin ise hem olumlu hem olumsuz baş etme stratejiler ile olumlu ilişkisi mevcuttur. Son olarak, modele gore, başarım kaçınma hedefleri olan öğrenciler üst biliş stratejilerini daha etkili kullanmakta olduğu söylenebilir.

Anahtar Sözcükler: Hedef Yönelimi, Başarısızlık Korkusu, Ailelerden ve Öğretmenlerden Algılanan Hedefler, Üstbiliş, Baş Etme Stratejileri

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1. INTRODUCTION

"There are three things to remember about education. The first one is motivation. The second one is motivation. The third one is motivation."

-Terrell H. Bell (cited in Ames, 1990, p.409)

Nowadays, the motivation researchers focus on the important role of achievement goals in academic settings (Ames, 1992; Anderman & Maehr, 1994; Wolters, Yu, & Pintrich, 1996). Achievement goals are different from goals. Locke and Latham (1990) define goals as qualitative or quantitative purposes for a performance. In other words, they focus on specific goals that individuals trying to obtain. For example, doing well on a science test can be a goal for a student (Wolters, Yu, & Pintrich, 1996; Pintrich& Schunk, 2002). On the other hand, achievement goals concern the reasons of individuals pursuing an achievement task. In relation to the previous example, achievement goals are interested in why students want to do well on a science test (Ames, 1992; Urdan, 1997; Pintrich, 2000).

Accordingly, achievement motivation explores the incentives of people while attaining a task, or setting a goal with two components: approach- avoidance, and mastery-performance orientation (Fryer& Elliot, 2007). The first component, *approach-avoidance motivation,* suggests that there are two types of motives that make people direct their energy to a behavior. Approach motivation, refers to being motivated to strive for a positive possibility such as a success, whereas avoidance motivation refers to being motivated to avoid a negative possibility, such as a failure (Elliot& Sheldon, 1997; Elliot, 1999). The second component, *mastery-performance orientation*, suggests that people can have different reasons while attaining a given task. While some people can focus on improving their knowledge or skills, others can focus on comparing their abilities to their peers. Combining these two components, researchers (Elliot& Harackiewicz, 1996; Church& Elliot, 1997;

Elliot& McGregor, 2001) have developed the current version of achievement goal theory. Accordingly, they offered a 2× 2 form of achievement goals namely, mastery approach, mastery avoidance, performance approach, and performance avoidance goals. Mastery approach goals focus on improving knowledge or skills, whereas, mastery avoidance goals focus on avoiding misunderstanding or missing any points. Performance approach goals focus on demonstrating ability to others and looking smart, while performance avoidance goals focus on avoiding looking slow or getting the worst grades.

Related researches demonstrated that students' achievement goals are significantly linked to their metacognition and their use of various coping strategies. Metacognition refers to thinking about a person's own learning progress. Theorists shortly define metacognition as "thinking about thinking" or "cognition about cognition" (Flavell, 1999; Livingston, 2003). In other words, metacognition is a thinking level that helps control thinking used in learning conditions. It also helps people monitor their cognitive processes (Forrest-Pressley& Waller, 1984; Flavell, 1999; Hattie, Biggs, & Purdie, 1996; Schraw, 1998). People think about their thinking process by two components: metacognitive knowledge and metacognitive regulation. While metacognitive knowledge refers to information about learning process, metacognitive regulation refers to a set of activities that help people control their learning processes Gardner, 1990; Schraw& Moshman, 1995; Schraw, 1998; Livingston, 2003). According to the researchers, students who focus on learning, or mastering a task, who adopt mastery goals, tend to use more metacognitive strategies in comparison to others. Additionally researches have shown that students who focus on not looking slow, or not getting the worst grade and adopt performance avoidance goals, cannot use metacognitive strategies effectively (Middlebrooks, 1996; Wolters, Yu & Pintrich, 1996; McGregor & Gable, 1999; Somuncuoğlu & Yıldırım, 2001; Vermetten, Lodewijks & Vermunt, 2001; Wolters, 2004; Shih, 2005a, Ommundsen, 2009).

The other achievement related outcome which is found to be significantly related to achievement goals involves students' use of various coping strategies. Coping can be defined as a response to negative events, in other words, it is behaviors, strategies or emotions that are used to handle a stressful event like an academic failure (Lazarus& Folkman, 1986; Kamins& Dweck, 1999; Folkman& Moskowitz, 2004). Although there are many types of coping strategies, Tero and Connel (1984) classified coping strategies under four categories; positive coping, projective coping, denial coping and non-coping. Asking others like parents or teachers for help, time management, or finding errors were examples of positive coping. In projective coping, students pass the buck, and blame other people. In denial coping, students try to ignore the failure. They emphasize to themselves that the failure was not important. The last method, non- coping, refers to blaming one's self. This means, if students choose non-coping, they beat themselves up (Kaplan and Midgley, 1999). Moreover, coping strategies can be classified as adaptive and maladaptive strategies. While help seeking, time management, and studying more are examples of adaptive strategies due to their relationship with positive outcomes, procrastination, and blaming others are examples of maladaptive strategies due to their relationship with negative outcomes (Kaplan& Midgley, 1999; Friedel, Cortina, Turner and Midgley, 2007). According to researchers, mastery goals are positively related to adaptive coping; whereas, performance goals are positively related to maladaptive coping strategies (Brdar, Rijavec & Loncaric, 2006; Friedel, Cortina, Turner & Midgley 2007; Taye & Zhou, 2009). Based on aforementioned studies, in the present study, students' use of various coping strategies and their metacognition were examined as consequences of students' achievement goals.

Relevant literature suggests that many factors which act as antecedents of achievement goals can influence students' adoption of any kind of achievement goals. For example, fear of failure is one of the antecedents of achievement goals. Fear of failure can be defined as use of energy as a motivation to avoid a negative possibility (Elliot& Sheldon, 1997; Elliot, 1999). Fear of failure is directly related to how people define and perceive an academic failure. Besides, it can also emerge

from people's self evaluations and their opinions on others' evaluation of themselves after the failure (Heckhausen, 1991). According to Conroy, Poczwardowski, and Henschen (2001), there are five consequences of failure a) experiencing shame and embarrassment, b) devaluing devaluation of one's self-esteem, c) having an uncertain future, d) important others losing interest, and e) upsetting important others. In other words, people avoid failure because of these five reasons; first, they maybe think that after the failure, they will feel ashamed. Second, according to some people, the failure can create a situation that orients them to criticize their intelligence, and talent. Third, the failure can affect some people's future plans in a negative way. Forth, some people believe that their parents, teachers, or peers take them seriously because of their success so if they fail, they will lose other people's interest. Lastly, people not only fear losing interest of important people, but also they fear upsetting them with their failures (Conroy, 2001; Conroy, Willow, and Metzler, 2002; Conroy, Metzler, and Hofer, 2003; Conroy& Elliot, 2004). According to achievement goal researchers, students with a high fear of failure tend to adopt performance goals, in both approach and avoidance forms, and mastery avoidance goals. In other words, these students focus on demonstrating themselves, avoiding missing a point, not understanding, or being worst, or not looking slow-minded in front of others,(Thrash and Elliot 2002; Conroy, Elliot& Hofer, 2003; Conroy& Elliot, 2004; Nien & Duda, 2008; Elliot and Murayama 2008). In the same way, in the relevant literature, fear of failure is treated as one of the antecedents of students' achievement goals.

Furthermore, related literature have shown students' motivational beliefs, such as task value and self-efficacy beliefs and socio-cultural influences such as perceived parents' and teachers goals as antecedents of achievement goals. Among these variables, task value is defined as the main reason to engage in a task for the students (Eccles& Wigfield, 2000; 2002). According to the theorists, Task value comprises four elements: Attainment value refers to the importance of doing well in a task. People may prefer tasks because of their beliefs on being able to do well in them. The second component, intrinsic value, refers to personal interest. People can

engage in a task because of their interest in its content, or they believe they will be having fun doing it. Thirdly, utility value refers to perceived usefulness of the task for the person. For instance, a student who wants to be a doctor would give much importance to biology courses. Finally, cost beliefs concern negative aspects of engaging in a task. For example, while engaging in one task, people generally eliminate other alternatives. Hence, preferring a task brings some costs, like the amount of necessary effort or time required for it (Eccles, & Wigfield, 2002; Pintrich & Schunk, 2002; Hulman, Durik, Schweigert & Harackiewicz, 2008; Eccles, 2009). According to the relevant literature, students who find the tasks interesting, useful, or enjoyable, mostly adopt mastery approach goals, or performance approach goals. On the other hand, students who do not find the task interesting, useful, or enjoyable mostly adopt performance avoidance goals (Wolters, Yu, & Pintrich, 1996; Xiang, McBride & Bruene, 2004; Bong, 2004; Liem, Lau & Nie, 2008).

The other motivational belief which is an underlying reason of achievement goals is self-efficacy. Self-efficacy can be defined as students' beliefs on their capabilities to learn and perform effectively. In other words, self-efficacy refers to people's judgments on whether or not they can organize and fulfill the task, or possess necessary skills to perform it. Therefore, people's self-efficacy can change depending on the difficulty level of the task (Bandura, 1982, 1999; Zimmerman, 2000). Self-efficacy affects people's engagement in a task, their effort and persistence for it. On the one hand, if students have a low self-efficacy in a task, they tend to avoid it. On the other hand, people with a high self-efficacy demonstrate higher levels of effort, and tend to persist longer in difficult tasks compared to those who are less self-efficacious (Baundra 1977; Bandura, 1982; Schunk, 1990; Bandura, 1999; Pintrich, & Schunk, 2002). Moreover, people's judgments on themselves depend on the information coming from their past performances, observations of the others' performances, verbal persuasions (others' advice), and physiological states (whether they are relaxed or stressed) (Bandura, 1982; Schunk, 1984; Pintrich, & Schunk, 2002). According to researchers, students with a high self-efficacy tend to adopt mastery goals; whereas, the ones with a low self-efficacy tend to adopt

performance avoidance goals (Phillips & Gully, 1997; Bong, 2001; Shim & Ryan, 2005; Hsieh, Sullivan & Guerra, 2007).

Apart from students' motivational beliefs including task value and self-efficacy beliefs, socio-cultural influences are also found to affect students' adoption of achievement goals. The socio-cultural influence, here, refers to the goals emphasized by the social environments, both school environment and home environment. Teachers at the classrooms or parents at home can lead students to adopt mastery goals by focusing on the importance of learning and improving skills. In the same manner, they can also lead students to adopt performance goals by focusing on comparing students by their peers (Nicholls, 1989; Anderman & Maehr, 1994; Kaplan& Maehr, 2002; Friedel, Cortina, Turner and Midgley, 2007). Therefore, students' perceptions of teachers' or parents' goals is an important antecedent of achievement goals. According to researchers, students tend to adopt mastery goals, if they think the social environment considers mastery goals important. They tend also to adopt performance goals, if they perceive performance goals from the social environment (Roeser, Midgley & Urdan, 1996; Friedel, Hruda, & Midgley, 2001; Gonida, Kiosseoglou& Voulala, 2007; Bong, 2008; Kim, Schallert & Kim, 2010).

Based on the above-mentioned literature, current study aimed at examining antecedents and consequences of students' achievement goals in science by proposing a path model. In the model, concerning the relationship between achievement goals and their antecedents, it was hypothesized that students' motivational beliefs, fear of failure and socio cultural influence are directly linked to students' adoption of achievement goals. More specifically, paths were specified from students' self efficacy, task value, and students' perceptions about parents' and teachers' mastery goals to students' mastery approach and mastery avoidance goals. The path from fear of failure to students' mastery avoidance goals also included in the model. Besides, paths were specified from self efficacy, task value, fear of failure

and students' perceptions parents' and teachers' performance goals to students' performance approach and avoidance goals.

Concerning the relationship between achievement goals and their consequences, it was proposed that students' achievement goals (i.e. mastery approach goals, mastery avoidance goals, performance approach goals, and performance avoidance goals) are associated with students' metacognition and coping strategies. More specifically, in the model, students' mastery approach, mastery avoidance, performance approach, and performance avoidance goals were directly linked to students' metacognition and positive coping. Further, paths were defined from students' performance approach and avoidance goals to students' projective, denial, and non coping strategies.

In addition to aforementioned relations, the model included paths between antecedents and consequences of achievement goals. More specifically, paths were defined from self efficacy, task value, and perceived teacher mastery goal emphasizes to metacognition and positive coping. The model also included direct paths from fear of failure, and perceived teachers performance goals to maladaptive coping strategies; projective coping, denial coping and non coping. The coping strategies were also linked to metacognition in the model.

Finally, the model also proposed relationships between motivational beliefs and fear of failure. More specifically, students' task value, fear of failure and their perceptions about parents' and teachers' mastery goals were directly linked to their self efficacy. Additionally, paths were specified from students' fear of failure and their perceptions about parents' and teachers' mastery goals to students' task value. Besides, the model included direct paths from perceived teachers' performance goals to fear of failure. The proposed path model is displayed in Figure 1.1.

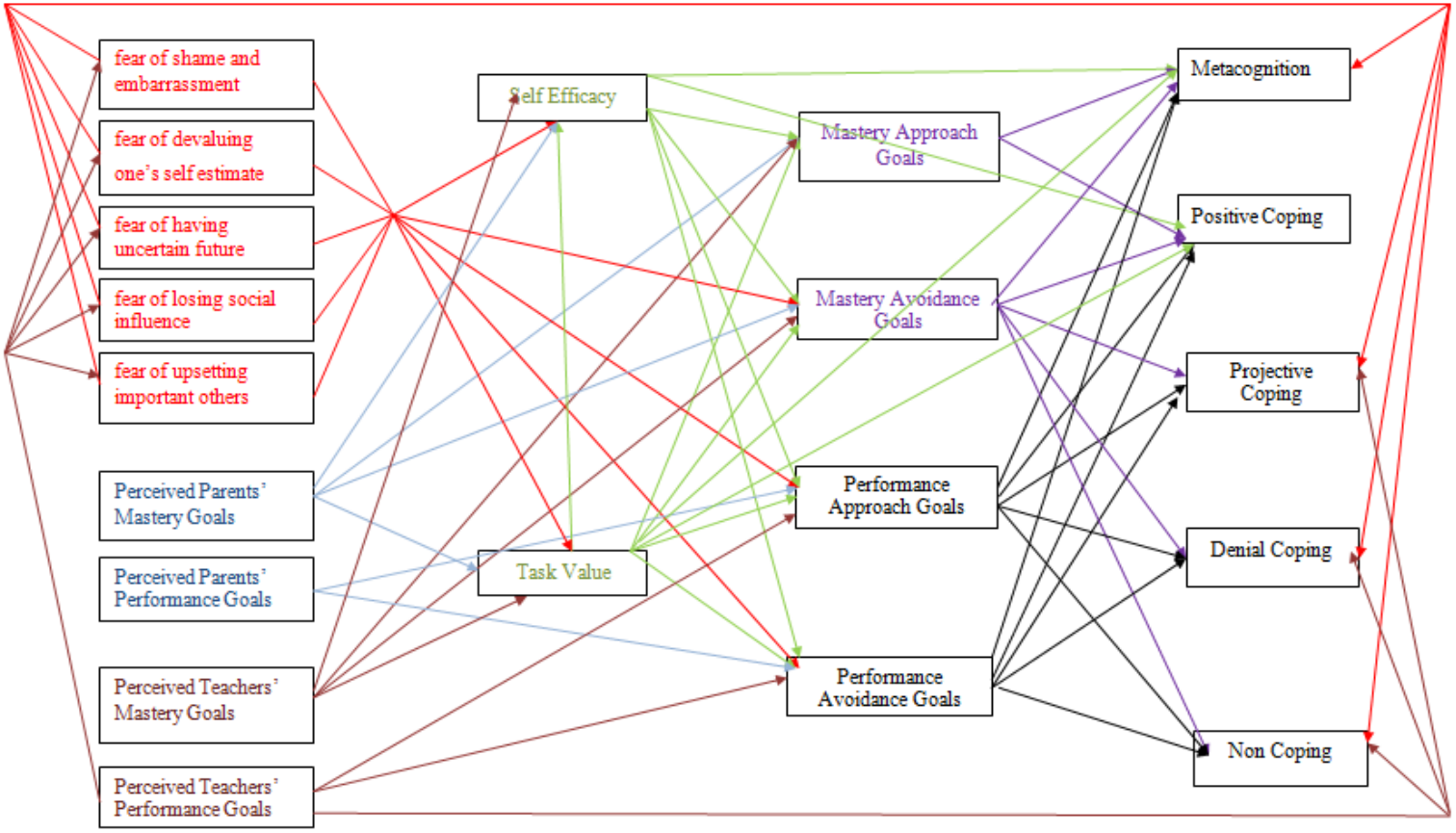

Figure 1.1 The proposed path model

1.1. Purpose of the Study

In this study, antecedents and consequences of 7th grade elementary students' achievement goals will be investigated. Self-efficacy, task value, fear of failure, perceived parents' and teachers' achievement goals will be examined as antecedents of achievement goals while metacognition and coping strategies will be examined as its consequences.

While conducting this study, the ten following main questions will be examined:

1. What is the relationship between Turkish elementary school students' self-efficacy, task value, fear of failure, and perceived parents' and teachers' achievement goals and their own achievement goals in science?

Based on the first question, the following sub questions will be addressed in the present study.

1.1. Is there a relationship between Turkish elementary students' self-efficacy and achievement goals in science?

1.2. Is there a relationship between Turkish elementary students' task value and achievement goals in science?

1.3. Is there a relationship between Turkish elementary students' fear of failure and achievement goals in science?

1.4. Is there a relationship between Turkish elementary students' perceptions of their parents' achievement goals and their own achievement goals?

1.5. Is there a relationship between Turkish elementary students' perceptions of their teachers' achievement goals and their own achievement goals?

2. What is the relationship between Turkish elementary school students' achievement goals and their metacognition in science?
3. What is the relationship between Turkish elementary school students' achievement goals and their coping strategies in science?
4. What is the relationship between Turkish elementary school students' motivational beliefs and fear of failure?

Based on the fourth question, the following sub questions will be addressed in the present study.

4.1. Is there a relationship between Turkish elementary school students' self efficacy and fear of failure?
4.2. Is there a relationship between Turkish elementary school students' task value and fear of failure?

5. What is the relationship between socio-cultural influence and Turkish elementary school students' motivational beliefs and fear of failure?

Based on the fifth question, the following sub questions will be addressed in the present study

5.1. Is there a relationship between students' perceptions of parents' achievement goals and students' self efficacy?
5.2. Is there a relationship between students' perceptions of teachers' achievement goals and their self efficacy?
5.3. Is there a relationship between students' perceptions of parents' achievement goals and their task values?
5.4. Is there a relationship between students' perceptions of teachers' achievement goals and their task values?
5.5. Is there a relationship between students' perceptions of teachers' achievement goals and their fear of failure?

6. What is the relationship between Turkish elementary school students' motivational beliefs, fear of failure and metacognition?

Based on the sixth question, the following sub questions will be addressed in the present study.

6.1. Is there a relationship between Turkish elementary school students' self efficacy and metacognition?
6.2. Is there a relationship between Turkish elementary school students' task value and metacognition?
6.3. Is there a relationship between Turkish elementary school students' fear of failure and metacognition?

7. What is the relationship between Turkish elementary school students' motivational beliefs, fear of failure and coping strategies?

Based on the seventh question, the following sub questions will be addressed in the present study.

7.1. Is there a relationship between Turkish elementary school students' self efficacy and positive coping?
7.2. Is there a relationship between Turkish elementary school students' task value and positive coping?
7.3. Is there a relationship between Turkish elementary school students' fear of failure and projective coping?
7.4. Is there a relationship between Turkish elementary school students' fear of failure and denial coping?
7.5. Is there a relationship between Turkish elementary school students' fear of failure and non coping?

8. What is the relationship between socio-cultural influence and Turkish elementary school students' metacognition?

9. What is the relationship between socio cultural influence and Turkish elementary school students' coping strategies?

Based on the ninth question, the following sub questions will be addressed in the present study.

9.1. Is there a relationship between students' perceptions of teachers' achievement goals and students' positive coping?
9.2. Is there a relationship between students' perceptions of teachers' achievement goals and students' projective coping?
9.3. Is there a relationship between students' perceptions of teachers' achievement goals and students' denial coping?
9.4. Is there a relationship between students' perceptions of teachers' achievement goals and students' non coping?

10. What is the relationship between Turkish elementary school students' metacognition and coping strategies?

Based on the tenth question, the following sub questions will be addressed in the present study.

10.1. Is there a relationship between students' metacognition and positive coping?
10.2. Is there a relationship between students' metacognition and projective coping?
10.3. Is there a relationship between students' metacognition and denial coping?
10.4. Is there a relationship between students' metacognition and non coping?

1.2. Significance of the Study

At the time being, achievement goal theory is one of the dominant theories that focus on differences between students while engaging in a task (Elliot, 1999). Investigating the achievement goals, understanding student's reasons for engage a task, will be helpful to comprehend their achievement motivations (Urdan& Maehr, 1995). As known, motivation is an important factor that affect students' learning and performance. Motivated students are not only much interested in the tasks, but also perform better than others. Therefore, improving students' achievement motivation is one of the goals of schools (Pintrich, & Schunk, 2002). For this reason, this study aims to help understand students' achievement motivation, and in the light of the results make suggestions to improve their motivation to teachers, parents, etc.

Besides, a student's approach to academic tasks affects his/her achievement behaviors. In the same way, reasons to undertake a task also affect persistence, performance and success (DeBacker& Nelson, 1999). Therefore, it is important to determine the sources of achievement goals and so the present study aims at elevating our understanding of the relations between personal achievement goals, and various motivational variables; self-efficacy, task value, fear of failure, perceived parents' and teachers' achievement goals. Additionally, in the current study, metacognition and coping strategies will be regarded as consequences of achievement goals. The relationships between these variables can vary depending on culture and country (Sungur& Şenler, 2008). In this study, the data will be collected from Turkish students, and the researchers will try to explain the results according to Turkish culture and Turkish educational system. The results will also be compared to the literature. In addition the relationship among all the variables will be tested with a conceptual model proposed based on the literature by using path analysis in the present study. Path analysis allows us to examine the relationship among the variables simultaneously. It is the first time that relationship among antecedents and consequences of achievement goals will be examined simultaneously through the present study.

1.3. Definition of Important Terms

1.3.1. Achievement Goals

Achievement goals involve reasons for engaging an academic task (Midgley, 2000). In this study, four personal achievement goals of mastery approach, mastery avoidance performance approach and performance avoidance achievement goals will be measured via Achievement Goal Questionnaire, developed by Elliot and Church, 2001.

1.3.2. Self-Efficacy

Self-efficacy refers to beliefs about capabilities to learn (Pintrich, & Schunk, 2002). Self efficacy will be assessd by a sub scale of Motivated Strategies in Learning Questionnaire in the present study.

1.3.3. Task value

Task value can be defined as the reasons for engaging a task. The answer to "why should I do this task?" question shows us task value. Four constituents of the task value are; attainment value, intrinsic interest, utility value and cost belief, (Eccles& Wigfield, 2000; 2002; Pintrich & Schunk, 2002). Task Value will be assessed by a sub scale of Motivated Strategies in Learning Questionnaire in the present study.

1.3.4. Fear of Failure

Fear of failure is an important factor that affects achievement behavior (Conroy& Elliot 2004). Fear of failure can be shortly defined as people's orientation of their energy to avoid a negative possibility (Elliot& Shledon, 1997; Elliot, 1999; Conroy, 2001). Although fear of failure can bring achievements especially for good performers, it can also cause people not to demonstrate their full potential on a given subject. (Conroy, 2001; Conroy, Willow, and Metzler, 2002). In the present study,

students fear of failure will be assessed via Performance Failure Appraisal Inventory, developed by Conroy, 2001.

1.3.5. Perceived Parents' Achievement Goals

Parents' goals also play an effective role on students' goals (Friedel, Cortina, Turner and Midgley, 2007). In this study, parents' achievement goals refer to students' perceptions of goals that their parents emphasize to them for science classes**.** In this study, students' perceptions about their parents goals will be assessed via Perceived Parent Goal Emphases Scale, developed by Friedel, Cortina, Turner and Midgley, 2007.

1.3.6. Perceived Teachers' Achievement Goals

Another factor that affects students' achievement goals is teachers' achievement goals (Friedel, Cortina, Turner and Midgley, 2007).). In this study, teachers' achievement goals refer to students' perceptions of goals that their science teachers emphasize to them in science classes. In this students' perceptions about their teachers goals will be assessed via Perceived Teacher Goal Emphases Scale, adopted from Patterns of Adaptive Learning Survey by Friedel, Cortina, Turner and Midgley, 2007.

1.3.7. Metacognition

Metacognition refers to high order thinking about one's learning process (Flavell, 1999; Livingston, 2003). Researchers shortly summarize metacognition as "thinking about thinking", or "cognition about cognitive phenomena". In this research, students' metacognition will be examined as a consequence of achievement goals. Students' metacognitve strategies will be assessed by a sub scale of Motivated Strategies in Learning Questionnaire in the present study.

1.3.8. Coping Strategies

Coping can be defined as students' thoughts, behaviors, or possible strategies that are adopted to handle an academic failure. (Folkman,& Moskowitz, 2004). In this research, students using coping strategies will be examined as consequences of achievement goals. Students' coping strategies will be assessed via Academic Coping Inventory, developed by Tero and Connell, 1984, in the present study.

2. LITERATURE REVİEW

In this study, antecedents and consequences of 7th grade elementary students' achievement goals will be investigated. While self efficacy, task value, fear of failure, perceived parents' achievement goals and perceived teachers' achievement goals will be examined as antecedents of achievement goals, metacognition and coping strategies will be examined as consequences of achievement goals.

2.1. Achievement Goals

Achievement goal theory, one of the most active motivational theories, has emerged to explain achievement behavior (Anderman, Urdan, & Roeser, 2003; Pintrich, Conley& Kemper, 2003). Achievement goal theory is focused on the goals of achievement tasks, not general life goals (Pintrich, Conley& Kempler, 2003). In other words, researchers of this theory are interested in are interested in what drives a student to complete a task, namely why do students want to achieve a task (Anderman, Urdan, & Roeser, 2003; Eliot& Harackiewicz, 1996; Midgley, Kaplan& Middleton 2001; Pintrich, 2000a). The theory highlights that students may have equal motivation to perform a task, but this does not mean that they have same reasons for doing the task (Anderman, Urdan, & Roeser, 2003). Therefore, researchers think that understanding reasons of achieving the task can lead them to understand students' achievement motivation (Pintrinch& Garcia, 1991).

Achievement goal theory was developed in the late 1970's and early 1980's (Elliot& Harackiewicz, 1996; Shih, 2005). Early researchers of this theory distinguished two achievement goals; mastery goals and performance goals. While mastery goals are concerned with learning and understanding a task and improving competence skills, performance goals focus on demonstrating competence or ability (Elliot& Harackiewicz, 1996; Church& Elliot, 1997; Pintrich, 2000; Linnenbrink& Pintrich, 2002; Pintrich& Conley& Kemper, 2003; Shih 2005). The theorists also underlined that these goals are related to a student's ability to process a situation as well as their reaction to the outcome. Researchers suggest that mastery goals are

related to positive process and outcomes; while, performance goals are related to negative outcomes (Elliot, 1999).

Later researchers suggest that an achievement goal in which a student desires a positive possibility is an approach goal, whereas (s)he is avoiding a negative possibility is an avoidance goal (Elliot& Thrash, 2001). Combining these two orientations, mastery versus performance; approach versus avoidance, researches offered 2× 2 form of achievement goals: mastery approach, mastery avoidance, performance approach, and performance avoidance. Mastery approach goals refer to an attempt to successfully complete a task, whereas, mastery avoidance goals refer to avoiding failure without understanding. For instance, if students are using mastery approach goals, their reasons for studying are improving their knowledge or skills. On the other hand, if students use mastery avoidance goals, they study for the reason of avoiding not learning and understanding, but not to improve. Concerning performance goals, students using performance approach goals study to show their ability to others and look smart, while students with performance avoidance goals study to avoid looking dumb or getting the worst grades. In the table 2.1, Pintrich and Schunk (2002) summarize the two main goals and their approach and avoidance forms.

Table 2.1 Two Goal Orientations and Their Approach and Avoidance Forms (Adapted from Pintrich & Schunk, 2002, pp 219)

	Approach focus	Avoidance focus
Mastery orientation	Focus on mastering task, learning understanding	Focus on avoiding misunderstanding, not learning or not mastering task
	Use of standards of self improvement, process, deep understanding of task	Use of standards of not being wrong, not doing it incorrectly relative to task

Table 2.1 (Continued)

Performance orientation	Focus on being superior, besting others, being the smartest, best at task in comparison to others	Focus on avoiding inferiority, not looking stupid or dumb in comparison to others
	Use of normative standards such as getting best or highest grades, being top or best performer in class	Use of normative standards such as not getting the worst grades, being lowest performer in class.

Related research has demonstrated that achievement goals are related to other motivational outcomes, such as fear of failure, task value, or self efficacy and cognitive outcomes, such as various cognitive and metacognitive strategy use (Anderman& Midgley, 1997; Elliot& Thrash, 2001; Pintrich& Schunk, 2002). Considerable research in the literature focused on how these goals are related with other outcomes (Pintrich& Schunk, 2002). Elliot (1999) defines achievement goals as "midlevel surrogates", namely, there are factors that underline adopting the goals, and these goals also influence the processes and outcomes. Therefore, the current study of these theories is aimed at examining achievement goals in relationship to their antecedents and consequences. While self efficacy, task value, fear of failure, parents' achievement goals, and teachers' achievement goals will be examined as antecedents of achievement goals, cognitive and metacognitive strategy use and coping strategies will be examined as consequences of achievement goals in the present study.

2.2. Antecedents of Achievement Goals

2.2.1. Relationship Between Task Value and Achievement Goals

One of the most prominent motivational theory is expectancy-value theory proposed by Atkinson in 1957. Inspired by work of early researchers (e.g. Lewin,

1935) Atkinson developed this theory to explain achievement-related behaviors, such as choosing a task and persisting in it. According to the theory, achievement behaviors can be explained by achievement motivation constructs, which are expectations for success and value. Atkinson defined expectation of success as the probability of success that a person expects for a given task. He also supports that value has a relationship with probability for success; if the given task is hard, people give it more value. For that reason, the theory was seen as limited (Wigfield, 1994; Pintrich& Schunk, 2002; Wigfield& Cambria, 2010).

Eccles and her friends elaborated on the Atkinson's work and developed the contemporary expectancy-value theory which led to considerable research on academic achievement (Eccles& Wigfield, 2000; 2002; Pintrich & Schunk, 2002; Eccles, 2009). According to this theory, people's behavioral choices are dependent upon two motivational beliefs: expectation for success and task value (Wigfield& Eccles, 1992; Wigfield, 1994; Eccles& Wigfield, 2000; 2002; Pintrich & Schunk, 2002; Eccles, 2009). While success expectancy is defined as the opinions of students about the outcome before engaging the task, value is defined as the reason for students to do the task (Eccles& Wigfield, 2000; 2002; Pintrich & Schunk, 2002; Eccles, 2009). The Eccles' expectancy- value model is presented in Figure 2.1.

As seen in the figure 2.1, expectancy and value components have direct affects on achievement behavior. While people are engaging in a task, they eliminate the other ones. During this process, their belief about probability of success and values that they give the task become the dominant distinctive marks (Eccles& Wigfield, 2002). Even when determining the answer to "why should I do this?", the value of the task changes based on the quality of the task. According to theorists, four components influence the quality of the task, and they are attainment value, intrinsic value, utility value, and cost. (Wigfield& Eccles, 2000; Eccles, & Wigfield, 2002, Pintrich & Schunk, 2002; Eccles, 2009). Attainment value refers to the importance of doing well. For example, one can see the task as an opportunity to

demonstrate one's self. Secondly, intrinsic value refers the individual interest in the task.

The task with the most intrinsic value will make an individual experience and enjoyment while doing it. Moreover, utility value refers to the task's importance for the person's goals. This include not only the current goals, but also in the future goals. In other words, if the task is useful for the immediate situation or future situation for a person, she or he will give it a value (Eccles, & Wigfield, 2002; Pintrich & Schunk, 2002; Hulman, Durik, Schweigert & Harackiewicz, 2008; Eccles, 2009). Finally, the last component of task value, cost can be defined as negative judgment about the task. For instance, if a person engages in a task, how he or she will perform or what opportunities will discard for that task will directly affect the persons' motivation (Eccles, & Wigfield, 2002; Pintrich & Schunk, 2002; Eccles, 2009).

Referring to the figure 2.1, expectancy and value are influenced by two motivational components. One of them is affective memories which refers to individuals' previous experiences about the task. For instance, if students have bad, negative experiences with science, this can affect students' present value of science The other one is self schemas and goals. Self schemas refer to individuals' beliefs about themselves. Further, goals refer to what students want to achieve. This might be a short term goal, like "getting the A in an exam", or a long term goal, like "to become a scientist". These two motivational constructs are influenced by students' perceptions of their past experiences; their perceptions about how they interpret different events that happen to them, and socio cultural environment; their perceptions about the beliefs of people around them such as their parents, or their teachers. (Eccles et al.,1983; Eccles et al., 1998; Wigfield & Eccles 1992; Eccles & Wigfield, 2000; Pintrich & Schunk, 2002).

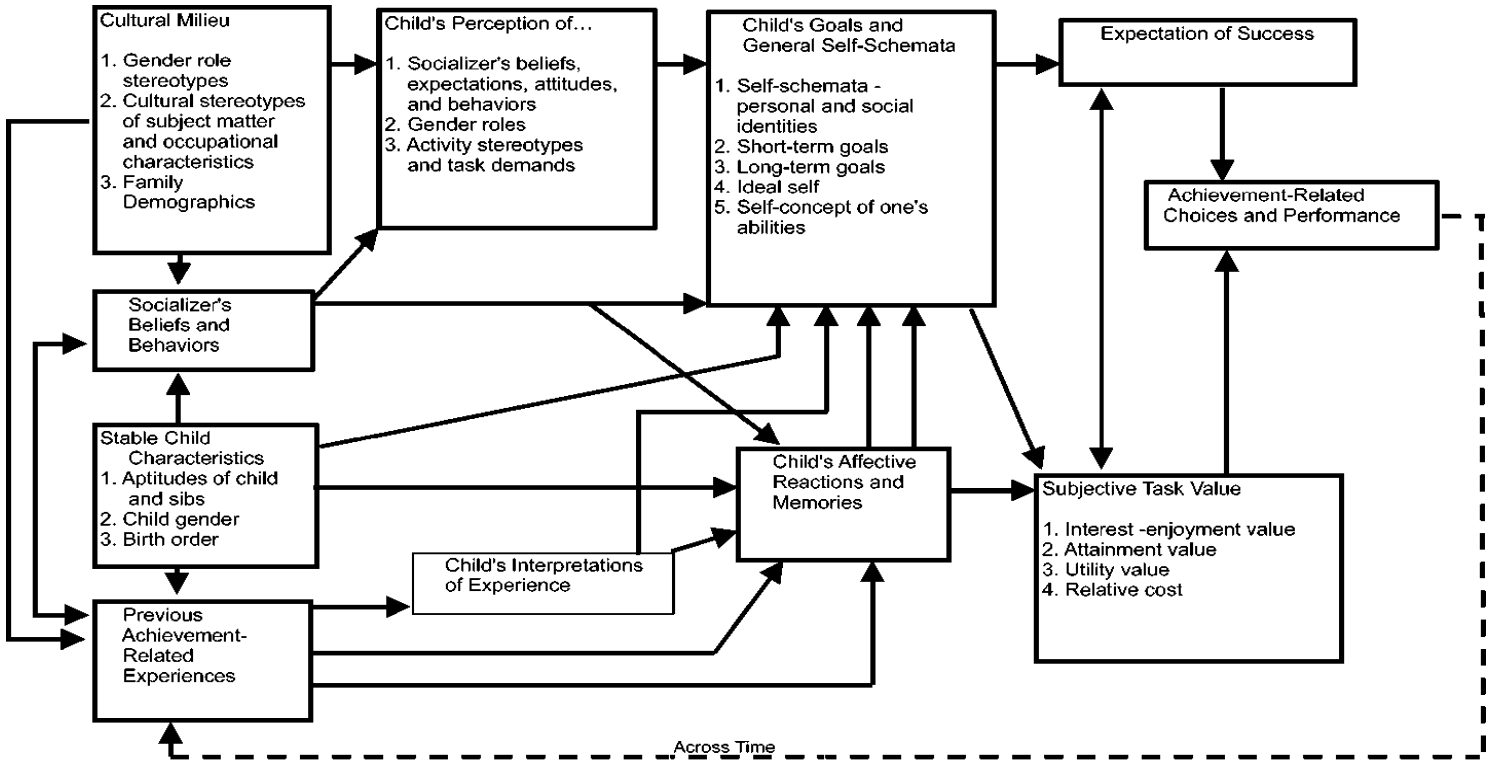

Figure 2.1 The Eccles and Wigfield (2000, pp 69) expectancy-value model of achievement from Contemporary Educational Research, 25

As mentioned above, task value beliefs are assumed to be good predictors of achievement behaviors such as choice, persistence, and effort. Students who see the task as useful, important, or enjoyable spent more time and effort on the task. Moreover, task value also has a direct relationship to students' achievement goals (DeBacker& Nelson, 1999). To illustrate, Wolters, Yu, and Pintrich (1996) investigated the associations between students' achievement goals and their students' motivational beliefs for three different academic subjects; English, math, and social sciences. They examined three achievement goals namely, mastery goals, performance approach goals, and performance avoidance goals. Also, they examined task value as one of the motivational beliefs. Four hundred thirty four (225 females, and 209 males) seventh and eighth grade elementary students participated the study. The researchers collected the data two times, at the beginning of the academic year, in October, and at the end of the academic year in June. They assessed students' achievement goals with the PALS (Patterns of Adaptive Learning Survey). It assesses mastery goals with six items, performance approach goals with five items, and performance avoidance goals with five items. Additionally, they assessed students' task value beliefs with MSLQ (Motivated Strategies for Learning Questionnaire), with six items. According to the results, task value was significantly associated with achievement goals. More specifically, task value beliefs were found to be positively related to mastery and performance approach goals. On the other hand, a negative association was found between students' task value beliefs and performance avoidance goals. The results were significant at both the first and second time.

Moreover, Xiang, McBride and Bruene (2004) investigated the relationship between task value and achievement goals in an elementary physical education program. One hundred nineteen, fourth grade students were participants of the study. Researchers assessed students' achievement goals with scales that developed from "Task and Ego Orientation in Sport Questionnaire". The scale, assessed students' mastery goals and had six items. The scale, which assed students' performance goals, had also six items. They also asked six questions to assess

students' task value beliefs. Additionally, researchers collected the data at the beginning of the fall semester. Results indicated that mastery goals and task value beliefs were positively related to each other. More specifically, students perceiving the tasks as useful, interesting, or important tend to adopt mastery goals..

In another study, Bong (2004) assessed the associations between students' task value and achievement goals; mastery goals, performance approach goals, and performance avoidance goals among 389 Korean high school girls. The survey used by the researchers was adopted from other published studies. It assessed task value with three items; mastery goals with four items; performance approach goals with three items; and performance avoidance goals with three items. Results showed that task value was positively related to mastery goals. This finding implied that students who find the task useful, interesting, or important, are likely to study for the reasons of improving their skills and knowledge.

In a similar study, Hulman, Durik, Schweigert and Harackiewicz (2008) investigated the relationships between achievement goals and task value judgments in a college classroom. They examined mastery approach, and performance approach goals as achievement goals, and utility and interest value as task value judgments. The participants of the study were six hundred sixty three (215 men, and 448 women) college students who enrolled psychology classes. At the beginning of the course, the second week, the researchers assessed students' achievement goals. They asked 4 questions, two of them assessing mastery approach goals, and two of them assessing performance approach goals. At the fourth week of the course, participants were asked their values for the task. In the questionnaire, there were asked three questions to assess utility value and three questions to assess interesting value. According to the results, only adoption of mastery approach goals are associated with task value beliefs, both utility and interest value.

In addition, Liem, Lau and Nie (2008) examined the relationship between task value as one of the motivational construct and achievement goals. The

participants of the study were 1475 (695 boys, and 780 girls). Researchers assessed students' achievement goals with the PALS (Patterns of Adaptive Learning Survey). It consists 16 items, and three parts; mastery goals, performance approach goals, and performance avoidance goals. Additionally, they assessed students' task value beliefs with the subscale of MSLQ (Motivated Strategies for Learning Questionnaire), with six items. Results of the study show that task vale directly predicted achievement goals. According to the results, task value was positively related to mastery goals and performance approach goals implying that students who find the tasks useful, or interesting are likely to focus on learning and understanding the course material as well as showing their abilities to others.

Furthermore, Khezri Azar, Lavasani, Malahmadi, and Amani (2010) examined the relationship between task value and achievement goals, including mastery goals, performance approach goals, and performance avoidance goals in math courses. Two hundred eighty (167 males, 113 females) high school junior students participated the study. Researchers used Midgley et al Achievement Goals (2000), includes 14 items, and Pintrich, et al Task Value (1991), includes 6 items surveys. The results were consistent with findings in that task value beliefs were found to be directly linked to mastery goals. This finishing suggested that students who give high value to the math task and activities tend to adopt mastery goals in math.

Overall, abovementioned literature shows that task value beliefs are significantly associated with achievement goals. More specifically, results demonstrated that, students who find the tasks as interesting, useful, or enjoyable, tend to adopt mastery goals, or performance approach goals. These students are likely to focus on improving their skills, learning new things and demonstrating their ability to others. Besides, students who do not find the task interesting, useful, or enjoyable tend to adopt performance avoidance goals. These students are likely to focus on avoiding getting worst grades or looking dump in front of their peers. Accordingly, in the present study, while a positive relationship is expected to be

found between students' task value and students' mastery and performance approach goals, negative relationship is expected between students' task value and mastery and performance avoidance goals.

2.2.2. Relationship Between Self Efficacy and Achievement Goals

One of the most widely known theories in education is Bandura's (1986) Social cognitive theory. There are three main idea in this theory; reciprocal interactions, enactive and vicarious learning, and motivation. Reciprocal interactions stand for a dynamic interplay among personal, behavioral, and environmental elements contribute equally to human functioning. Enactive learning refers to learning by doing; conversely, vicarious learning refers to learning by observing others. According to the this theory, motivation is an important issue that affects learning and performance. Additionally, motivation is a goal directed behavior. People set their goals, they activate them by the outcome expectations and they perform the actions by self efficacy beliefs (Pintrich& Schunk, 2002; Schunk& Pajares, 2009). In other words, self efficacy, or judgment of oneself about one's own capacity for a task, has a very large contribution on a persons' self motivation (Bandura, 1982, 1999; Zimmerman, 2000) and is also a key component for the Social Cognitive Theory (Bandura, 1977; Pintrich, & Schunk, 2002; Zimmerman, 2000). Self efficacy includes feelings, and emotions for an oncoming situation and differs from outcome expectations (Bandura, 1977; 1981). Outcome expectations can be defined as a person's thoughts about what effects a behavior will cause; a person's perceptions about how well they organize required activities for an ambiguous situation addresses to self efficacy beliefs (Bandura, 1977; Bandura& Schunk, 1981). Therefore, self efficacy beliefs are a factor that directly effects people's engagement in an activity (Bandura, 1977; 1981; Tipton& Worthington, 1984).

People's judgments of themselves about whether they achieve the task or not is a process which is based on four types of information: performance attainments; vicarious experiences of observing the performances of others; verbal persuasion; and physiological states (Bandura, 1982; Schunk, 1984). Performance

attainments refer to past performance of people. In other words, if a person achieves a task in the past, the next time he or she will believe himself/herself to accomplish the oncoming task. Additionally, performance attainments present valid efficacy information for people (Schunk, 1984). The second source, verbal persuasion, refers to observing others who are similar or whose tasks are similar. In other words, people can decide whether or not they can accomplish the task by observing other people. In the third information source, verbal persuasion, people judge their capacity for a task by others' accounts or advice. In the last source, physiological states, people get assistance from their physiological conditions. For instance, if a person feels relaxed, he or she will be more confident, and they will infer from this that they can succeed (Bandura, 1982; Siegel& McCoach, 2007).

Self efficacy is a multidimensional construct that varies in strength, and difficulty level and also has significant effects on persons' achievement behavior. It can even be seen as the best predictor of a specific behavior (Schunk, 1990; Pintrich, & Schunk, 2002). For instance, if people think the task is very difficult and that it exceeds their capacity, their judgment is negative, and they may avoid the task (Baundra 1977). Because having capacity is not enough to achieve a task, students also need to believe that they can achieve it (Hsieh, Sullivan and Guerra, 2007).

Accordingly, self efficacy has considerable effects on setting goals and persisting in these goals (Bandura, 1982). In general, students with high self efficacy choose more challenging goals, show more effort, and perform better than others who are less self-efficacious (Bandura, 1982; Schunk, 1990). Moreover, judgment about peoples' ability is also related to their adoption of achievement goals (Dweck& Leggett, 1988). In fact, Elliot and Church (1997) suggested that self-efficacy is a direct antecedent of achievement goals. More specifically, according to Elliot and Church, highly self-efficacious people tend to adopt approach achievement goals, while less self-efficacious people tend to adopt avoidance achievement goals. In a study providing a support for this idea, Liem, Lau and Nie (2008) investigated the relationship between self efficacy and achievement goals. One thousand and four

hundred seventy five (695 boys, and 780 girls) Singapore students participated in the study. The average age of the participants was 15. Researchers assessed students' achievement goals with the PALS (Patterns of Adaptive Learning Survey). The PALS consisted of 16 items in three dimension namely, mastery goals (6 items), performance approach goals (5 items) and performance avoidance goals (5 items). Additionally, they assessed students' self efficacy with the subscale of MSLQ (Motivated Strategies for Learning Questionnaire), with eight items. Results of the study showed that self efficacy directly predicts achievement goals. More specifically, self efficacy was found to be a positive predictor of mastery goals and performance approach goals; whereas, a negative predictor of performance avoidance goals. These results implied that, students with higher levels of self efficacy are likely to adopt approach goals (mastery and performance approach) while students with lower levels of self efficacy are likely to adopt performance avoidance goals.

In other study Phillips and Gully (1997) investigated the relationship between self efficacy and achievement goals using the dichotomous achievement goals framework. Accordingly, they assessed only mastery goals and performance goals. Four hundred five undergraduate students participated in the study. They measured the achievement goals by using two 8-item scales developed by Button et al. (1996), and self efficacy by using a 10-item scale. Results showed that there was a positive relationship between self efficacy and mastery goals that is, higher levels of self-efficacy was found to be associated with higher levels of mastery goal adoption. However, according to the results, there were no relationship between performance goals and self efficacy.

In addition, Pajares, Britner, and Valiante examined the relationship between self efficacy and achievement goals in two studies; in writing class (study 1) and in science class (study 2). 497 middle school students (250 girls and 247 boys) , participated in study 1. Meanwhile, 281 middle school students (139 girls, and 142 boys) participated in study 2. Patterns of Adaptive Learning Survey (PALS) were

used to assess students' achievement goals. Researchers also assessed writing self efficacy, and science self efficacy with guidelines provided by Bandura. In both studies, self efficacy was found to be positively linked to mastery goals, and negatively related to performance avoidance goals. Differently from study 2, in the study 1, self efficacy was also positively related to performance approach goals for writing class.

The relationship between self efficacy and achievement goals was also investigated by Bong (2001). Four hundred twenty four students (212 girls, and 212 boys) from three middle schools and two high schools in Korea participated in the study. The researcher assessed students' achievement goals with the scale that was adopted from Patterns of Adaptive Learning Survey (PALS; Middleton & Midgley, 1997), and students' self efficacy with the scale that was adopted from PALS, and MSLQ (Motivational Strategies for Learning Questionnaire). Results indicated that self efficacy has positive relationships between mastery goals and performance approach goals.

In other study, Shim and Ryan (2005) examined the relationship between achievement goals and students' self efficacy. The participants were three hundred sixty one (64% females, 36% males) college students from a large Midwestern university. The researchers used Patterns of Adaptive Learning Survey (PALS; Midgley et al., 1997) to assess achievement goals; mastery goals (6 items), performance approach goals (5 items) and performance avoidance goals (5 items), and to assess self efficacy (3 items). Results indicated that while self-efficacy was positively related to mastery goals, it was negatively linked to performance-avoidance goal. The study also showed that self-efficacy was not significantly linked to performance approach goals.

In a similar study, Hsieh, Sullivan and Guerra (2007) explored the relationship between self efficacy and achievement goals. Participants were one hundred twelve undergraduate students from a large, metropolitan, Hispanic-serving

institution in the Southwest. Results showed that self-efficacy was significantly correlated with mastery goals implying that students with higher levels of self efficacy adopt stronger mastery goals than those who had lower levels of self-efficacy.

In a study conducted in Turkey, Akın (2008) also investigated the relationship between self efficacy and achievement goals. The researcher used the 2X2 form of achievement goals framework. Accordingly, the author examined mastery approach goal, mastery avoidance goals, performance approach goals, and performance avoidance goals in the study. Six hundred, forty six (331 males, 315 females) university students participated the study. He used 2X2 Achievement Goal Orientation Scale, which consisted of 26 items, and self efficacy sub scale of Motivated Strategies for Learning Questionnaire, which consisted of 8 items. Results showed that, while self efficacy positively predicted mastery approach goals, it was a negative predictor of mastery avoidance, performance approach, and performance avoidance goals. These findings revealed that self-efficacious students are likely to focus on improving their knowledge and skills and they tend to adopt mastery approach goals. On the other hand, students with lower levels of self efficacy are likely to focus on avoiding misunderstanding, getting the worst grades, or making fools of themselves. These students tend to adopt mastery avoidance goals, performance avoidance goals, or performance approach goals. Overall, the findings obtained from Turkish sample were parallel to those obtained in Western cultures.

Recently, Khezri Azar, Lavasani, Malahmadi, and Amani (2010) examined the relationship between self efficacy and achievement goals; mastery goals, performance approach goals, and performance avoidance goals in math courses. Two hundred eighty (167 males, 113 females) third grade high school students participated the study. Researchers used Midgley et al Achievement Goals (2000), which includes 14 items, and Middleton and Midgley Self efficacy in Mathematics (1997), which includes 4 items surveys. The results showed that self efficacy has positive direct relationship with mastery goals and performance approach goals. This

finding implied that students with positive judgments about their capabilities are likely to study for the reasons of improving their skills and knowledge. On the other hand, negative relationship found between self efficacy and performance avoidance goals suggested that students with lower levels self efficacy are likely to study for the reasons of avoiding looking stupid or getting the worst grade in the class.

To sum up, aforementioned literature has demonstrated that self efficacy is significantly related to achievement goals. More specifically, substantial empirical evidence from previous research consistently indicated that self efficacy is positively associated with mastery and performance approach goals and negatively with performance avoidance goals. Accordingly, in the present study, while a positive relationship is expected to be found between students' self efficacy and students' mastery and performance approach goals, negative relationship is expected between students' self efficacy and students' mastery and performance avoidance goals.

2.2.3. Relationship Between Fear of Failure and Achievement Goals

Achievement motivation, directing energy to a competence based affect, explains the reasons of people's motivation by two components; need for achievement and fear of failure. Need for achievement refers to being motivated to approach a positive possibility, to approach a success. Conversely, fear of failure refers to being motivated to avoid a negative possibility, to avoid from a failure (Elliot& Shledon, 1997; Elliot, 1999). In other words, fear of failure is seen as a tendency to sense shame and the chance of being belittled in the eyes of peers (Atkinson, 1957 cited in Conroy, Willow, and Metzler, 2002; Elliot, Henry, Shell, & Maier, 2005). Fear of failure can arise from dwelling on past negative experiences (Kesici& Erdoğan, 1999). Additionally, fear of failure is related to negative affective outcomes, like text anxiety (Elliot & McGregor, 1999), and maladaptive cognitive strategies (Elliot & Thrash, 2004).

Researchers used to assessed fear of failure with one-dimensional measures in the past; since, it caused to make little known about why people worry,

why they afraid being unsuccessful (Wigfield& Eccles, 1990; Conroy, 2001). To elaborate the knowledge about worry, Birney, Burdick, and Teevan (1969) proposed a three dimensional fear of failure model. The model includes a) fear of devaluing one's self esteem, b) fear of nonego punishment, and c) fear of reduced social value (Conroy, 2001). Moreover, Conroy, Poczwardowski, and Henschen (2001) enriched this model, and they defined five aversive consequences of failure: a) experiencing shame and embarrassment, b) devaluing one's self-estimate, c) having an uncertain future, d) important others losing interest, and e) upsetting important others. The first dimension of fear of failure, shame based fear of failure, refers to people's negative self evaluations about themselves, in other words they think that failure brings them shame and embarrassment, for that reason they try to avoid from the failure. Secondly, some people can accuse themselves for the failure. They can blame their talent, intelligence, etc. Hence, the failure can cause to decrease in their self confidence. The third possible consequences of failure is fear of having uncertain future. Some people believe that their future plans need to change after a failure, and these changes make them see the future ambiguous. Another reason to fear of failure is fear of losing interest. People who fear of losing interest believe that their value depends on their success, and they also believe that if they can not success, their value will decrease for some people. According to them, failure brings loss social influence. Lastly, people don't want to be unsuccessful because they believe that they will upset other people who are important for them, like their parents, or their teachers (Conroy, 2001; Conroy, Willow, and Metzler, 2002; Conroy, Metzler, and Hofer, 2003; Conroy& Elliot, 2004).

Researchers have shown that fear of failure has indirect effects on achievement behavior such as choosing a task, showing effort and performance for the task. In a sense, that fear has a domino effect; it affects directly the adaptation of achievement goals, and from there achievement goals directly affect achievement behavior (Elliot& Church, 1997; Elliot& Sheldon, 1997; Elliot& McGregor, 1999; Conroy& Elliot, 2004; Elliot, Henry, Shell, & Maier, 2005). Since people who desire to avoid failure are also likely to desire success, fear of failure is seen as a

predictor of not only avoidance goals, but also performance approach goals. In brief, fear of failure is an antecedent of achievement goals (Elliot, 1999). To illustrate, Elliot and Sheldon (1997) investigated that how fear of failure influences the adoption of approach and avoidance achievement goals. The researchers conducted the study using a trichotomous achievement goal framework; mastery goals, performance approach goals, and performance avoidance goals. Although, mastery goals and performance goals (approach goals) were not differentiated in the study, both of them were examined as approach goals. One hundred thirty five undergraduate students (51 men and 85 women) participated in the study. They used Alpert and Haber's (1960) 10-item Debilitating Anxiety Scale to assess the students' fear of failure since, in achievement motivation literature, researchers have used text anxiety scales as the motivation to avoid failure. Additionally, they developed Achievement Goal Questionnaire to assess students' achievement goals. According to the results, there were positive relationships between fear of failure and avoidance goals. Researchers also concluded that fear of failure can be one of the antecedents of approach goals as well.

Moreover, in 2003, Conroy, Elliot and Hofer examined the affects of fear of failure on achievement goals using the 2X2 achievement goal model, which encompasses mastery approach, mastery avoidance, performance approach, and performance avoidance, in sports. Three hundred fifty six (250 male, 106 female) athletes participated the study. They used 12 items, 2X2 Achievement Goal Questionnaire by revising for sport, and 5 item, short form of Performance Failure Appraisal Inventory as instruments. Results showed that fear of failure positively predicts mastery avoidance goals, performance approach goals, and performance avoidance goals. Furthermore, no relationship was found between mastery approach goals and fear of failure.

In another study in 2004, Conroy and Elliot investigated the relationship between fear of failure and achievement goals. Three hundred fifty-six undergraduates at a large university participated in the study. Researchers used The

Performance Failure Appraisal Inventory (PFAI; Conroy, 2001; Conroy et al, 2002) to assess fear of failure. This 25-item measure yields scores for five first order beliefs about aversive consequences of failing and one higher-order factor representing general fear of failure. The lower-order scales include (a) Fears of Experiencing Shame and Embarrassment (b) Fears of Devaluing One's Self-Estimate,(c) Fears of Having an Uncertain Future, (d) Fears of Important Others Losing Interest, and (e) Fears of Upsetting Important Others. The results indicated that mastery-avoidance and performance-avoidance achievement goals were positively associated with each fear of failure appraisal score and each general fear of failure score. Additionally, performance approach goals were positively associated with fears of experiencing shame and embarrassment and also positively associated with general fear of failure, of having an uncertain future, and of important others losing interest.

In 2008, Nien and Duda investigated the relationship between fear of failure and achievement goals; mastery approach goals, mastery avoidance goals, performance approach goals, and performance avoidance goals in sports. Four hundred fifty (249 males, 197 females) athletes from different universities and sports clubs around the UK participated the study. 12-item Achievement Goals Questionnaire for Sport (AGQ-S; Conroy et al., 2003), and 5- items of the General Fear of Failure Scale (Conroy et al., 2002) were used in the study. Results indicate that fear of failure is an antecedent of not only avoidance goals, mastery avoidance, and performance avoidance goals, but also performance approach goals.

Elliot and Murayama (2008) examined the effects of fear of failure on adoption of achievement goals. Two hundred twenty nine (76 male, 150 female, and 3 unspecified) undergraduate students participated the study. They assessed students' achievement goals by revising Achievement Goal Questionnaire (Elliot& McGregor, 2001), and students' fear of failure by short form of Conroy's (2001) Performance Failure Appraisal Inventory. The results confirmed the previous ones. In other words, students who have high fear of failure, tend to focus on avoiding word grades,

misunderstanding, and demonstrating themselves. Additionally, there was no relationship between fear of failure and mastery approach goals.

To sum up, according to the research mentioned above, fear of failure has observable direct effects on adoption of achievement goals. Researchers suggest that approach and avoidance performance goals, along with mastery avoidance goals, can emerge from fear of failure. Further, there were no relationships between mastery approach goals and fear of failure. In conclusion, students with high fear of failure want to achieve their goals, because they feel uncomfortable of missing the point, not understanding, or looking stupid in front of their peers. They wish to appear intelligent and skilled in front of others. Accordingly, in the present study, a positive relationship is expected to be found between students' fear of failure and students' approach and avoidance performance goals, as well as mastery avoidance goals.

2.2.4. Relationship Between Socio Cultural Influences and Achievement Goals

Achievement goal theory highlights that environment, both school environment and home environment, has a conspicuous effect on students behavior (Ames, 1990). Expectancies and behaviors of people who are at the environment of the students also direct students actual and achievement behavior in a positive or negative way. Not only achievement behavior, students' perceptions of significant people's, like parents', teachers', beliefs affect also students' motivational beliefs. Stated in other words, while students acquiring motivational beliefs, such as self efficacy, task value, fear of failure, etc., socio cultural influences are also considerable determinants (Crandall, 1969; Pintrich & Schunk, 2002; Friedel, Cortina, Turner and Midgley, 2007).

Researchers suggest that achievement goals emerge in social cultural environment, and it is a kind of product of these environmental influences. Accordingly, people's experiences in their surroundings lead them to adapt any kind of achievement goals; if the environment emphasizes mastery goals, people can focus on improving their skills, and even they can change their performance goals to

mastery goals or vice versa. (Nicholls, 1989; Anderman & Maehr, 1994; Kaplan& Maehr, 2002; Friedel, Cortina, Turner and Midgley, 2007). Due to this reason, socio cultural influence will be examined as one of the antecedents of the achievement goals in the current study. Moreover, social influence will be handled in the two categories as parents' achievement goals and teachers' achievement goals in the study.

2.2.4.1. Relationship Between Perceived Parent Achievement Goal Emphasize and Achievement Goals

Parental influences have significant effects on not only students' achievement, but also their motivational beliefs (Gonida, Kiosseoglou& Voulala, 2007), because students tend to rely on their parents' attitudes and opinions about their abilities more than their own past performances (Eccles, Parsons, Adler and Kaczala, 1982). When students think that their parents focus on the effort, they give high priority to it (Marchant *et al.,* 2001). Furthermore, students can adopt performance goals, they can focus on being a top student, or demonstrating themselves, if they feel that their parents regard it. In the same manner, students can also adopt mastery goals, they can focus on improving their skills, or knowledge, if their parents emphasize mastery goals (Gonida, Kiosseoglou& Voulala, 2007). Because as mentioned before, parents' perceptions and expectancies directly affects students' expectancies (Eccles, Parsons, Adler and Kaczala, 1982).

To illustrate, Friedel, Hruda, and Midgley (2001) examined the relationship between students' perceptions about their parents' achievement goals and their personal achievement goals in mathematics. Nine hundred forty five 7^{th} grade students participated in the study. According to the results, children 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, Friedel, Cortina, Turner and Midgley (2007) investigated the effects of parents' achievement goals on their students goals. The researchers used the dichotomous achievement goal framework; as mastery goals and performance

goals. One thousand and twenty one 7th grade students were participated in the study. They assessed students' achievement goals and perceptions about their parents' achievement goals by items adopted from PALS (Midgley et al. 1997). Results showed that students perceptions about their parents' achievement goals have an important effect on adoption of achievement goals. According to the results, when parents have mastery goals, students also adopt mastery goals. Additionally, when parents' have performance goals, students mostly adopt performance approach goals.

Gonida, Kiosseoglou& Voulala (2007) also investigated the relationship between students' perceptions about their parents' achievement goals and students' personal achievement goals. One hundred thirty nine 7th grade students, one hundred forty nine 9th grade students and one hundred thirty eight 11th grade students participated the study. They assess students' achievement goals with the questionnaire "Personal Achievement Goal Orientations" developed by Midgley et al. (1998). Moreover, they assessed parent achievement goals that they emphasized with the questionnaire "Perceptions of Parents, Home Life, and Neighborhood" developed by Midgley et al. (2000). Findings suggested that students mastery goals were predicted by mastery goals that parents emphasize, as well, students performance goals, both approach and avoidance, were predicted by performance goals that parents emphasize. However, there were differences about antecedents of achievement goals between elementary students and junior high school students. For junior high school students, students' perceptions about their parents' master goals also affects students' adaptation of performance approach goals. In another study, the same researchers, Gonida, Voulala, and Kiosseoglou (2009) investigated how perceived parent goals emphasize affects students' adoption of achievement goals. The researchers examined the parents goals as mastery goals and performance goals; while, they examined students' achievement goals as mastery goals, performance approach goals, and performance avoidance goals. Two hundred seventy one, high school students (7th and 9th grade) participated in the study. They used the same instrument with the previous research. 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 parent want them to demonstrate themselves, they tend to adopt performance goals, both approach and avoidance goals.

Recently, Kim, Schallert and Kim (2010) investigated how students' perceptions of their parents achievement goals affect their adaptation of achievement goals in mathematics classroom. One hundred ninety one Korean students (105 boys and 86 girls) participated in the study. While students' personal achievement goals were assessed by the Patterns of Adaptive Learning Survey (PALS; Midgley et al., 2000), perceived parents goals emphasized were assessed by an adaptation form of PALS. According to the results, students' personal goals could be predicted by their perceptions of their parents' achievement goals, but not directly. Perceived parent goals emphasize affect students own self regulated motivations, and students self regulated motivation effects students' adaptation of achievement goals.

Overall, the abovementioned literature demonstrated that students' perceptions about their parents' achievement goals are related to their personal goals. More specifically, previous research consistently indicated that students can adopt either mastery goals or performance goals according to the their perceptions about their parents' achievement goals. Accordingly, in the present study, a positive relationship is expected to be found between students' perceptions of their parents' mastery goals and students' mastery goals. In the same manner, a positive relationship is expected to be found between students' perceptions of their parents' performance goals and students' performance goals.

2.2.4.2. Relationship Between Perceived Teacher Achievement Goal Emphasize and Achievement Goals

Ames (1992) suggested that if students' motivation, cognition, affect, and behaviors are examined, their perceptions about learning environment should also be included as a factor. She also added that students' perceptions about learning

environment is influenced by teachers' behaviors. Therefore, teachers' beliefs and behaviors, and how these beliefs are reflected to students are notable determinants to understand students' motivation, cognition, affect, and behavior. Teachers can create a learning environment that emphasizes mastery goals, by giving meaningful tasks to students, considering mistakes as a part of learning, focusing on learning and mastering new skills, etc., or they can create a learning environment that emphasizes performance goals, by encouraging ability, high succeed with little effort, etc. (Nicholls, 1989; Garner, 1990; Ames, 1992; Kaplan et all., 2002; Meece, Anderman& Anderman, 2006). Relevant literature provide a support to the idea that students' perceptions about these environments' goals structure is related to adoption of their achievement goals (Ames, 1992; Kaplan & Maehr,1999; Middleton, Gheen, Hruda, & Midgley, 2000; Roeser, Midgley, & Urdan, 1996).

To illustrate, Roeser, Midgley, and Urdan, (1996) investigated how the goal structures in learning environments affect students' adoption of achievement goals. Two hundred ninety six, middle school students (147 girls and 149 boys) participated in the study. The researchers used Patterns of Adaptive Learning Survey (PALS) to assess students' achievement goals and their perceptions' about learning environment. They used dichotomous goal frame work, mastery and performance goals, for both environments' goals and personal goals. According to the results, there were positive relationship between personal achievement goals, and learning environment goals. Namely, students who perceived mastery goals from learning environment, they tend to adopt mastery goals. In the same manner, students who feel that ability is focused on the class, they tend to adopt performance goals.

Moreover, Friedel, Cortina, Turner and Midgley (2007) investigated the effects of learning environment goals, more specifically teachers' achievement goals on their students goals. The researchers used the dichotomous achievement goal framework; as mastery goals and performance goals. One thousand twenty one, 7^{th} grade students were participated in the study. They assessed students' achievement goals and perceptions about their teachers' achievement goals by items adopted from

PALS (Midgley et al. 1997). Results showed that students' perceptions about teachers' achievement goals have an important effect on students' achievement goals. In other words, mastery goals that teachers emphasize in the lesson direct student to adopt the mastery goals, in the same manner, performance goals that teachers emphasize in the lesson direct students to adopt the performance goals.

Bong (2008) also investigated the relationship between students' personal goals and their perceptions about social-psychological environments in math class. Seven hundred fifty three, high school students (315 girls, 438 boys) participated in the study. She assessed students' personal achievement goals and their perceptions about learning environments' goals with PALS (Midgley et al. 1997). According to the results, students' perceptions about learning environment's goals play an important role to adaptation achievement goals.

In a study conducted in Turkey, Tas (2008) examined the relationship between the personal achievement goals and the goals that emphasized in the learning environment in science classes. One thousand, nine hundred and fifty seventh grade students participated in the study. The researcher used PALS developed (Midgley et al. 2000) to assess students' personal achievement goals, mastery goals, performance approach goals, and performance avoidance goals, and their perceptions of about learning environments' goals, both mastery goals and performance goals. Results indicated the positive relationship between personal goals and perception of environment goals. In other words, when students perceive mastery goals from their learning environment, they tend to adopt mastery goals. In the same manner, when students perceive performance goals, they tend to adopt performance goals.

To sum up, achievement goals that socio cultural environment emphasize to their children have an important effect on children achievement goals. Goal researchers show that there is a positive relationship between personal goals and emphasized goals. In other words, when social environment emphasize mastery

goals, students also tend to adopt mastery goals, and, when social environment emphasize performance goals students also tend to adopt performance goals. But still there is not enough study that explain the relationship between social goals and personal goals. Accordingly, in the present study, a positive relationship is expected to be found between students' perceptions of their teachers' mastery goals and students' mastery goals. In the same manner, a positive relationship is also expected to be found between students' perceptions of their teachers' performance goals and students' performance goals.

2.3. Consequences of Achievement Goals

2.3.1. Relationship between Coping Strategies and Achievement Goals

Coping can be defined as thoughts, behaviors, or may be strategies that are used to manage a negative, or stressful event, or an academic failure. Coping can also be defined as a response to the obstacles to reach person's cognitive, behavioral, or affective goals (Lazarus& Folkman, 1986; Kamins& Dweck, 1999; Folkman& Moskowitz, 2004). According to the researchers, students cope with a stressful event in three stages: the first appraisal involves realizing the event as a threat to oneself, second appraisal concerns thinking about the possible responses to the threat and deciding on an appropriate one, and the last appraisal, coping, involves actualizing the decided response (Lazarus& Folkman, 1986; Lazarus& Folkman, 1988; Lazarus, 1990)

There are various coping strategies that people can use when they face a difficulty. Additionally, using a coping strategy is a personal choice; that is reactions to a stressful event can change person to person. For instance, while some students persist at the difficult task, others can give up quickly. Early coping researcher defined the coping strategies under three categories: problem focused coping, emotion focused coping, and avoidance coping. Problem focused coping aims to manage and solve the problem. It also aims to enhance the relationships between person and environment. Taking advice from the people like parents, teachers etc.,

help seeking, time management or planning can be examples of problem focused coping. The second category, emotion focused coping, aims to manage the emotions. The strategies in this category focus on emotions without changing the situation. Seeking for emotional support and accepting living with the problem can be examples of emotion focused coping. The last category, avoidance coping, aims to avoid from the problems. Denying the problem, focusing on different things can be examples for this category (Lazarus& Folkman, 1986; Folkman, Lazarus, Gruen& DeLongis, 1986; Folkman, Lazarus, Dunkel, Schetter, DeLongis,& Gruen, 1986; Lazarus& Folkman, 1988; Lazarus, 1990).

Tero and Connel (1984) also classified coping strategies under the four categories; positive coping, projective coping, denial coping and non coping. Positive coping includes strategies like asking for help, finding out where the wrong was done. Projective coping strategies, on the other hand, are blaming other people. Thirdly, denial coping refers to trying to forget the failure. Students who use denial coping strategies tell themselves that the failure was not important, and was not a matter. Lastly, non coping, refers to self blaming. In other words, feeling terrible and stupid (Kaplan and Midgley, 1999).

Some of the coping strategies are related to positive outcomes, while others are related to negative outcomes. Therefore, researchers also classified coping strategies as adaptive and maladaptive strategies. Trying again, studying more or finding errors, help seeking are examples of adaptive or positive coping. On the other hand, accusing others, or ignoring the mistakes are examples of maladaptive or negative strategies (Kaplan& Midgley, 1999; Friedel, Cortina, Turner and Midgley, 2007). To identify a coping strategy as adaptive there are five necessary conditions: the strategy, firstly, should help them to enhance their chance for the success in the future. Secondly, it should make the student learn to tolerate the reality of failure. Thirdly, the students should not change their ideas about themselves. Fourthly, students could provide continued emotional equilibrium. And lastly, the strategy

should help students to establish a satisfying relationship with his/her environment (Zeidner, 1995).

The researchers suggest that adaption of achievement goals has an influence on how to cope. To illustrate, Brdar, Rijavec and Loncaric (2006) investigated the relationship between achievement goals and coping strategies. One thousand and one hundred thirty one secondary school students participated in the study. The researchers assessed students' coping strategies by School Failure Questionnaire developed by Rijavec and Brdar, 1997. It includes 48 items and two sub scales that assess Problem focused coping (Problem Solving and Asking Help from Parents) and Emotion focused coping (Emotional Reactions and Forgetting). They also assessed students' achievement goals, mastery goals (5 items) and performance goals (5 items), by Goal Orientation scale, developed by Niemivirta, 1996. Results showed that students with mastery goals use more problem focused coping. On the other hand, students with performance goals use more emotion focused coping strategies which are more maladaptive than problem focused strategies.

Friedel, Cortina, Turner and Midgley (2007) also examined the relationship between strategies for coping with academic difficulty and achievement goals. The participants of the study were one thousand twenty one seventh grade students. They assessed students' achievement goals by utilizing the PALS (Midgley et al. 1997) and students' coping strategies by using the Academic Coping Inventory (ACI), Tero and Connell (1984). The inventory examined coping strategies under the four categories; positive coping, projective coping, denial coping and non-coping. According to the results, mastery goals are positively related to use of adaptive strategies like positive coping and negatively related to use of more maladaptive strategies such as projective coping and non-coping. On the contrary, performance oriented students used less adaptive strategies. In general, it can be said that they blame others for the academic failure. Additionally, performance goals were also found to be negatively related to positive coping implying that performance oriented

students are less likely to think that they can do better the next time, or think about where they made the mistake.

In similar study, Taye and Zhou (2009) investigated the association between achievement goals and students' coping strategies. Two hundred twenty six undergraduate students (163 male, 63 female) participated in the study. They assessed achievement goals by using the Achievement Goal Questionnaire, (Elliot& Church 1997), and coping strategies by using the Ways of Coping Scale, (Carver et al., 1989). The scale consisted of three main sub scales: problem focused coping, emotion focused coping and avoidance coping. The subscales included active coping, planning, positive reinterpretation and growth, acceptance, denial, behavioral disengagement, suppression of completing activities etc. Results revealed that mastery goals were positive predictors of adaptive coping strategies like active coping, and planning. On the other hand, performance avoidance goals were found to be negative predictors of maladaptive coping strategies like venting emotions, and denial.

Overall, aforementioned studies demonstrated that achievement goals are significantly related to coping strategies. More specifically, findings suggested that mastery goals are positively related to adaptive coping; while, performance goals are positively related to maladaptive coping strategies. Accordingly, in the present study, positive relationships are expected to be found between students mastery approach, performance approach goals and adaptive coping strategies. Additionally, positive relationships are expected to be found between mastery avoidance, performance avoidance goals and adaptive coping strategies.

2.3.2. Relationship between Metacognition and Achievement Goals

Metacognition briefly can be defined as "thinking about thinking", or "cognition about cognitive phenomena". In other words, metacognition refers to high order thinking about one's learning process (Flavell, 1999; Livingston, 2003). After recognition of its important role in learning by cognitive researchers, metacognition

emerged in the educational area towards the end of 1970's (Flavell, 1999; Pintrinch, 2002; Moseley, Elliot, Gregson and Higgins, 2005). Researchers underline that metacognitive strategies are different from cognitive strategies. While cognitive strategies help to develop cognitive progress, metacognitive strategies help to monitor this cognitive progress. For instance, if a student takes notes to understand a passage, this refers to cognitive strategies, but, if (s)he asks questions to herself/himself to check whether s(he) understands the subject, this refers to metacognitive strategies. From this aspect, metacognition differs from cognition (Forrest-Pressley& Waller, 1984; Flavell, 1999; Hattie, Biggs, & Purdie, 1996; Schraw, 1998).

Metacognition has two components: metacognitive knowledge and metacognitive regulation (Gardner, 1990; Schraw& Moshman, 1995; Schraw, 1998; Livingston, 2003). Metacognitive knowledge refers to information, and beliefs about learning process (Flavell, 1999; Livingston, 2003). There are three kinds of information: a) declarative, b) procedural c) conditional. Declarative knowledge refers to self image; knowing about oneself and knowing about what factors affect one's performance. Procedural knowledge refers to knowledge about how to do a task. Finally, conditional knowledge refers to knowing when to use one's knowledge about oneself i.e., declarative knowledge, and how to do the task i.e., procedural knowledge (Paris, Lipson, and Wixson, 1983; Gardner, 1990; Schraw& Moshman, 1995; Schraw, 1998). Flavell, most known cognitive researcher, proposed another classification about metacognitive knowledge. According to him, there are three major category of knowledge that can influence a person's cognitive process: a) person, b) task and c) strategy. The category of person includes everything about both the person's and other people's cognitive processors. For example, while a person can learn things by reading, his/her friend can learn by listening. The task category concerns the available information during the process. The task can be interesting, difficult, or unfamiliar and etc. This information is important, because it helps people decide how they can achieve the goal, the task. The last category, strategy, refers to knowledge about what strategies are effective for the defined task.

Further, Flavell emphasizes that a person's metacognitive knowledge concerns the combination of these knowledge types; a person should use two of them, or all of them during the cognitive process (Flavell, 1979).

The second component of metacognition, metacognitive regulation, refers to regulation of cognition. In other words, it consist a set of activities that help people control their learning process. Although there can be a various kinds of strategies that help to control cognitive process, they can be summarized under three of them: planning, monitoring, and evaluation. Planning refers to the stage prior to beginning in a given task; person can decide how to approach the task, and choose the appropriate strategy for the task in this step. Monitoring concerns one's judgments about the process while learning. And lastly, evaluation refers to last step of learning. One can evaluate the conclusion, in terms of both product, and process (Paris, Lipson& Wixson, 1983; Gardner, 1990; Schraw& Moshman, 1995; Schraw, 1998; Livingston, 2003; Pintrich, 2005). Researchers underline that metacognition, both of the components, can build up over time. For instance, young children not only have less metacognitive knowledge, but they also have less regularity skills than old ones since older children can have more experiences and have more knowledge about their cognition (Flavell, 1979; Baker, 1989; Schraw& Moshman, 1995; Schraw, 1998).

Relevant literature showed that metacognition, or metacognitive strategy use can also be influenced by adaptation of achievement goals. To illustrate, Schraw, Horn, Thorndike-Crist and Bruning (1995) investigated the relationship between achievement goals and metacognitive strategy use. The researchers used the dichotomous framework of achievement goals, mastery goals versus performance goals. 448 undergraduate students (191 females, 257 males) participated in the study. The researchers used three inventories: first inventory assessed achievement goals adapted from Roedel, Schraw, and Plake (1994), secondly metacognitive awareness inventory, and lastly strategy use inventory. According to the results, students with

mastery goals not only have high metacognitive awareness, high knowledge about their cognition, but they also use different strategies much affectively.

Middlebrooks (1996) also examined whether metacognitive activity affected by one's achievement goals and if so, what metacognitive activities are more or less likely under each achievement goals in his experimental design study. In this design, there were two groups; one of them was mastery oriented, and the other group was performance oriented. Researcher found that students under the mastery goal orientation demonstrated an awareness of their prior knowledge which facilitated the problem solving and learning process. Strategy monitoring during the early attempts to solve the problem, as well as an awareness of the strategy effectiveness after solution were also significant. On the other hand, performance goal oriented students did not indicate using any other metacognitive activities before and during the task. And they reported strategy consideration during and after the task in contrast to mastery oriented students who reported strategy consideration before and during the task. Therefore, researcher underlined the general conclusion that performance oriented individuals are less likely to utilizes strategies does not mean they will not use them at all.

Furthermore, Wolters, Yu and Pintrich (1996) examined the relationship between achievement goals and metacognitive strategy use with a correlational study. The participants of the study were four hundred thirty four students (225 girls, 209 boys) from seventh and eighth grade students. The researchers collected the data at two times; at the beginning of the term and at the end of the term. They used an adopted version of MSLQ (Motivational Strategies for Learning Questionnaire) to assess students goals and learning strategies. Result showed that not only mastery goals, but also performance goals were the predictors of the metacognitive strategy use for both time 1 and time 2; although, mastery goals were the strongest ones.

Elliot, McGregor and Gable (1999) also examined achievement goals as predictors of cognitive and metacognitive strategy use with two studies. In the first

study, the participants reported their achievement goal, and their strategies for an upcoming exam. In the second study, the achievement goals and strategies were assessed for the general. One hundred sixty four undergraduate students (56 males, 108 females) participated in the study. The researchers assessed students' achievement goals with Achievement Goal Questionnaire (Elliot and Church' 1997). Additionally' they investigate cognitive and metacognitive strategy use as surface processing, deep processing and disorganization. Results indicated that while mastery goals had a positive effect on deep processing, performance approach and avoidance goals had a positive effect on surface processing. By the way, performance avoidance goals also had a positive effect on disorganization.

Another study that investigated the relationship between achievement goals and cognitive and metacognitive strategy usage of students was conducted by Somuncuoğlu and Yıldırım (2001), for a specific course, Educational Psychology. One hundred eighty nine undergraduate students enrolled the study. The researchers handled cognitive and metacognitive strategies as a) surface cognitive which refers to strategies that activate short term memory only, b) deep cognitive which refers to strategies that help to make connections between new information and existing one, c) metacognitive which refers to strategies that help adjust or modify cognition when necessary. Results showed that mastery goals predicted use of deep cognitive and metacognitive strategies; while, performance goals predicted surface cognitive strategies and was not related to deep and metacognitive strategies.

Additonally, Vermetten, Lodewijks and Vermunt (2001) investigated the relationship between cognitive and metacognitive strategy use and achievement goals. Three hundred and ten students from three departments of a university participated in the study. The Inventory of Learning Styles (ILS) instrument was used to assess cognitive processing strategies and metacognitive regulation strategies. The second scale, derived from scales developed by Nicholls, was used to measure achievement goals. Researchers administered the survey to the students at the end of an academic semester, at exam time. According to the results,

performance goals had a direct effect on surface learning whereas mastery goal goals had a direct effect on deep learning. Namely, it can be summarized as students who wish to learn new things and improve their abilities, use deep learning strategies.

Wolters (2004) also investigated how achievement goals are related to students' cognitive and metacognitive strategy use in a math class. Five hundred and twenty five junior high school students (272 girls, 253 boys) participated in the study. The researchers used items from Midgley et al, 1998, to assess students' achievement goals, and items from Pintrich et. al, 1993, to assess students' cognitive and metacognitive strategy use. Results revealed that only mastery goals predicted students' use of cognitive and metacognitive learning strategies. Students adopting mastery goals were found to be likely to use cognitive and metacognitive strategies. In contrast, there were no relationship between performance, approach and avoidance, goals and learning strategies.

Moreover, Shih (2005a) investigated the relations among Taiwanese children's achievement goals, cognitive and metacognitive strategy use. The participants of the study were two hundred forty two sixth grade students. Researcher found that mastery goals are positively associated with children's metacognition. Performance approach goals are also adaptive in terms of children's use of cognitive strategies, whereas performance avoidance goals are related to students' maladaptive metacognitive and cognitive strategy use. Moreover, children high in performance-approach orientation reported greater use of metacognitive strategies than did children low in performance approach orientation. In another study, the same researcher, Shih (2005b) investigated the role of achievement goals in students' use of learning strategies. Researcher examined achievement goals in trichotomous model, mastery goals, performance approach goals and performance avoidance goals. One hundred and ninety eight, 6^{th} grade students participated in the study. The results of the study confirmed the previous one; mastery goals were the best predictor of metacognitive strategy use. Although performance approach goals were positive

predictor of strategy use, they were not as much as mastery goals. In contrast, performance avoidance goals were negatively predictor of strategy use.

Additionally, Mousoulides and Phillippou (2005) examined the relationship between achievement goals and metacognitive strategy use in a math course. One hundred ninety four pre-service teachers participated in the study. The researchers used MSLQ (Motivational Strategies for Learning Questionnaire) to assess students' achievement goals and their strategy usage. Consistent with previous research finding revealed that students who adopt mastery goals use different kinds of metacognitive strategies more actively than students who adopt performance goals.

In other study, Coutinho (2007) examined the relationship between mastery goals and performance goals and metacognition. One hundred seventy nine undergraduates (87 women, 92 men) participated in the study. The researcher assessed students' achievement goals by Goals Inventory (Roedel, Schraw and Plake, 1994), and metacognition by Metacognitive Awareness Inventory (Schraw and Dennison 1994). Results showed that mastery goals are significant predictors of metacognition. This finding suggested that students who focus on improving their knowledge or skills are likely to be metacognitively active at higher levels. In a similar sutyd, Coutinho and Neuman (2008) also investigated the relationship between students' achievement goals and their metacognitive strategy usage. Six hundred twenty nine undergraduate students (310 women, 316 men and 3 unspecified) participated in the study. The researchers used Achievement Goal Questionnaire (Elliot and McGregor, 2001) and Metacognitive Awareness Inventory (Schraw and Dennison 1994) as instruments. According to the results, students who adopt mastery approach goals use not only surface processing, but also deep processing; use connections between new information and old one. In contrast, students who adopt performance approach goals use surface strategies; while, students with performance avoidance goals were found to be disorganized.

Furthermore, Vrug and Oort (2008) developed and tested a model of effective self regulated learners. The model included achievement goals, metacognition and study strategies. The researchers used trichotomous form of achievement goals; while, they investigated metacognition as metacognitive knowledge, regulation and experience. Further, study strategies were examined as metacognitive, deep cognitive, surface cognitive and resource management strategies. Nine hundred fifty two psychology students (652 females and 300 males) were participated in the study. They used Achievement Goal Questionnaire (Elliot and Church, 1997), The Awareness of Independent Learning Inventory (Elshout-Mohr et al., 2004) and MSLQ (Pintrich and Garcia, 1991). Results demonstrated that mastery and performance approach goals were predictors of deep cognitive and metacognitive strategy use; whereas, performance avoidance goals were not related to the use of these strategies. Additionally, mastery goals were positively and performance avoidance goals were negatively linked to metacognition

Recently, Ommundsen (2009) investigated the relationships between metacognitive strategies and different achievement goals; mastery goals, performance approach goals and performance avoidance goals. Two hundred seventy three 10^{th} grade students (125 boys, 148 girls) participated in the study. The researchers assessed students' achievement goals with a scale developed by Skaalvik (1997) and metacognitive strategies with MSLQ. According to the results, students who focus on improving their knowledge and demonstrating their abilities, use more adaptive learning strategies. Further, students who focus on not looking unsuccessful or stupid are not likely use metacognitive strategies effectively.

To sum up, aforementioned literature showed that achievement goals are significantly related to metacognitive strategy use. More specifically, findings demonstrated that adaptive strategy usage is positively related to mastery goals, and negatively related to performance avoidance goals. In the regard of performance approach goals, the results are mixed. While some researchers suggest positive relationship, others suggest no relationship between performance approach goals and

metacognition. Accordingly, in the present study, while a positive relationship is expected to be found between students mastery approach goals and metacognition, negative relationship is expected to be found between performance avoidance goals and metacognition.

2.4. Relationships among Antecedents of Achievement Goals

2.4.1. The Relationship between Students' Motivational Beliefs.

Considerable researches have demonstrated a significant relationship between students' different motivational beliefs (i.e. self-efficacy and task value beliefs). To illustrate this, Meece, Wigfield, and Eccles (1992) examined the relationship between task value and self efficacy in mathematic lessons. Two hundred and fifty, 7th through 9th grade students participated in the study. The Student Attitude Questionnaire (SAQ) was used to assess students' self efficacy (two items) and task value (two items). The findings suggested that there is a positive relationship between self-efficacy and task value. In another study, Pajares and Miller (1994) investigated the association between students' self efficacy and task value. Three hundred and fifty undergraduate students participated in the study. The researchers used Mathematics confidence scale (MCS), developed by Dowling (1978), to assess participants' self efficacy in math. They assessed participants' task value by a scale adapted from a 20-item instrument created by Shell, Murphy, and Bruning (1989). The results suggested that self-efficacy is positively linked to students' task value beliefs.

Besides that, Eccles and Wigfield (1995) examined the relationship between students' self-efficacy and task value. Seven hundred and forty two, 5th through 12th grade students participated in the study. The Self- and Task- Perception Questionnaire was used to assess students' both task value (7 items) and self-efficacy (5 items). According to the results, task value and self efficacy were positively related to each other. Moreover, Bong (2001) examined the relationship between self efficacy and task value. The participants of the study were one hundred and sixty

eight undergraduate students. The researcher assessed self efficacy in five sub categories: self-efficacy for self-regulated learning (11 items), self-efficacy for academic achievement (7 items), course-specific self-efficacy (4 items), content-specific self-efficacy (5 items) and problem-specific self-efficacy (15 items). They also assessed task value with three items. Except for problem specific self-efficacy, four of the self-efficacy factors were positively related to task value. Additionally, Cole and Denzine (2004) investigated the same relationship with one hundred and sixty four undergraduate students. The researchers used The Motivated Strategies for Learning Questionnaire (MSLQ) to assess participants' self-efficacy and task value. Results confirmed the previous findings: self-efficacy was positively related to students' task value. In other words, students who have positive beliefs on completing a task, also give it value.

Furthermore, Jacobs, Lanza, Osgood, Eccles and Wigfield (2002) investigated the relationship between students' self-efficacy and task value. Seven hundred and sixty one students participated in the study. The researchers assessed students' self efficacy by Competence Beliefs Items (5 items) and task value by Subjective Task Value items (4 items). The scales were developed by Eccles, Wigfield, et. al., 1993. The results suggested that students with strong self-efficacy also have a high task value. Eccles and Wigfield (2002) also examined the relationship between self-efficacy and task value. Seven hundred and forty two 5^{th} through 12^{th} grade students participated in the study. Self and Task Perception Questionnaire was used to assess students' self-efficacy (5 items), and task value (7 items). The results confirmed that students' self-efficacy is positively related to their task value.

In another study, Senler and Sungur (2009) investigated the relationship between self-efficacy and task value. Five hundred and two, 4^{th} through 8^{th} grade students participated in the study. The researchers used The Academic Self-Concept Questionnaire (ASCQ; Marsh,1990) to assess students' beliefs in their capabilities in science (8 items), and The Academic Interest Questionnaire (AIQ; Corbiere,

Fraccaroli, Mbekou, & Perron, 2006) to assess students' science task value (6 items). The results suggested a positive relationship between self-efficacy and task value in science.

2.4.2. The Relationship between Students' Fear of Failure and their Motivational Beliefs

Relevant literature also suggested a significant association between students' fear of failure and their motivational beliefs. For example, Pantziara and Philippou (2006) investigated the relationship between fear of failure and students' intrinsic value in mathematics. Three hundred and two sixth grade students participated in the study. The researchers assessed fear of failure using nine items adopted from the Herman's fear of failure measure, and students' interest using Elliot & Church (1997) seven-item scale. The results indicated that fear of failure has a direct, negative effect on students' intrinsic value.

In another study, the same researchers (2007) investigated the relationship between self-efficacy and fear of failure. Three hundred and twenty one, sixth grade students participated in the study. The researchers assessed students' self efficacy using five items by adopting from the Patterns of Adaptive Learning Scales (PALS) and fear of failure using nine items adopted from the Herman's fear of failure measure. The results suggested that there is a strong negative relationship between self-efficacy and fear of failure. Besides, the same researchers conducted a similar research in 2009. The participants of the study were three hundred and twenty one, sixth grade students. The results confirmed the previous ones. In other words, students with high self-efficacy have low fear of failure, and the other way around.

Moreover, Thompson, Sharp and Alexander (2008) examined the relationship between fear of shame, the core of fear of failure, and self-efficacy in psychology class. Three hundred and twenty two, undergraduate students participated in the study. The Self-Descriptive Questionnaire III (Marsh, 1992) was used to assess students' self-efficacy (10 items) by the researchers. The researchers

also developed The Achievement Guilt and Shame Scale (AGSS), a scenario-based measure, to assess students' fear of shame. According to the results, fear of shame was negatively related to self efficacy.

Overall, abovementioned literature shows that students' self-efficacy beliefs, task value beliefs and fear of failure are significantly related to each other. More specifically, results demonstrated that self-efficacy is positively related to task value and negatively related to fear of failure. Furthermore, the results also indicated the negative relationship between task value and fear of failure. Accordingly, in the present study, while a positive relationship is expected to be found between students' self-efficacy and task value beliefs, negative relationships are expected between motivational beliefs and fear of failure.

2.4.3. Relationships between Socio Cultural Influences and Motivational Beliefs

The expectancy- value theory suggests that students' perceptions of social environment, both the school environment and home environment, is an important factor that influences not only students' achievements and behaviors, but also students' motivational beliefs (Eccles et al.,1983; Eccles et al., 1998; Wigfield & Eccles 1992; Eccles & Wigfield, 2000; Pintrich & Schunk, 2002). Besides, achievement goal researchers suggested that the social environment created by people around students can emphasize either mastery goals, by focusing on improving knowledge, skills, or abilities, or performance goals, by focusing on showing abilities to others (Nicholls, 1989; Garner, 1990; Ames, 1992; Kaplan et all., 2002; Meece, Anderman& Anderman, 2006). Therefore, perceived parents' achievement goals and perceived teachers' achievement goals can be examined as socio-cultural influences on student-related outcomes including motivation. To illustrate, Roeser, Midgley, and Urdan, (1996) investigated how the goal structures in learning environments affect students' motivation in math classes. Two hundred ninety six, middle school students participated in the study. The researchers used Patterns of Adaptive Learning Survey (PALS) to assess students' perceptions' of their learning environment. They assessed students' self-efficacy with The Academic

Self-Efficacy Scale coming from PALS. They used dichotomous goal frame work, mastery and performance goals, for environments' goals. The results suggested that there is a relationship between students' self efficacy and their perceptions of classroom goals. In other words, students who think that understanding and learning new things is important for their teachers in the classroom have high self-efficacy for math lessons. Moreover, Gutman (2006) examined the effects of students' perceptions of classroom goals on their self-efficacy during the high school transition. The researcher collected the longitudinal data. She administered the survey during the last year of elementary school and then again the first year of high school. In the first year, nine hundreds and one elementary students and the next year, five hundreds and seven high school students participated in the study. The researcher used Patterns of Adaptive Learning Survey (PALS) to assess students' perceptions of their learning environment and their self-efficacy. According to the results, students who perceive more mastery and less performance goals in their classroom have more positive changes in their self-efficacy than their peers.

In another study, Brunel (2006) investigated the effects of perceived classroom climate on students' motivations. One hundred and sixty undergraduate students from physical education studies who were also parts of a badminton course, participated in the study. The classroom climate was assessed through the PE Class Climate Scale (Goudas & Biddle), and students' motivations were assessed through the Sport Motivational Scale" (SMS: Pelletier et al.). Students who perceive their classto be emphasizing mastery goals, give more value to learning or achieving new skills, than the ones who perceive it it to be emphasizing performance goals.

Moreover, Tsai (2009) examined the relationship between motivational climate and students' fear of failure. 176 adolescent athletes participated in the study. The researcher used the Chinese Perceived Motivational Climate in Sport Questionnaire to assess students' perceptions of goals that are emphasized by the learning environment and the Performance Failure Appraisal Inventory to assess students' fear of failure. According to the results, students' perceptions of classroom

performance goals has positively related to students' fear of failure. Also, no relationship was found between students' perceptions of mastery goals and fear of failure.

Overall, abovementioned literature shows that motivational beliefs and fear of failure are significantly associated with socio-cultural influences. More specifically, results demonstrated that emphasized perceived teachers mastery goals are positively related to students' self-efficacy and task value. Additionally, emphasized perceived teachers performance goals are positively related to students' fear of failure. Accordingly, in the present study, while a positive relationship is expected to be found between students' perceptions of teachers' mastery goals and their self-efficacy and task value beliefs, a positive one also is expected to be found between their perceptions of teachers' performance goals and fear of failure.

Although, there are a number of researches on perceived classroom goal structures and their effects on students' motivations, there is a gap in terms of the role of perceived parents' goals (Kim, Schallert& Kim, 2010; Friedel, Cortina, Turner, and Midgley, 2010). For this reason, the relationship between emphasized perceived parents goals and motivational beliefs, self-efficacy and task value, will be investigated in the current study. In the light of expectancy- value theory, a positive relationship is expected to be found between students' perceptions of parents' mastery goals and their self-efficacy and task value beliefs.

2.5. Relationships among Consequences of Achievement Goals

2.5.1. Relationship between Coping Strategies and Metacognition

The relevant literature also suggests that students' coping strategies influence their learning strategies. To illustrate, Appelhans, and Schmeck (2002) examined the relationship between learning strategies and coping strategies. Seventy four university students participated in the study. Nine items from Ways of Coping Questionnaire, developed by Folkman and Lazarus, 1988, were used to assess

students' coping strategies. The researchers also used the Inventory of Learning Processes, developed by Schmeck and Geisler-Brenstein, 1995, to assess students' cognitive process. According to the results, adaptive coping was positively related to deep and strategic learning strategies. In other words, students who use adaptive coping strategies, like problem focused coping, tend to use deep learning strategies. On the contrary, students who use maladaptive coping strategies, like denial coping, tend to use surface learning strategies.

Furthermore, Moneta, Spada, and Rost (2007) investigated how coping strategies affect students' learning strategies. One hundred and thirty five undergraduate students participated in the study. The researchers used The Approaches and Study Skills Inventory for Students, developed by Tait, Entwistle, and McCune, 1998, to assess students' deep approach (6 items), strategic Approach (6 items) and surface approach (6 items) to studying. They also used The Revised COPE, developed by Zuckerman, and Gagne, 2003, to assess students' coping strategies (32 items). According to the results, students using maladaptive coping strategies tend to adopt surface learning strategies; they generally escape consciously from the task. Besides, students using adaptive coping strategies tend to adopt deep or strategic approach to their cognitive process.

In another study, Moneta and Spada (2009) examined the relationship between students' learning strategies and their coping strategies. Three hundred and seventeen undergraduate students participated in the study. The researchers used The Approaches and Study Skills Inventory for Students to assess students' learning strategies, and Revised COPE to assess students' coping strategies. The results of the study confirmed the previous ones, suggesting that adaptive coping is one of the predictors of deep and strategic learning; whereas, maladaptive coping is a predictor for the surface learning strategies.

Overall, abovementioned literature shows that metacognition is significantly associated with coping strategies. More specifically, results

demonstrated that deep learning strategies are positively related to adaptive coping; while, surface learning strategies are positively related to maladaptive coping. Accordingly, in the present study, while a positive relationship is expected to be found between students' adaptive coping strategies and metacognition, negative relationships are expected to be seen between maladaptive coping strategies and metacognition.

2.6. Relationships between Antecedents of Achievement Goals and Consequences of Achievement Goals

2.6.1. Relationships among Students' Motivational Beliefs, Fear of Failure, and Coping Strategies

Current literature highlights that motivational beliefs are also related to coping strategies. To illustrate, Mantzicopoulos (1997) investigated the relationship between motivation and coping strategies. One hundred and eighty seven, fourth and fifth grade students participated in the study. The researcher used Academic Coping Inventory (ACI), Tero and Connell (1984) to assess students' coping strategies. Subjects were assigned to four groups (positive coping, projective coping, denial coping and non-coping) according to the responses of the ACI. According to the results, only those who cope positively reported that they enjoy and value academic tasks. Moreover, Hsieh (2005) investigated the relationship between academic motivation (i.e. task value and self efficacy) and coping strategies. Three hundred and fifty undergraduate students participated in the study. The researcher used the intrinsic interest scale, developed by Elliot and Church (1997) to assess students' task value, The Perceived Competence Scale (PCS) developed by Williams and Deci (1996) to assess students' self efficacy, and a coping scale that was adapted from Carver, Scheier and Weintraub's (1998) to assess students' coping strategies. The results suggested a positive relationship between adaptive coping and achievement motivation. In other words, students with high self-efficacy and high task value use more adaptive strategies than their peers. Devenport and Lane (2006) examined the relationship between self-efficacy and coping strategies. One hundred and thirty one

undergraduate students participated in the study. The researchers developed a 40 item questionnaire to assess students' self-efficacy. They also used Crocker and Graham's (1995) modified version of the COPE (MCOPE) to assess students' coping strategies. The findings of the study suggested that active coping, such as seeking advice and time management is related to high self-efficacy. In other words, students who use adaptive coping strategies are high self-efficient students.

Blankstein, Flett, and Watson (1992) investigated the relationship between fear of failure and coping strategies. One hundred and twenty five undergraduate students participated in the study. The researchers assessed students' fear of failure (10 items) by Reactions to Tests scale, developed by Sarason (1984). Additionally, they assessed students' coping strategies (68 items) by Revised Ways of Coping Questionnaire developed by Folkman, Lazarus, Dunkel-Schetter, Delongis and Gruen (1986). According to the results, students who worry and experience a fear of failure, tend to use emotion-focused coping strategies. In another study, Veisson, Leino, Ots, Ruus and Sarv (2004) investigated the relationship between fear of failure and academic coping. Two thousand, four hundred and sixty seven, 7^{th}, 9^{th} and 12^{th} grade students participated in the study. The researchers assessed students' coping strategies by 36 items developed by Skinner and Wellborn, in 1997. According to the results, there was a negative relationship between fear of failure and coping. Namely, students with low fear of failure were found to be more successful in coping than students with high fear of failure.

Overall, abovementioned literature shows that coping strategies are significantly associated with motivational outcomes. More specifically, results demonstrated that adaptive coping strategies are positively related to self-efficacy and task value, and negatively related to fear of failure. Accordingly, in the present study, while a positive relationship is expected to be found between students' self-efficacy, task value beliefs and adaptive coping strategies, negative relationships are expected between fear of failure and adaptive coping strategies.

2.6.2. Relationships among Students' Motivational Beliefs, Fear of Failure, and Metacognition

Current literature also suggests that motivational beliefs and fear of failure are related to metacognition. To illustrate, Mousoulides and Philippou (2005) examined the relationship between motivational beliefs (i.e. self efficacy and task value) and metacognition. One hundred and ninety four pre-service teachers participated in the study. The researchers used Motivated Strategies for Learning Questionnaire (MSLQ) to assess students' self-efficacy, task value and metacognition. According to the results, there was a positive relationship between metacognition and not only self-efficacy, but also task value. In other words, students with a high-self efficacy and task value can use metacognitive learning strategies more actively.

Moreover, Coutinho (2008) investigated the relationship between self-efficacy and metacognition. One hundred and seventy three undergraduate students participated in the study. The researcher used Motivated Strategies for Learning Questionnaire (MSLQ), to assess students' self-efficacy (8 items), and Metacognitive Awareness Inventory (MAI), to assess students' metacognition (52 items). According to the results, there were a positive relationship between self-efficacy and metacognition. Coutinho and Neuman (2008) examined the same relationship with six hundred and twenty nine undergraduate students. The researchers assessed students' self efficacy with subscale of MSLQ, and students' metacognition with MAI. The results suggested that students with a high self-efficacy can use deeper metacognitive strategies than students with a low self-efficacy.

Besides, Bartels, and Magun-Jackson (2008) investigated the relationship between fear of failure and metacognition. One hundred and forty five, undergraduate students participated in the study. The researchers assessed students' fear of failure by using Success/Failure Questionnaire developed by Herman, (1990), and students' metacognition by using Motivated Strategies for Learning Questionnaire developed by Pintrich, Smith, Garcia, and McKeachie, 1991. The

results suggested that there is a negative relationship between fear of failure and metacognitive strategy use. In a similar study, Bartels, Magun-Jackson and Ryan (2010) examined the relationship between fear of failure and metacognition. The participants of the study were one hundred and forty six undergraduate students. The researchers used Success/Failure Questionnaire to assess students' fear of failure and Motivated Strategies for Learning Questionnaire to assess students' metacognition. The findings confirmed the previous results. In other words, according to the results, students with a high fear of failure cannot use adaptive learning strategies as much as students with a low fear of failure.

Overall, abovementioned literature shows that metacognition is significantly associated with motivational outcomes. More specifically, results demonstrated that metacognition is positively related to self-efficacy and task value, and negatively related to fear of failure. Accordingly, in the present study, while a positive relationship is expected to be found between students self-efficacy, task value beliefs and metacognition, negative relationships are expected between fear of failure and metacognition.

2.6.3. Relationships between Socio Cultural Influences and Coping Strategies

Relevant literature also suggested that socio-cultural influences are also related to coping strategies. To illustrate, Kaplan and Midgley (1999) examined the relationship between students' perceptions of classroom goals and their coping strategies. Eight hundred and eighty students participated in the study. The researchers designed a longitudinal study. They collected the data four times. They used Patterns of Adaptive Learning Survey (PALS) to measure perceptions of the goal structure in the classroom as emphasizing mastery and performance goals, and Academic Coping Inventory (ACI) developed by Tero and Connell (1984) to assess students' coping strategies. According to the results, students' perception of the mastery goals in classroom context is positively related to adaptive coping strategy use. In other words, students who perceive that learning new things, and improving

skills is important in the classroom, use more adaptive strategies, like positive coping, than others.

Ntoumanis, Biddle, and Haddock (1999) examined the relationship between classroom climate and students' coping strategies. Three hundred and fifty six university athletes participated in the study. The researchers used some subscales of the Cope Inventory, developed by Crocker and Graham, 1995, and some subscales of the Ways of Coping Questionnaire, developed by Folkman *et al.*, 1986, to assess participants' coping strategies. Additionally, they used a short version of Perceived Motivational Climate in Sport Questionnaire, developed by Newton and Duda, 1993 to assess participants' perceptions of learning climate. The results suggested that students who perceive mastery goals in classrooms tend to adopt adaptive coping strategies; while, students who perceive performance goals in classrooms tend to adopt maladaptive coping strategies.

Moreover, Friedel, Cortina, Turner and Midgley (2007) investigated the relationship between perceived teachers' and parents' achievement goals and students' coping strategies. One thousand twenty one, 7th grade students participated in the study. They assessed students' perceptions of their teachers' achievement goals by items adopted from PALS (Midgley et al. 1997), and students' coping strategies using the Academic Coping Inventory (ACI), Tero and Connell (1984). The inventory examined coping strategies under the four categories; positive coping, projective coping, denial coping and non-coping. They also developed a scale to assess students' perceptions of their parents' achievement goals. According to the results, there is an indirect relationship between students' perceptions of social goals that are emphasized by their parents and teachers and their use of adaptive and maladaptive coping strategies. Namely, perceived parents'/ teachers' goal emphasis affects students' adoption of personal achievement goals and students' personal goals affect their coping strategies. While mastery goals are positively related to adaptive coping strategies, like positive coping, they are negatively related to maladaptive coping strategies, like denial coping and projective coping. There was one exception

in the findings. The results suggested a direct, positive relationship between students' perceptions of teachers' performance goals and projective coping.

Besides, Lau and Nie (2008) examined the relationship between classroom goal structure and avoidance coping strategies. Three thousand nine hundred and forty three, fifth grade students participated in the study. The researchers assessed students' perceptions of classroom goals via The Patterns of Adaptive Learning Survey (PALS), and avoidance coping by adopting a scale (3 items) from the Motivated Strategies for Learning Questionnaire (Pintrich, Smith, Garcia, & McKeachie, 1993). According to the results, there was a positive relationship between classroom performance goals and avoidance coping. In other words, students who find demonstrating ability, and getting high grades to be important in their classrooms tend to adopt avoidance coping strategies and tend to give up when the task is difficult.

Overall, abovementioned literature shows that coping strategies are significantly associated with socio-cultural influences. More specifically, results demonstrated that the goals that are emphasized in learning environment affect adoption of coping strategies. While emphasized perceived mastery goals are positively related to adaptive coping strategies, emphasized perceived performance goals are positively related to maladaptive coping strategies. Accordingly, in the present study, a positive relationship is expected to be found between students' perceptions of teachers' mastery goals and adaptive coping strategies. Besides, a positive relationship is expected to be found between students' perceptions of teachers' performance goals and maladaptive coping strategies.

2.6.4. Relationships between Socio Cultural Influences and Metacognition

Relevant literature also suggested that socio-cultural influences are also related to students' metacognition. To illustrate, Ames and Archer (1988) investigated the relationship between the achievement goals that are emphasized in the classrooms and use of effective learning strategies. One hundred seventy six, 8th

to 11th grade students participated in the study. The researchers developed an instrument to assess students' perceptions about achievement goals in classroom settings. The instrument includes 19 items to assess mastery goals and 15 items to assess performance goals. They also adopted 15 items from the Learning and Study Strategy Inventory (Weinstein, Schulte, & Palmer, 1987) to assess use of information processing, self-planning, and self-monitoring strategies. The results suggested the relationship between using learning strategies and students' perceptions of mastery or performance goals. According to the results, students who perceive mastery goals in their classroom, tend to use more effective learning strategies.

Moreover, Lyke and Young (2006) examined the relationship between students' perceptions of achievement goals in learning environment, and use of cognitive strategies. Three hundred and twenty two undergraduate students participated in the study. The Patterns of Adaptive Learning Survey (PALS) was used to assess students' perceptions and strategy use. According to the results, students' perceptions of classroom mastery goals were positively correlated with use of deep cognitive strategies and use of rehearsal. Additionally, no relationship was found between students' perceptions of classroom performance goals and strategy usage.

In another study, Young (2007) examined the effects of perceived classroom goals on students' strategy use. Three hundred and six students participated in the study. The researcher collected the data two times. The first time, the students were sixth grade, and at the second time, the same students were seventh grade students. The researcher used Patterns of Adaptive Learning Survey (PALS) to assess students' perceptions' of learning environment, and their cognitive strategy use. The findings of researches suggested that students' perceptions of classroom mastery goals had a positive effect on students' strategy use. In other words, students who perceive mastery goals in their classrooms, tend to use deeper cognitive strategies than others.

Overall, abovementioned literature shows that metacognitive strategy use is significantly associated with socio-cultural influences. More specifically, results demonstrated that deep learning strategies are positively related to emphasized perceived social mastery goal. Accordingly, in the present study, a positive relationship is expected to be found between perceived teachers' mastery goals and metacognition.

2.7. Summary of Findings

Achievement goal theory as one of the most active paradigms of research in education, defines four types of achievement goals; mastery approach goals, mastery avoidance goals, performance approach goals and performance avoidance goals. The abovementioned literature suggests that mastery approach goals, focusing on improving skills or learning new things, is positively related to not only students' self-efficacy, task value beliefs, but also their perceptions of their parents'/ teachers' mastery goals. In other words, students who perceive mastery goals from people in their environment, and have high self-efficacy and task value tend to adopt mastery goals. Besides, students who adopt mastery approach goals tend to use metacognitive and adaptive coping strategies much better than others. Also, mastery avoidance goals, focusing on avoiding misunderstanding, or not mastering the task, are negatively related to students' self efficacy, task value beliefs and students' metacognition. Moreover, mastery avoidance goals are positively related to students' perceptions of parents'/ teachers' mastery goals, fear of failure and maladaptive coping strategies, such as projective coping, denial coping, and non coping.

In regard to performance approach goals, focusing on demonstrating one's ability, are positively related to students' self efficacy, task value, fear of failure and perceived parents'/teachers' performance goals. Moreover, the consequences of performance approach goals are mixed. While some researchers suggest a positive relationship between performance approach goals and metacognition, others suggest a negative one. Besides, performance avoidance goals, focusing on avoiding looking

slow-minded, or getting the worst grades, are negatively related to students' self efficacy, task value, and metacognition. On the contrary, perceived parents'/teachers' performance goals, students' fear of failure, and maladaptive coping strategies are positively related to performance avoidance goals.

The literature also suggests that students who have high task value beliefs, a low fear of failure and perceive mastery goals from their teachers generally have a higher self-efficacy in comparison to others. These highly efficious students tend to use adaptive coping and metacognitive strategies more effectively. Additionally, students with a low fear of failure and perceived mastery goals from their teachers tend to have high task value beliefs, and tend to use adaptive coping strategies and they use metacognitive strategies much more effectively than others. In contrast, students who perceive performance goals from their teachers generally have a high fear of failure, and tend to use maladaptive coping strategies, and they use metacognitive strategies less effectively than others.

3. METHODOLOGY

This chapter addresses the methodology of the study in three main categories namely, population and sampling, instruments, and data collection procedures.

3.1. Population and Sampling

All seventh grade elementary students attending public schools in Kütahya, are identified as the target population of the study. Since it was not feasible to reach a sample that represents this population well due to administrative and other restrictions all seventh grades elementary students in the center of Kütahya, not including districts of the city, were identified as an accessible population for the study. This was the population to which the results of this study will be generalized.

There are 111 elementary schools in the center of Kütahya. Twelve public elementary schools (10 %) were selected randomly from these schools using the cluster random sampling procedure. Schools were considered as clusters during the sample selection. All volunteer seventh grade students, with parental permission, in these twelve schools *(n = 977)* constituted the sample of the study. Table 3.1 presents the number of schools and students within each school involved in the study.

Table 3. 1: Number of Schools and Students

Number of schools	***Frequency***	***Percent (%)***
School 1	27	2.76
School 2	46	4.71
School 3	114	11.67
School 4	139	14.23
School 5	126	12.90

Table 3.1 (Continued)

School 6	57	5.83
School 7	79	8.09
School 8	181	18.53
School 9	44	4.50
School 10	70	7.16
School 11	48	4.91
School 12	46	4.71
TOTAL	977	100.00

There were 494 (50. 6 %) girls and 482 (49. 4 %) boys participating in the study. Their mean science grade in the previous semester was 3. 74 (SD= 1.11). They were coming from families with mostly 2 children. Although the majority of the students' mothers were unemployed (82. 5%), the majority of the students' fathers were employed (83. %). The majority of the students' mothers graduated from primary education (53. 7%), while, the majority of the students' fathers graduated from high school or lower (74. 4%). There are exiguous reading materials, fewer than 100 at most students' homes (73. 7%). Furthermore, most families bought a daily newspaper occasionally (71. 1%), although there are families that never bought a newspaper (8%). Moreover, most of the students had personal rooms (80. 4%), a computer (75 %), and internet connection (56. 5%). Table 3.2 gives detailed information related to students' gender (GENDER), number of sibling (SIBLING), mother's employment status (MES), father's employment status (FES), mother's educational level (MEL), father's educational level (FEL), number of reading materials at home (READI), frequency of buying a daily newspaper (NEWS), presence of a separate study room (ROOM), a computer (COMPUTER) and an internet connection (INTERNET).

Table 3. 2 Background Characteristics of Students

	Frequency	***Percent (%)***
GENDER		
Girl	494	50. 6
Boy	482	49. 4
SIBLING		
1	222	22. 7
2	438	44. 8
3	229	23. 4
4	49	5. 0
5	6	0. 6
6	3	0. 3
7 or more	7	0. 7
MES		
Employed	145	14. 6
Unemployed	806	82. 5
Occasionally employed	11	1.1
Retired	6	0. 6
FES		
Employed	811	83. 0
Unemployed	34	3. 5
Occasionally employed	45	4. 6
Retired	73	7. 5

Table 3. 2 (Continued)

MEL		
Illiterate	15	1. 5
Primary School	525	53. 7
Secondary School	162	16. 6
High School	193	19. 8
University	63	6. 5
Ms	11	1.1
PhD	2	0. 2
FEL		
Illiterate	5	0. 5
Primary School	222	22. 7
Secondary School	169	17. 3
High School	331	33. 9
University	191	19. 5
Ms	41	4. 2
PhD	10	1. 0
READI		
0-10 books	79	8. 1
11-25 books	286	29. 3
26-100 books	355	36. 3
101-200 books	140	14. 3
More than 200 books	114	11. 7
ROOM		
Have a separate study room	785	80. 4
Do not have a separate study room	191	19. 6

Table 3. 2 (Continued)

NEWS		
Never	78	8. 0
Sometimes	694	71. 1
Always	204	20. 9
COMPUTER		
Have a computer	729	74. 6
Do not have a computer	243	24. 9
INTERNET		
Have an internet connection	547	56. 0
Do not have an internet connection	421	43. 1

3.2. Instruments

3.2.1. Background Characteristics Survey

There were 13 items that investigated background characteristics of students, namely: age, gender, number of siblings, Parents' employment status, and educational level of parents, number of reading materials at home, frequency of buying a daily newspaper, presence of a separate study room, a computer and an internet connection. This information was used as an indicator of students' socioeconomic status.

3.2.2. Motivated Strategies for Learning Questionnaire (MSLQ)

MSLQ is a self-reported questionnaire developed by Pintrinch, Garcia, and McKeachie (1991). Students rate themselves on a seven point Likert scale from "not at all true of me" to very true of me" concerning different aspects of their motivation and use of learning strategies. There are two main sections in the MSLQ; a motivation section and a learning strategies section. In the motivation section, there

are 31 items in 6 sub-scales namely: intrinsic goal orientation, extrinsic goal orientation, task value, control of learning beliefs, self -efficacy for learning and performance, and test anxiety. In the learning section, there are 50 items in 9 sub-scales which include rehearsal, elaboration, organization, critical thinking, metacognitive and self regulation, time and study environment, effort regulation, help seeking and peer learning. Within the scope of the present study, only 3 of the MSLQ sub-scales (self efficacy for learning and performance (7 items), task value (6 items), and metacognitive self regulation (12 items) were used to collect data. While the self efficacy sub-scale focuses on students' judgments about their capabilities to learn and perform well in science classes (e.g. "I expect to do well in this class"), the task value sub-scale focuses on their beliefs concerning the importance, utility, and interestingness of the tasks in science classes (e. g. "It is important for me to learn the course material in this class"). Additionally, the metacognitive self-regulation sub-scale of the MSLQ, focuses on how students plan, monitor, and evaluate their learning process (e.g. "I ask myself questions to make sure I understand the material I have been studying in this class").

The MSLQ was translated and adopted into Turkish by Sungur (2004). Sungur conducted the validation study with 485 high school students (319 tenth grade and 169 eleventh grade). During its validation, confirmatory factor analysis was conducted for each section and fit statistics similar to the original instrument were obtained (see Sungur, 2004). The Cronbach's alpha reliability coefficients of the MSLQ- Turkish version were also comparable to those of the original version.

In order to validate factor structure for the present study, CFA was conducted for each sub-scale. According to Kline (2005), GFI and CFI values > .90 and RMSEA and SRMR < .10 indicate a reasonably good fit of the model to the data. The CFA results obtained from each section are presented in Table 3. 3.

Table 3.3 CFA results for the MSLQ sub-scales

Subscale name	RMSEA	SRMR	GFI	CFI
Self Efficacy for Learning and Performance	.12	.04	.94	.95
Task Value	.09	.02	.98	.98
Metacognitive Strategy Use	.08	.02	.99	.99

As shown in the table, the fit indices indicated a good model fit for each sub-scale. In addition, reliability coefficients were found to be high enough to conduct further analysis (see Table 3. 4).

Table 3.4 Subscales of the MSLQ

Scale	Number of Items	Reliability of Original Version	Reliability of Turkish Version	Reliability of Current Study
Self efficacy	8	.93	.89	.89
Task value	6	.90	.87	.85
Metacognition	12	.79	.80	.87

3.2.3. Achievement Goal Questionnaire (AGQ)

AGQ is a self-report questionnaire developed by Elliot and Church (2001) to assess students' adaptation of goals. It is a five point Likert scale ranging from strongly agree to strongly disagree . It consists of 15 items in four sub-scales namely: mastery approach goals (3 items), mastery avoidance goals (3 items), performance approach goals (3 items) and performance avoidance goals (6) items. While mastery

approach goals emphasize learning and understanding (e.g. “I desire to completely master the material that presented in this class”), mastery avoidance goals focus on avoiding not learning or misunderstanding (e.g. “I just want to avoid doing poorly in this class”). Performance approach goals focus on showing abilities to others (e.g. “It is important to me to do better than other students”); and performance avoidance goals focus on avoiding failure compared to others (e.g. “My goal for this class is to avoid performing poorly”).

During its development, Elliot and McGregor (2001) pilot tested the AGQ with 180 (49 male and 131 female) undergraduate students . Internal consistency reliabilities were .87 for mastery approach, .92 for performance approach, .89 for mastery avoidance, and .83 for performance avoidance. Additionally, the confirmatory factor analyses revealed a good model to data fit (RMSEA = .04, GFI = .99, CFI = .99).

The Turkish version of AGQ was translated and adapted into Turkish by Senler and Sungur (2007). The researchers conducted the validation study with 616 elementary students. The coefficient alpha values for the Turkish sample were found to be .81 for mastery approach goals, .69 for performance approach goals, .65 for mastery avoidance goals, and .64 for performance avoidance goals. The result of the confirmatory factor analysis supported the four factor structure of the instrument (GFI = .92, CFI = .90, RMSEA = .06, SRMR = .07).

In order to validate factor structure for the present study, CFA was conducted for each sub-scale. The CFA results obtained from each section is presented in Table 3.5.

Table 3.5 CFA results for the AGO sub-scales

Subscale name	RMSEA	SRMR	GFI	CFI
Mastery approach goals	.00	.00	1.00	1.00
Mastery avoidance goals	.00	.00	1.00	1.00
Performance approach goals	.00	.00	1.00	1.00
Performance avoidance goals	.11	.04	.96	.93

As shown in the table, fit indices indicated a good model fit for each sub-scale. In addition, reliability coefficients were found to be high enough to conduct further analysis (see Table 3.6).

Table 3. 6 Subscales of the Achievement Goal Questionnaire

Scale	Number of Items	Reliability of original version	Reliability of Turkish version	Reliability of Main study
Mastery approach goals	3	.87	.81	.69
Mastery avoidance goals	3	.89	.69	.67
Performance approach goals	3	.92	.65	.64
Performance avoidance goals	6	.83	.64	.76

3.2.4. Performance Failure Appraisal Inventory (PFAI)

The PFAI is a self-report instrument on a 5 point Likert scale originally developed by Conroy (2001). The original instrument consisted of 41 items in five

sub-scales: the fear of shame and embarrassed (11 items), the fear of devaluing one's self estimate (8 items), the fear of having uncertain future (5 items), the fear of losing social influence (9 items), and lastly the fear of upsetting important others (8 items). During its development, Conroy (2001) tested the original instrument with 396 high school and college-aged students (167 females and 229 males) through series of confirmatory factor analyses. The first confirmatory factor analysis was conducted for the whole scale yielding the following fit indices: GFI = .77, CFI = .87, RMSEA = .06, SRMR = .06. Then, separate CFAs for each of the sub-scale were performed. Table 3.3 also summarizes the fit indicates for both separate and whole CFAs on the original version of the PFAI Concerning the reliability issues, Cronbach's alpha coefficients were found to be .87 for the fear of shame and embarrassment, .75 for the fear of devaluing one's self estimate, .73 for the fear of uncertain future, .82 for the fear of losing social interest, and .87 for the fear of upsetting important others.

Table 3.7 The fit indicates for the first version of PFAI

Factor	**GFI**	**CFI**	**RMSEA**	**SRMR**
The fear of shame and embarrassment	.95	.98	.04	.04
The fear of devaluing one's self estimate	.97	.99	.04	.04
The fear of having uncertain future	.98	.97	.04	.04
The fear of losing social influence	.96	.99	.06	.04
The fear of upsetting important others	.96	.99	.05	.04

Since the instrument was long with many reverse scored items, Conroy, Willow, and Metzler (2002) revised the PFAI and developed a second version of the PFAI by removing some of the items from the original version. The revised version consists 25 items, consistent with the original version- in five-sub scales namely, the fear of shame and embarrassed (7 items; e.g. When I am failing, it is embarrassing if

others are there to see it"), the fear of devaluing one's self estimate (4 items, e.g. "When I am failing, I blame my lack of talent".), the fear of having uncertain future (4 items, e.g. "When I am failing, my future seems uncertain".), the fear of losing social influence scale (5 items, e.g. "When I am not succeeding, people are less interested in me"), and lastly the fear of upsetting important others (5 items, "When I am failing, it upsets important others"). While revising the inventory, the researchers conducted validation study with 438 college students (234 female, and 204 male).

The internal consistency reliabilities were .80 for the fear of shame and embarrassment, .74 for the fear of devaluing one's self estimate, .80 for the fear of uncertain future, .81 for the fear of losing social interest, and .78 for the fear of upsetting important others. The developers also conduct the confirmatory factor analyses (CFA) to assess the fit of the data. The results indicated a good data fit to the model (GFI = .98, CFI = .95, RMSEA = .04, SRMR = .09).

In the present study, firstly, the 41-item original version of the instrument was translated and adopted to Turkish by the researcher. The translated instrument was examined by two instructors from science education department at the faculty of education for its content validity. The instructors also judged the quality of items regarding clarity, sentence structure, and comprehensiveness. Additionally, the grammar structure of the translation was examined by one of the instructors from Academic Writing Center of METU. In line with the suggestions by the instructors from both faculty of education and Academic Writing Center, the instrument was revised. The final form of the instrument was pilot tested with 201 7^{th} grade elementary students, (104 boys and 97 girls), in Kütahya. As shown in Table 3.8, the CFA results did not indicate a good model fit for the sub-scales. In addition, reliability coefficients were quite low for the fear of devaluing one's self estimate and the fear of having uncertain future sub-scales (see table 3.9). While analyzing the results, 13 items not contributing well to the total variability leading to lower reliability coefficients and having low factor loadings were identified. Then, 7^{th} grade elementary students' opinions were gathered concerning the clarity of these

items and necessary revisions were made on the items to make them more clear and understandable by 7th grade students. The statements in the original version of the instrument and the first pilot study as well as the revision made on these statements in the second pilot study displays in Appendix F. The second pilot study was conducted with 182 7th grade elementary students (89 boys and 93 girls).

Table 3.8 The results of the confirmatory factor analyses for Fear of Failure

Scale	GFI				CFI				SRMR				RMSEA			
	1. Pilot	2. Pilot	3. Pilot	Main study	1. Pilot	2. Pilot	3. Pilot	Main study	1. Pilot	2. Pilot	3. Pilot	Main study	1. Pilot	2. Pilot	3. Pilot	Main study
The fear of shame and embarrassment	.77	.90	.94	.93	.62	.80	.93	.93	.11	.07	.06	.04	.18	.09	.12	.12
The fear of devaluing one's self estimate	.86	.86	.99	.98	.69	.73	.99	.98	.11	.12	.03	.03	.17	.17	.09	.10
The fear of having uncertain future	.97	.98	.99	.99	.91	.98	.99	.99	.05	.05	.03	.01	.10	.06	.10	.03
The fear of losing social influence	.80	.93	.98	.99	.76	.92	.98	.99	.10	.07	.03	.01	.24	.12	.14	.04
The fear of upsetting important others	.87	.85	.98	.96	.81	.74	.96	.93	.08	.10	.04	.04	.16	.17	.09	.13

3.9 Reliability Coefficients for the Fear of Failure

Scale	Number of Items for long form	Number of Items for short form	Reliability of original version for long form (1. Version)	Reliability of original version for short form (2. Version)	Reliability of Pilot 1	Reliability of Pilot 2	Reliability of Pilot 3	Reliability of the Main Study
The fear of shame and embarrassment	11	7	.87	.80	.71	.72	.77	.84
The fear of devaluing one's self estimate	8	4	.75	.74	.28	.64	.71	.70
The fear of having uncertain future	5	4	.73	.80	.27	.54	.72	.70
The fear of losing social influence	9	5	.82	.80	.80	.84	.85	.86
The fear of upsetting important others	8	5	.87	.78	.77	.71	.64	.73

As displayed in Table.3 8 and Table 3.9, the second pilot study resulted in better fit indices and reliability coefficients. However, the model to data fit was not good enough to conduct further analyses. The problematic items were mainly those which were deleted from the original version of the PFAI by Conroy et al., (2002) while developing the revised short version of the PFAI. Therefore, it was decided to use the 25-item revised version of the PFAI by Conroy et al., (2002). Since the revised version of the PFAI is the short form of the original PFAI, a third pilot study was conducted excluding the items in the original long version of the PFAI, The third pilot study revealed a good model fit and high reliability coefficients for each sub-scale (see Table 3.8 and Table 3.9) Lambda-ksi estimates presented in Table 3.10. also showed that items had sufficiently large factor loadings. Therefore, it was demonstrated that the short version of Turkish PFAI provides a valid and reliable measure of fear of failure for elementary students.

In order to validate factor structure for the main study, CFAs were also conducted for each sub-scale. Results indicated a good model fit (see Table 3.8) In addition, reliability coefficients were high enough to conduct further analysis (see Table 3.9).

Table 3.10. Lambda ksi Estimates for Performance Failure Appraisal Inventory (PFAI)

question	LX Estimate	Scale
q16	0.43	Fear of Shame and Embrassment
q30	0.56	
q34	0.66	
q38	0.80	

Table 3.10.(Continued)

q40	0.70	
q41	0.70	Fear of Shame and Embrassment
q2	0.79	
q7	0.82	Fear of Devaluing One's Self Estimate
q12	0.82	
q27	0.18	
q3	0.68	
q8	0.64	
q13	0.85	Fear of uncertain future
q23	0.67	
q19	0.77	
q24	0.78	
q28	0.76	Fear of losing social influence
q32	0.88	
q5	0.45	Fear of upsetting important others
q10	0.40	

Table 3.10.(Continued)

q15	0.47	
q25	0.45	Fear of upsetting important others
q33	0.91	

3.2.5. Perceived Parent Goal Emphases Scale

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 1 "do not believe at all" to 5 "completely true". The questionnaire was designed to assess students' perceptions about their parents' goal emphases. It consists of 11 items in two sub-scales: mastery goals (6 items) and performance goals (5 items). While perceptions of parents mastery goal emphasis focus on assessing whether parents want their children to understand science, or to learn from mistakes (e.g. "My parents want me to understand science concepts, not just do the work"), perceptions of parent performance goal emphasis focus on assessing whether parents want their children to show their abilities to others, or whether they dislike mistakes (e.g. "My parents don't like it when I make mistakes in science").

While developing the questionnaire, Friedel and et. all (2007) conduct a pilot study with 1021 students (52% girl, 48% boy). Internal consistency reliabilities were .65 for perceived parent mastery goals emphasize, and .70 for perceived parent performance goals emphasize. Confirmatory analysis was also verified the final factor structure.

The scale was translated and adapted to Turkish by the researchers of the current study. For its content validity, the translated instrument was examined by two instructors from science education department at the faculty of education. The

instructors also judged the quality of items with respect to clarity, sentence structure, and comprehensiveness. Additionally, the grammar structure of the translation was examined by one of the instructors from Academic Writing Center of METU. Taking the suggestions by the instructors from both faculty of education and Academic Writing Center into consideration, the instrument was revised. The final form of the instrument was pilot tested with 201 7^{th} grade elementary students, (104 boys and 97 girls) in Kütahya. The coefficient alpha values for the Turkish sample were found to be .66 for the perceived parent mastery goals, and .61 for the perceived parent performance goals. The results of the confirmatory factor analysis indicated a good model fit for the perceived parent mastery goals (GFI = .94, CFI = .89, RMSEA = .13, SRMR = .05) and, for the perceived parent performance goals (GFI = .98, CFI = .96, RMSEA = .09, SRMR = .03).

In the main study, the factor structure was also validated through confirmatory factor analysis. Of 4 fit indices examined, two of them (i.e., GFI and SRMR) indicated a good model fit for both perceived parent mastery goals and perceived parent performance goals (see Table 3.11). On the other hand, RMSEA and CFI values were not indicative of a good model fit for perceived parent performance goals. When factor loadings (see Table 3.12) and item-total correlation were examined, no apparent problematic item was found. Internal consistency reliability of the main study was found to be comparable with the original English version of the questionnaire with the alpha coefficients of .75 for the parents' mastery goals and .61 for the parents' performance goals. Thus, it was decided to use this scale in the main study. However, the data obtained from this sub-scale should be interpreted cautiously.

Table 3.11. The results of the confirmatory factor analyses for Perceived Parents' Goals Emphasize Questionnaire

Scale	GFI		CFI		SRMR		RMSEA	
	Pilot	Main study	Pilot	Main study	Pilot	Main study	Pilot	Main study
Perceived Parents' Mastery Goals	.94	.95	.89	.93	.05	.04	.11	.12
Perceived Parents' Performance Goals	.98	.95	.96	.85	.03	.06	.09	.15

Table 3.12. Reliability Coefficients for the Perceived Parent Goal Emphasis Scale

Scale	Number of Items	Reliability of original version	Reliability of Pilot Study	Reliability of Main Study
Perceived parent mastery goal emphasis	6	.65	.66	.75
Perceived parent performance goal emphasis	5	.70	.61	.61

Table 3.13. Lambda ksi Estimates for Perceived Parent Goal Emphases

Question	LX	Scale
q1	0.80	Parents Mastery Goals
q2	0.59	Parents Mastery Goals
q3	0.60	Parents Mastery Goals
q4	0.29	Parents Mastery Goals
q5	0.55	Parents Mastery Goals
q6	0.63	Parents Mastery Goals
q7	0.48	Parents' Performance Goals
q8	0.83	Parents' Performance Goals
q9	0.64	Parents' Performance Goals
q10	0.59	Parents' Performance Goals
q11	0.49	Parents' Performance Goals

3.2.6. Perceived Teacher Goal Emphases Scale

Perceived Teacher Goal Emphases Scale is a self-report instrument adopted from the Patterns of Adaptive Learning Survey (PALS; Midgley et al., 1997) by Friedel, Cortina, Turner and Midgley (2007). The questionnaire was designed to assess students' perceptions about their teachers' goal emphases in the classroom. It is a five point Likert scale ranging from 1 "do not believe at all" to 5 "completely true". It consists 10 items in two sub scales: perceived mastery goals (5 items), and perceived performance goals (5 items). Items in the perceived mastery goals scale were designed to assess if teachers focus on learning, and understanding in the class (e.g. "My teacher gives us time to really explore and understand new ideas in

science"), whereas, items in the perceived performance goals scale were developed to assess if teachers focus on highest grades in the class (e.g. "My teacher points out those students who get good grades in science as an example to all of us").

The scale was translated and adopted to Turkish by the researcher of the current study. The Turkish version of the questionnaire was examined by, two instructors from science education department at the faculty of education for its content validity. The instructors also judged the quality of items with respect to clarity, sentence structure, and comprehensiveness. Additionally, the grammar structure of the translation was examined by one of the instructors from Academic Writing Center of METU. Considering the suggestions by the instructors from both faculty of education and Academic Writing Center, the instrument was revised. The final form of the instrument was pilot tested with 201 7^{th} grade elementary students, (104 boys and 97 girls) in Kütahya. The coefficient alpha values for the Turkish sample were found to be .67 for the perceived teachers' mastery goals, and .78 for the perceived teachers' performance goals (see Table 3.14). The results of the confirmatory factor analysis were GFI = .99, CFI = .98, RMSEA = .08, SRMR = .02 for the perceived teachers' mastery goals, GFI = .96, CFI = .95, RMSEA = .13, SRMR = .04 for the perceived teachers' performance goals (see Table 3.15 and Table 3.16). Thus, the pilot study demonstrated the Turkish version of Perceived Teacher Goal Emphases Scale as a valid and reliable measure of students' perceptions of their teacher goal emphasis in science classes. The validated instrument was used in the main study. The coefficient alpha values for the main study were .67 for the teachers' mastery goals and .78 for the teachers' performance goals. The results of the confirmatory factor analyses were GFI = .98, CFI = .98, RMSEA = .08, SRMR = .02 for the teachers' mastery goals, and GFI = .99, CFI = .99, RMSEA = .19, SRMR = .05 for the teachers' performance goals indicating a good model fit .

Table 3.14. Subscales of the Perceived Teacher Goal Emphasis

Scale	**Number of Items**	**Reliability of original version**	**Reliability of Pilot Study**	**Reliability of Main Study**
Perceived teacher mastery goal emphasis	5	.74	.67	.83
Perceived teacher performance goal emphasis	5	.84	.78	.78

Table 3.15: The results of the confirmatory factor analyses for Perceived Teachers' Goals Emphasize Scale

Scale	**GFI**		**CFI**		**SRMR**		**RMSEA**	
	Pilot	Main study	Pilot	Main study	Pilot	Main study	Pilot	Main study
Perceived Teachers' Mastery Goals	.99	.98	.98	.98	.02	.02	.08	.08
Perceived Teachers' Performance Goals	.96	.99	.95	.99	.04	.09	.13	.19

Table 3.16. Lambda ksi Estimates for Perceived Teacher Goal Emphases

Question	Wilks Lamda	Scale
q1	0.79	Teachers Mastery Goals
q2	0.45	Teachers Mastery Goals
q3	0.71	Teachers Mastery Goals
q4	0.37	Teachers Mastery Goals
q5	0.52	Teachers Mastery Goals
q6	0.58	Teachers Performance Goals
q7	0.76	Teachers Performance Goals
q8	0.76	Teachers Performance Goals
q9	0.83	Teachers Performance Goals
q10	0.61	Teachers Performance Goals

3.2.7. Academic Coping Inventory (ACI)

ACI is a self report questionnaire developed by Tero and Connell (1984) to assess students' coping strategies when faced with an academic failure. It is a five point likert scale from 1 "do not believe at all" to 5 "completely true". It consists 13 items in four sub-scales namely, positive coping (3 items), projective coping (3 items), denial coping (3 items) and non-coping (4 items). All items in the questionnaire start with a stem that "If something bad happened to me during science, such as doing poorly on a test or not being able to answer a question in class..." and students complete this stem with items. Positive coping assess students' adaptive strategies (e.g."I would try to see what I did wrong)". While students who prefer projective coping blame others (e.g."I would say it was the teacher's fault"),

students who prefer denial coping generally say that they do not care the negative event (e.g."I would say it wasn't important"). On the other hand, non-coping, students blame themselves (e.g."I would get really mad at myself").

The scale translated and adopted to Turkish by the researcher of the current study. The Turkish version of the questionnaire was examined by two instructors from science education department at the faculty of education for its content validity. The instructors also judged the quality of items with respect to clarity, sentence structure, and comprehensiveness. Additionally, the grammar structure of the translation was examined by one of the instructors from Academic Writing Center of METU. Considering the suggestions by the instructors from both faculty of education and Academic Writing Center, the instrument was revised. The final form of the instrument was pilot tested with 201 7^{th} grade elementary students, (104 boys and 97 girls) in Kütahya. The coefficient alpha values for the Turkish sample were found to be .70 for the positive coping, .78 for the projective coping, .75 for the denial coping and .83 for the non-coping (see Table 3.17). The results of the confirmatory factor analysis indicated a perfect fit for the positive coping, projective coping and denial coping sub-scales (GFI = 1.00, CFI = 1.00, RMSEA = .00, SRMR = .00), Concerning non-coping sub-scale, of four fit indices examined, three of them indicated a good model fit (i.e.. GFI=.94, CFI=.91, SRMR= .04). However, RMSEA value was found to be well-above .10. Since reliability of this sub-scale was high enough and items were contributing well to the total variability with high factor loadings (see Table 3.18), the non-coping sub-scale was decided to be retained in the main study.

In the main study, the coefficient alpha values for the Turkish sample were found to be .73 for the positive coping,.84 for the projective coping, .82 for the denial coping and .80 for the non-coping. Similar to the results of pilot study, confirmatory factor analyses results of the main study revealed a perfect fit for the positive coping, projective coping and denial coping. (GFI = 1.00, CFI = 1.00,

RMSEA = .00, SRMR = .00), and a good model fit for non-coping sub-scales (GFI=.99, CFI=.98, RMSEA= .09, SRMR= .01)..

Table 3.17. Subscales of the Coping Strategies

Scale	**Number of Items**	**Reliability of original version**	**Reliability of Pilot Study**	**Reliability of Main Study**
Positive Coping	3	.63	.70	.73
Projective Coping	3	.72	.78	.84
Denial coping	3	.62	.75	.82
Non-coping	4	.78	.83	.80

Table 3.18. The results of the confirmatory factor analyses for Academic Coping Inventory

Scale	**GFI**		**CFI**		**SRMR**		**RMSEA**	
	Pilot	Main study	Pilot	Main study	Pilot	Main study	Pilot	Main study
Positive Coping	1.00	1.00	1.00	1.00	.00	.00	.00	.00
Projective Coping	1.00	1.00	1.00	1.00	.00	.00	.00	.00
Denial Coping	1.00	1.00	1.00	1.00	.00	.00	.00	.00
Non-coping	.94	.99	.91	.98	.23	.01	.04	.09

Table 3.19. Lambda ksi Estimates for Academic Coping Inventory

Question	Wilks Lamda	Scale
q1	0.88	Positive Coping
q2	0.68	Positive Coping
q3	0.82	Positive Coping
q4	0.57	Projective Coping
q5	0.98	Projective Coping
q6	0.48	Projective Coping
q7	0.71	Denial Coping
q8	1.05	Denial Coping
q9	0.67	Denial Coping
q10	0.69	Non-Coping
q11	0.76	Non-Coping
q12	0.81	Non-Coping
q13	0.76	Non-Coping

3.3. Data Collection Procedure

The study was started with defining the research problem. The next step was reviewing the related literature in detailed. Both Turkish and foreign studies were researched from the Educational Resources Information Center (ERIC), the Ebscohost, Social Science Citation Index (SSCI), Science Direct databases, YÖK, TUBITAK-ULAKBIM, and from library of METU. After the literature review, the

researcher hypothesized about the research problem. Then, pilot studies were conducted during the 2008- 2009 academic year in Kütahya. With the necessary permission from the Ministry of Education, the Background Characteristics Survey, the MSLQ (Motivated Strategies for Learning Questionnaire), the AGQ (Achievement Goal Questionnaire), the PFAI (Performance Failure Appraisal Inventory), the Perceived Parent Goal Emphases, the Perceived Teacher Goal Emphases, and the ACI (Academic Coping Inventory) were administered to 201 seventh grade, volunteer students. During the same academic year, the PFAI (Performance Failure Appraisal Inventory), was administered first to 182 seventh grade students and later to 211 seventh grade students. The main study was conducted during the 2009-2010 academic year by selecting 12 elementary schools from Kütahya. All the mentioned instruments were administered to 977 seventh grade, volunteer students. While conducting the study, firstly, the participants were informed about the study. The purpose of the study and how it would be conducted were explained by the researcher. Students were also told that there were no right or wrong answers, and their responses would be kept confidential. Additionally, their names were not collected. Besides that, the researcher obtained the permission of the participants' parents on the consent forms. Completing the instrument took nearly one lesson hour, approximately 40 minutes.

Fraenkel and Wallen (2006) suggested that a researcher should be careful to protect the participants from harm by ensuring the confidentiality of the research and by not deceiving the participants to make the research ethical. In the present study, the researcher took care to protect participants. The instruments were checked by the ethics committee of METU. Hence, participants were not faced with any physical or psychological harm during the study. Besides that, the participants were informed that they could withdraw from the study if they did not want to complete. Participants were also asked to not write their name, surname or number that identification number on the instrument to provide confidentiality. Moreover, there were consent forms for both students and their parents. The research aim and procedure were explained on the consent forms. The e-mail addresses and phone

numbers of the researcher were also given in the consent forms so the participants or parents could contact the researcher. Therefore, the researcher tried to meet the requirements of an ethical research.

While conducting the study, the researcher also considered the internal validity of the research. For instance, the same researcher collected the data to control the data collector characteristic threat. Moreover, the instruments of the study was designed so one subject would not affect the other one, so the testing was not a threat to the internal validity of the research. On the contrary, although the researchers attempted to standardize the conditions during the administration, location threat was possible for the study, since the schools of participants were in different districts.

3.4. Data Analysis Procedure

Two statistical packages, SPSS 16. for Windows and LISREL 8.30 for Windows, were utilized in the current study to analyze the data. Missing data, normality, outlier, influential data points and reliability coefficients were checked by using SPSS. Confirmatory factor analysis (CFA) and Path analysis were conducted by using the second statistical package, LISREL.

3.4.1. Missing Data Analysis

One or more values are not available for the analyses, called as missing data, is a threat for the statistical analyses. There are different options for the researchers to handle the problem. One of the most known solution deleting subjects pair wise or list wise; however, this is not very much recommended because of losing subjects possibility. Instead, replacement of missing values with mode is another known solution and works best (Schumacker& Lomax, 2004).

In the current study, data were examined in terms of missing values. There were not much missing, less than 5%, in the data, so, missing values of the items were replaced by the mode (see also Appendix G).

3.4.2. Normality

Path analysis assume multivariate normality. To talk about multivariate normality there are three necessary conditions; firstly the univariate distributions should be normal, secondly distributions of the variables should be bivariate normal and thirdly bivariate scatter plots should be linear and homoscedatic (Kline, 2005). As a result, univariate normality were checked before the analysis. To check univariate normality, skewness and kurtosis values were assessed. The skewness and kurtosis values between -2 and +2 acceptable to talk about univariate normality (George and Mallery, 2003).

3.4.3 Outliers

Outliers, data points that are extreme or atypical, can arise because of observation errors, data entry errors, instrument errors or actual extreme values from self-report data. Outliers can effect mean, standard deviation and correlations so these values should be considered and deleted or accommodated. There are two types of outliers: univariate outliers and multivariate outliers. While univariate outliers refer to an extreme values on one variable, multivariate outliers refer to cases with an unusual combination of scores on two or more variables. Box plot display, scatter plots, normality plots, frequency distributions, and z- values can be used to explore univariate outliers. In large samples, $n > 100$, z value greater than 4 indicates outliers (Tabachnick& Fidell, 1996; Stevens, 2002).

Additionally, Leverage values can be used to detect multivariate outliers. Leverage value greater than $3p/n$, where $p=k+1$ and k is the number of predictors, can be considered as an outlier. Further, Cook Distance is a way to check whether the outliers are influential or not. Cook Distance, assesses change in regression coefficients

when a case is deleted. If the distance value greater than 1, or lesser than -1, it is considered as influential outlier, and it should be excluded from the study (Stevens, 2002).

In the current study, box plot display, scatter plots, normality plots, frequency distributions, z- values, Leverage and Cook D were used to identify outliers.

3.4.3. Data Analyses

After the preliminary analyses was conducted, the data was examined in terms of missing values, normality, and outliers, the confirmatory factor analyses were conducted to confirm the theoretical factor structures of the questionnaires (AGQ, MSLQ, PFAI, Perceived Parents Goal Emphases Scale, Perceived Teacher Goal Emphases Scale, and ACI) by using the second statistical package, LISREL 8.7.

Descriptive statistics; mean, minimum and maximum values, and standard deviation, were used to investigate the 7th grade elementary students' profiles about achievement goals, motivational beliefs and cognitive outcomes.

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3.5. PATH Analysis

The data was analyzed by using path analysis in this study. LISREL 8.7 for Windows with SIMPLIS command language was utilized for assessing the LISREL models of the antecedents and consequences of achievement goals in science lesson. Path analysis is a technique which enables to the researcher to assess explanatory relationships for non experimental situations (Jöreskog& Sörbom, 1993; Raykov& Marcoulides, 2006). It is from structural modeling equation (SEM) family. In other words, path analysis test a model that represents causal relationships between variables (Jöreskog& Sörbom, 1993; Kline, 2005; Raykov& Marcoulides, 2006).

3.5.1. Definition of Terms

1. Path Diagrams: A path diagram refers to graphical representation of a model; it presents structural relations and equals to a set of equations (Raykov& Marcoulides, 2006). Figure 3.1 summarizes commonly used symbols in Path diagram.

2. Observed, or Manifest Variable: Observed variables refer to variables that are directly measured on subjects, and used to define latent variables (Raykov& Marcoulides, 2006).

3. Latent Variable: Latent variables refer to variables that cannot directly observable. They are constructs that researchers interested in. They are generally indicated by using observed variables (Raykov& Marcoulides, 2006).

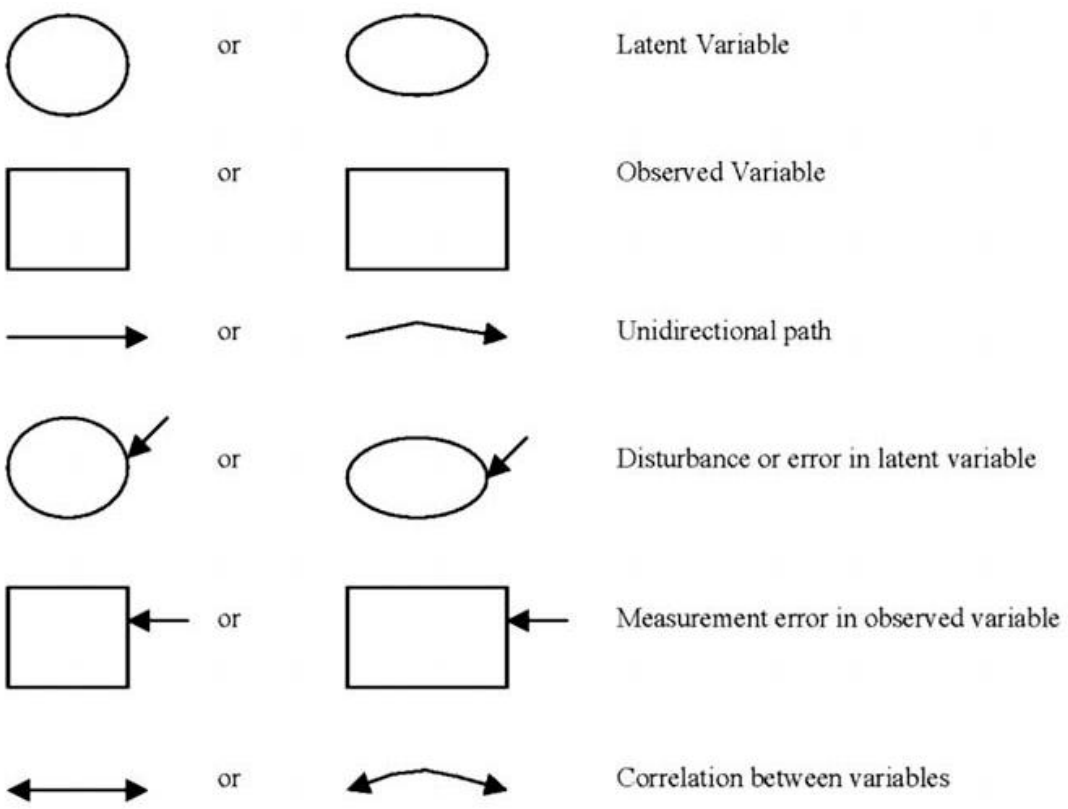


Figure 3. 1: Commonly used symbols in path diagrams. (Raykov& Marcoulides, 2006, p. 8)

4. Endogenous Variable: Endogenous variables refers to dependent variables; a latent variable that is predicted by other latent variable (Schumacker & Lomax, 2004; Raykov& Marcoulides, 2006).

5. Exogenous Variable: Exogenous variables refers to independent variables; a latent variable that used to predict other latent variable (Schumacker & Lomax, 2004; Raykov& Marcoulides, 2006).

6. Direct Effect, or Path: Direct effect refers to direct relationship between two latent variables (Schumacker & Lomax, 2004; Kline, 2005)

7. Indirect, or Mediator Effect: Indirect effect refers to relationship between two latent variables but not directly. In other words, it indicates

that there is an intervening variable (mediator variable) between two latent variable; the first latent variable affects the intervening variable, and the intervening variable affects the second latent variable (Schumacker & Lomax, 2004; Kline, 2005; Raykov& Marcoulides, 2006)

8. The Measurement Coefficients: The measurement coefficients, The λ_y (lowercase lambda sub y) and λ_x (lowercase lambda sub x) values, refers to factor loadings, and they indicate the relationships between observed and latent variables (Schumacker & Lomax, 2004).

9. The Structure Coefficients: The Structure Coefficients, β (lowercase beta) and γ (lowercase gamma), indicated the strength and direction of the relationship between latent variables (Schumacker & Lomax, 2004).

10. Path Coefficients: Path coefficients refer to a structure coefficient which measures direct effects (Schumacker & Lomax, 2004; Kline, 2005; Raykov& Marcoulides, 2006).

3.5.2. Assessing Model Fit

Researchers need to assess the degree of fit of a path model when they conduct path analysis. Researchers sometimes can have problems while assessing the model, since there are a large number of model fit indexes in the literature. While some of them report a fit index, others can report the different one. To work out this problem, researchers suggest to use a minimal set of fit indexes. According to the recommendations, researchers should use 1) the model chi-square, 2) the root mean square error of approximation (RMSEA), 3) the comparative fit index (CFI), and 4) the standardized root mean square residual (SRMR), in their report (Kline, 2005).

1. Model Chi Square ($\chi 2$) = The model Chi Square is test that compares observed and estimated variance-covariance matrices. A significant $\chi 2$ value point at differences between observed and estimated matrixes.

Hence, a non significant value is accepted as an evidence for the model fit. However, it is sensitive to sample size, with large sample sizes, it tends to indicate a significant value (Schumacker &Lomax, 2004; Kline, 2005).

2. Root Mean Square Error of Approximation (RMSEA) = The RMSEA estimates the amount of error of approximation for the model, and it is a "badness of fit index". Therefore, the value of "0" indicates best fit for the model, and the greater value means worse for the model. Additionally, it's acceptable fit interpretation is .05 (Kline, 2005).

3. Comparative Fit Index (CFI) = The CFI is one of the indexes that assess the relative improvement in fit of the model. It assess the model with parameters of the variables, and it is a "goodness of fit" index; the value of "0" poor fit, and "1" indicates perfect fit. Further, the acceptable value of CFI is .95 (Kline, 2005).

4. Standardized root mean square residual (SRMR)= The SRMR is an index which based on standardized covariance residuals, differences between observed and predicted covariances. The value of "0" for SRMR indicates perfect fit; while, the value of "1" indicates poor fit for the model. Additionally, the acceptable value of the index is .05 (Kline, 2005).

4. RESULTS

This chapter presents the results of the study in three parts namely, Preliminary Data Analysis, Descriptive Statistics, and Inferential Statistics. In the Preliminary Data Analysis part, the data were examined to identify potential outliers and to check normality assumption. In the Descriptive Statistics part, the variables of the study were investigated in terms of mean, standard deviation, and frequency distributions. In the Inferential Statistics part, the proposed model was tested through the path analysis.

4.1. Preliminary Data Analysis

4.1.1. Outlier Analysis

There are two types of outliers: univariate outliers and multivariate outliers. To check univariate outliers, box plots, scatter plots and z- values were investigated. In the current study, because of the large sample size, Z- values > 4 indicates outliers. There were no variables that has large z value, greater than 4. Hence, there were no univariate outliers on the data.

To check multivariate outliers standardized residuals Leverage value were examined. The standard residuals around 3 considered outliers. The range of standard residuals was -2. 81 to 2. 19. It did not indicate outliers. The maximum leverage value, .12, also indicates outliers; since, the leverage values greater than .087 also considered as outliers for the present study.

To check whether these outliers should be excluded from the study, or not Cook's Distance were examined. Cook D less than -1 or greater than +1 refers to the outliers which should be excluded from the study. As shown in the Table 4.1, Cook's Distance's range is between .00 and .055, so it can be concluded that the outliers were no influential, and they can included the study.

Table 4.1 Residuals statistics

	Min.	**Max.**	**M**	**SD**
Standardized Residual	-2. 81	2. 19	.00	.87
Centered Leverage Value	.015	.127	.06	.02
Cook's Distance	.000	.055	.02	.08

4.1.2. Normality

To check normality, skewness and kurtosis values were assessed. Table 4.2 summarizes the skewness and kurtosis values for the variables of the study. The skewness and kurtosis values between -2 and +2 are considered to be acceptable to demonstrate univariate normality (George and Mallery, 2003). As shown in the table, all the variables' values are between -2 and +2. Therefore, there is no violation in normality assumption.

Table 4.2 Univariate normality statistics

	Skewness	**Kurtosis**
Mastery Approach Goals	-1.66	1.45
Mastery Avoidance Goals	-.53	-.28
Performance Approach Goals	-1.53	1.16
Performance Avoidance Goals	-.82	.23

Table 4.2 (Contuniued)

Perceived Parents' Mastery Goals	-.95	.90
Perceived Parents' Performance Goals	-.49	-.13
Perceived Teachers' Mastery Goals	-1.43	1.71
Perceived Teachers' Performance Goals	-.84	.12
The fear of shame and embarrassment	-.52	-.31
The fear of devaluing one's self estimate	-.08	-.89
The fear of having uncertain future	-.16	-.83
The fear of losing social influence	.09	-1.13
The fear of upsetting important others	-.52	-.22
Denial Coping	.09	-1.09
Positive Coping	-1.18	2.02
Projective Coping	.33	-1.19
Non Coping	-.30	-.92
Self Efficacy	-.84	.25
Task Value	-1.40	2.03
Metacognition	-.54	-.14

4.2. Descriptive Statistics

Descriptive statistics were used to investigate the 7th grade elementary students' profiles about achievement goals, motivational beliefs and cognitive outcomes. As detailed in the following sections, results demonstrated that 7th grade students appeared to adopt approach goals at higher levels compared to avoidance goals; They are also found to have high levels of science self efficacy (*M=5.30, SD=1.35*), and task value beliefs (*M=5.76, SD=1.22*). Additionally, they appeared to use metacognition strategies at high levels (*M=5.28, SD=1.18*), and cope positively with an academic failure (*M=4.48, SD=.66*). Moreover, from participants' perspective, their parents and teachers were found to have comparable emphasis on mastery and performance goals.

4.2.1. Descriptive Statistics for Achievement Goals

The mean subscale scores were used to identify the achievement goals profile of the sample. According to the descriptive results, also presented in Table 4.3, seventh grade students appeared to adopt approach goals at higher levels compared to avoidance goals in their science classes. This finding implied that elementary students are likely to study for the reasons of mastering the course material, getting a good grade, and showing their abilities to others rather than to avoid not learning or getting the worst grade. Indeed, the repeated measures ANOVA results indicated statistically significant differences in means among four achievement goals (Wilks' Lambda =.519 , $F(3,976) = 3,01$, $p = .000$, $\eta^2 = .485$). Pairwise comparisons, paired sample t tests with Bonferroni procedure, was presented in Table 4.4.

Table 4.3. Descriptive results of achievement goals

	Mean	**S.D**	**Minimum**	**Maximum**
Mastery Approach Goals	4.54	.57	1.00	5.00
Mastery Avoidance Goals	3.76	.89	1.00	5.00
Performance Approach Goals	4.38	.69	1.00	5.00
Performance Avoidance Goals	3.87	.81	1.17	5.00

Table 4.4. Pairwise comparisons for achievement goals

	T	***Df***	***p***	***Cohen's d***
Mastery Approach-Performance Approach	6. 74	976	.00	0.22
Mastery Approach- Mastery Avoidance	26. 39	976	.00	0. 84
Mastery Approach-Performance Avoidance	24. 23	976	.00	0. 78
Performance Approach-Mastery Avoidance	19. 80	976	.00	0. 63
Performance Approach-Performance Avoidance	20. 06	976	.00	0. 64
Mastery Avoidance-Performance Avoidance	-4. 14	976	.00	0. 13

Paired sample t-test with Bonferroni procedure indicated that students have significantly adopt higher mastery approach goals (*M= 4. 54, SD= .57*) compared to performance approach goals (*M= 4. 39, SD= . 69*), t (976)= 6. 74, p=.000. The magnitude of the difference was medium (*d= ,22*). Furthermore, students' adaptation of mastery approach goals was significantly higher mean than their mastery avoidance goals (*M= 3. 76, SD= .89*), t (976) = 26. 39, p= .000, with large effect size (*d= .84*) and performance avoidance goals (*M= 3. 87, SD= .81*), t (976) = 24. 23, p= .000, with large effect size (*d= .78*). The second highest mean was belong to performance approach goals, and it was also significantly higher than mastery avoidance goals, t (976) = 19. 80, p= .000, with large effect size (*d= .63*) and performance avoidance goals, t (976) = 20. 06, p= .000, with large effect size (*d= .63*). Additionally, the mean level of mastery avoidance goals was significantly smaller than the mean level of performance avoidance goals, t (976)= -4. 14, p= .000, with small effect size (*d= .13*).

In order to get a clear picture of elementary students' achievement goals, the items and students' responses to the individual items in the achievement goal questionnaire (AGQ) and their frequency distributions were also presented in Table 4.5.

As shown in the table, the mean scores on the items measuring approach goals were higher than that of avoidance goals. Consistent with this pattern, while the highest mean (*M* = 4.61) score was found on the item "It is important for me to understand the content of this course as thoroughly as possible" which belongs to mastery approach scale, the lowest means score (*M* = 3.58) score was obtained on the item "My fear of performing poorly in this class compared to others is often what motives me" which belongs to performance avoidance scale. Indeed, the frequency distributions showed that the highest agreements were found on the approach goal items. In the table, the data were presented utilizing the following coding scheme: 5 and 4 points were assigned to "agree", 3 to "undecided", 1 and 2 to "disagree".

Table 4. 5. Descriptive Statistics and Frequency distribution of the responses of Achievement Goals Questionnaire (AGQ)

	Statement	M	SD	Percentage (%)		
				Disagree	Undecide	Agree
Mastery Approach Goals	It is important for me to understand the content of this course as thoroughly as possible	4.61	.66	0.8	7.0	82.2
	I want to learn as much as possible from this class.	4.58	.73	2.0	6.9	91.1
	I desire to completely master the material presented in this class.	4.44	.80	2.8	9.6	87.6
Mastery Avoidance Goals	I worry that I may not learn all that I possibly could in this class	3.93	1.08	9.6	22.2	68.2
	I am often concerned that I may not learn all that there is to learn in this class	3.64	1.22	18.3	23.5	58.2
	Sometimes I'm afraid that I may not understand the content of this class as thoroughly as I'd like	3.72	1.17	16.1	21.7	62.2

Table 4. 5 (Contuniued)

Performance Approach Goals	It is important for me to do better than other students.	4.58	.74	2.2	5.9	91.9
	My goal in this class is to get a better grade than most of the other students	4.34	.94	5.8	9.2	85.1
	It is important for me to do well compared to others in this class.	4.24	1.02	7.2	13.8	79.0
Performance Avoidance Goals	My goal for this class is to avoid performing poorly compared to the rest of the class.	4.10	1.19	11.4	9.7	78.9
	My fear of performing poorly in this class compared to others is often what motives me	3.58	1.22	19.3	22.4	58.3
	I just want to avoid doing poorly in this class compared to others	3.88	1.25	15.0	14.5	70.5
	My goal for this class is to avoid performing poorly.	4.28	1.01	6.8	10.9	72.3
	My fear of performing poorly in this class is often what motivates me.	3.65	1.26	19.0	20.4	60.6
	I just want to avoid doing poorly in this class.	3.74	1.31	19.0	16.6	64.4

Using the preceding coding scheme, a close examination of the frequency distribution revealed that the highest agreement was on the first item of performance approach goals: 91.9 % of the participants agreed with the item that “It is important for me to do better than other students”. On the other hand, the lowest agreement (58.2 %) was on the first item of performance avoidance goals which state that “My goal for this class is to avoid performing poorly compared to the rest of the class”. For the response of “ undecided” the highest percentage was for the second item of mastery avoidance goals: 23.5 % of the sample were uncertain about the statement that “I am often concerned that I may not learn all that there is to learn in this class”. For the response of “disagree” the highest percentage was for the second item of performance avoidance goals (19.3 %) which state that “My fear of performing poorly in this class compared to others is often what motives me”. On the other hand, only 2.0 % of the participants disagreed with the item that “I want to learn as much as possible from this class” which belongs to mastery approach goals scale.

Overall, the examination of mean scores and frequency distributions revealed that elementary students tend to study science for the reasons of understanding and mastering the course content and getting better grades than their classmates.

4.2.2. Descriptive Statistics for Motivational Beliefs

4.2.2.1. Descriptive Statistics for Science Self Efficacy

Concerning the descriptive statistics for science self-efficacy, the mean score of 5.33 with a standard deviation of 1.3, on a seven-point scale revealed that elementary students have a reasonable level of science self-efficacy. In order to get an in-depth understanding of elementary students' science self-efficacy, their responses to the MSLQ were examined in item level and displayed in Table 4.6.

Table 4.7 Descriptive Statistics of Self Efficacy

Statement	***M***	***SD***
I believe I will receive an excellent grade in this class	5.23	1.78
I'm certain I can understand the most difficult material presented in the readings for this course	5.07	1.82
I'm confident I can understand the basic concepts taught in this course	5.45	1.66
I'm confident I can understand the most complex material presented by the instructor in this course	5.01	1.81
I'm confident I can do an excellent job on the assignments and tests in this course	5.48	1.64
I expect to do well in this class	5.44	1.63
I'm certain I can master the skills being taught in this class	5.41	1.66
Considering the difficulty of the course, the teacher, and my skills, I think I will do well in this class	5.64	1.78

As shown in the table, the highest mean (*M=5.64)* score was obtained on the item stating that "Considering the difficulty of the course, the teacher, and my skills, I think I will do well in this class";. Consistent with this finding, frequency distributions displayed in Table 4.8 indicated that majority of the participants (77.8 %) agreed with this item. On the other hand, the lowest mean (*M=5.01*) score was on the item that, "I'm confident I can understand the most complex material presented by the instructor in this course". More than half of the participants (64.9 %) were found to agree with this item. At this point it is important to note that, even the lowest mean score determined in item level was well above the mid-point of seven point scale implying that elementary students have a strong belief that they have capabilities to perform well in science class. The examination of the frequency distributions in the item level also reflected this pattern. In the table, the data were presented utilizing the following coding scheme: 7, 6 and 5 points were assigned to "agree", 4 to "undecided", 1, 2 and 3 to "disagree".

Table 4.8 Frequency distribution of the responses for self efficacy

	Percentage (%)		
	Disagree	**Undecided**	**Agree**
Item 1	17.1	11.7	71.2
Item 2	19.8	13.5	66.7
Item 3	13.7	10.3	76.1
Item 4	20.8	14.2	64.9
Item 5	13.2	10.7	76.1
Item 6	12.8	11.3	75.9
Item 7	13.5	12.0	74.5
Item 8	11.9	10.3	77.8

4.2.2.2. Descriptive Statistics for Task Value

The descriptive statistics used to identify the task value profile of the participants showed that elementary students perceive content of science courses as interesting, useful and important to learn at high levels (M = 5.76, SD = 1.7)

Table 4.9 Descriptive Statistics of Task Value

Statement	*M*	*SD*
I think I will be able to use what I learn in this course in other courses	6.11	1.39
It is important for me to learn the course material in this class	5.64	1.78
I am very interested in the content area of this course	5.60	1.63
I think the course material in this class is useful for me to learn	5.97	1.46
I like the subject matter of this course	5.38	1.80
Understanding the subject matter of this course is very important to me	5.84	1.59

The examination of the mean scores (Table 4.9) and frequency distributions (Table 4.10) in item level also revealed that the task value beliefs' item with the highest mean (*M*=6.11*)* was "I think I will be able to use what I learn in this course in other courses". Majority of the participants (77.8 %) agreed on this item. The highest agreement (88.8 %) was on the item that "It is important for me to learn the course material in this class". On the other hand, the item with lowest mean (*M*=5.38) was, "I like the subject matter of this course. The lowest (73.9 %) agreement was observed on this item.

Table 4.10 Frequency distribution of the responses for Task Value

	Percentage (%)		
	Disagree	**Undecided**	**Agree**
Item 1	11.9	10.3	77.8
Item 2	6.5	4.7	88.8
Item 3	11.7	10.2	78.1
Item 4	6.6	8.9	84.5
Item 5	15.7	10.4	73.9
Item 6	9.5	8.0	82.5

4.2.2.3. Descriptive Statistics for Fear of Failure

The descriptive statistics, also presented in table 4. 11, used to identify the fear of failure profile of the participants in science showed that seventh grade students tend to experience a fear of being unsuccessful in science at moderate levels as indicated by a mean score of M = 3.57 (SD= .94) for the fear of shame and embarrassment sub-scale. Additionally, they were found to have a fear of upsetting people who are important for them, like their parents, or their teachers (M= *3.51*, SD= *.93*). Indeed, the repeated measures ANOVA results indicated statistically significant differences in means among five fear of failure subscales (Wilks' Lambda = .542, F(4, 976) = 2. 057, p = .000, η^2 = . 458). Pairwise comparisons, paired sample t tests with Bonferroni procedure, was presented in Table 4.12.

Table 4.11. Descriptive statistics of fear of failure

	Mean	**S.D**	**Minimum**	**Maximum**
The fear of shame and embarrassment	3.52	.98	1.00	5.00
The fear of devaluing one's self estimate	3.12	1.04	1.00	5.00
The fear of having uncertain future	3.13	1.06	1.00	5.00
The fear of losing social influence	2.87	1.22	1.00	5.00
The fear of upsetting important others	3.62	.94	1.00	5.00

Table 4.12 Pairwise comparisons for fear of failure

	t	***df***	***p***	***Cohen's d***
fear of shame and embarrassment- fear of devaluing one's self estimate	17. 13	976	.000	0. 55
fear of shame and embarrassment- fear of having uncertain future	15. 99	976	.000	0. 51
fear of shame and embarrassment- fear of losing social influence	23. 92	976	.000	0. 77
fear of shame and embarrassment- fear of upsetting important others	2. 88	976	.004	0. 09

Table 4.12 (Contuniud)

fear of devaluing one's self estimate- fear of having uncertain future	-. 51	976	.610	-0. 01
fear of devaluing one's self estimate- fear of losing social influence	9. 43	976	.000	0. 30
fear of devaluing one's self estimate- fear of upsetting important others	-14. 45	976	.000	-0. 46
fear of having uncertain future- fear of losing social influence	8. 99	976	.000	0. 29
fear of having uncertain future- fear of upsetting important others	-14. 00	976	.000	-0. 45
fear of losing social influence- fear of upsetting important others	-22. 97	976	.000	0. 73

Paired sample t-test with Bonferroni procedure results also confirmed that students have a fear of shame and embarrassment (*M=3.57, SD= .94*) and fear of upsetting important others (*M= 3.51, SD= .93*) at significantly higher levels compared to fear of devaluing one's self estimate (*M= 3. 12, SD= 1. 02*), having uncertain future (*M= 3. 13, SD= .88*), and losing social influence (*M=2. 81, SD= 1. 24*). On the other hand, the difference in the level of fear of shame and embarrassment and fear of upsetting important others was not statistically significant, t(976)= 2. 88, p= .004. The magnitudes of the difference in the level of fear of shame and embarrassment beliefs and fear of devaluing one's self esteem beliefs, t (976)= 17. 13, p= .000, *d= .55* and fear of uncertain future beliefs, t (976)= 15. 99, p= .000, *d= .51* were medium while the magnitude of the difference in the level of fear of shame and embarrassment beliefs and fear of losing social interest, t (976)= 23. 92, p= .000, *d= .77*, was large.

Fear of upsetting important others beliefs were also significantly higher than fear of devaluing one's self esteem beliefs, t (976)= 14. 45, p= .000, with medium effect size (*d= .46*), fear of uncertain future beliefs, t (976)= 14. 00, p= .000, with medium effect size (*d= .45*), and fear of losing social interest, t (976)= 22. 97, p= .000, with large effect size (*d= .73*). On the other hand, the level of fear of losing social influence were statistically at lower levels than fear of devaluing one's self esteem, t (976)= 9. 43, p= .000, with medium effect size (*d= .30*), and fear of having uncertain future beliefs, t (976)= 8. 99, p= .000, with medium effect size (*d= .29*), among 7th grade students. Moreover, according to the results, there was no statistically significant mean difference in the level of students' fear of devaluing one's self esteem beliefs and fear of uncertain future beliefs, t (976)= .51, p= .610.

In order to get a clear picture of elementary students' fear of failure, the items and students' responses to the individual items in the PFAI, Performance Failure Appraisal Inventory ,was presented in Table 4.13.

Table 4.13 Descriptive Statistics for Fear of Failure

Fear of Failure	**Statement**	***M***	***SD***
Fear of Shame and Embarrassment	When I am not succeeding, I am less valuable than when I succeed	3.45	1.37
	When I am not succeeding, I get down on myself easily	3.93	1.22
	When I am failing, it is embarrassing if others are there to see it	3.57	1.36
	When I am failing, I believe that everybody knows I am failing	3.47	1.37

Table 4.13 (Contuniud)

Fear of Shame and Embarrassment	When I am failing, I believe that my doubters feel that they were right about me	3.16	1.45
	When I am failing, I worry about what others think about me	3.12	1.45
	When I am failing, I worry that others may think I am not trying	3.79	1.30
The fear of devaluing one's self estimate	When I am failing, it is often because I am not smart enough to perform successfully	2.54	1.57
	When I am failing, I blame my lack of talent.	2.92	1.43
	When I am failing, I am afraid that I might not have enough talent	3.14	1.45
	When I am failing, I hate the fact that I am not in control of the outcome	3.89	1.24
The fear of having uncertain future	When I am failing, my future seems uncertain	3.08	1.45
	When I am failing, I believe that my future plans will change	3.27	1.46
	When I am failing, it upsets my "plan" for the future.	3.17	1.45
	When I am failing, I am not worried about it affecting my future plans	2.99	1.50

Table 4.13 (Contuniud)

The fear of losing social influence	When I am not succeeding, people are less interested in me.	2.79	1.53
	When I am not succeeding, people seem to want to help me less	3.03	1.46
	When I am not succeeding, people tend to leave me alone.	2.73	1.54
	When I am not succeeding, some people are not interested in me anymore.	2.68	1.54
	When I am not succeeding, my value decreases for some people	3.12	1.45
The fear of upsetting important others	When I am failing, it upsets important others	4.05	1.18
	When I am failing, I expect to be criticized by important others	3.47	1.44
	When I am failing, I lose the trust of people who are important to me	3.06	1.51
	When I am failing, important others are not happy	3.93	1.22
	When I am failing, important others are disappointed	3.57	1.36

The examination of the mean scores (Table 4.13) and frequency distributions (Table 4.14) in item level also revealed that the highest mean score was obtained for the item "When I am failing, it upsets important others" which belongs to the fear of upsetting important others sub-scale (M = 4.05) Majority of the

students agreed on this item (74 %). On the other hand, the item with the lowest mean (*M= 2.*54) was "When I am failing, it is often because I am not smart enough to perform successfully". This items belongs to the fear of devaluing one's self estimate sub-scale. More than half of the students (52.5 %) disagreed on the item.

Table 4.14 Frequency distribution of the responses

		Percentage (%)		
		Disagree	**Undecided**	**Agree**
Fear of Shame and Embarrassment	Item 1	25.4	21.1	53.6
	Item 2	14.7	17.6	67.8
	Item 3	23.3	19.0	57.7
	Item 4	25.8	20.9	53.3
	Item 5	34.1	20.8	45.1
	Item 6	35.3	20.5	44.1
	Item 7	17.7	18.1	64.2
The fear of devaluing one's self estimate	Item 8	52.5	17.1	30.4
	Item 9	39.0	23.4	37.6
	Item 10	34.8	21.1	44.2
	Item 11	13.6	17.5	67.9
The fear of having uncertain future	Item 12	37.7	16.8	45.4
	Item 13	31.8	18.3	49.9
	Item 14	35.2	17.7	47.1
	Item 15	38.9	18.5	41.6
The fear of losing social influence	Item 16	45.1	20.0	34.9
	Item 17	38.4	21.4	40.1

Table 4.14 (Contuniued)

The fear of losing social influence	Item 18	48.8	16.3	34.9
	Item 19	50.0	16.5	33.5
	Item 20	35.4	20.5	44.1
The fear of upsetting important others	Item 21	11.3	14.7	74.0
	Item 22	27.0	17.0	56.0
	Item 23	38.7	17.5	43.9
	Item 24	14.6	17.6	67.8
	Item 25	23.2	19.0	57.7

4.2.2.4. Descriptive Statistics for Perceived Parents Goal Emphasis

The descriptive statistics were used to identify the perceived parents goal emphasis profile of the sample. According to the results, seventh grade students generally perceive mastery (*M=3.93, SD=.76*) goals emphasis more than performance goals emphasis (*M=3.77, SD=.79*) from their parents. Paired sample t-test results also indicated statistically significant difference in means between two perceived parent achievement goals emphasizes, t (976)= 5. 75, p= .000 with small effect size (*d= .24*), see also Table 4.15.

Table 4. 15 Pairwise comparisons for perceived parents goals

	t	*df*	*p*	*Cohen's d*
Perceived parent mastery goal emphasis- Perceived parent performance goal emphasis	5. 75	976	.000	0. 18

In order to get a clear picture of elementary students' perceptions about their parents achievement goals, the item means and students' responses to the individual items in terms of percentages were presented in Table 4.16.

Table 4. 16 Descriptive Statistics of Perceived Parents Goal Emphasis

	Statement	***M***	***SD***
Perceived parent mastery goal emphasis	My parents want me to understand science concepts, not just do the work	4.23	1.06
	My parents want me to understand science problems, not just memorize how to do them	4.57	.87
	My parents would like me to do challenging science problems. even if I make mistakes	4.02	1.15
	My parents think how hard I work in science is more important than the grades I get	3.23	1.31
	My parents think mistakes are OK in science as long as I learn from them	3.79	1.25
	My parents want me to spend time thinking about science concepts	3.76	1.21
Perceived parent performance goal emphasis	My parents don't like it when I make mistakes in science	3.30	1.37
	My parents would like it if I could show that I'm better at science than other students in my class	4.36	.97

Table 4. 16 (Contuniued)

Perceived parent performance goal emphasis	My parents ask me how my work in science compares with the work of other students in my class	3.44	1.46
	My parents would like me to show others that I am good at science	3.34	1.51
	My parents would be pleased if I could show that science is easy for me	4.44	.92

The examination of the mean scores (Table 4.16) and frequency distributions (Table 4.17) in item level also revealed that the highest mean score was obtained for the item "My parents want me to understand science problems, not just memorize how to do them" which belongs to perceived mastery goals emphasis (*M=4.57*). Approximately, 90 % of the students' agreed on this item. On the other hand, the item with the lowest mean (*M= 3.23*) was "My parents think how hard I work in science is more important than the grades I get". The lowest agreement (44.1%) was also observed on this item.

Table 4.17 Frequency distribution of the responses

		Percentage (%)		
		Disagree	**Undecided**	**Agree**
Perceived parent mastery goal emphasis	Item 1	8.2	12.6	79.2
	Item 2	4.4	6.3	89.3
	Item 3	11.5	15.5	62.9
	Item 4	27.5	28.4	44.1

Table 4.17 (Contuniued)

Perceived parent mastery goal emphasis	Item 5	16.0	18.4	65.6
	Item 6	15.6	22.1	62.4
Perceived parent performance goal emphasis	Item 7	29.5	22.5	48.0
	Item 8	6.0	9.3	84.7
	Item 9	27.8	18.8	53.5
	Item 10	30.4	17.2	52.4
	Item 11	5.1	8.6	86.3

4.2.2.5. Descriptive Statistics for Perceived Teacher Goal Emphasis

The descriptive statistics were used to identify the perceived teacher goal emphasis profile of the sample. According to the results, seventh grade students perceive mastery goals emphasis (*M=4.07, SD= .92*) from their science teachers more than performance goals emphasis (*M=3.83, SD= .97*). Paired sample t-test results also indicated a statistically significant mean difference between perceived teacher mastery goal emphasis and performance goal emphasis, t (976)= 7. 46, p= .000 with medium effect size (*d= .24*), see also Table 4.18.

Table 4.18. Pairwise comparisons for perceived parents goals

	T	***df***	***p***	***Cohen's d***
Perceived teacher mastery goal emphasis- Perceived teacher performance goal emphasis	7. 46	976	.000	0. 24

In order to get a clear picture of elementary students' perceptions about their science teacher achievement goals, the item means and students' percent agreements on the individual items in the Perceived Teacher Goal Emphasis was presented in Table 4.19 and Table 4.20.

Table 4. 19 Descriptive Statistics of Perceived Teachers Goal Emphasis

	Statement	***M***	***SD***
Perceived teacher mastery goal emphasis	My teacher really wants us to enjoy learning new things in science	4.47	1.06
	My teacher gives us time to really explore and understand new ideas in science	3.98	1.23
	My teacher recognizes us for trying hard in science	3.87	1.26
	My teacher thinks mistakes are okay in science as long as we are learning	3.72	1.33
	My teacher wants us to understand our science work, not just memorize it	4.32	1.09
Perceived teacher performance goal emphasis	My teacher lets us know which students get the highest scores on a science test	4.10	1.22
	My teacher points out those students who get good grades in science as an example to all of us	3.79	1.36
	My teacher tells us how we compare in science to other students	3.85	1.27
	My teacher lets us know if we do worse in science than most of the other students in class	3.84	1.30

Table 4. 19 (Continued)

Perceived teacher performance goal emphasis	My teacher makes it obvious when certain students are not doing well on their science work	3.54	1.46

The examination of the mean scores (Table 4.19) and frequency distributions (Table 4.20) in item level also revealed that the item with the highest mean (*M=4.47*) was "My teacher really wants us to enjoy learning new things in science" which belongs to perceived teacher mastery goals emphasis. Majority of students agreed on this item (86.5 %). On the other hand, the item with the lowest mean (*M= 3.54*) was "My teacher makes it obvious when certain students are not doing well on their science work", which belongs to perceived teacher performance goals emphasis. About half of the students (51.2%) agreed on the item.

Table 4.20 Frequency distribution of the responses

		Percentage (%)		
		Disagree	**Undecided**	**Agree**
Perceived teacher mastery goal emphasis	Item 1	7.7	5.8	86.5
	Item 2	13.6	12.3	74.1
	Item 3	15.9	16.4	67.6
	Item 4	19.6	17.2	63.2
	Item 5	9.3	7.2	83.5

Table 4.20 (Continued)

Perceived teacher performance goal emphasis	Item 1	12.5	11.0	76.5
	Item 2	18.9	15.3	65.8
	Item 3	16.6	17.4	66.1
	Item 4	16.9	16.6	66.5
	Item 5	25.2	18.6	51.2

4.2.3. Descriptive Statistics for Cognitive Outcomes

4.2.3.1. Descriptive Statistics for Metacognition

The descriptive statistics concerning students' metacognition revealed that elementary students use effective metacognitive strategies in science (M = 5.25, SD = 1.1) at high levels. In order to get an in-depth understanding of students' use of metacognitive strategies in science, mean scores in item level and percentage of students' responses to the individual items in the metacognition subscale of MSLQ (Motivational Strategies for Learning Questionnaire) were presented in Table 4.21 and Table 4.22.

Table 4. 21 Descriptive Statistics of Metacognitive Self Regulation

Statement	***M***	***SD***
During the class time I often miss important points because I'm thinking of other things	4.59	2.14
When I am reading for this course, I make up the questions to help focus my reading	5.12	1.83

Table 4. 21 (Continued)

When I became confused about something I'm reading for this class, I go back and try to figure it out	5.64	1.63
If course material is difficult to understand, I change the way I read the material	5.27	1.75
Because I study new course material thoroughly, I often skim it to see how it is organized	5.34	1.79
I ask myself questions to make sure I understand the material I have been studying in this class	5.26	1.84
I try to change the way I study in order to fit the course requirements and instructor's teaching style	5.26	1.79
I often find that I have been reading for class but don't know what it was all about	4.40	2.17
I try to think through a topic and decide what I am supposed to learn from it rather than just reading it over when studying	5.53	1.66
When studying for this course I try to determine which concepts I don't understand well	5.51	1.70
When I study for this class, I set goals for myself in order to direct my activities in each study period	5.61	1.63
If I get confused taking notes in class, I make sure I sort it out afterwards	5.28	1.94

The examination of the mean scores (Table 4.21) and frequency distributions (Table 4.22) in item level revealed that the item with the highest mean

(*5.64*) was "When I became confused about something I'm reading for this class, I go back and try to figure it out". Around three quarter of the students (77%) agreed on this item. On the other hand, the item with the lowest mean (*M= 4.40*) was "I often find that I have been reading for class but don't know what it was all about". Since, it was a negatively worded item, the lowest mean score on this item suggested that elementary students are likely to be metacognitively active at moderate levels while reading for science class students. The lowest agreement (54.8 %) was observed on this item.

Table 4.22 Frequency distribution of the responses

	Percentage (%)		
	Disagree	**Undecided**	**Agree**
Item 1	32.2	8.8	59.0
Item 2	19.7	11.5	68.8
Item 3	11.1	11.1	77.8
Item 4	16.6	11.7	71.6
Item 5	16.8	10.6	72.6
Item 6	17.8	12.7	69.5
Item 7	17.2	9.7	73.1
Item 8	36.7	8.5	54.8
Item 9	12.7	10.7	76.6
Item 10	14.3	8.8	76.9
Item 11	12.4	8.6	79.0
Item 12	18.8	12.2	69.0

4.2.3.2. Descriptive Statistics for Coping Strategies

The descriptive statistics, also presented in table 4. 23, were used to identify the coping strategy profile of the sample. According to the results, seventh grade students adopt mostly positive coping (*M=4.48, SD*= .*66*). In other words, when they face a failure in a science course, they try to find where they did the wrong, or they try to do better at the next time. Indeed, the repeated measures ANOVA results indicated that statistically significant differences in means among four coping strategies (Wilks' Lambda = .346, $F(3,976) = 6.126$, $p = .000$, $\eta^2 = .654$. Pairwise comparisons, paired sample t tests with Bonferroni procedure, was presented in Table 4.24.

Table 4. 23. Descriptive Statistics of Coping Strategies

	Mean	**S.D**	**Minimum**	**Maximum**
Positive Coping	4.48	.66	1.00	5.00
Projective Coping	2.61	1.30	1.00	5.00
Denial Coping	2.88	1.25	1.00	5.00
Non Coping	3.32	1.15	1.00	5.00

Table 4.24 Pairwise comparisons for coping strategies

	T	***Df***	***p***	***Cohen's d***
Positive Coping- Projective Coping	39. 14	976	.000	1. 25
Positive Coping- Denial Coping	35. 29	976	.000	1. 13

Table 4.24 (Contuniued)

Positive Coping- Non coping	30. 03	976	.000	0. 96
Projective Coping- Denial Coping	-6. 75	976	.000	0. 22
Projective Coping- Non coping	-15. 53	976	.000	0. 50
Denial Coping- Non coping	-9. 09	976	.000	0. 29

Paired sample t-test with Bonferroni procedure indicated that students adopt positive coping strategies at significantly higher levels (*M= 4. 48, SD= .66*) compared to projective coping (*M=2. 63, SD= 1. 30*),), t (976)= 39. 14, p=.000, with high large size, (*d= 1. 25*), denial coping (*M=2. 89, SD= 1. 22*), t (976)= 35. 29, p=.000, with large effect size, (*d= 1. 13*), and non coping (*M=3. 33, SD= 1. 14*), t (976)= 30. 03, p=.000, with large effect size, (*d= 0. 96*). The second highest mean belonged to non coping strategies, and it was also significantly higher than projective coping , t (976) = -15. 53, p= .000, with medium effect size (*d= .50*) and denial coping, t (976) = -9. 09, p= .000, with medium effect size (*d= .29*). Additionally, students were found to use projective coping strategies at lower levels than denial coping strategies, t (976)= -6. 75, p= .000, with medium effect size (*d= .22*).

In order to get a clear picture of elementary students' coping strategies, the item means and students' responses to the individual items in the Academic Coping Inventory, (ACI), were presented in Table 4.25 and Table 4.26. All items listed below start with a stem that "If something bad happened to me during science, such as doing poorly on a test or not being able to answer a question in class."

Table 4. 25 Descriptive Statistics of Coping Strategies

	Statement	*M*	*SD*
Positive Coping	I would try to figure out what I did wrong so it wouldn't happen again	4.57	.78
	I would try to see what I did wrong	4.47	.80
	I would tell myself that I'll do better next time	4.41	.85
Projective Coping	I would say it was the teacher's fault	2.60	1.46
	I would say that the teacher didn't cover the things on the test	2.74	1.51
	I would get angry at the teacher	2.54	1.51
Denial Coping	I would tell myself it didn't matter	3.14	1.41
	I would say it wasn't important	2.81	1.44
	I would say I didn't care about it	2.71	1.48
Non-coping	I would feel really terrible	3.59	1.36
	I would worry that other students would think I'm dumb	3.36	1.46
	I would feel really stupid	2.85	1.54
	I would get really mad at myself	3.50	1.45

The examination of the mean scores (Table 4.25) and frequency distributions (Table 4.26) in item level also revealed that the coping strategies item with the highest mean (M=4. 57) was "If something bad happened to me during

science, such as doing poorly on a test or not being able to answer a question in class, I would try to figure out what I did wrong so it wouldn't happen again", which belonged to positive coping sub-scale. Majority of the students (92. 9%) agreed on this item. The next item with the highest agreement response also belonged to positive coping (89.9 %). The mean score for this item stating that "If something bad happened to me during science, such as doing poorly on a test or not being able to answer a question in class, I would try to see what I did wrong" was 4.47. On the other hand, the coping strategies item with lowest mean (M=2. 54) was, "If something bad happened to me during science, such as doing poorly on a test or not being able to answer a question in class, I would get angry at the teacher" which belonged to projective coping. More than half of the students (55.2%) were disagree with this item.

Table 4.26 Frequency distribution of the responses

		Percentage (%)		
		Disagree	**Undecided**	**Agree**
Positive Coping	Item 1	2.9	4.2	92.9
	Item 2	3.1	7.0	89.9
	Item 3	2.8	11.1	85.0
Projective Coping	Item 4	51.4	20.0	28.5
	Item 5	48.2	18.0	33.8
	Item 6	55.2	14.6	30.1
Denial Coping	Item 7	32.9	24.8	40.5
	Item 8	46.4	19.4	34.2

Table 4.26 (contuniued)

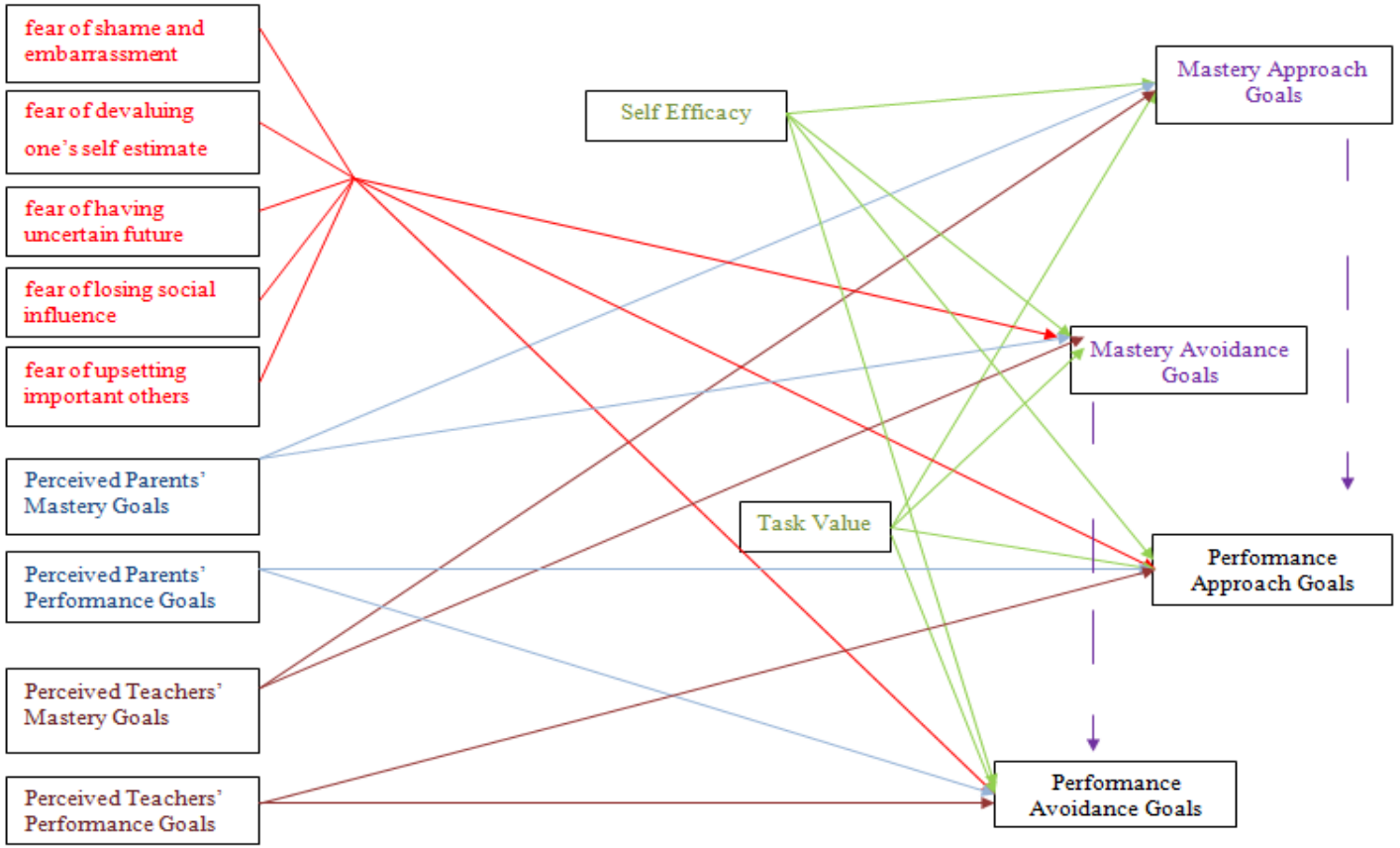
Denial Coping	Item 9	49.4	19.1	31.5
Non-coping	Item 10	21.6	19.2	59.1
	Item 11	28.3	20.2	51.4
	Item 12	44.8	17.2	38.0
	Item 13	26.6	16.9	56.4

4.3. Inferential Statistics

In order to investigate 7th grade elementary students' achievement goals in science classes in relation to their antecedents and consequences, path analysis was conducted. In the model, concerning the relationship between achievement goals and their antecedents, it was hypothesized that students' self efficacy and task value beliefs in science, and their perceptions about parents' and teachers' mastery goals emphases would have direct effects on their own mastery approach goals. Further, it was proposed that students' self efficacy, task value, fear of failure and their perceptions regarding parents' and teachers' mastery goals emphases would have direct effects on their mastery avoidance goals. Besides, students' self efficacy, task value, fear of failure and their perceptions concerning parents' and teachers' performance goals were suggested to have direct effects on their both performance approach and avoidance goals. The relations between achievement goals and their antecedents were also presented in figure 4.1.

Then, concerning the relationship between achievement goals and their consequences, it was hypothesized that students' achievement goals (i.e. mastery approach, mastery avoidance, performance approach, and performance avoidance goals) would have direct effects on students' metacognition and positive coping. Moreover, it was proposed that students' mastery avoidance and performance

approach and avoidance, goals would have direct effects on students' projective, denial, and non coping strategies. The links between achievement goals and their consequences also were presented in figure 4.2.



dashed line show added paths after modification

Figure 4.1. The relations between achievement goals and their antecedents

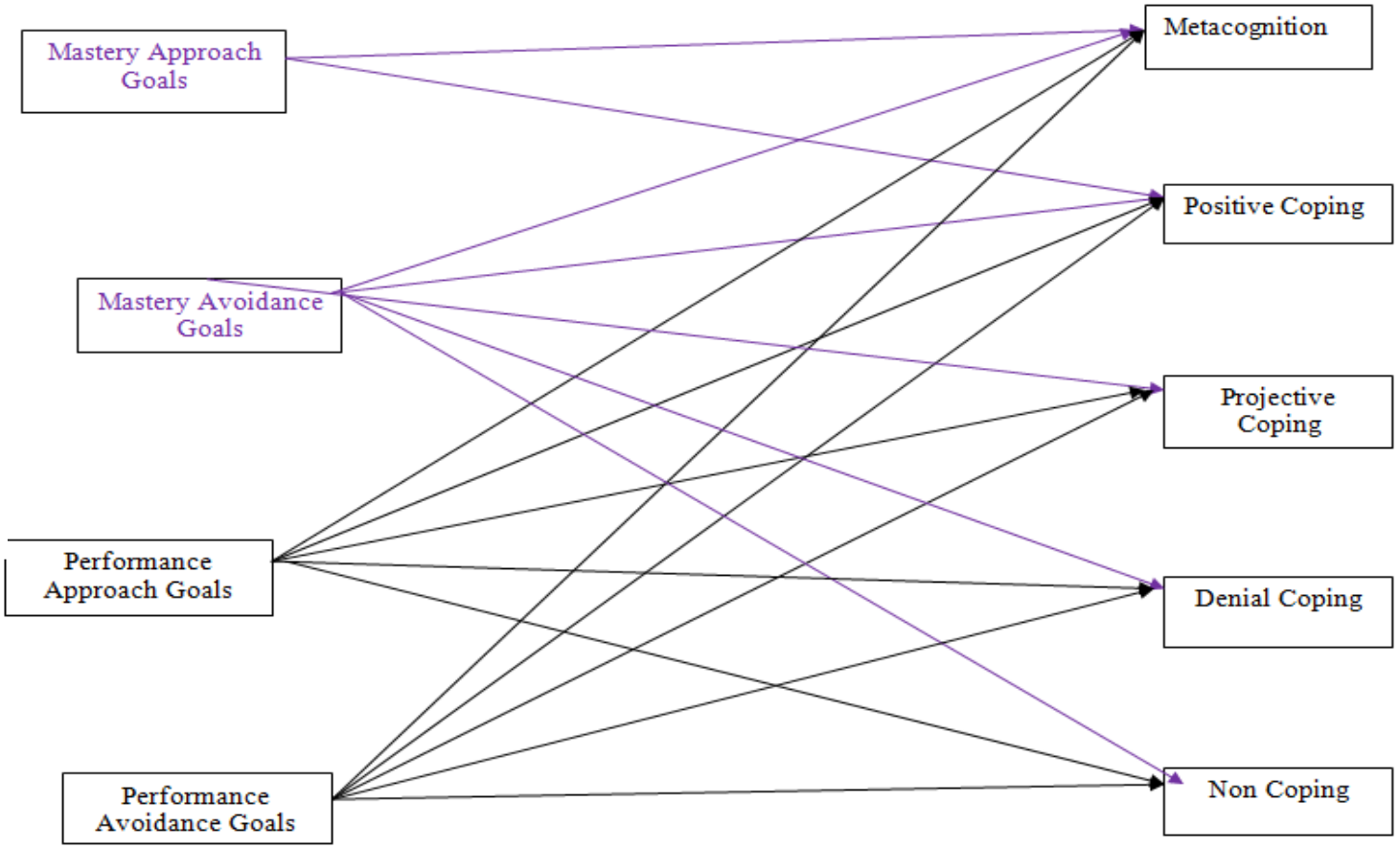


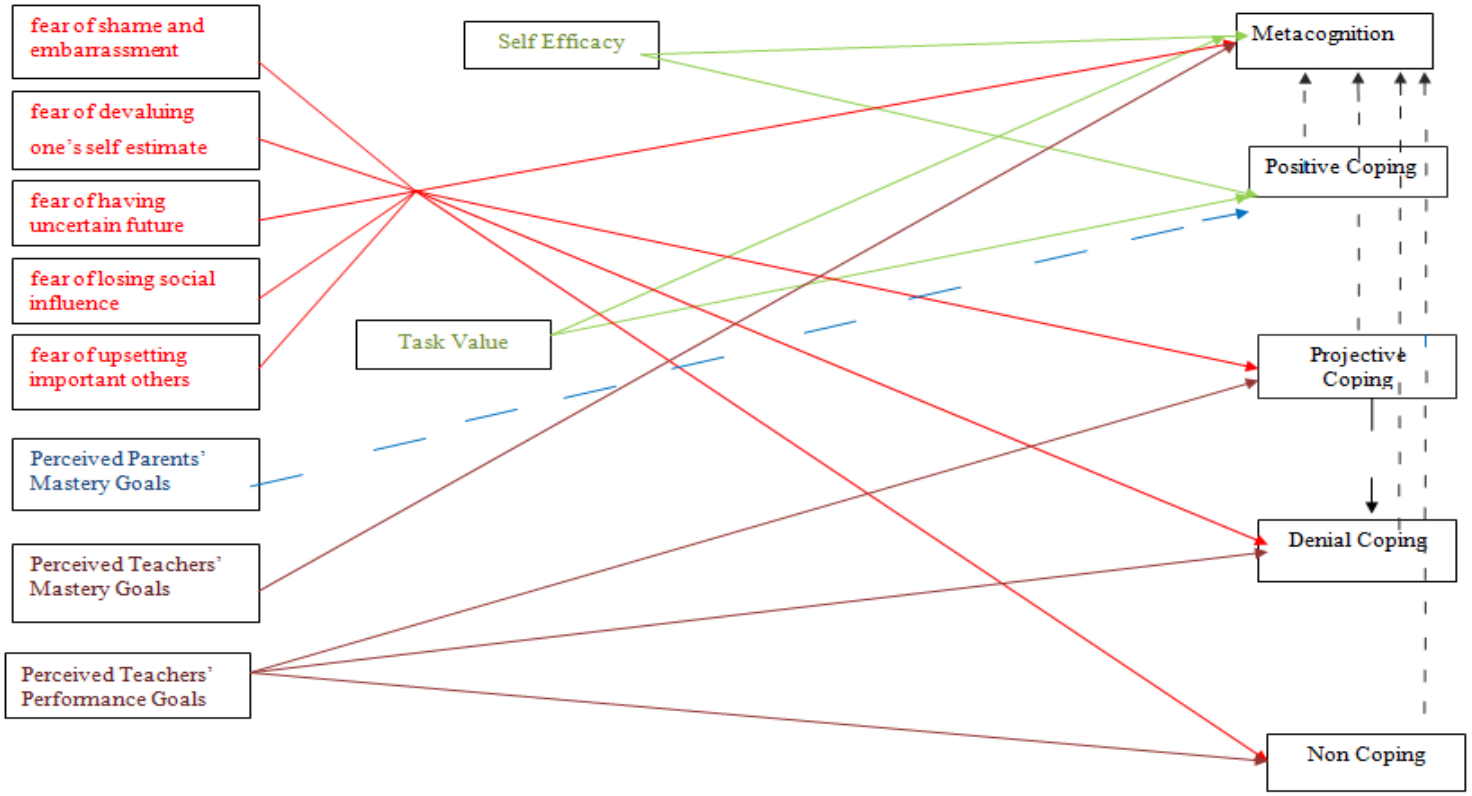
Figure 4.2. The relations between achievement goals and their consequences

In addition to aforementioned relations, links were specified between antecedents and consequences of achievement goals. More specifically, the model included direct paths from self efficacy, task value, and perceived teacher mastery goal emphasized to metacognition and positive coping. The model also included direct paths from fear of failure, and perceived teachers performance goals to maladaptive coping strategies; projective coping, denial coping and non coping. Besides, the paths were specified between coping strategies and students' metacognition in the model. The relations between antecedents and consequences of achievement goals were presented in figure 4.3.

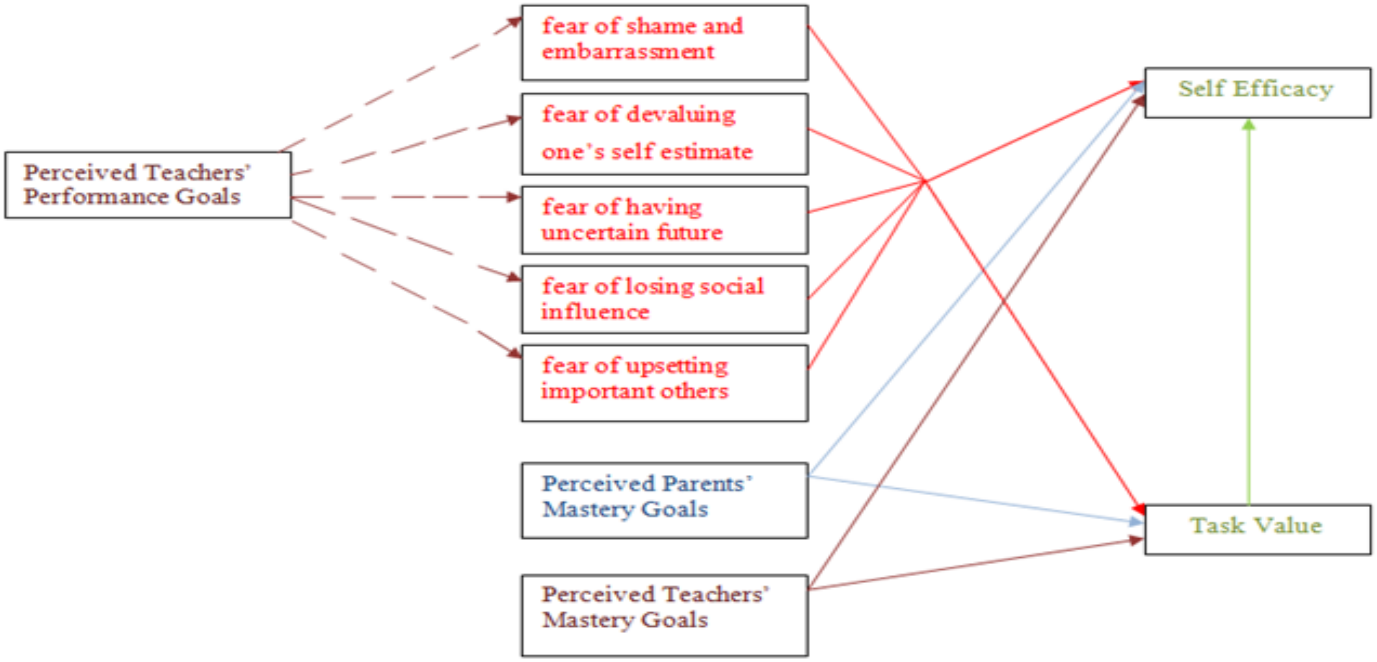
Finally, it was hypothesized that students' task value, fear of failure and their perceptions about parents' and teachers' mastery goals would have direct effects on students' self efficacy. Additionally, students' fear of failure and their perceptions about parents' and teachers' mastery goals were proposed to have direct effects on students' task value. Besides, the model included direct paths from perceived teachers' performance goals to fear of failure. The relations among antecedents' of achievement goals were also presented in figure 4.4.

The path analysis of the conceptual model was conducted using the LISREL 8.30 program. The goodness of fit measures (χ^2/ df =69.60, GFI = .64, CFI = .70, RMSEA = .02, SRMR = .01) revealed that the initial conceptual model (based on previously published relationships) did not fit the data very well. Based on these preliminary results, modifications were made and a new model was specified. In the re-specified model, the paths between fear of failure and perceived teachers' performance goals emphases and between coping strategies to metacognition were eliminated. On the other hand, paths leading from projective coping to denial coping, from mastery approach to performance approach goals and to projective coping, from mastery avoidance to performance avoidance goals, and from perceived parents' mastery goals to positive coping were added. The re-specified model results in an acceptable fit (χ^2/ df = 7. 70, GFI= .95, CFI = .97, RMSEA = .08, SRMR = .04)

The standardized path coefficients for direct and indirect effects are presented in Appendix D. The significant path coefficients for direct effects are also graphically summarized in Figure 4.5.



*dashed line show added paths after modification
*small dashed lines show eliminated paths after modification
Figure 4.3. Relations between antecedents and consequences of achievement goals



dashed line show eliminated paths after modification

Figure 4.4. The relations among antecedents' of achievement goals

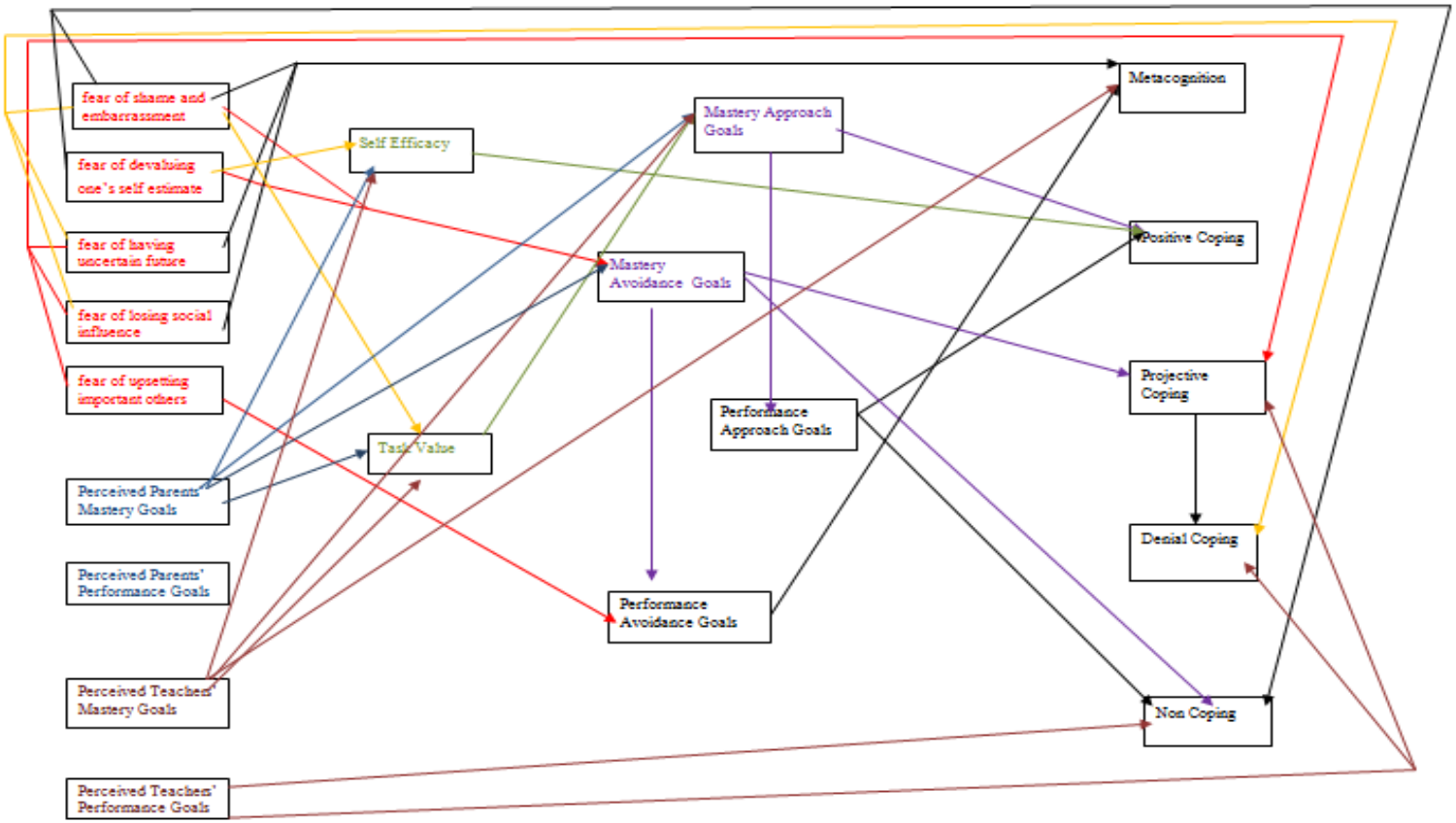


Figure 4.5. The significant path coefficients for direct effects

4.3.1. Relationship between Achievement Goals and their Antecedents (Motivational Beliefs, Fear of Failure, Socio Cultural Influence)

In the re-specified model, self efficacy, task value, students' perceptions of parents' and teachers' mastery goal emphasize accounted for 21 % of the variance in mastery approach goals. Parameter estimates revealed that higher levels of task value (*β=.34*) perceived parents' mastery goals (*γ=.19),* and perceived teachers' mastery goals (*γ=.07*) were positively related to mastery approach goals. These results implied that students who perceive science tasks and activities as interesting, useful, and important and who perceive that their parents and teachers emphasizes learning and understanding of science tend to study for the reasons of mastering the course material. The relationship between self efficacy (*B=.01*) and mastery approach goals was not statistically significant (see Table 4. 29).

Moreover, self efficacy, task value, perceived parents' mastery goals, perceived teachers' mastery goals, fear of shame and embarrassment, fear of devaluing one's self-estimate, fear of having uncertain future, fear of important others losing interest, and fear of upsetting important others accounted for 18 % of the variance in mastery avoidance goals. Parameter estimates revealed that higher levels of perceived parents' mastery goals (*γ=.29*), fear of shame and embarrassment (*γ=.17*), fear of devaluing one's self-estimate (*γ=.11*) were positively related to mastery avoidance goals. These results implied that students who perceive that their parents emphasize the importance of learning and understanding of science and students who think that failure in science make feel them shame, and decrease their self esteem tend to study for the reasons of avoiding misunderstanding, or not learning the course material in science. The relationships between self efficacy (*β=-.06),* task value *(β=.07)*, perceived teachers' mastery goals *(γ=-.01),* fear of having uncertain future (*γ=.00*), fear of important others losing interest *(γ=.05),* and fear of upsetting important others *(γ=-.02)* and mastery avoidance goals were not statistically significant (see Table 4. 29).

Table 4. 29. Relations between antecedents' of achievement goals and mastery goals

Effect	Direct effect	Indirect effect	Total Effect	T	*R2*
On Mastery Approach Goals					.21
Self Efficacy	.01	.00	.01	0.22	
Task Value	.34	.00	.34	7.68*	
Perceived Parents' Mastery Goals	.19	.05	.24	6.04*	
Perceived Teachers' Mastery Goals	.07	.12	.19	2.20*	
On Mastery Avoidance Goals					.18
Self Efficacy	-.06	.00	-.06	-1.34	
Task Value	.07	-.04	.03	1.59	
Perceived Parents' Mastery Goals	.29	.00	.29	9.13*	
Perceived Teachers' Mastery Goals	-.01	.01	.00	-.33	
Fear of Shame and Embarrassment	.17	.01	.18	2. 68*	
Fear of Devaluing One's Self Estimate	.11	.00	.11	2.20*	
Fear of Having Uncertain Future	.00	.00	.00	-.023	
Fear of Losing Social Influence	.05	.00	.05	1.06	
Fear of Upsetting Important Others	-.02	-.01	-.03	-.37	

Besides, mastery approach goals, self efficacy, task value, perceived parents' performance goals, perceived teachers' performance goals, fear of shame and embarrassment, fear of devaluing one's self-estimate, fear of having uncertain

future, fear of important others losing interest, and fear of upsetting important others accounted for 21 % of the variance in performance approach goals. Parameter estimates revealed that higher levels of mastery approach goals *(β=.24)*, self efficacy *(β=.09)* and perceived parents' performance goals (*γ=.20*) were positively related to performance approach goals. These results implied that students who focus on learning new things, or improving skills in science course, and have positive judgments about their own capacity to learn science, and who perceive that their parents emphasizes demonstrating ability tend to study for the reasons of getting good grades in science. The relationships between task value *(β=.08)*, perceived teachers' performance goals *(γ=.04)*, fear of shame and embarrassment (*γ=.07*), fear of devaluing one's self-estimate (*γ=.00*) fear of having uncertain future (*γ=-.05*), fear of important others losing interest *(γ=-.01)*, and fear of upsetting important others *(γ=.07)* and performance approach goals were not statistically significant (see Table 4. 30).

Further, mastery avoidance goals, self efficacy, task value, perceived parents' performance goals, perceived teachers' performance goals, fear of shame and embarrassment, fear of devaluing one's self-estimate, fear of having uncertain future, fear of important others losing interest, and fear of upsetting important others accounted for 35 % of the variance in performance avoidance goals. Parameter estimates revealed that higher level of mastery avoidance goals *(β=.43)*, task value *(β=.09)*, perceived parents' performance goals (*γ=.23*) and fear of upsetting important others *(γ=.14)* were positively related to performance avoidance goals. These results implied that students who focus on avoiding not understanding the material, and who perceive science tasks and activities as interesting, useful, and important and perceive that their parents emphasizes the importance of high grades science tend to study for the avoiding getting the worst grades. Besides, students who experience a fear of upsetting other people because of the academic failure, tend to focus on avoiding not looking stupid or dumb in comparison to others. The relationships between self efficacy *(β=.01),* perceived teachers' performance goals *(γ=.04)*, fear of shame and embarrassment (*γ=-.04*), fear of devaluing one's self-

estimate (*γ=.06*) fear of having uncertain future (*γ=.01*), fear of important others losing interest *(γ=.02)*, and performance avoidance goals were not statistically significant (see Table 4. 30).

Table 4. 30. Relations between antecedents' of achievement goals and performance goals

Effect	Direct effect	Indirect effect	Total Effect	T	*R2*
On Performance Approach Goals					.21
Mastery Approach Goals	.24	.00	.24	7. 22*	
Self Efficacy	.09	.00	.09	2.09*	
Task Value	.08	.14	.22	1.69	
Perceived Parents' Performance Goals	.20	.00	.20	5.99*	
Perceived Teachers' Performance Goals	.04	.00	.04	1.21	
Fear of Shame and Embarrassment	.08	.05	.13	1.32	
Fear of devaluing one's self estimate	-.05	-.03	-.08	-1.10	
Fear of having uncertain future	-.03	.00	-.03	-.68	
Fear of Losing Social Influence	.00	.00	.00	-.004	
Fear of Upsetting Important Others	.08	-.01	.07	1.33	

Table 4. 30. (Continued)

On Performance Avoidance Goals				.35
Mastery Avoidance Goals	.43	.00	.43	14. 64*
Self Efficacy	.01	-.03	-.02	.37
Task Value	.09	.02	.11	2.17*
Perceived Parents' Performance Goals	.23	.00	.23	7.47*
Task Value	.09	.02	.11	2.17*
Perceived Parents' Performance Goals	.23	.00	.23	7.47*
Perceived Teachers' Performance Goals	.04	.00	.04	1.34
Fear of Shame and Embarrassment	-.04	.10	.06	-.68
Fear of Devaluing One's Self Estimate	-.06	.04	-.02	-1.34
Fear of Having Uncertain Future	.01	.00	.02	.34
Fear of Losing Social Influence	.02	.02	.04	.52
Fear of Upsetting Important Others	.14	-.01	.13	2.72*

Concerning the relationship among the variables examined as antecedents of achievement goals, results showed that task value, perceived parents' mastery goals, perceived teachers' mastery goals, fear of shame and embarrassment, fear of devaluing one's self-estimate, fear of having uncertain future, fear of important others losing interest, and fear of upsetting important others accounted for 52 % of

the variance in self efficacy. Parameter estimates revealed that higher levels of task value *(β=.66)*, perceived parents' mastery goals *(γ=.08)*, and perceived teachers' mastery goals *(γ=.08)*, were positively related to self efficacy. However, fear of devaluing one's self-estimate *(γ=-.11)*, was negatively related to self efficacy. These results implied that students who perceive science tasks and activities as interesting, useful, and important and who perceive that their parents and teachers emphasizes learning and understanding of science generally have positive judgments about their own capacity to learn science. On the contrary, students who think that failure in science can devalue their self esteem, generally have low self efficacy in science. The relationships between fear of shame and embarrassment *(γ=-.02)*, fear of having uncertain future *(γ=.00)*, fear of important losing interest *(γ=.07)*, fear of upsetting important others *(γ=.04)*, and self efficacy were not statistically significant (see Table 4. 31).

Moreover, perceived parents' mastery goals, perceived teachers' mastery goals, fear of shame and embarrassment, fear of devaluing one's self-estimate, fear of having uncertain future, fear of important others losing interest, and fear of upsetting important others accounted for 18 % of the variance in task value. Parameter estimates revealed that higher levels of perceived parents' mastery goals *(γ=.14)*, perceived teachers' mastery goals *(γ=.26)*, fear of shame and embarrassment *(γ=.22)*, were positively related to task value. These results implied that students who perceive that their parents and teachers emphasizes learning and understanding of science, and who think that the failure in science make feel them shame and embarrassment perceive science tasks and activities as interesting, useful, and important. The relationships between fear of devaluing one's self-estimate *(γ=-.09)*, fear of having uncertain future *(γ=.01)*, fear of important losing interest *(γ=.04)*, fear of upsetting important others *(γ=-.05)* and task value were not statistically significant (see Table 4. 31).

Table 4. 31. Relations among motivational beliefs, fear of failure and socio cultural influence

Effect	Direct effect	Indirect effect	Total Effect	t	*R2*
On Self Efficacy					.52
Task value	.66	.00	.66	25.63*	
Perceived Parents' Mastery Goals	.08	.09	.17	3.43*	
Perceived Teachers' Mastery Goals	.08	.24	.32	3.15*	
Fear of Shame and Embarrassment	-.02	.15	.13	-.36	
Fear of Devaluing One's Self Estimate	-.11	-.06	-.17	-3.02*	
Fear of Having Uncertain Future	.00	.01	.01	-.10	
Fear of Losing Social Influence	.07	-.03	.04	1.78	
Fear of Upsetting Important Others	.04	-.04	.00	.87	
On Task Value					.18
Perceived Parents' Mastery Goals	.14	.00	.14	4.39*	
Perceived Teachers' Mastery Goals	.36	.00	.36	11.55*	
Fear of Shame and Embarrassment	.22	.00	.22	3.53*	
Fear of Devaluing One's Self Estimate	-.09	.00	-.09	-1.80	

Table 4. 31 (Contuniued)

Fear of Having Uncertain Future	.01	.00	.01	.31
Fear of Losing Social Influence	-.03	.00	-.03	-.70
Fear of Upsetting Important Others	-.05	.00	-.05	-.93

Overall, results concerning the relationship between achievement goals and its antecedents revealed that higher levels of perceived parents' and teachers' mastery goals emphasizes, and task value beliefs were positively related to students' mastery approach goals. Further, students' perceptions of parents' mastery goals emphasizes, fear of shame and embarrassment, and fear of devaluing one's self estimate were positively associated with mastery avoidance goals. Regarding performance goals, the results suggested that there were positive relationships between mastery approach goals, self efficacy, perceived parents' performance goals emphasizes and performance approach goals. The findings also revealed positive relationships between mastery avoidance goals, task value, fear of upsetting important others, perceived parents' performance goals and performance avoidance goals. In addition, positive relationships were found between perceived parents' and teachers' mastery goals emphasizes and students' self efficacy and task value. Moreover, fear of shame and embarrassment was positively related to students' task value. Besides, task value was positively, fear of devaluing one's self estimate was negatively related to self efficacy.

4.3.2. Relationship between Achievement Goals and their Consequences (Metacognition and Coping Strategies)

In this section, the results concerning how students' achievement goals related to their metacognition and coping strategies are presented while the following

section focuses on how antecedents of achievement goals (i.e. students' motivational beliefs, fear of failure, and socio cultural influence) are related to metacognition and coping strategies. The results showed that mastery approach goals, mastery avoidance goals, performance approach goals, performance avoidance goals, self efficacy, task value, perceived teachers' mastery goals, fear of shame and embarrassment, fear of devaluing one's self-estimate, fear of having uncertain future, fear of important others losing interest, and fear of upsetting important others accounted for 63 % of the variance in metacognition. Concerning the achievement goals, parameter estimates revealed that higher levels of performance avoidance goals (β=.08) was positively related to metacognition. These results implied that students who study for avoiding getting worst grades, tend to use metacognitive skills like planning or monitoring at higher levels. The relationships between mastery approach goals (β=.01), mastery avoidance goals (β=.02), and performance approach goals (β=.00) and metacognition were not statistically significant (see Table 4. 31).

Moreover, mastery approach goals, mastery avoidance goals, performance approach goals, performance avoidance goals, self efficacy, task value, perceived teachers' mastery goals, perceived parents' mastery goals accounted for 27 % of the variance in positive coping. Parameter estimates revealed that higher levels of mastery approach goals (β=.29), and performance approach goals (β=.07) were positively related to positive coping. These results implied that students who study for the reasons of mastering new skills, or learning new things in science course, and who study to getting high grades, or being top student tend to use much positive coping strategies when they faced with an academic failure. The relationships between mastery avoidance goals (β=.00), performance avoidance goals and positive coping were not statistically significant (see Table 4. 31).

In addition, mastery approach goals, mastery avoidance goals, performance approach goals, performance avoidance goals, perceived teachers' performance goals, fear of shame and embarrassment, fear of devaluing one's self-estimate, fear of having uncertain future, fear of important others losing interest,

and fear of upsetting important others accounted for 22 % of the variance in projective coping. Parameter estimates revealed that higher levels of mastery avoidance goals (β=.14) was positively related to projective coping. However, mastery approach goals (β=-.19) was negatively related to projective coping. These results implied that students who study for the reasons of avoiding not learning, or mastering the task tend to blame other people like their teacher because of their failure, whereas, students who study for the reasons of mastering new skills, or learning new things in science course tend to use projective coping less than others. The relationships between performance approach goals (β=.00), performance avoidance goals (β=.00) and projective coping were not statistically significant (see Table 4. 31).

Mastery avoidance goals, performance approach goals, performance avoidance goals, perceived teachers' performance goals, fear of shame and embarrassment, fear of devaluing one's self-estimate, fear of having uncertain future, fear of important others losing interest, fear of upsetting important others and projective coping also accounted for 36 % of the variance in denial coping. Parameter estimates revealed that the relationships between mastery avoidance goals (β=-.06), performance approach goals (β=-.01), performance avoidance goals (β=-.05) and denial coping were not statistically significant (see Table 4. 32).

Besides that, mastery avoidance goals performance approach goals, performance avoidance goals, perceived teachers' performance goals, fear of shame and embarrassment, fear of devaluing one's self-estimate, fear of having uncertain future, fear of important others losing interest, and fear of upsetting important others accounted for 35 % of the variance in non coping. Parameter estimates revealed that higher levels of mastery avoidance goals (β=.14), and performance approach goals (β=.09) were positively related to non coping. These results implied that students who study to getting high grades, or being top student, and who study for avoiding misunderstanding the course material blame themselves when they face an academic

failure. The relationship between performance avoidance goals (β=.05) and non coping was not statistically significant (see Table 4. 32).

Table 4. 32. Relations between achievement goals and their consequences

Effect	Direct effect	Indirect effect	Total Effect	t	*R2*
On Metacognition					.63
Mastery Approach Goals	.02	.00	.01	.04	
Mastery Avoidance Goals	.02	.03	.05	.07	
Performance Approach Goals	.00	.00	.00	-.22	
Performance Avoidance Goals	.08	.00	.08	3.08*	
On Positive Coping					.27
Mastery Approach Goals	.29	.02	.31	8.66*	
Mastery Avoidance Goals	.00	-.01	-.01	.05	
Performance Approach Goals	.07	.00	.07	2.18*	
Performance Avoidance Goals	-.02	.00	-.02	-.73	
On Projective Coping					.22
Mastery Approach Goals	-.20	.00	-.20	-6. 39*	
Mastery Avoidance Goals	.14	-.02	.12	4. 05*	

Table 4. 32. (Continued)

Performance Approach Goals	.00	.00	.00	.33	
Performance Avoidance Goals	-.06	.00	-.06	-1.87	
On Denial Coping					.36
Mastery Avoidance Goals	-.06	.04	-.02	-1.92	
Performance Approach Goals	-.01	.00	-.01	-.32	
Performance Avoidance Goals	-.02	.00	-.05	-0.6	
On Non Coping					.35
Mastery Avoidance Goals	.14	-.01	.13	4.22*	
Performance Approach Goals	.09	.00	.09	3.19*	
Performance Avoidance Goals	-.01	.00	-.01	-.33	

Overall, results suggested that higher levels of performance avoidance goals were positively related to metacognition. Additionally, the positive relationship was found between performance approach goals and positive, and non coping. Regarding to mastery goals, the results showed that mastery approach goals was positively related to positive coping, and negatively related to projective coping. Further, there were positive relationships between mastery avoidance goals and projective coping, and non coping.

4.3.3. Relationship between Antecedents (Motivational Beliefs, Fear of Failure, Socio Cultural Influence) and Consequences (Metacognition, and Coping Strategies) of Achievement Goals.

The results concerning the relationship between antecedents and consequences of achievement goals revealed that higher levels of self efficacy *(β=.59)*, task value *(β=.17)*, perceived teachers' mastery goals *(γ=.06)*, fear of shame and embarrassment *(γ=.19)* fear of having uncertain future *(.07)* were positively related to metacognition. However, fear of important losing interest *(γ=-.11)* was negatively related to metacognition. These results implied that students who perceive science tasks as interesting, useful, and important, who have positive judgments about their capability to understand science, and who think that failure in science makes them feel shame, and change their future plans tend to use metacognitive skills effectively. Further, students' perceptions about their teachers emphasize learning and understanding of science also orient them using metacognitive skills in higher level. On the contrary, students who think that their parents or teachers will not be interested in them after failure tend to plan, or monitor their learning process less effectively. The relationships between fear of devaluing one's self-estimate *(γ=.03)*, fear of upsetting important others *(γ=-.05)* and metacognition were not statistically significant (see Table 4. 33).

Moreover, parameter estimates revealed that higher levels of self efficacy *(β=.13)*, and perceived parents' mastery goals *(γ=.18)* were positively related to positive coping. These results implied that students who are high self efficious in science, and who perceive the importance of learning new things, or improving skills in science from their parents tend to asking for help, trying again, or finding out where the wrong was done when they face to an academic failure in science. The relationships between task value *(β=.05)*, perceived teachers' mastery goals *(γ=.05)* and positive coping were not statistically significant (see Table 4. 33).

In addition, in the model higher levels of perceived teachers' performance goals *(γ=.10)*, fear of having uncertain future *(γ=.24)*, fear of important losing

interest *(γ=.32)* were positively related to projective coping. However, fear of shame and embarrassment *(γ=-.14),* and fear of upsetting important others *(γ=-.17)* were negatively related to projective coping. These results implied that students who perceive the importance of high grades, and competition to others in science classes from their teachers, and who think that failure in science will change their future plans, and will decrease their parents', or teachers' interest to them tend to blame other people when they face to an academic failure in science. On the other hand, students who think that failure in science will make them feel shame in front of other people, and will make their parents, or teachers upset, they tend to use projective coping less than others. The relationships between fear of devaluing one's self-estimate *(γ=.06)* and projective coping were not statistically significant (see Table 4. 33).

Parameter estimates also revealed that higher levels of perceived teachers' performance goals *(γ=.15),* fear of having uncertain future *(γ=14)*, fear of important losing interest *(γ=.18),* projective coping *(β=.46)*, were positively related to denial coping. However, fear of shame and embarrassment *(γ=-.24),* was negatively related to denial coping. These results implied that students who perceive the importance of high grades, and ability in science classes from their teachers, and who think that failure in science will change their future plans, and will decrease their parents', or teachers' interest to them tend to try forgetting what happened when they face to an academic failure in science. On the other hand, students who think that failure will make them feel shame in front of other people, they use denial coping less than others. The relationships between fear of devaluing one's self-estimate *(γ=.06)*, fear of upsetting important others *(γ=-.01)* and denial coping were not statistically significant (see Table 4. 33).

Besides that, the model suggest that higher levels of perceived teachers' performance goals *(γ=.07),* fear of shame and embarrassment *(γ=.12),* fear of devaluing one's self-estimate *(γ=.26),* and fear of having uncertain future *(γ=.09)* were positively related to non coping. These results implied that students who

perceive the importance of high grades, and ability in science classes from their teachers, and who think that failure will make them feel shame in front of other people, change their future plans, and will orient them to judge their self esteem tend to blame themselves when they face to an academic failure in science. The relationships between fear of important losing interest *(γ=.04)*, fear of upsetting important others *(γ=.04)* and non coping were not statistically significant (see Table 4. 33).

Table 4. 33. Relationship between Antecedents and Consequences of Achievement Goals.

Effect	**Direct effect**	**Indirect effect**	**Total Effect**	**t**	***R2***
On Metacognition					.63
Self Efficacy	.59	.00	.59	19.78*	
Task Value	.17	.40	.57	5.33*	
Perceived Teachers' mastery Goals	.06	.26	.32	2.82*	
Fear of Shame and Embarrassment	.19	.12	.31	4.28*	
Fear of Devaluing One's Self Estimate	.03	-.11	-.08	1.04	
Fear of Having Uncertain Future	.07	.01	.08	2.21*	
Fear of Losing Social Influence	-.11	.02	-.09	-3.36*	
Fear of Upsetting Important Others	-.05	.00	-.05	-1.36	

Table 4. 33.(Continued)

On Positive Coping					.27
Self Efficacy	.13	.01	.14	3.10*	
Task Value	.05	.20	.25	1.22	
Perceived Parents' Mastery Goals	.18	.11	.29	5. 73*	
Perceived Teachers' Mastery Goals	.05	.12	.17	1.47	
On Projective Coping					.22
Perceived Teachers' Performance Goals	.10	.00	.10	3.18*	
Fear of Shame and Embarrassment	-.14	.01	-.13	-2.25*	
Fear of Devaluing One's Self Estimate	.06	.00	.08	1.23	
Fear of Having Uncertain Future	.24	.00	.24	5.15*	
Fear of Losing Social Influence	.32	.00	.32	6.77*	
Fear of Upsetting Important Others	-.17	-.01	-.18	-2. 92*	
On Denial Coping					.36
Perceived Teachers' Performance Goals	.15	.04	.19	5.37*	
Fear of Shame and Embarrassment	-.24	-.06	-.30	-4.03*	
Fear of Devaluing One's Self Estimate	.06	.04	.10	1.68	

Fear of Having Uncertain Future	.14	.11	.25	3.15*	
Fear of Losing Social Influence	.18	.14	.32	3.98*	
Fear of Upsetting Important Others	-.01	-.09	-.10	-.25	
Projective Coping	.46	.00	.46	15.20*	
On Non Coping					.35
Perceived Teachers' Performance Goals	.07	.01	.08	2.07*	
Fear of Shame and Embarrassment	.12	.01	.16	2.16*	
Fear of Devaluing One's Self Estimate	.26	.00	.28	6.18*	
Fear of Having Uncertain Future	.09	.00	.08	1.99*	
Fear of Losing Social Influence	.04	.00	.04	.88	
Fear of Upsetting Important Others	.06	.02	.06	.83	

Overall, results suggested that higher levels of self efficacy, task value, perceived teachers' mastery goals, fear of shame and embarrassment, and fear of having uncertain future are positively related to students' metacognition. On the contrary, there was a negative relationship found between fear of losing social influence and metacognition. Regarding to coping strategies, students' self efficacy, and perceptions about their parents' mastery goals were positively related to positive coping. Moreover, higher level of students' perceptions of teachers' performance goals, fear of having uncertain future, and fear of losing social influence were positively, fear of shame and embarrassment negatively related to projective and denial coping. There was also negative relationship between fear of upsetting important others and projective coping. Besides, projective coping positively related

to denial coping. Last but not least, students' perceptions of teachers' performance goals, fear of shame and embarrassment, fear of devaluing one's self estimate, and fear of having uncertain future were positively related to non coping.

4.3.4. Summary of Findings

The current study aimed to investigate Turkish elementary students' achievement goals in science classes in relation to their antecedents and consequences, path analysis was conducted. The model suggested following relationships:

- Students' task value, perceived parents' and teachers' mastery goals emphasizes were positively related to mastery approach goals
- Perceived parents' mastery goals, fear of shame and embarrassment, and fear of devaluing one' s self estimate were positively related to mastery avoidance goals.
- Students' mastery approach goals, self efficacy, perceived parents' performance goals were positively related to performance approach goals.
- Students' mastery avoidance goals, task value, perceived parents' performance goals, fear of upsetting important others were positively related to performance avoidance goals.
- Students' performance avoidance goals, self efficacy, task value, perceptions of their teachers' mastery goal emphasize, fear of shame and embarrassment, fear of having uncertain future were positively, fear of losing social influence were negatively related to metacognition.
- Students' mastery approach goals, performance approach goals, self efficacy, and perceived parents' mastery goals emphasize were positively related to positive coping.
- Students' mastery avoidance goals, perceived teachers' performance goals emphasizes, fear of having uncertain future, and fear of losing social influence were positively, mastery approach goals, fear of shame and

embarrassment and fear of upsetting important others were negatively related to projective coping.

- Students' perceptions about their teachers' performance goals emphasizes, fear of having uncertain future, fear of losing social influence, and projective coping were positively, fear of shame and embarrassment was negatively related to denial coping.
- Students' mastery approach goals, performance approach goals, perceptions of their teachers' performance goals emphasizes, fear of shame and embarrassment, fear of devaluing one's self estimate were negatively related to non coping.
- Students' task value, perceptions of their parents' and teachers' mastery goals emphasizes were positively, fear of devaluing one's self estimate was negatively related to self efficacy
- Students' perceptions of their parents' and teachers' mastery goals emphasizes and fear of shame and embarrassment were positively related to task value.

5. DISCUSSION

The present study aimed to investigate the antecedents and consequences of Turkish elementary students' achievement goals in science. Self efficacy, task value, fear of failure, and socio cultural influence (i.e. perceived parents' and teachers' goal emphases) were investigated as antecedents of achievement goals in science while metacognition and coping strategies were examined as consequences of achievement goals. In this section, the results of the study will be summarized and discussed.

5.1. Discussion of the Results

5.1.1. Relationship between Achievement Goals and their Antecedents (Motivational Beliefs, Fear of Failure, Socio Cultural Influence)

In the present study, the proposed model suggested that parents' goal emphases are important factors that affect students' adoption of achievement goals. According to the findings, students who perceive that their parents emphasize learning and understanding of the course materials in science tend to adopt mastery, both approach and avoidance, goals. In the same manner, students who perceive that parents emphasize getting high grades, and demonstrating ability in science tend to adopt performance, both approach and avoidance, goals. The model suggested that students who think that their parents give priority to improvement of knowledge, and skills in science tend to study not only for the reasons of learning, understanding, and mastering the course materials but also for avoiding not learning, or misunderstanding the course material. Similarly, when students think their parents give priority to grades, or ability, they tend to adopt performance goals; tend to focus on both demonstrating themselves, and avoiding looking stupid in front of othersConsistent with the current findings, Friedel, Cortina, Turner, and Midgley (2007) found, in their study examining the effects of perceived parents goal emphases on students' achievement goals, that students' perceptions of parents achievement goals is an important predictor of students' personal achievement goals.

More specifically, students who perceive that parents emphasize mastery goals were found to adopt mastery approach goals, and who perceive that parents emphasize performance goals were found to adopt performance approach goals. Likewise, Gonida, Kiosseoglou and Voulala (2007; 2009) investigated the relationship between perceived parents' goal emphases and students' achievement goals via path models. They examined trichotomous form of achievement goals; mastery goals, performance approach goals, and performance avoidance goals. The results showed that students' perceptions of parents' goals has considerable effects on students' adoption of any kind of achievement goals. Consisting with previous ones, the results of the present study suggested that while perceived mastery goals orient students to adopt mastery goals, perceived performance goals orient students to adopt performance goals, both approach and avoidance goals. The current study differ from the previous ones since considering 2X2 form of achievement goals; namely including mastery avoidance goals, and suggesting that perceived parents' mastery goal emphasize direct students not only to adopt mastery approach goals, but also to adopt mastery avoidance goals.

Regarding to teachers' goal emphases, the findings of the current study showed that students' perceptions of teachers' mastery goals are related to students' adoption of mastery approach goals. Inconsistent with previous literature, on the other hand, the model revealed non-significant relationships between perceived teachers' performance goal emphasis and students' adoption of achievement goals: Previous literature generally suggested a positive relationship between performance goal emphases and adoption of performance goals. For instance, Rooser, Midgley, and Urdan (1996) suggested that students can adopt either mastery goals or performance goals according to their perceptions of classroom goals. In other words, if students think that learning and mastering new things are important in their classroom, they tend to adopt mastery goals, but if they think that ability, or high success is important in their classroom, they tend to adopt performance goals. Similarly, Tas (2008) investigated the effects of perception of classroom goals on students' personal achievement goals, and suggested that classroom goals is one of

the predictor of achievement goals. Namely, students adopt mastery goals in the classes where self improvement and learning new things are emphasized, and they adopt performance approach goals in the classes where the importance of getting good grades is emphasized.

On the other hand, the study conducted by Friedel, Cortina, Turner, and Midgley (2007) which examined the students' achievement goals in relation to perceived teachers' goal emphases together with parents' goal emphases revealed similar results with the present study; students' mastery approach goals were predicted by both perceived parents' and teachers' mastery goals, whereas, students' performance goals were not predicted by perceived teachers' goals.

In the present study, besides socio culture influences such as perceived teacher and parents goal emphases, fear of failure was also investigated as an antecedent of students' achievement goals in science. According to the findings, students who have high fear of failure in science tend to adopt avoidance goals. In other words, students who think that failure in science classes make them feel not only shame and embarrassment, but also devalue their self esteem tend to study for avoiding not learning, or misunderstanding. In addition, students who think that their failure in science upsets their parents, or teachers, tend to study for avoiding getting the worst grades, or being the lowest performer in class. Consistent with the current findings, Elliot and Sheldon's (1997) study examining relationship between fear of failure and students' adoption of achievement goals revealed positive relationships between fear of failure and avoidance goals. Additionally, Conroy, Elliot, and Hofer (2003) proposed that fear of failure is positively associated to avoidance goals. Elliot and Conroy (2004) also suggested that students who have high fear of failure tend to focus on avoiding misunderstanding and getting worst grades. Furthermore, Nien and Duda (2008) confirmed previous results, and found that fear of failure is positively linked to avoidance goals.

In the current study, another variable examined as one of the antecedents of students' achievement goals was self efficacy. The path model indicated that students with higher levels of self efficacy tend to adopt performance approach goals. However, the relationships between mastery approach goals, mastery avoidance goals, performance approach goals, and self efficacy were not significant. Although, it was an expected result, and confirmed the previous ones that self efficacy positively related to performance approach goals, it was surprising to find no significant relation between self efficacy and the other goals. Because the literature generally suggests significant relationships between self efficacy and achievement goals. For example, Elliot and Church (1997) investigated these relationships and found that self efficacy is positively related to mastery goals, and performance approach goals, whereas, it is negatively related to performance avoidance goals. In another study, Bong (2001) investigated the relationship between self efficacy and achievement goals, and offered positive relationship between mastery goals, performance approach goals and self efficacy. Liem, Lau and Nie (2008) also reported the positive relationship between mastery goals, performance approach goals and self efficacy. They also suggested that self efficacy negatively related to performance avoidance goals. Besides, Khezri Azar, Lavasani, Malahmadi, and Amani (2010) also suggested that self efficacy is positively related to mastery goals, and performance approach goals, whereas, it is negatively related to performance avoidance goals.

Another unexpected finding was found between students' task value beliefs and achievement goals. According to the results, students who find science tasks interesting, enjoyable, or important tend to study for improving their knowledge, mastering new skills, or avoiding not looking stupid in front of others. While the positive relationship between mastery approach goals and task value was expected, a positive effect of task value on performance avoidance goals is surprising, since the related literature suggest negative relationship between performance avoidance goals task value. For instance, Wolters, Yu, and Pintrich (1996) investigated the relationship between task value and achievement goals, and

suggested that task value is positively related to mastery and performance approach goals, whereas, it is negatively related to performance avoidance goals. Moreover, Xiang, McBride and Bruene (2004) examined the relations of task value with achievement goals, and suggested positive relationship between mastery goals and task value. Liem, Lau and Nie (2008) also reported a positive relationship between task value and mastery approach goals. They also suggested that task value is not significantly related to performance avoidance goals. Why perceiving value in science tasks lead to adopt not only mastery approach goals but also performance avoidance goals can be a cultural factor. Although, Turkey had a traditional collectivist culture, nowadays the individualist trend is also increasing. Therefore, the characteristics of both individualist and collectivist cultures are apparent in Turkish society (Kağıtçıbaşı, 1994; Tsuladze; 2007). In collectivist cultures, people define their identity according to society. Additionally, these cultures give priority to group goals, not person's own goals (Markus, Kitayama, & Heiman, 1996). Elliot, Chirkov, Kim, and Sheldon (2001) suggested that people from collectivist cultures can adopt much performance avoidance goals than others. Furthermore, in these cultures, performance avoidance goals are not related to maladaptive outcomes because people emphasize and give value avoiding negative outcomes. Supporting this idea, Bong's (2001) study which investigated the relationship between task value and achievement goals in another collectivistic culture, Korea, revealed that task value is positively associated to performance avoidance goals. Besides the collectivistic culture, mentioned Turkish test oriented, competitive educational system can also lead students who find science tasks useful, interesting, or enjoyable, study for avoiding getting worst grade, or being lowest performer in the class: In Turkey, educational system is highly competitive and examination oriented. Indeed, when the data of the present study were collected, middle school students were entering placement exams at the end of each academic year. These exam results were essential to be admitted to better high schools. In such a competitive environment, students tend to focus not only on demonstrating their ability to others or getting high grades but also avoiding being the lowest performer or getting the worst grades. These contextual and cultural factors can provide an explanation as to why, in the

present study, positive associations were found between adaptive motivational beliefs and performance goals, including positive relationships found between self-efficacy and performance approach goals and between task value and performance avoidance goals.

Concerning the interrelationships among antecedents of achievement goals, the path model also suggested that students' who perceive that their parents and teachers emphasize learning, and understanding of the course materials in science generally have positive judgments about their own capacity to learn science (i.e. self-efficacy), and perceive science activities as interesting, useful, and important. The findings were consistent with previous research: For instance, Rooser, Midgley and Urdan (1996) investigated the relationship between students' perceptions of classroom goals and their self efficacy, and they found a positive relationship between self efficacy and students' perception of classroom mastery goals. In another study, Gutman (2006) examined the same relations and reported that students' perception of classroom mastery goals was positively linked to their self efficacy. In other words, students who perceive an emphasis on learning and understanding the course material in science classrooms have more positive beliefs about their capacity to learn the material than others. Furthermore, Brunel (2006) investigated the relation between students' perceptions of classroom goals and task value. According to the results, students who perceive mastery goals from their teachers tend to give much value on learning new skills than students who perceive performance goals from their teachers. Although, abovementioned literature clearly established the link between perceived teacher goal emphases and students' self-efficacy and task value beliefs, there is no previous research examining the relationship between perceived parent goal emphases and students' motivational beliefs. However, expectancy- value theory stressed that students' considerations about their social environment, not only school, but also home environment, have significant role in the development of their motivational beliefs. Consistent with this proposition, current study revealed a positive association between perceived parent mastery goal emphasis and students' adaptive motivational beliefs. Indeed, mastery

oriented parents focus on their children's improvement and learning progress over time . They emphasize the importance of learning new things, developing skills, and understanding course material (Gonida, Kiosseoglu,& Voulala, 2007). Besides, mastery oriented teachers choose meaningful and interesting tasks for their students, help students to participate in decision making process, give opportunity to develop responsibility, and focus on individual improvement, and process (Ames, 1992). Therefore, students who think that their parents and teachers give priority to self improvement tend to have positive judgments about their ability and high opinion of their tasks.

Besides that, students' fear of failure was found to be negatively linked to their self efficacy, and positively linked to their task value. More specifically, students who think that failure in science lead to a decrease in their self esteem generally have negative judgments about their capacity to learn science. Furthermore, students who think that failure in science make them feel shame and embarrassment perceive science tasks as useful, interesting or important. Consistent with the current findings, Pantziara and Philippou's (2007; 2009) study revealed that fear of failure was negatively associated with self efficacy. The positive relation found between fear of failure and task value in the present study, on the other hand, was surprising: The relevant literature suggests that fear of failure is negatively associated with task value. For example, Pantziara and Philippou (2006) investigated the relation between fear of failure and students' intrinsic value. They suggest that fear of failure is negatively linked to students' task value. However, cross cultural comparisons suggest that collectivist cultures have higher levels of fear of failure than individualistic cultures. Additionally, in these cultures, fear of failure is not linked to negative outcomes (Elliot, Chirkov, Kim, & Sheldon, 2001). Consistent with the related researches which compares Asian-American and non Asian students, proposed that although, Asian-American students have higher fear of failure, this negative motive is not related to negative consequences (Eaton& Dembo, 1997; Zusho et al., 2005). In the current study, results showed that students who have higher levels of intrinsic interest in science activities and task, find these activities

and tasks as useful and important tend to have higher levels of fear of failure. This finding can also be partly explained by the competitive Turkish educational system: In Turkey, students who want to pursue science related careers must be good at science and score high at science tests in the university entrance exam. One wrong answer can cause a dramatic decline in their ranking, decreasing their likelihood of being admitted to a science related department. Therefore, it is not unusual that students with higher levels of utility value and attainment (importance) value experience higher levels of fear of failure.

Moreover, results demonstrated that task value was strongly associated with self efficacy. In other words, the path model suggested that students who find science tasks useful, interesting or enjoyable tend to have much positive judgments about their capability to learn science. Actually, self efficacy and task value are two main components of expectancy-value theory. These two motivational beliefs are suggested to have strong influence on students' performance, persistence, and choice of an academic task (Wigfield& Eccles, 1992). Empirical research also supported the theoretical proposition concerning the link between task value and self-efficacy (Bong, 2001; Cole & Denzine, 2004; Eccles & Wigfield, 1995; Eccles & Wigfield 2002; Jacobs, Lanza, Osgood, Eccles & Wigfield, 2002; Pajares & Miller, 1994; Senler & Sungur; 2009). Hence, it is not surprising that task value was found to be positively linked to self efficacy in the present study.

5.1.2. Relationship between Achievement Goals and their Consequences (Metacognition and Coping Strategies)

The path analysis results showed that students who study for avoiding getting worst grades, looking dumb in front of their peers (performance avoidance goals) tend to use metacognitive skills like planning or monitor more effectively than others. It was unexpected that performance avoidance goals rather than mastery approach goals were positively related to metacognition because the relevant

literature demonstrated that adaptive strategy usage is positively related to mastery goals, and negatively related to performance avoidance goals. For example, Elliot, McGregor and Gable (1999) examined the relationship between achievement goals and .metacognitive strategy use. Results revealed that while mastery goals were positively linked to use of deep learning strategies, performance approach and avoidance goals were positively related to use of surface learning strategies. Additionally, performance avoidance goals were found to have a positive relationship with disorganization. Furthermore, Coutinho and Neuman (2008) also investigated the relationship between students' achievement goals and their metacognitive strategy usage. According to the results, students who adopt mastery approach goals use both surface processing, and deep processing. On the contrary, students who adopt performance approach goals use surface strategies; while, students with performance avoidance goals were found to be disorganized. Recently, Ommundsen (2009) investigated the relationships between metacognitive strategies and achievement goals. The results demonstrated that students who focus on improving their knowledge and demonstrating their abilities, who adopt mastery and performance approach goals use more adaptive learning strategies. Furthermore, students who focus on not looking unsuccessful or stupid, adopt performance avoidance goals are not likely use metacognitive strategies effectively.

Concerning the relationship between students' achievement goals and their use of coping strategies in science, the path analysis revealed that when faced with a failure, students who study for the reasons of mastering new skills, or learning new things in a science course (i.e. adopting mastery approach goals) try to find where the mistake was done, study harder for the next time, and do not blame other people for their failure. On the contrary, students who study for the reasons of avoiding not learning, or mastering the task (i.e. adopting mastery avoidance goals) tend to blame other people like their teacher for their failure. Moreover, students who study to get high grades, or to be a top student (i.e. adopting performance approach goals), try to find where the mistake was done, study harder for the next time, and blame their ability for the failure when they face an academic failure in science. Overall results

suggested that mastery approach goals are positively linked to adaptive coping strategies, and negatively linked to maladaptive coping strategies. In contrast, mastery avoidance goals are positively related to maladaptive coping strategies. Furthermore, performance approach goals were found to be positively related to both adaptive and maladaptive coping strategies. Last but not least, the present results demonstrate that performance avoidance goals are not related to maladaptive coping strategies. It was unexpected, because the literature generally suggests positive relationship between these two variables. For example, Brdar, Rijavec and Loncaric (2006) investigated the relationship between achievement goals and coping strategies. Findings of their study suggested that students with mastery goals use more adaptive coping strategies while students with performance goals use more maladaptive coping strategies. Moreover, Friedel, Cortina, Turner and Midgley (2007) examined the same relationship and found that mastery goals are positively related to the use of adaptive strategies like positive coping and negatively related to the use of maladaptive strategies like projective coping. On the contrary, performance oriented students were found to use less adaptive strategies. Additionally, performance goals were found to be negatively related to positive coping. In a similar study, Taye and Zhou (2009) investigated the association between achievement goals and students' coping strategies. Results implied that students with mastery goals use adaptive coping strategies like active coping, and planning, whereas students with performance avoidance goals use maladaptive coping strategies like venting emotions, and denial.

Inconsistent with literature, why Turkish elementary students who adopt performance avoidance goals tend to use metacognitive strategies much effectively than others, and do not use maladaptive coping strategies may be due to the cultural factors and test oriented Turkish educational system. As mentioned before, collectivistic cultures, like Turkey, tend to adopt more performance avoidance goals. Furthermore, performance avoidance goals are not related to maladaptive outcomes in these cultures (Elliot, Chirkov, Kim, & Sheldon, 2001). Supporting this idea, Sungur and Şenler (2009) investigated the relationship between achievement goals

and students' metacognition among Turkish high school students, and suggest that performance avoidance goals have positive association with students' metacognitive strategy usage.

5.1.3. Relationship between Antecedents (Motivational Beliefs, Fear of Failure, Socio Cultural Influence) and Consequences (Metacognition, and Coping Strategies) of Achievement Goals

Path analysis results showed that students who have positive beliefs about their capacity to learn science, and students who find science tasks useful, important or enjoyable tend to use metacognitive strategies more effectively than students with lower levels of self-efficacy and task value beliefs. Besides, high self-efficacious students were found to use adaptive coping strategies at higher levels. Consistent with the findings, Mousoulides and Philippou (2005) found that students with high self efficacy and task value beliefs use metacognitive learning strategies more actively. Moreover, Coutinho's (2008) study revealed that self-efficacious students use deeper metacognitive strategies than students with low self efficacy. Concerning the coping strategies, Hsieh (2005) investigated the relationship between self efficacy and coping strategies. The results demonstrated that students with high self efficacy use more adaptive strategies than their peers. Furthermore, Devenport and Lane (2006) examined the relationship between self efficacy and coping strategies. The findings of the study suggested that active coping, such as seeking advice and time management is related to higher levels of self efficacy. In other words, self efficious students were found to use adaptive coping strategies at higher levels. To sum up, students with high self efficacy tend to use much deeper learning strategies, and try to find where the mistake was and study harder for the next time when they face an academic failure in science. Additionally, students with high task value also tend to use more effective learning strategies than students with low task value.

Regarding the relationship between fear of failure and consequences of achievement goals; metacognition and coping strategies, the results showed that students who see the failure as an event which makes them feel shame, and change

their future plans tend to use metacognitive skills effectively. On the contrary, students who think that they will lose social environment's interest after the failures, like their parents' or teachers' interest, tend to plan, or monitor their learning process less effectively. Regarding the coping strategies, students who think that failure will make them feel shame in front of other people tend to blame themselves not others, and do not try to forget what happened or ignore the failure. Furthermore, students who think that failure will orient them to judge their self esteem tend to blame themselves when they face to an academic failure in science. On the other hand, students who think that failure will change their future plans tend to blame not only themselves, but also other people because of the failure, and try to forget, or ignore the failure when they face an academic failure. Moreover, students who think that failure will decrease other people's, their parents', or teachers' interest in them tend to blame other people, and try to forget the failure. Lastly, students who think that failure will make their parents, or teachers upset, tend to blame other people less when they face an academic failure in science. Long of short, inconsistent with the previous findings, the currents study suggest that students' fear of failure linked not only to maladaptive, but also to adaptive metacognitive and coping strategies. The previous findings generally suggest that students' fear of failure is associated to maladaptive outcomes like using maladaptive coping strategies. To illustrate, Blankstein, Flett, and Watson (1992) investigated the relationship between fear of failure and coping strategies. According to the results, students who have fear of failure, tend to use emotion focused, namely maladaptive coping strategies. In another study, Veisson, Leino, Ots, Ruus and Sarv (2004) investigated the relationship between fear of failure and academic coping, and confirmed that students with low fear of failure were found to be more successful in coping than students with high fear of failure. Besides, Bartels, and Magun-Jackson (2008) investigated the relationship between fear of failure and metacognition, and suggested negative relationship between fear of failure and metacognitive strategy usage. In a similar study, Bartels, Magun-Jackson and Ryan (2010) examined the same relationship and confirmed the previous results. In other words, according to

the results, students with high fear of failure cannot use adaptive learning strategies as much as students with low fear of failure.

Furthermore, students' perceived teacher mastery goal emphasis was found to be positively linked to their metacognitive strategy use. Consistent with the present findings, Ames and Archer's (1988) study demonstrated a positive relationship between students' use of learning strategies and perceived teacher mastery goal emphasis.. In another study, Lyke and Young (2006) examined the relationship between students' perceptions about achievement goals in learning environment, and use of cognitive strategies. According to the results, students' perceptions of classroom mastery goals were positively associated with their use of deep cognitive strategies. Additionally, there were no relationship between students' perceptions of classroom performance goals and strategy usage. Additionally, Young (2007) examined the effects of perceived classroom goals on students' strategy usage. The findings suggested that students experiencing learning environments where learning and understanding of science tasks are emphasized tend to use deeper cognitive strategies.

On the contrary, the path model suggest that students who perceive the importance of high grades, and ability in science classes from their teachers, tend to blame not only themselves, but also other people for their failure, and try to forget what happened, ignore the failure. In other words, students who perceive performance goals from their teachers, tend to use projective, denial and non coping strategies, namely maladaptive coping strategies. Consistent with the current findings, Ntoumanis, Biddle, and Haddock (1999) found that students who perceive performance goals in classrooms tend to adopt maladaptive coping strategies. In another study, Lau and Nie (2008) examined the relationship between classroom goal structure and avoidance coping strategies. According to the results, students who perceive demonstrating ability, and getting high grades are important in their classrooms tend to adopt avoidance coping strategies; they tend to give up when the task is difficult. Moreover, Friedel, Cortina, Turner and Midgley (2007) investigated the relationship between perceived teachers' and parents' achievement goals and

students' coping. According to the results, there is an indirect relationship between students' perceptions of teachers' achievement goals and students' use of coping strategies with one exception. The researchers suggested also a direct, positive relationship between students' perceptions about teachers' performance goals and projective coping.

5.2. Conclusions

The findings of the present study offer the following conclusions about 7th grade Turkish elementary students:

- Students who have positive judgments about their capacity to learn science tend to study for demonstrating their ability, use metacognitive strategies more effectively, and use adaptive coping strategies.
- Students who find science tasks as useful, interesting, or enjoyable tend to have positive beliefs about their capacity to learn science, study for their self improvement, and avoiding getting worst grades, tend to use metacognitive strategies more effectively.
- Students who think that failure make feel them shame and embarrassment tend to study for avoiding misunderstanding or not learning course material, use metacognitive strategies more effectively, find science tasks as useful, interesting or enjoyable, blame themselves not other people for the failure, and less try to forget the failure than others.
- Students who think that failure make them judge their self esteem tend to study for avoiding misunderstanding or not learning course material, blame themselves when they face an academic failure, and have low self efficacy.
- Students who think that failure will change their future plans tend to use metacognitive strategies more effectively, blame both themselves and other people because of their failure, and try to ignore the failure when they face an academic failure.

- Students who think that failure make lose them social influence tend to use metacognitive strategies less effectively, blame other people because of their failure and try to ignore the failure when they face an academic failure.
- Students who think that failure make upset other important people, like their parents or teachers, tend to study for avoiding getting worst grades, or looking dumb in front of their peers, try to ignore the failure, and do not blame other people when they face an academic failure.
- Students who perceive the significance of the self improvement from their parents tend to study for learning new things, avoiding misunderstanding the course material in science, have positive beliefs about their capacity to learn science, find science tasks useful, important, or enjoyable, and try to find where the mistake was, or study harder for the next time.
- Students who perceive the importance of high grades, or ability in science from their parents tend to study for demonstrating their ability, getting high grades, and avoiding getting worst grades, or looking dumb in front of their peers.
- Students who perceive the significance of the self improvement from their science teachers tend to study for mastering new skills, or learning new things in science, use metacognitive strategies more effectively, have positive beliefs about their capacity to learn science, and find science tasks useful, important, or enjoyable.
- Students who perceive the importance of high grades, or ability in science from their science teachers tend to blame not only themselves, but also other people because of their failure, and try to forget the failure when they face an academic failure.
- Students who study for learning new things or mastering new skills in science tend to try to find out what went wrong or study harder for the next time when they face an academic failure, and they blame other people less because of their failure.
- Students who study for avoiding misunderstanding the course material, tend to blame both themselves and other people because of their failure.

- Students who study for demonstrating their ability, getting high grades tend to try to find out what went wrong or study harder for the next time, and blame themselves when they face an academic failure.
- Students who study for avoiding getting worst grades, or looking dumb in front of their peers tend to use metacognitive strategies more effectively.

5.3. Implications

The present study underlines the importance of teachers' role on students' motivation, and behavior. While perceived teachers' mastery goal emphases are associated with the students' positive outcomes, perceived teachers' performance goal emphases are associated with the students' negative outcomes. In science classrooms in which the significance of the self improvement is stressed by science teachers, students study for learning new things, and improving their skills in science. In other words, they adopt mastery approach goals. Considering mastery approach goals' consequences, their positive relations with adaptive coping, and negative relations with maladaptive coping strategies, it is important to promote students to adopt mastery approach goals. Besides that, in science classrooms in which the significance of the self improvement is stressed by science teachers, students also use metacognitive and positive coping strategies at higher level. Moreover, in these classrooms, students also tend to have high self efficacy, and find science tasks as useful, interesting, or enjoyable more than others. In contrast, in science classrooms in which the importance of high grades, or ability is stressed by science teachers, students tend to use maladaptive coping strategies such as blaming their ability, other people, and ignoring the failure. Therefore, these findings suggest that teachers should emphasize mastery goals, and avoid creating a competitive environment. There are several different ways to create a mastery oriented classroom. Epstein (1989) defined six dimensions of classrooms that effect students' motivation: Task, Authority, Recognition, Grouping, Evaluation, and Time. The task dimension refers to learning activities. In order to emphasize mastery goals in the classrooms, teachers can use different types of tasks. The difficulty of the task is also an important factor. The task should be challenging, but in an optimal level. The

second dimension, authority, concerns the students' rights over learning activities. Students should have some choice and control in the classroom settings. Teachers should give them leadership roles. Recognition involves using rewards. Each student in the class should have a chance to earn reward. Rewarding individual learning and progress, not normative comparisons, can emphasize students, the importance of improving knowledge. The other dimension, grouping, refers group works. Teachers can allocate time, and orient students to work with their peers in the classroom. Evaluation focuses on methods that used to assess students' learning. Teachers should use private evaluation methods, because a public evaluation stresses the social comparisons so it emphasizes performance goals. Teachers should determine evaluation criteria that allow assessing individual progress to make students focus on self improvement. The last component, time, refers to time for completing work. Teachers should adjust time according to the workload. Given time should also allow students to plan their timetables for the progress (Ames, 1992; Pintrich& Shunk, 2002).

Regarding the parents effect, the findings demonstrated that home environment also has considerable influence on students' motivation. While perceived parents' mastery goal emphases are associated with the students' positive outcomes, perceived parents' performance goal emphases are associated with the students' negative outcomes. For instance, students who perceive that learning new things is important from their parents, tend to adopt mastery goals, whereas, students who perceive that ability is important in science from their parents tend to adopt performance goals. Additionally, students who think that their parents give priority to the their self improvement, tend to have high self efficacy, task value, tend to study for learning new things, or improving their skills in science, and misunderstanding the course material. On the other hand, students who think that their parents give priority to the their ranking with respect to other students, tend to study for demonstrating their ability, getting high grades, and avoiding getting the worst grades, or looking dumb in front of their peers. Therefore, these findings suggest that parents should emphasize mastery goals to their children, namely create a mastery

oriented environment in their home. Parents can focus on their children's improvement on science to lead them focus on enhancing their knowledge and skills 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. 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 mastery oriented home environments.

In addition, results of the current study revealed that self-efficacious students tend to use metacognitive strategies like planning, monitoring or evaluating more effectively than others in science classes. The strongest predictor of the metacognition was self efficacy. Students who use metacognitive strategies at higher level refer to students who are aware of their own learning process, and bring better academic performance. Students with high self efficacy also use adaptive coping strategies when they face an academic failure. Shortly, the present study suggests that self efficacy has a conspicuous role on 7^{th} grade Turkish elementary students' learning. Therefore, educators, teachers and researchers should be aware of the importance of self efficacy, and try to increase students' positive judgments about their capacity to learn science. Accordingly, teachers are suggested to choose different types of tasks in science classes and give corrective feedbacks to students' work. Instead of saying "good job", teachers can focus on what the students did right, and share their opinion with the students. Furthermore, teachers can give challenging science tasks to students to make them believe themselves to learn new things (Linnerbrink& Pintrich, 2003). On the other hand, students thought that the failure will decrease their self esteem is negatively linked to students' self efficacy. For this reason, teachers and parents should help student see mistakes, or failure as a part of learning. Students should be able to attribute their failures in science to their inadequate effort which is improvable and under their own control. Otherwise, if classroom or home environment leads students to attribute their failures to inadequate ability which is perceived as a stable characteristic by students, this can

have detrimental effects on self-efficacy (Paulsen & Feldman, 2005; Schommer, 1994).

Moreover, the present study revealed that students who find science tasks as useful, interesting, or enjoyable tend to have positive beliefs about their capacity to learn science, study for their self improvement, and tend to use metacognitive strategies more effectively. Making connections between what students learn in the classroom and their daily lives, designing meaningful and challenging activities, using variety and personal tasks, discussing rationales of school work by focusing on the importance of the work, giving students opportunities for choice and control in the class can help to increase students' task value (Pintrich& Schunk, 2002). By the way, increasing students' task value will also increase their self efficacy.

5.4. Limitations and Suggestions for Future Research

There are some limitations in this study. Firstly, it is a cross sectional study, therefore, the observed relationships do not imply cause and effect relations. Future studies can use longitudinal designs to establish cause and effect relations. Secondly, this study examined the proposed relationships within the science domain. So, whether the relationships are the same for other domains or not is not answered in the current study. Additionally, 7^{th} grade, Turkish elementary students participated in the study. The participants of the study were from Kutahya, Turkey. Therefore, the study cannot be generalized to all Turkish elementary students, and across other age groups. Besides that, the present study investigated perceived parents' and teachers' achievement goals without making an approach-avoidance distinction. In future investigations, the social goals can be examined as 2X2 form of achievement goals.

Moreover, the findings of the present study solely rely on students' responses to self-report instruments. Future studies can use qualitative data collection procedures such as interviews to validate and get an in-depth understanding of the observed relationships. In addition, the present study surprisingly suggested that

Turkish students' fear of failure in science is related to both adaptive and maladaptive outcomes. With regard to cultural factors, students' fear of failure in science and its association with other motivational beliefs can be another study subject. Besides, the current study also offered a positive relationship between students' perceptions of their parents' goals and their adaptive coping strategies. This relationship also needs more investigations and confirmation.

Finally, in the present study, relationship between perceived parents' and teachers' goal emphases and students' achievement goal were investigated. Future studies can examine how these socio cultural goals are effected by demographic variables. Furthermore, how students' personal achievement goals, perceived parents' goals emphasis, and perceived teacher goal emphasis interact with each other can be another study subject. Such studies can shed light into what happens if there is conflict in parents' and teachers' goal emphases.

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APPENDICES

APPENDIX A
MOTIVATED STRATEGIES FOR LEARNING QUESTIONNAIRE

Self Efficacy

- I believe I will receive an excellent grade in this class
- I'm certain I can understand the most difficult material presented in the readings for this course
- I'm confident I can understand the basic concepts taught in this course
- I'm confident I can understand the most complex material presented by the instructor in this course
- I'm confident I can do an excellent job on the assignments and tests in this course
- I expect to do well in this class
- I'm certain I can master the skills being taught in this class
- Considering the difficulty of the course, the teacher, and my skills, I think I will do well in this class

Task Value

- I think I will be able to use what I learn in this course in other courses
- It is important for me to learn the course material in this class
- I am very interested in the content area of this course
- I think the course material in this class is useful for me to learn
- I like the subject matter of this course
- Understanding the subject matter of this course is very important to me

Metacognitive Self Regulation

- During the class time I often miss important points because I'm thinking of other things
- When I am reading for this course, I make up the questions to help focus my reading
- When I became confused about something I'm reading for this class, I go back and try to figure it out
- If course material is difficult to understand, I change the way I read the material
- Because I study new course material thoroughly, I often skim it to see how it is organized
- I ask myself questions to make sure I understand the material I have been studying in this class
- I try to change the way I study in order to fit the course requirements and instructor's teaching style
- I often find that I have been reading for class but don't know what it was all about
- I try to think through a topic and decide what I am supposed to learn from it rather than just reading it over when studying
- When studying for this course I try to determine which concepts I don't understand well
- When I study for this class, I set goals for myself in order to direct my activities in each study period
- If I get confused taking notes in class, I make sure I sort it out afterwards

ÖĞRENMEDE GÜDÜLEYICI STRATEJILER

Öz yeterlilik

- Fen bilgisi dersinden çok iyi bir not alacağımı düşünüyorum.
- Fen bilgisi dersi ile ilgili okumalarda yer alan en zor konuyu bile anlayabileceğimden eminim.
- Fen bilgisi dersinde öğretilen temel kavramları öğrenebileceğimden eminim.
- Fen bilgisi dersinde, öğretmenin anlattığı en karmaşık konuyu anlayabileceğimden eminim.
- Fen bilgisi dersinde verilen sınav ve ödevleri en iyi şekilde yapabileceğimden eminim.
- Fen bilgisi dersinde çok basarili olacağımı umuyorum
- Fen bilgisi dersinde öğretilen becerileri iyice öğrenebileceğimden eminim.

Değer Verme

- Fen bilgisi dersinde öğrendiklerimi başka derslerde de kullanabileceğimi düşünüyorum.
- Fen bilgisi dersindeki konuları öğrenmek benim için önemlidir
- Fen bilgisi dersinin kapsamında yer alan konular çok ilgimi çekiyor.
- Fen bilgisi dersinde öğrendiklerimin benim için faydalı olduğunu düşünüyorum.
- Fen bilgisi dersindeki konulardan hoşlanıyorum.
- Fen bilgisi dersindeki konuları anlamak benim için önemlidir.

Biliş Ötesi kendi Kendini Ayarlama Stratejileri

- Fen bilgisi dersi sırasında başka şeyler düşündüğüm için önemli kısımları sıklıkla kaçırırım.
- Fen bilgisi dersi ile ilgili bir şeyler okurken, okuduklarıma odaklanabilmek için sorular oluştururum.
- Fen bilgisi dersi ile ilgili bir şeyler okurken bir konuda kafam karışırsa, basa döner ve anlamak için çaba gösteririm.
- Eğer fen bilgisi dersi ile ilgili okumam gereken konuları anlamakta zorlanıyorsam, okuma stratejimi değiştiririm.
- Yeni bir konuyu detaylı bir şekilde çalışmaya başlamadan önce çoğu kez konunun nasıl organize edildiğini anlamak için ilk olarak konuyu hızlıca gözden geçiririm.
- Fen bilgisi dersinde islenen konuları anladığımdan emin olabilmek için kendi kendime sorular sorarım.
- Çalışma tarzımı, dersin gereklilikleri ve öğretmenin öğretme stiline uygun olacak tarzda değiştirmeye çalışırım.
- Genelde derse gelmeden önce konuyla ilgili bir şeyler okurum fakat okuduklarımı çoğunlukla **anlamam**
- Fen bilgisi dersine çalışırken, konuları sadece okuyup, geçmek yerine ne öğrenmem gerektiği konusunda düşünmeye çalışırım.
- Fen bilgisi dersine çalışırken iyi anlamadığım kavramları belirlemeye çalışırım.
- Fen bilgisi dersine çalışırken, çalışmalarımı yönlendirebilmek için kendime hedefler belirlerim.
- Ders sırasında not alırken kafam karışırsa, notlarımı dersten sonra düzenlerim.

APPENDIX B

THE PERFORMANCE FAILURE APPRAISAL INVENTORY

1. When I am failing, it is often because I am not smart enough to perform successfully.
2. When I am failing, my future seems uncertain.
3. When I am failing, it upsets important others.
4. When I am failing, I blame my lack of talent.
5. When I am failing, I believe that my future plans will change.
6. When I am failing, I expect to be criticized by important others.
7. When I am failing, I am afraid that I might not have enough talent.
8. When I am failing, it upsets my "plan" for the future.
9. When I am failing, I lose the trust of people who are important to me.
10. When I am not succeeding, I am less valuable than when I succeed.
11. When I am not succeeding, people are less interested in me.
12. When I am failing, I am not worried about it affecting my future plans. (Reverse)
13. When I am not succeeding, people seem to want to help me less.
14. When I am failing, important others are not happy.
15. When I am not succeeding, I get down on myself easily.
16. When I am failing, I hate the fact that I am not in control of the outcome.
17. When I am not succeeding, people tend to leave me alone.
18. When I am failing, it is embarrassing if others are there to see it.
19. When I am failing, important others are disappointed
20. When I am failing, I believe that everybody knows I am failing.
21. When I am not succeeding, some people are not interested in me anymore.
22. When I am failing, I believe that my doubters feel that they were right about me.
23. When I am not succeeding, my value decreases for some people.
24. When I am failing, I worry about what others think about me.
25. When I am failing, I worry that others may think I am not trying.

PERFORMANS BAŞARISIZLIĞI DEĞERLENDİRME ENVENTARİ

1. Başarısızlıklarımın nedeni yeterince zeki olmamamdır.
2. Başarısız olduğumda, geleceğim belirsiz görünür.
3. Başarısız olduğumda, bu durum beni önemseyen kişileri (anne, baba, vb) üzer.
4. Başarısız olduğumda, bunu yeteneksizliğime bağlarım.
5. Başarısız olduğumda, geleceğe yönelik planlarımın değişeceğine inanırım
6. Başarısız olduğumda, beni önemseyen kişiler (anne, baba, vb) tarafından eleştirileceğimi düşünürüm.
7. Başarısız olduğumda, yeteri kadar yetenekli olmadığımdan korkarım.
8. Başarısız olduğumda, bu benim geleceğe yönelik planlarımı alt üst eder.
9. Başarısız olduğumda, benim için önemli olan kişilerin güvenini kaybederim.
10. Başarısız olduğum zamanlarda kendimi başarılı olduğum zamanlardan daha az değerli hissederim.
11. Başarılı olamadığımda, insanlar benimle daha az ilgilenir.
12. Başarısızlıklarımın gelecek ile ilgili planlarımı etkilemesinden endişe duymam.
13. Başarılı olamadığımda, insanlar bana daha az yardım etmek istiyormuş gibi hissederim.
14. Başarısız olduğumda, beni önemseyen kişiler mutsuz olurlar.
15. Başarılı olamadığımda, hemen moralim bozulur.
16. Elimde olmayan sebeplerden dolayı başarısız olmak beni rahatsız eder.
17. Başarılı olamadığımda, insanlar beni yalnız bırakma eğilimindedir.
18. Başarısız olduğumda, başkalarının başarısızlığımı görmesi beni utandırır.
19. Başarısız olduğumda, beni önemseyen kişiler (anne, baba, vb) hayal kırıklığına uğrar.
20. Başarısız olduğumda, herkesin başarısızlığımdan haberdar olduğunu düşünürüm.
21. Başarısız olduğumda, insanlar benimle ilgilenmezler.
22. Başarısız olduğumda, bana şüpheyle bakan kişilerin haklı olduğunu düşünürüm.

23. Başarılı olamadığımda, bazı insanların gözünden düşerim.
24. Başarısız olduğumda, başkalarının benim hakkımda ne düşündüğü merak ederim.
25. Başarısız olduğumda, başkalarının benim yeterince çaba göstermediğimi düşünmelerinden endişelenirim

APPENDIX C

PERCEIVED PARENTS' ACHIEVEMENT GOAL SCALE

- My parents want me to understand science concepts, not just do the work
- My parents want me to understand science problems, not just memorize
- how to do them
- My parents would like me to do challenging science problems, even if I
- make mistakes
- My parents think how hard I work in science is more important than the
- grades I get
- My parents think mistakes are OK in science as long as I learn from them.
- My parents want me to spend time thinking about science concepts
- My parents don't like it when I make mistakes in science
- My parents would like it if I could show that I'm better at science than
- other students in my class
- My parents ask me how my work in science compares with the work of
- other students in my class
- My parents would like me to show others that I am good at science
- My parents would be pleased if I could show that science is easy for me

AILELERDEN ALGILANAN HEDEFLER ÖLÇEĞI

- Anne ve babam, yalnızca, ödev yapmamı değil, fen kavramlarımı anlamamı da ister.
- Anne ve babam , fen problemlerinin nasıl çözüldüğünü ezberlememi değil, bu problemleri anlayarak çözmemi ister.
- Anne ve babam , hata yapsam da zorlayıcı fen problemleri üzerinde çalışmamı ister.
- Anne ve babam , aldığım notlardan çok fen dersine çalışmamın daha önemli olduğunu düşünür.
- Anne ve babam, hatalarımı gördüğüm sürece fen dersinde hata yapmamı anlayışla karşılar.
- Anne ve babam, fen kavramları hakkında düşünmeye zaman ayırmamı ister.
- Anne ve babam, fen dersinde hata yapmamdan hoşlanmaz.
- Anne ve babam, fen dersinde sınıfımdaki diğer öğrencilerden daha iyi olduğumu görmek ister.
- Anne ve babam, sınıfımdaki diğer arkadaşlarımın notları ile benim notlarımı karşılaştırır.
- Anne ve babam fen dersinde başarılı olduğumu başkalarına göstermemi ister.
- Anne ve babam, fen dersinin benim için kolay olduğunu gösterebilirsem sevinirler.

APPENDIX D

PERCEIVED TEACHERS' ACHIEVEMENT GOALS

- My teacher really wants us to enjoy learning new things in math
- My teacher gives us time to really explore and understand new ideas in math
- My teacher recognizes us for trying hard in math
- My teacher thinks mistakes are okay in math as long as we are learning
- My teacher wants us to understand our math work, not just memorize it
- My teacher lets us know which students get the highest scores on a math test
- My teacher points out those students who get good grades in math as an
- example to all of us
- My teacher tells us how we compare in math to other students
- My teacher lets us know if we do worse in math than most of the other
- students in class
- My teacher makes it obvious when certain students are not doing well on
- their math work

ÖĞRETMENLERDEN ALGILANAN HEDEFLER ÖLÇEĞI

- Öğretmenimiz, fen dersinden zevk aldığımızı görmek ister.
- Öğretmenimiz, fen dersindeki yeni düşünceleri tam olarak araştırmamız ve anlamamız için bize yeterli zaman verir.
- Öğretmenimiz ,fen dersi için gösterdiğimiz çabanın farkındadır.
- Öğretmenimiz ,öğrendiğimiz sürece fen dersinde hata yapmamızı anlayışla karşılar.
- Öğretmenimiz ,fen dersini ezberlemekten çok anlayarak yapmamızı ister.
- Öğretmenimiz, bir fen testinde hangi öğrencilerin en yüksek notları aldığını bize bildirir.
- Öğretmenimiz, fen dersinde iyi not alan öğrencileri bize örnek olarak gösterir.
- Öğretmenimiz, diğer öğrencilerle karşılaştırıldığında fen dersinde nasıl olduğumuzu bizlere söyler.
- Öğretmenimiz, fen dersinde sınıftaki diğer öğrencilerden daha kötü yaparsak bunu bize bildirir.
- Öğretmenimiz, sınıftaki bazı öğrenciler fen etkinliklerinde iyi olmadıklarında bunu açıkça belirtir.

APPENDIX E
ACADEMIC COPING INVENTORY

Stem: If something bad happened to me during math, such as doing poorly on a test or not being able to answer a question in science class

- I would try to Wgure out what I did wrong so it wouldn't happen again.
- I would try to see what I did wrong.
- I would tell myself that I'll do better next time.
- I would say it was the teacher's fault.
- I would say that the teacher didn't cover the things on the test.
- I would get angry at the teacher.
- I would tell myself it didn't matter.
- I would say it wasn't important.
- I would say I didn't care about it.
- I would feel really terrible.
- I would worry that other students would think I'm dumb.
- I would feel really stupid.
- I would get really mad at myself.

AKADEMIK SORUNLARLA BAŞA ÇIKMA ENVANTERI

Fen dersinde, bir teste başarısız olma yada sınıftaki bir soruyu cevaplayamama gibi kötü bir durumla karşılaşsam…

- Böyle bir durumun tekrar başıma gelmemesi için neyi yanlış yaptığımı anlamaya çalışırdım.
- Nerede yanlış yaptığımı bulmaya çalışırdım.
- Kendi kendime bir dahaki sefere daha iyi yapacağımı söylerdim.
- Bunun öğretmenimin hatası olduğunu söylerdim.
- Öğretmenin testteki tüm konuları işlemediğini söylerdim.
- Öğretmenime kızardım.
- Kendi kendime bunun sorun olmadığını söylerdim.
- Bunun önemli olmadığını söylerdim.
- Bunu önemsemediğimi söylerdim.
- Kendimi berbat hissederdim.
- Diğer öğrenciler akılsız (bilgisiz) olduğumu düşünecekler diye endişelenirdim.
- Kendimi çok akılsız hissederdim.
- Kendime gerçekten çok kızardım.

APPENDIX F

Some items' original version, first translation and second translation of Performance Failure Appraisal Inventory

Original version	1. Pilot	2. Pilot	Sub-scale
When I am not succeeding, it bothers me that I was too confident before performing	Başarılı olamadığımda, uygulamadan önce kendime çok güvenmiş olmam beni rahatsız eder	Başarılı olamadığımda, önceden kendime çok güvenmiş olmam beni rahatsız eder	
When I am not succeeding, I am less valuable than when I succeed	Başarısızsam, başarılı olduğum zamandan daha az değerli hissederim	Başarısız olduğum zamanlarda kendimi başarılı olduğum zamanlardan daha az değerli hissederim.	Fear of Shame and Embarrassment
When I am failing, I believe that everybody knows I am failing	Başarısız olduğumda, herkesin başarısızlığımdan haberdar olduğunu sanırım	Başarısız olduğumda, herkesin başarısızlığımdan haberdar olduğunu düşünürüm.	

When I am failing, my doubters feel that they were right about me	Başarısız olduğumda, derslerime şüpheyle bakan kişilerin haklı olduğunu düşünürüm	Başarısız olduğumda, bana şüpheyle bakan kişilerin haklı olduğunu düşünürüm.	
When I am failing, it is often because I am not smart enough to perform successfully.	Başarısız olduğumda, bu genellikle başarılı bir performans sergileyebilecek kadar zeki olmamam yüzündendir	Başarısızlıklarımın nedeni yeterince zeki olmamamdır	
When I am failing, I am afraid that I might not have enough talent	Başarısız olduğumda, yeteri kadar yetenekli olmadığımdan korkarım	Başarısızlıklarım yeterince iyi olmamamdan kaynaklanır	Fear of Devaluing One's Self Estimate
When I am failing, I hate the fact that I am not in control of the outcome	Başarısız olduğumda, sonucu kontrol edememek beni rahatsız eder.	Elimde olmayan sebeplerden dolayı başarısız olmak beni rahatsız eder	
When I am not succeeding, it is because too many factors out of my control.	Kontrolüm dışındaki faktörler başarısızlığıma etkendir	Başarısızlıklarım elimde olmayan pek çok sebepten kaynaklanmaktadır	
When I am failing, I have a plan for recovering	Başarısız olduğumda, bu durumu telafi için bir planım vardır	Başarısız olduğumda, bu durumu telafi etmek için bir planım	Fear of Having Uncertain Future

		vardır.	
When I am failing, I am not worried about it affecting my future plans	Başarısız olduğumda, bunun gelecekle ilgili planlarımı etkilemesinden endişelenmem	Başarısızlıklarımın gelecek ile ilgili planlarımı etkilemesinden endişe duymam	
When I am failing, I am afraid that I won't be allowed to try again	Başarısız olduğumda, tekrar denememe izin verilmeyeceğinden korkarım	Başarısız olduğumda, bana bir şans daha verilmeyeceğinden korkarım	
When I am not succeeding, I can tell that some people avoid me	Başarılı olamadığımda, bazı insanların benden kaçtığını söyleyebilirim	Başarılı olamadığımda, bazı insanların benden uzaklaştığını söyleyebilirim	Fear of Losing Social Influence
When I am not succeeding, my value decreases for some people	Başarılı olamadığımda, bazı insanlar için değerim düşer	Başarılı olamadığımda, bazı insanların gözünden düşerim	

APPENDIX G

Missing Data Analysis

Sub-scale	Items	Missing Data
Mastery Approach goals	Item 1	.3
	Item 2	2.1
	Item 3	.6
Mastery Avoidance Goals	Item 1	2.0
	Item 2	2.0
	Item 3	2.0
Performance Approach Goals	Item 1	.1
	Item 2	.7
	Item 3	2.1
Performance Avoidance Goals	Item 1	.9
	Item 2	1.7
	Item 3	2.9
	Item 4	2.0
	Item 5	1.9
	Item 6	1.7
Perceived Parents' Mastery Goals	Item 1	.1
	Item 2	.3
	Item 3	3.1
	Item 4	1.0
	Item 5	.9
	Item 6	1.3
Perceived Parents' Performance Goals	Item 1	2.3
	Item 2	1.6
	Item 3	1.2
	Item 4	1.3
	Item 5	1.3

Perceived Teachers' Mastery Goals	Item 1	.6
	Item 2	.6
	Item 3	2.3
	Item 4	1.1
	Item 5	1.4
Perceived Teachers' Performance Goals	Item 1	1.2
	Item 2	1.4
	Item 3	1.1
	Item 4	.7
	Item 5	.9
Fear of Shame and Embarrassed	Item 1	2.8
	Item 2	3.8
	Item 3	4.1
	Item 4	3.5
	Item 5	4.0
	Item 6	3.3
	Item 7	2.9
Fear of Devaluing One's Self Estimate	Item 1	1.2
	Item 2	1.8
	Item 3	1.5
	Item 4	3.0
Fear of Having Uncertain Future	Item 1	1.6
	Item 2	2.9
	Item 3	2.0
	Item 4	3.4
Fear of Losing Social Influence	Item 1	1.8
	Item 2	3.6
	Item 3	3.9
	Item 4	3.0
	Item 5	3.3
Fear of Upsetting Important Others	Item 1	1.2
	Item 2	1.7
	Item 3	3.9

Fear of Upsetting Important Others	Item 4	3.8
	Item 5	4.1
Self Efficacy	Item 1	2.8
	Item 2	2.8
	Item 3	2.6
	Item 4	2.8
	Item 5	2.4
	Item 6	2.7
	Item 7	2.7
Task Value	Item 1	2.5
	Item 2	2.5
	Item 3	1.9
	Item 4	1.9
	Item 5	2.5
	Item 6	2.8
Metacognition	Item 1	3.1
	Item 2	3.2
	Item 3	3.3
	Item 4	2.9
	Item 5	3.4
	Item 6	3.3
	Item 7	3.7
	Item 8	3.0
	Item 9	3.1
	Item 10	3.0
	Item 11	2.7
	Item 12	2.5
Positive Coping	Item 1	.9
	Item 2	.5
	Item 3	.8
Projective coping	Item 1	2.3
	Item 2	1.7
	Item 3	1.4

Denial Coping	Item 1	1.7
	Item 2	2.3
	Item 3	2.9
Non-coping	Item 1	3.0
	Item 2	1.7
	Item 3	1.7
	Item 4	1.5

APPENDIX H

The standardized path coefficients for direct and indirect effects

Effect	Direct effect	Indirect effect	Total Effect	T value	*R2*
On Mastery Approach Goals					.21
• Self Efficacy	.01	.00	.01	0.22	
• Task Value	.34	.00	.34	7.68*	
• Perceived Parents' Mastery Goals	.19	.05	.24	6.04*	
• Perceived Teachers' Mastery Goals	.07	.12	.20	2.20*	
On Mastery Avoidance Goals					.18
• Self Efficacy	-.06	.00	-.06	-1.34	
• Task Value	.07	-.04	.03	1.59	

• Perceived Parents' Mastery Goals	.29	.00	.29	9.13*
• Perceived Teachers' Mastery Goals	-.01	.01	.00	-.33
• fear of shame and embarrassment	.17	.01	.18	2. 68*
• fear of devaluing one's self estimate	.11	.00	.11	2.20*
• fear of having uncertain future	.00	.00	.00	-.023
• fear of losing social influence	.05	.00	.05	1.06
• fear of upsetting important others	-.02	-.01	-.03	-.37
On Performance Approach Goals				.21
• Mastery Approach Goals	.24	.00	.24	7. 22*
• Self Efficacy	.09	.01	.10	2.09*
• Task Value	.08	.14	.22	1.69
• Perceived Parents' Performance Goals	.20	.00	.20	5.99*
• Perceived Teachers' Performance Goals	.04	.00	.04	1.21

• fear of shame and embarrassment	.07	.05	.12	1.32
• fear of devaluing one's self estimate	.00	-.03	-.03	-1.10
• fear of having uncertain future	-.05	.00	-.05	-.68
• fear of losing social influence	-.01	.00	-.01	-.004
• fear of upsetting important others	.07	-.01	.06	1.33
On Performance Avoidance Goals				.35
• Mastery Avoidance Goals	.43	.00	.43	14. 64*
• Self Efficacy	.01	-.03	-.02	.37
• Task Value	.09	.02	.11	2.17*
• Perceived Parents' Performance Goals	.23	.00	.23	7.47*
• Perceived Teachers' Performance Goals	.04	.00	.04	1.34
• fear of shame and embarrassment	-.04	.10	.06	-.68
• fear of devaluing one's self estimate	-.06	.04	-.02	-1.34

• fear of having uncertain future	.01	.00	.02	.34	
• fear of losing social influence	.02	.02	.04	.52	
• fear of upsetting important others	.14	-.01	.13	2.72*	
On Metacognition					.63
• Mastery Approach Goals	.02	.00	.01	.04	
• Mastery Avoidance Goals	.02	.03	.05	.07	
• Performance Approach Goals	.00	.00	.00	-.22	
• Performance Avoidance Goals	.08	.00	.08	3.08*	
• Self Efficacy	.59	.00	.59	19.78*	
• Task Value	.17	.40	.57	5.33*	
• Perceived Teachers' mastery Goals	.06	.26	.32	2.82*	
• fear of shame and embarrassment	.19	.12	.31	4.28*	

• fear of devaluing one's self estimate	.03	-.11	-.08	1.04	
• fear of having uncertain future	.07	.01	.08	2.21*	
• fear of losing social influence	-.11	.02	-.09	-3.36*	
• fear of upsetting important others	-.05	.00	-.05	-1.36	
On Positive Coping					.27
• Mastery Approach Goals	.29	.02	.31	8.66*	
• Mastery Avoidance Goals	.00	-.01	-.01	.05	
• Performance Approach Goals	.07	.00	.07	2.18*	
• Performance Avoidance Goals	-.02	.00	-.02	-.73	
• Self Efficacy	.13	.01	.14	3.10*	
• Task Value	.05	.20	.25	1.22	
• Perceived Parents' Mastery Goals	.18	.11	.29	5. 73*	
• Perceived Teachers' Mastery Goals	.05	.12	.17	1.47	

On Projective Coping				.22
• Mastery Approach Goals	-.20	.00	-.20	-6. 39*
• Mastery Avoidance Goals	.14	-.02	.12	4. 05*
• Performance Approach Goals	.00	.00	.00	.33
• Performance Avoidance Goals	-.06	.00	-.06	-1.87
• Perceived Teachers' Performance Goals	.10	.00	.10	3.18*
• fear of shame and embarrassment	-.14	.01	-.13	-2.25*
• fear of devaluing one's self estimate	.06	.00	.08	1.23
• fear of having uncertain future	.24	.00	.24	5.15*
• fear of losing social influence	.32	.00	.32	6.77*
• fear of upsetting important others	-.17	-.01	-.18	-2. 92*
On Denial Coping				.36
• Mastery Avoidance Goals	-.06	.04	-.02	-1.92

• Performance Approach Goals	-.01	.00	-.01	-.32
• Performance Avoidance Goals	-.02	.00	-.05	-0.6
• Perceived Teachers' Performance Goals	.15	.04	.19	5.37*
• fear of shame and embarrassment	-.24	-.06	-.30	-4.03*
• fear of devaluing one's self estimate	.06	.04	.10	1.68
• fear of having uncertain future	.14	.11	.25	3.15*
• fear of losing social influence	.18	.14	.32	3.98*
• fear of upsetting important others	-.01	-.09	-.10	-.25
• Projective Coping	.46	.00	.46	15.20*
On Non Coping				.35
• Mastery Avoidance Goals	.14	-.01	.13	4.22*
• Performance Approach Goals	.09	.00	.09	3.19*
• Performance Avoidance Goals	-.01	.00	-.01	-.33

• Perceived Teachers' Performance Goals	.07	.01	.08	2.07*
• fear of shame and embarrassment	.12	.01	.16	2.16*
• fear of devaluing one's self estimate	.26	.00	.28	6.18*
• fear of having uncertain future	.09	.00	.08	1.99*
• fear of losing social influence	.04	.00	.04	.88
• fear of upsetting important others	.06	.02	.06	.83
On Self Efficacy				.52
• task value	.66	.00	.66	25.63*
• Perceived Parents' Mastery Goals	.08	.09	.17	3.43*
• Perceived Teachers' Mastery Goals	.08	.24	.32	3.15*
• fear of shame and embarrassment	-.02	.15	.13	-.36
• fear of devaluing one's self estimate	-.11	-.06	-.17	-3.02*
• fear of having uncertain future	.00	.01	.01	-.10

• fear of losing social influence	.07	-.03	.04	1.78
• fear of upsetting important others	.04	-.04	.00	.87
)n Task Value				.18
• Perceived Parents' Mastery Goals	.14	.00	.14	4.39*
• Perceived Teachers' Mastery Goals	.36	.00	.36	11.55*
• fear of shame and embarrassment	.22	.00	.22	3.53*
• fear of devaluing one's self estimate	-.09	.00	-.09	-1.80
• fear of having uncertain future	.01	.00	.01	.31
• fear of losing social influence	-.03	.00	-.03	-.70
• fear of upsetting important others	-.05	.00	-.05	-.93

APPENDIX I

CURRICULUM VITA

PERSONAL INFORMATION

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Date and Place of Birth: 27. 09. 1983, Kutahya

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EDUCATION

Degree	Institution	Year of Graduation
BS	İstanbul University	2006
High School	High School of Tavşanlı	2001

WORK EXPERIENCE

Year	Place	Enrollment
2010-Present	Celal Bayar University, Manisa	Research Assistant

PUBLICATIONS

- **Kahraman, N.**& Sungur, S. (2009). Students' achievement goals and competence expectations in relation to parents' achievement goals and classroom environment perceptions. ***E****uropean* ***S****cience* ***E****ducation* ***R****esearch* ***A****ssociation Conferance.*
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- **Kahraman, N**.,& Sungur, S. (2011). The contribution of motivational beliefs to students' metacognitive strategy use. *Education and Science,* 36, 3- 10.

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- **Kahraman, N.&** Sungur, S. (2011). Investigating Turkish middle school students' coping strategies in science. *World Conferance on New Trends in Science Education* ***(accepted).***
- ***Kıyıcı, G.,*** *Kahraman, N.* ***& Abalı, Y. (2011***). Kimya bölümü öğrencilerinin endüstriyel kimyaya yönelik tutumları ve öz yeterlilik inançları arasındaki ilişki; Celal Bayar Üniversitesi örneği. *II. Ulusal Kimya Eğitimi Kongresi, (accepted)*
- Kıyıcı, G., Abalı, Y. & **Kahraman, N.** (2011). Kimyager adaylarının teknoloji tutumları; Celal Bayar Üniversitesi Örneği. *II. Ulusal Kimya Eğitimi Kongresi, (accepted)*

APPENDIX J

TURKISH SUMMARY

HEDEF YÖNELİMİNİ ETKİLEYEN FAKTÖRLER VE SONUÇLARI

"Eğitim denince akla gelen üç şey vardır. Birincisi motivasyon. İkincisi motivasyon.

-Terrell H. Bell (cited in Ames, 1990, p.409)

Başarma motivasyonu insanların çalışmak, amaçlarını gerçekleştirebilmek için davranışlarını nasıl şekillendirdiklerini açıklar. (Eliot, 1999). Başarma motivasyonu insanların bir amaçları için ya da herhangi bir görevi gerçekleştirirken ne şekilde güdülendiklerini ise iki unsur üzerinden açıklar: yaklaşma- kaçınma, ve ustalık- başarım yönelimleri (Fryer& Elliot, 2007). İlk unsur *yaklaşma- kaçınma motivasyonu* insanların herhangi bir davranışa enerjilerini harcarken iki güdü tarafından yönlendiklerini öne sürüyor. Yaklaşma güdüsü olası pozitif sonuçları düşünerek bu amaç uğrunda çalışma durumunu inceler herhangi bir başarıya ulaşmak için çalışmak bu duruma iyi bir örnektir. Kaçınma güdüsü ise oluşabilecek olumsuz sonuçları engellemeye yönelik bir motivasyondur; buna örnek olarak da başarısızlıktan kaçınmak verilebilir (Elliot& Sheldon, 1997; Elliot, 1999). İkinci unsur, ustalık- başarım yönelimleri ise insanların herhangi bir amaç için çalışmaya başlamalarında farklı yönelimlerin etkin olduğunu iddia eder. Bazı kişiler kendi bilgilerini arttırıp kişisel gelişimlerine odaklanırken ikinci grup ise kendilerini daha çok diğerleriyle kıyaslamaya meyillidirler. Araştırmacılar (Elliot& Harackiewicz, 1996; Church& Elliot, 1997; Elliot& McGregor, 2001) bu iki unsuru bir araya getirerek mevcut hedef yönelimi teorisini oluşturmuşlardır. Buna bağlı olarak dört farklı grubu gösterecek şekilde bir şema oluşturmuşlardır; sözü geçen gruplar şu

şekilde sıralanabilir: ustalık yaklaşma hedefleri, ustalık kaçınma hedefleri, başarım yaklaşma hedefleri ve başarım kaçınma hedefleri. Ustalık yaklaşma hedefleri yetenekleri geliştirme ve bilgi artırımına odaklıyken, ustalık kaçınma hedefleri olası hataları ve yanlış anlaşılmaları engellemeye odaklıdır. Başarım yaklaşma hedefleri kendini gösterme, zeki görünme ve yetenekleri vurgulama isteği ile bağlantılıyken, başarım kaçınma hedefleri ise sınıftaki en düşük notu alan kişi olmayı veya arkadaşlarının önünde yeteneksiz görünmeyi engelleme isteğiyle bağlantılıdır.

İlgili araştırmalar gösteriyor ki öğrencilerin hedef yönelimleri kayda değer şekilde üst bilişlerine ve bir şeyin üstesinden gelebilme stratejilerine ilişkilidir. Üst biliş kişinin kendi öğrenme aşamalarını düşünsel olarak incelemesini ifade eder. Teorisyenler üst bilişi kısaca "düşünme üzerine düşünme" ya da "biliş hakkındaki biliş" olarak tanımlarlar (Flavell, 1999; Livingston, 2003). Başka bir deyişle, üst biliş öğrenme aşamasında düşünceyi kontrol etmeye yarayan bir düşünce düzeyidir. Aynı zamanda kişinin kendi bilişsel gelişimini izlemesine yardımcı olur (Forrest-Pressley& Waller, 1984; Flavell, 1999; Hattie, Biggs, & Purdie, 1996; Schraw, 1998). İnsanlar düşünce aşamalarını iki unsur yardımıyla izlerler: üst bilişsel bilgi ve üst bilişsel düzenleme. Üst bilişsel bilgi öğrenme aşaması hakkındaki bilgiyi anlatırken üst bilişsel düzenleme kişilerin öğrenme aşamasındaki davranışlarını kontrol etmelerini anlatır (Gardner, 1990; Schraw& Moshman, 1995; Schraw, 1998; Livingston, 2003). Araştırmacılara göre, bilgiyi arttırmaya, öğrenme odaklı yani ustalık yaklaşma hedeflerine sahip olan öğrenciler üst bilişsel stratejileri diğer öğrencilere göre daha çok kullanıyorlar. Ek olarak, araştırmacılar gösterdiler ki öğrenme bozukluklarını gizlemeye çalışan ya da en düşük notu almamaya odaklı, yani başarım kaçınma hedeflerine sahip öğrenciler üst bilişsel stratejileri verimli olarak kullanamıyorlar (Middlebrooks, 1996; Wolters, Yu & Pintrich, 1996; McGregor & Gable, 1999; Somuncuoğlu & Yıldırım, 2001; Vermetten, Lodewijks & Vermunt, 2001; Wolters, 2004; Shih, 2005a, Ommundsen, 2009).

Hedef yönelimiyle ilgili bir diğer davranış biçimi ise öğrencilerin çeşitli bir şeyin üstesinden gelebilme stratejilerini kullanmalarıdır. Bir şeyin üstesinden gelebilme olumsuz olaylara bir tepki, başka bir deyişle akademik başarısızlık gibi sıkıntılı durumlarda gösterilen davranış, strateji ve duyguların bütünüdür (Lazarus&

Folkman, 1986; Kamins& Dweck, 1999; Folkman& Moskowitz, 2004). Bu stratejilerin birçok sınıfa ayrılmalarına rağmen Tero ve Connel üstesinden gelme stratejilerini dört farklı grupta incelemişlerdir: Pozitif üstesinden gelme, Yansıtmalı üstesinden gelme, İnkar etme ve üstesinden gelememe. Pozitif stratejiye örnek olarak, ebeveynlere ve öğretmenlere sorma, zaman planlama ve hataları fark edip analiz etme verilebilir. Yansıtmalı stratejide ise öğrenci hataları için başkalarını suçlar. Bu başarısızlığın sebebinin öğretmeni, ailesi veya çevresindeki diğer insanlar olduğunu düşünür. İnkâr etmede ise öğrenci başarısızlıklarını göz ardı eder ve kendini bu başarısızlığın önemli olmadığına inandırır. Son metot, üstesinden gelememe ise kendini suçlamayı anlatır. Başka bir deyişle, öğrenci üstesinden gelememeyi seçmişse başarısızlığın sebebinin kendini yeteneksizliği olduğunu düşünür (Kaplan and Midgley, 1999). Ayıca üstesinden gelme stratejileri uyumlu ve uyumsuz stratejiler olarak ikiye ayrılır. Yardım istemek, zaman planlaması yapmak, nerede hata yaptığını analiz etmek ve bir dahaki sefere daha fazla çalışmak uyumlu stratejilere örnek iken başarısızlığından dolayı başkalarını veya kendini suçlamak, başarısızlığı görmezden gelmek uyumsuz stratejilere örnektir (Kaplan& Midgley, 1999; Friedel, Cortina, Turner and Midgley, 2007). Araştırmacılara göre ustalık hedefleri uyumlu stratejilerle ilişkiliyken başarım hedefleri uyumsuz stratejilerle ilişkilidir (Brdar, Rijavec & Loncaric, 2006; Friedel, Cortina, Turner & Midgley 2007; Taye & Zhou, 2009). Yukarıda bahsedilen araştırmalara dayanarak bu çalışma öğrencilerin farklı üstesinden gelme stratejileri ve üst bilişsel davranışları hedef yöneliminin sonucu olarak incelenmiştir.

İlgili literatür öğrencilerin hedef yönelimini benimsemelerinde etkin olan birçok öncül etken olduğunu öne sürüyor. Örneğin başarısızlık korkusu hedef yöneliminin belirlenmesinde rol oynayan etkenlerden biridir. Başarısızlık korkusu negatif olasılıkları engellemek için gerekli olan motivasyona enerji harcamak olarak tanımlanabilir (Elliot& Sheldon, 1997; Elliot, 1999). Başarısızlık korkusu kişinin akademik başarısızlığı nasıl tanımladığına ve ne şekilde algıladığına bağlıdır. Bunun yanında, aynı zamanda başkalarının kişinin başarısızlığı hakkında düşünceleri de başarısızlık korkusuna neden olabilir (Heckhausen, 1991). Conroy, Poczwardowski ve Henschen' e göre (2001) başarısızlık korkusunun beş tane sonucu vardır: a) Utanç

ve mahcubiyet duygusu b) Özsaygının değerinin düşmesi c) geleceğin belirsizliği d) Diğer kişilerin ilgisini kaybetme e) Diğer kişileri hayal kırıklığına uğratmak. Başka bir deyişle, kişi bu beş olası sonuç yüzünden başarısızlıktan korkar. İlk olarak kimilerine göre başarısızlık onların başkaları önünde utanacakları, küçük düşecekleri ortam hazırlar. İkinci olarak başarısızlık bazı kişileri kendi yetenekleri ve zekasını sorgulamaya yönlendirir. Üçüncü olarak başarısızlık kişinin gelecek planlarını olumsuz yönde etkileyebilir. Dördüncü olarak ise bazı kişiler sadece başarıları yüzünden ciddiye alındıklarını düşündükleri için başarısız olduklarında diğerlerinin ilgisini kaybetme korkusu yaşarlar. Son olarak, bu kişilerin ilgisini kaybetmelerinin yanında aynı zamanda onlar için önemli insanları hayal kırıklığına uğratmaktan da korkarlar (Conroy, 2001; Conroy, Willow, and Metzler, 2002; Conroy, Metzler, and Hofer, 2003; Conroy& Elliot, 2004). Hedef yönelimi araştırmacılarına göre başarısızlık korkusu yüksek olan öğrenciler başarım yaklaşma, başarım kaçınma ve ustalık kaçınma hedeflerini benimsemeye yatkındırlar. Yani bu öğrenciler kendilerini göstermeye, derste öğretilen materyali yanlış anlama veya hiç anlayamamaya ve başkalarının yanında kötü duruma düşmemeye odaklanmıştır. Aynı şekilde ilgili kaynakçada başarısızlık korkusu öğrencilerin hedef yöneliminde etkin olan öncül dürtülerden biridir (Thrash and Elliot 2002*;* Conroy, Elliot& Hofer, 2003; Conroy& Elliot, 2004; Nien & Duda, 2008; Elliot and Murayama 2008).

Buna ek olarak ilgili kaynakça ebeveyn ve öğretmenlerin hedefleri gibi sosyo-kültürel etkileri, öz yeterlilik ve görev değeri gibi öğrencilerin dürtüsel inançlarını da hedef yönelimini etkileyen öncül faktörler olduğunu göstermiştir (Eccles& Wigfield, 2000; 2002). Bu değişkenlerin arasından görev değeri öğrenciler için bir göreve başlamada ana neden olarak tanımlanmıştır. Teorisyenlere göre görev değeri dört elemandan oluşur: Beceri değeri bir görevde başarılı olmanın önemini işaret eder. İnsanlar bir görevi seçerken söz konusu görevde başarılı olacaklarına dair inançlarıyla önemlidir. İkinci unsur gerçek değer kişisel ilgiyi işaret eder. Kişi bir görevi sadece içeriğiyle ilgili olduğu için ya da görevin eğlenceli olacağını düşündüğü için yapabilir. Üçüncü olarak fayda değeri kişinin bu görevden yararlanabilmesiyle ilgilidir. Örneğin doktor olmak isteyen bir öğrencinin biyoloji derslerine daha çok önem vermesi gibi. Son olarak bedel bir görevde yer alırken bu

işin olumsuz yönlerini göz önüne almakla ilgilidir. Bu nedenle bir görevi yürütmenin belirli bir bedeli vardır, gerekli zaman ya da enerji gibi. (Eccles, & Wigfield, 2002; Pintrich & Schunk, 2002; Hulman, Durik, Schweigert & Harackiewicz, 2008; Eccles, 2009) İlgili literatür gösteriyor ki görevi ilgi çekici ve faydalı bulan öğrenciler daha çok ustalık yaklaşım hedeflerine ya da başarım yaklaşım hedeflerine eğimliler. Diğer yandan görevi ilgi çekici ya da faydalı bulmayan öğrenciler daha çok başarım kaçınma hedeflerine eğilimliler. (Wolters, Yu, & Pintrich, 1996; Xiang, McBride & Bruene, 2004; Bong, 2004; Liem, Lau & Nie, 2008).

Hedef yöneliminin altında yatan bir diğer güdüsel inanç ise öz yeterliliktir. Öz yeterlilik öğrencinin öğrenme ve başarı için kendi kabiliyetleri ve yeterliliği ile ilgili düşünceleridir. Bir diğer deyişle öz yeterlilik kişinin bir görevi yerine getirmede kendini sorgulaması ve yetenekleri hakkında yargıya varmasıdır. Bu yüzden öz yeterlilik görevin zorluk derecesine göre değişiklik gösterebilir. (Bandura, 1982, 1999; Zimmerman, 2000). Öz yeterlilik kişinin bir görevi yerine getirmede ısrarını ve çabasını etkiler. Öğrencinin bir görevdeki öz yeterliliği düşük ise o görevden bırakma eğiliminde bulunabilir.. Diğer yandan öz yeterliliği yüksek insanlar zor görevlerde daha yüksek çaba ve uzun ısrar gösterirler. (Baundra 1977; Bandura, 1982; Schunk, 1990; Bandura, 1999; Pintrich, & Schunk, 2002). Ayrıca kişinin kendi hakkındaki yargıları geçmişindeki başarı ve başarımına, başkalarının başarı ve başarımını dışarıdan gözlemlemesine, başkalarının verdiği tavsiyelere ve psikolojik durumuna (rahat ya da gergin olma) bağlıdır. (Bandura, 1982; Schunk, 1984; Pintrich, & Schunk, 2002). Araştırmacılara göre öz yeterliliği yüksek olan öğrenciler ustalık yaklaşım hedeflerine sahipken düşük öz yeterliliği olan öğrenciler daha çok kaçınma hedeflerine meyillidirler. (Phillips & Gully, 1997; Bong, 2001; Shim & Ryan, 2005; Hsieh, Sullivan & Guerra, 2007).

Öğrencilerin görevin değeri ve öz yeterlilik gibi güdüsel inançları dışında sosyo kültürel etkiler de öğrencilerin hedef yönelimini benimsemelerinde etkilidir. Bu çalışmada sosyo kültürel etki hem ev hem de okul gibi sosyal çevrelerdeki hedeflerin etkisi olarak ele alınmıştır. Okulda öğretmenler, evde ebeveynler öğrenmenin önemine ve kabiliyetleri geliştirmenin önemine değinerek öğrencilerin ustalık hedeflerini benimsemelerinde rehberlik yapabilirler. Aynı şekilde öğrenciyi

arkadaşlarıyla kıyaslayarak başarım hedeflerini benimsemelerinde etkili olabilirler. Nicholls, 1989; Anderman & Maehr, 1994; Kaplan& Maehr, 2002; Friedel, Cortina, Turner and Midgley, 2007). Bundan dolayı öğrencilerin ebeveynleri ve öğretmenlerinin hedeflerini hakkındaki algıları hedef yöneliminin öncüllerinden biridir. Araştırmacılara göre öğrencinin sosyal çevresi ustalık hedeflerini önemsiyorsa öğrenci de ustalık hedeflerini benimseme eğilimindedir. Aynı şekilde başarım hedefleri sosyal çevrede önemseniyorsa öğrenci başarım hedeflerini benimseme eğilimindedir. (Roeser, Midgley & Urdan, 1996; Friedel, Hruda, & Midgley, 2001; Gonida, Kiosseoglou& Voulala, 2007; Bong, 2008; Kim, Schallert & Kim, 2010).

Yukarıda bahsedilen araştırmalara dayanarak bu çalışmada öğrencilerde hedef yöneliminin nedenleri ve sonuçları bir yol modeli kapsamında incelenmiştir. Kütahya'daki devlet okullarında tüm ilköğretim yedinci sınıf öğrencileri bu çalışmanın hedef popülasyonudur. Kütahya'nın bütün ilçe ve köylerindeki yedinci sınıf öğrencilerine ulaşmak mümkün olmadığı için şehir merkezi dışında kalan yerleşimlerdeki öğrenciler bu popülasyona alınmadı ve Kütahya merkezindeki öğrenciler bu çalışmada ulaşılabilir popülasyon olarak alındı. Çalışmanın sonuçları bu ulaşılabilir popülasyon üzerinden değerlendirilecektir. Kütahya merkezinde 111 ilköğretim okulu var. Küme rastgele örnekleme yöntemi kullanılarak 12 ilköğretim okulu (%10) rastgele örneklem olarak seçildi. Örneklem seçimi sırasında okullar küme olarak kabul edildi. Ailelerin de izni alınarak bu okullardaki tüm yedinci sınıf öğrencileri, 977 kişi, bu çalışmanın örneklemini oluşturdu. Veri toplama sırasında çalışmanın amacı ve kapsamı hakkında öğrenciler bilgilendirildi.

Öğrencilerin 494'ü (%50.6) kız, 482'si (%49.4) erkeklerden oluşmaktadır. Bu öğrenciler genellikle 2 çocuklu ailelerden geliyorlardı. Öğrenci annelerinin çoğu çalışmıyorken (%82.5), babaların çoğu bir işte (%83.) çalışmakta. Öğrenci annelerinin çoğunluğu ilkokul mezunlarından oluşuyor (%53.7) babalarda ise yoğunluk lise ya da ortaokul mezunlarında (%74.4). Evde 100'ün altında okuma materyali olduğunda bu yetersiz materyal olarak kabul edildi ve örneklemde yetersiz okuma materyali olan aileler çoğunlukta (%73.7). Ailelerin çoğunda günlük gazete

bazen alınıyorken (%71.1), eve hiç gazete almayan aileler de var (%8). Buna ek olarak çoğu öğrencinin kendine ait bir odası (%80.4), bir bilgisayarı (%75) ve internet bağlantısı var (%56.5).

Çalışma sırasında öğrencilerin öz yeterlilik, görev değeri ve üst biliş stratejilerini ölçmek için Öğrenmede Motive Edici Stratejiler- Ölçeği kullanıldı. Öz yeterlilik bölümündeki ifadeler (8 soru) öğrencilerin kendi yetenekleri ve fen dersindeki başarıları hakkındaki yargılarına odaklanırken (örnek:"Bu derste başarılı olmayı bekliyorum" gibi), görev değeri bölümündeki ifadeler ise (6 soru) öğrencilerin fen bilgisi derslerinde yapılan aktiviteleri ne derece yararlı, ilgi çekici veya eğlenceli bulunduklarının ölçülmesine odaklanmaktadır (örnek: "Bu dersteki materyali öğrenmem benim için önemlidir"). Ek olarak Öğrenmede Motive Edici Stratejiler- Ölçeği'ndeki üst bilişsel öz düzenleme bölümü (12 soru) öğrencilerin öğrenme aşamalarını nasıl planladıkları, gözlemledikleri ve değerlendirdiklerine odaklıdır (örnek: "Bu derste öğrendiklerimizi çalışırken kendime sorular sorarak ne kadar öğrendiğimden emin oluyorum"). Öğrenmede Motive Edici Stratejiler- Ölçeği Sungur tarafından tercüme edilmiş ve uyarlanmıştır (2004).

Hedef yönelimi anketi öğrencilerin hangi hedefleri adapte ettiklerini değerlendirme üzerinedir. Ölçek Elliot ve Church tarafından geliştirilmiş (2001) öğrencilerin hedef benimsemelerini inceleyen bir ankettir. Kesinlikle katılıyorum seçeneğinden kesinlikle katılmıyorum seçeneğine uzanan 5 noktalı bir Likert ölçeğidir. Dört alt gruptan oluşan anket 15 ifadeden oluşur: ustalık yaklaşma hedefleri (3 unsur), ustalık kaçınma hedefleri (3 unsur), başarım yaklaşma hedefleri (3 unsur) ve başarım kaçınma hedefleri (6 unsur). Ustalık yaklaşma hedefleri kendini geliştirme, yeni şeyler öğrenme ve becerileri geliştirme ile ilgiliyken (örnek: "Bu derste öğrendiklerimizi tam olarak anlamak istiyorum") ustalık kaçınma hedefleri öğrenememeyi, ya da yanlış anlamayı engellemeye yöneliktir (örnek: "Bu derste zayıf olmamak benim için yeterli). Başarım yaklaşma hedefleri kişinin becerilerini, başarısını başkalarına gösterme üzerineyken (örnek: "Diğer öğrencilerden daha iyi olmak benim için önemlidir") başarım kaçınma hedefleri diğer öğrenciler arasında başarısız olmak korkusu üzerinedir (örnek: "Bu dersteki amacım başarısız olmamak). AGQ Senler ve Sungur tarafından Türkçeye tercüme edilerek uyarlanmıştır (2007).

Başarım Başarısızlık Değerlendirme Envanteri (PFAI) öğrencilerin başarısızlık korkusunu ölçer. PFAI Conroy tarafından geliştirilmiş 5 noktalı bir Likert ölçeğidir (2001). 5 alt gruba ayrılmış 25 ifadeden oluşur: utanma ve mahcubiyet korkusu (7 unsur, örnek: "Başarısız olduğumda diğerlerinin bunu görmesi çok utanç verici"), kendi değerini düşürme korkusu (4 unsur, örnek: "Başarısız olduğumda yeteneksizliğimi suçluyorum"), gelecek korkusu (4 unsur, örnek: "Başarısız olduğumda gelecek belirsizleşiyor"), sosyal ilgi kaybetme korkusu (5 unsur, örnek: "Başarılı olamadığımda insanlar benimle daha az ilgilenirler"), ve son olarak önemli kişileri hayal kırıklığına uğratma korkusu (5 unsur, örnek: "Başarısız olduğumda bu durum benim için önemli olan kişileri hayal kırıklığına uğratır"). Araştırmacılar tarafından Türkçe'ye tercüme edilmiş ve uyarlanmıştır.

Ailelerden Algılanan Hedefler Ölçeği Friedel, Cortina, Turner ve Midgley tarafından geliştirilmiştir (2007). "Kesinlikle katılmıyorum" seçeneğinden "Kesinlikle katılıyorum" seçeneğine uzanan beş noktalı bir Likert ölçeğidir. Anket öğrencilerin ailelerinin hedeflerine bakışını incelemek üzerine geliştirilmiştir. İki alt grupta toplam 11 unsurdan oluşur: ustalık hedefleri (6 unsur) ve başarım hedefleri (5 unsur). Ailelerden algılanan ustalık hedefleri, anne baba için çocuğunun fen bilgisi dersinde öğrenmesinin, hatalarından ders almasının önemli olup olmadığı üzerinde dururken (örnek: "Ailem sadece derslerde iyi not almamı değil öğretilenleri tamamen anlamamı ister"), ailelerden algılanan başarım hedefleri ise anne babanın öğrencinin yeteneklerini göstermesini, hata yapmamasını ne derece önemsediği üzerinde durur (örnek: "Ailem derslerde hata yaptığımda bundan hiç hoşlanmazlar"). Bu anket bu çalışmanın araştırmacıları tarafından Türkçe'ye çevrilmiş ve uyarlanmıştır.

Öğretmenlerden Algılanan Hedefler Ölçeği Friedel, Cortina, Turner ve Midgley tarafından uyarlanmıştır (2007). Anket öğrencilerin öğretmenlerinin sınıftaki hedeflerine bakışını incelemek üzerine geliştirilmiştir. "Kesinlikle katılmıyorum" seçeneğinden "Kesinlikle katılıyorum" seçeneğine uzanan beş noktalı bir Likert ölçeğidir. İki alt grupta toplam 10 ifadeden oluşur: algılanan ustalık hedefleri (5 unsur) ve algılanan başarım hedefleri (5 unsur). Algılanan ustalık hedefleri ölçeğindeki unsurlar öğretmenlerin fen bilgisi dersinde öğrenme ve

anlamaya olan odaklanmalarını incelerken (örnek: "Öğretmenimiz bilimsel olarak yeni düşünceler keşfetmemiz için bize ekstra zaman verir"), algılanan başarım hedeflerindeki unsurlar ise öğretmenlerin sınıftaki yüksek notlara olan vurgusunu inceler (örnek: "Öğretmenimiz yüksek not alan öğrencileri diğerlerine örnek gösterir"). Anket araştırmacılar tarafından Türkçeye tercüme edilmiş ve uyarlanmıştır.

Akademik Üstesinden Gelme Envanteri (ACI) Tero ve Connell tarafından öğrencilerin akademik başarısızlıkla karşılaştıklarında üstesinden gelme stratejilerini inceleme üzerine geliştirilmiştir (1984). "Kesinlikle katılmıyorum" seçeneğinden "Kesinlikle katılıyorum" seçeneğine uzanan beş noktalı bir Likert ölçeğidir. Dört alt grupta toplanmış 13 ifadeden oluşur: pozitif üstesinden gelme (3 unsur), izdüşümsel üstesinden gelme (3 unsur), inkar etme (3 unsur) ve üstesinden gelememe (4 unsur Anketteki tüm bölümler "Eğer fen bilgisi dersinde kötü bir şey olduysa, bir sınavda düşük not almak ya da sınıfta bir soruyu cevaplayamama gibi…" bir yarı cümleyle başlar ve öğrenciden bu cümleyi tamamlamaları istenir. Pozitif üstesinden gelme öğrencilerin uyumlu stratejilerini belirler (önek: "Nerede hata yaptığımı görmeye çalışırım"). İzdüşümsel üstesinden gelme öğrencinin başarısızlığı için başkalarını suçlamayı gösterirken (örnek: "Öğretmenin hatası olduğunu düşünürdüm"). inkar etmede öğrenci bu olumsuz durum üzerinde çok durmadığını belirtip, başarısızlığı görmezden gelir (örnek: "Çok önemli olmadığını düşünürdüm"). Üstesinden gelememede ise öğrenci kendi becerisini, yeteneklerini kısacası kendini suçlar (örnek: "Kendime gerçekten kızardım"). Akademik Üstesinden Gelme Envanteri bu çalışmanın araştırmacıları tarafından Türkçeye tercüme edilmiş ve uyarlanmıştır.

Bu çalışmada 7. Sınıf öğrencilerinin fen bilgisi dersindeki hedef yönelimini etkileyen faktörler ve sonuçları incelenmiştir. Bu inceleme Lisrel analiz programında yol analizi ile gerçekleştirilmiştir. Öz yeterlilik, değer verme, başarısızlık korkusu ve ailelerden ve öğretmenlerden algılanan hedefler hedef yöneliminin öncüleri olarak incelenirken üst bilişsel ve üstesinden gelme stratejileri hedef yöneliminin sonuçları olarak ele alınmıştır. Bunların yanı sıra, hedef

yönelimini etkileyen faktörlerin kendi arasındaki ve hedef yöneliminin sonuçları, üst biliş ve üstesinden gelme stratejileri ile olan ilişki de çalışma kapsamında incelenmiştir. Yol analizi sonuçları kabul edilebilir bir model öne sürmüştür (χ^2/ df = 7. 70, GFI= .95, CFI = .97, RMSEA = .08, SRMR = .04)

Bu çalışmada tasarlanan model ailelerden algılanan hedeflerin 7. Sınıf öğrencilerinin fen bilgisi dersindeki kendi hedef yönelimi belirleme ve benimseme sürecinde önemli bir faktör olduğunu öne sürüyor. Araştırmalara göre öğrencinin fen bilgisini öğrenmesini ve fen dersindeki becerilerini geliştirmeyi önemseyen ailelerde öğrenciler ustalık yaklaşım veya ustalık kaçınma hedeflerini benimsiyorlar. Aynı şekilde çocuğunun yüksek not almasını önemseyen ailelerde öğrenciler başarım yaklaşma yada başarım kaçınma hedeflerini benimsiyorlar. Buna göre, aileleri fen bilgisi dersindeki gelişimine önem verdiğini düşünen öğrenciler hem fen bilgisini öğrenmek için hem de fen bilgisi konularını anlayamamayı engellemek için ders çalışıyorlar. Benzer olarak aileleri yüksek not almaya önem verdiğini düşünen öğrenciler başarım hedeflerini benimsiyor; kendi becerilerini arkadaşlarına göstermek, yüksek not almaya odaklanırken, aynı zamanda diğer öğrenciler arasında başarısız olma korkusu taşıyorlar. Öğretmenlerin odaklandıkları hedefler yönünden bakıldığında ise model öğretmenlerden algılanan ustalık hedefleri öğrencilerin kendi ustalık yaklaşım hedefleri ile ilişkili olduğunu önermektedir. Bunun yanı sıra, oluşturulan bu model öğrencideki öğretmenlerden algılanan başarım hedefleri ile öğrencilerinin hedef yönelimini benimsemesi arasında anlamlı bir ilişki göstermemiştir. Bu çalışmada öğretmen ve ailelerden algılanan hedefler gibi sosyo kültürel etkiler dışında başarısızlık korkusu da öğrencilerin akademik hedef yönelimini etkileyen bir faktör olarak incelenmiştir. Araştırmalara göre başarısızlık korkusu yüksek olan öğrenciler akademik hayatta daha çok kaçınma hedefleri geliştiriyorlar. Başka bir deyişle başarısızlık korkusu öğrenciye utanç vermenin dışında aynı zamanda öğrencinin öz saygısını yitirmesine neden oluyor ve yanlış anlamayı ya da öğrenememeyi engelleme yönünde güdülerini geliştiriyor. Buna ek olarak düşük notların ailelerini hayal kırıklığına uğrattığını düşünen öğrenciler düşük not almayı engellemek için ve sınıftaki en başarısız öğrenci olmayı engellemek için ders çalışıyorlar. Bu çalışmada hedef yöneliminin altında yatan faktör olarak

incelenen bir diğer değişken de öz yeterliliktir. Yol modeli ortaya koyuyor ki öz yeterlilik duygusu yüksek olan öğrenciler başarım yaklaşma hedeflerini benimsemeye daha yatkındırlar. Ustalık yaklaşma hedefleri, ustalık kaçınma hedefleri, başarım kaçınma hedefleri ile öz yeterlilik arasında ise anlamlı bir ilişki çıkmamıştır. Öz yeterliliğin başarım yaklaşma hedefleri pozitif bir ilişkisi olduğunun beklenen bir sonuç olmasına rağmen öz yeterlilik ve diğer hedef yönelimleri arasında manalı bir ilişki olmaması şaşırtıcıydı. Bu şaşırtıcılığın nedeni ise ilgili kaynakçanın genelde öz yeterlilik ve hedef yönelimi arasında belirli anlamlı ilişkiler olduğunu ortaya koymasıydı (Elliot& Church, 1997; Bong, 2001; Liem, Lau& Nie, 2008). Bir diğer beklenmeyen sonuç ise öğrencilerin görev değeri inancı ve hedef yönelimi arasındaki ilişki hakkındaydı. Sonuçlara göre fen ödevlerini ilgi çekici, eğlenceli ya da faydalı bulan öğrenciler bilgilerini artırmak, yeni yetenekler geliştirebilmek ya da diğer öğrenciler yanında başarısız olup küçük düşmemek için fen bilgisi derslerine çalışıyorlardı. Ustalık hedef yönelimi ve görev değer inancı arasında pozitif bir ilişki beklenen bir sonuçken görev değer inancı ve başarım kaçınma hedefleri arasındaki pozitif ilişki beklenmeyen bir sonuçtur. Bunun nedeni de aynı şekilde ilgili kaynakçanın görev değer inancı ve başarım kaçınma güdüsü arasında negatif bir ilişki beklendiği yönündeki yargısıdır (Wolters, Yu, & Pintrich , 1996; Xiang, McBride & Bruene, 2004). Bu şekilde bir sonuç kültürel bir faktör olabilir. Türkiye bireysel özellik gösteren geleneksel, kolektivist kültüre sahip bir ülke (Kağıtçıbaşı, 1994; Tsuladze; 2007). Kolektivist kültürlerde kişiler benliklerini topluma göre tanımlarlar. Ek olarak bu kültürlerde grup çalışmasıyla ulaşılan hedef kişisel hedeflere göre önceliğe sahiptir (Markus, Kitayama, & Heiman, 1996). Elliot, Chirkov, Kim, ve Sheldon'a göre (2001) kolektivist kültürden gelen insanlar başarım kaçınma hedeflerini diğerlerine göre daha çok benimseme eğilimindedirler. Dahası bu kültürlerde başarım kaçınma hedefleri olumsuz sonuçlarla ilişkili değildir çünkü böyle toplumlarda olumsuz sonuçları engelleme dürtüsü değerli bir amaçtır. Bu görüşü destekleyen bir araştırmada, Bong, (2001) görev değer inancı ve hedef yönelimi arasındaki ilişkiyi incelemek için kolektivist kültür yapısına sahip başka bir ülkeyi, Kore'yi seçerek şu sonuca varmıştır: görev değer inancı başarım kaçınma hedefleriyle pozitif bir ilişki içindedir. Kültürel etkilerin yanı sıra, Türkiye'de eğitim

sistemi yüksek oranda rekabetçi ve sınav odaklı bir yapıya sahiptir. Bu çalışma yapılırken ortaokul öğrencileri her yıl sonunda yapılan seviye belirleme sınavlarına giriyorlardı. Bu sınavlar sıralama sınavlarıydı ve sınav sonucu lise tercihlerinde önemli rol oynamaktadır. İyi bir liseye devam edebilmek için bu sınavlardan yüksek puan almak gereklidir. Bu şekilde rekabetçi bir çevrede öğrenciler sadece kendi başarılarını gösterme eğiliminde değil aynı zamanda sınıfta en düşük seviyeli öğrenci olma kaygısıyla kötü not almama eğilimindedirler. Bu kültürel ve sistemsel faktörler bu çalışmadaki sürpriz sonuçları açıklamada yardımcı oluyor.

Bu çalışmadaki yol modeline göre, öğretmen ve ailenin hedef algısının hedef yöneliminin öncülleri olmasının yanında diğer motivasyonsal inançlar ile de ilişkilidir. Ailelerinin ve fen bilgisi öğretmenlerinin, dersi öğrenme ve anlamaya, o ders ile ilgili becerileri arttırmanın daha önemli olduğunu düşünen öğrenciler fen bilgisi dersini öğrenme kapasiteleri hakkında daha pozitif yargıya sahip oluyorlar (öz yeterlilik) ve okulda öğrenilen fen bilgisi derslerini daha ilgi çekici, faydalı ve önemli olarak görüyorlar. Bunun yanında başarısızlık korkusu ve öz yeterlilik arasında negatif bir ilişki varken başarısızlık korkusu ve görev değer inancı arasında pozitif bir ilişki gözlemlenmiştir. Daha detaylı olarak, başarısızlığın özsaygılarını azaltacağına inanan öğrenciler genellikle akademik öğrenme kapasiteleri hakkında olumsuz yargıya sahip olmakta, fen bilgisi dersini öğrenmek için gerekli olan becerileri sergileyemeyeceklerini düşünmektedirler. Ayrıca başarısızlığın utanç verici olduğunu düşünen, bir başarısızlık karşısında çok utacaklarına, sıkılacaklarına inanan öğrenciler dersleri ilgi çekici bulma, derslerin önemli ve faydalı olduğunu düşünme gibi pozitif görüşlere sahipler. Bu çalışmadan çıkan sonuçlar gösteriyor ki düşük düzeyde içsel bilim ilgisi olan ve akademik görevleri önemli olduğu kadar faydalı bulan öğrenciler başarısızlık korkusuna kapılmaya daha çok meyillidirler. Bu sonuç Türk eğitim sistemiyle de bir nebze olsun açıklanabilir. Türkiye'de fende kariyer hedefleyen öğrenciler sayısal derslerde başarılı olmanın yanında aynı zamanda üniversite giriş sınavında yüksek derecelerde olmak zorundalar. Bir yanlış cevap bile sıralamada yüksek düşüşlere neden olurken hedefledikleri fakülteye girmelerinde önlerinde engel oluşturabilir. Bu yüzden de derslerin ve hedeflerin çok

önemli olduğunu düşünen öğrencilerin yüksek düzeyde de başarısızlık korkusuna sahip olmaları bu sisteme bağlanabilir.

Ayrıca, sonuçlar ortaya koyuyor ki görev değer inancı öz yeterlilik ile kuvvetli bir bağa sahiptir. Bir başka deyişle oluşturulan yol modeline göre fen bilgisi dersindeki akademik görevleri faydalı, eğlenceli ve ilgi çekici bulan öğrencilerin kendi kapasiteleri hakkında daha pozitif bir yargıya sahip olmakta, yani öz yeterlilik inançları artmaktadır. Öz yeterlilik ve görev değer inancı beklenti-değer teorisinin iki ana maddesidir. Bu iki güdüsel inanç öğrencilerin akademik başarım, istikrar ve seçim sürecinde çok etkilidirler (Wigfield& Eccles, 1992). Literatürdeki bir çok araştırma sonuçları da bu ilişkiyi doğrular niteliktedir (Bong, 2001; Cole & Denzine, 2004; Eccles & Wigfield, 1995; Eccles & Wigfield 2002; Jacobs, Lanza, Osgood, Eccles & Wigfield, 2002; Pajares & Miller, 1994; Senler & Sungur; 2009). Bu bağlamda bu çalışmada ortaya çıkan öz yeterlilik ve görev değer inancı arasındaki pozitif ilişki beklenen bir sonuçtur.

Yol analizi sonuçlarına göre düşük not engelleme dürtüsüyle çalışan, ya da diğer öğrenciler yanında yetersiz görünmeyi engelleme odaklı olan öğrenciler, bir başka değişle başarım kaçınma hedeflerini benimseyen öğrenciler planlama, gözlemleme gibi üst bilişsel becerilerini diğerlerine göre daha etkili kullanmaya meyillidirler. Ustalık yaklaşma hedef yönelimi yerine başarım kaçınma hedeflerinin üst bilişle pozitif ilgisi beklenmeyen bir sonuçtu çünkü ilgili kaynakça pozitif stratejilerin ustalık yaklaşma hedefleri ile pozitif ilişkili olduğunu, başarım kaçınma hedefleri ile ise negatif ilişkili olduğunu ortaya koyuyor (Elliot, McGregor & Gable, 1999; Coutinho & Neuman, 2008). Yol analizi öğrencilerin hedef yönelimi ve üstesinden gelme strateji kullanımları arasındaki ilişkiye bakarak şu sonuca varıyor: Fen bilgisi dersinde yeni yetenekler geliştirmek için, yeni bilgi keşfetme amacıyla çalışan öğrenciler akademik bir başarısızlıkla karşılaştıklarında nerede hata yaptıklarını görmeye çalışıp, bir daha ki sefere daha fazla çaba göstermekte başkalarını bu başarısızlık hakkında suçlamayı ise daha az tercih etmektedirler. Buna zıt olarak fen bilgisi dersinde herhangi bir konuyu öğrenememeyi, yada bir noktayı yanlış anlamayı engellemeye yönelik nedenlerle çalışan öğrenciler diğer kişileri suçlamaya meyillidirler.. Buna ekle olarak fen bilgisi dersinde yüksek not almak için,

en iyi öğrenci olmak için, kısacası kendilerini göstermek için çalışan öğrenciler, hatanın nerede olduğunu anlamaya çalışarak bir sonraki denemede daha çok çalışma ve kendi yeteneklerini suçlama eğilimindedirler. Özet olarak, sonuçlar gösteriyor ki ustalık yaklaşma hedefleri uyumlu üstesinden gelme stratejileri ile pozitif, uyumsuz üstesinden gelme stratejileri ile negatif ilişkilidir. Ustalık kaçınma hedefleri ise uyumsuz üstesinden gelme stratejileri ile pozitif ilişkilidir. Ayrıca başarım yaklaşma hedeflerinin hem uyumlu hem de uyumsuz üstesinden gelme stratejileri ile pozitif ilişkide olduğu söylenebilir. Son olarak mevcut sonuçlar gösteriyor ki başarım kaçınma hedefleri uyumsuz üstesinden gelme stratejileri ile herhangi bir anlamlı ilişkisi yoktur. Bu sonuç ilgili kaynakçanın iki değişken arasında, uyumsuz üstesinden gelme ve başarım kaçınma hedefleri arasında, pozitif bir ilgi olduğunu göstermesi nedeniyle beklenmeyen bir sonuç olmuştur (Brdar, Rijavec& Loncaric ;2006; Friedel, Cortina, Turner & Midgley, 2007).

Kaynakçayla tezat oluşturan başarım kaçınma güdüsüne sahip Türk ilköğretim öğrencilerinin üst bilişsel stratejileri daha etkili kullanması ve uyumsuz üstesinden gelme stratejiler kullanmaması kültürel faktörler nedeniyle ve sınav odaklı Türk eğitim sistemiyle ilgili olabilir. Önceden de belirtildiği gibi Türk toplumu gibi kolektivist kültüre sahip toplumlarda başarım kaçınma güdüsü daha baskındır. Ve başarım kaçınma güdüsü uyumsuz sonuçlara bağlı değildir (Elliot, Chirkov, Kim, & Sheldon, 2001). Bu görüşü destekleyen bir çalışma Sungur ve Şenler tarafından 2009 yılında yapılmıştır. Araştırmacılar hedef yönelimi ile Türk lise öğrencilerinin üst bilişi hakkında araştırma yaparak başarım kaçınma hedeflerinin öğrencilerin üst bilişsel strateji kullanımı arasında pozitif bir ilişki olduğunu öne sürmüşlerdir (2009).

Yol analiz sonuçları gösteriyor ki fen bilgisini öğrenmek konusunda kendi akademik kapasiteleri hakkında pozitif yargıları olan ve akademik görevleri faydalı, ilgi çekici, önemli bulan öğrenciler üst bilişsel stratejileri kullanma konusunda öz yeterlilik ve görev değer inancı düşük olan öğrencilere göre daha başarılılar. Bunun yanında bu öğrenciler uyumlu üstesinden gelme stratejilerini yüksek düzeylerde

kullanmaktadırlar. Fen bilgisi dersi ile ilgili bir etkinliğe daha fazla önem veren öğrenciler daha az önem veren öğrencilere göre daha etkili öğrenme stratejileri kullanmaktadırlar.

Başarısızlık korkusu ile hedef yöneliminin sonuçları yani üst biliş ile üstesinden gelme stratejileri arasındaki ilişkiye bakıldığında ise sonuçlar gösteriyor ki başarısızlığı utanç verici bir olay olarak gören ve başarısızlığın gelecek planlarını etkileyeceğini düşünen öğrenciler üst bilişsel stratejiler daha etkili bir şekilde kullanabilmektedirler. Buna zıt olarak başarısızlığı nedeniyle sosyal ilgiyi, ailelerinden veya öğretmenlerinden gördükleri ilgi gibi, kaybedeceğini düşünen öğrenciler fen bilgisi dersindeki öğrenme süreçlerini planlama, izleme ve değerlendirme gibi üst bilişsel stratejileri daha etkili kullanmaktadırlar. Üstesinden gelme stratejileriyle ilgili olarak ise başarısızlığın utanç verici olduğunu düşünen öğrenciler başkalarından ziyade kendilerini suçlarken olanları unutmayıp başarısızlığı göz ardı etmiyorlar. Başarısızlığın özsaygılarını yitimine neden olacağını düşünen öğrenciler ise akademik başarısızlıkla karşılaştıklarında kendilerini suçlamaya daha meyilli oluyorlar. Başarısızlığın gelecek planlarını değiştirme nedeni olduğunu düşünen öğrenciler ise hem kendilerini hem çevreyi suçlarken akademik başarısızlığı göz ardı etmeye meyilli oluyorlar. Başarısız olduğunda aile ya da öğretmenin ilgisini kaybedeceğini düşünen öğrenciler ise başkalarını suçlayıp başarısızlığı unutma eğiliminde oluyorlar. Son olarak başarısızlığının ailesini ya da öğretmenini hayal kırıklığına uğratacağını düşünen öğrencilerin başkalarını suçlama davranışı diğerlerine göre daha az olma eğiliminde. Önceki araştırmalara tezat oluşturacak şekilde, bu çalışma başarısızlık korkusunun yalnızca uyumsuz üstesinden gelme stratejilerine değil aynı zamanda uyumlu stratejilere de bağlı olduğunu öne sürüyor. Önceki araştırmalar genellikle öğrencilerdeki başarısızlık korkusunun uyumsuz üstesinden gelme stratejileri gibi olumsuz sonuçlar doğurduğunu ortaya atmıştır (Blankstein, Flett, & Watson, 1992; Veisson, Leino, Ots, Ruus & Sarv; 2004; Bartels, & Magun-Jackson; 2008)

Bu çalışma öğrencilerin öğretmen ustalık hedef algısının üst bilişsel strateji kullanımıyla pozitif ilişki içinde olduğunu önermektedir. Buna zıt olarak yol modeline göre aile veya öğretmenlerinin yüksek not almayı önemsediğini algılayan

öğrenciler akademik başarısızlıkla karşılaştıklarında sadece kendilerini değil, başkalarını da suçlama eğiliminde bulunuyorlar ve başarısızlığı önemsememe, göz ardı etme eğiliminde oluyorlar. Bir başka deyişle öğretmenlerinde başarım yönelimi algısını gözlemleyen öğrenciler izdüşümsel, inkar ve üstesinden gelememe gibi uyumsuz üstesinden gelme stratejilerini kullanmaya daha meyilli oluyorlar.

Bu çalışmanın bulgularını maddeler halinde özetleyecek olursak;

- fen bilgisini öğrenme konusunda pozitif inançları olan öğrenciler fen dersini becerilerini göstermek, yüksek notlar almak için çalışmaktadır. Bunun yanı sıra, üst bilişsel stratejileri daha etkili ve akademik bir başarısızlıkla karşılaştıklarında uyumlu üstesinden gelme stratejileri kullanmaktadırlar.
- Fen bilgisi dersindeki akademik etkinlikleri önemli, eğlenceli ve ilgi çekici bulan öğrenciler fen bilgisini öğrenme konusunda daha pozitif inançlara sahip olup, kendilerini geliştirmek ve en düşük notu alan öğrenci olamamak için ders çalışmakta ve üst bilişsel stratejileri daha etkili kullanmaktadırlar.
- Başarsızlığın kendilerini utandıracağını düşünen öğrenciler fen bilgisi dersinde her hangi bir noktayı kaçırmamak veya öğrenememeyi engellemek için ders çalışmakta, üst bilişsel stratejileri etkili bir şekilde kullanmakta, fen bilgisi dersindeki etkinlikleri daha önemli, kullanışlı ve ilgi çekici bulmaktadırlar. Akademik bir başarısızlıkla karşılaştıklarında ise başkalarını değil kendilerini suçlamakta ve başarısızlığı görmezden gelmeye çalışmamaktadırlar.
- Başarısızlığın kendilerine olan güvenlerini sarsacağını düşünen öğrenciler fen bilgisi dersinde her hangi bir konuyu anlayamamayı engellemek için çalışmakta ve bir akademik başarısızlıkla karşılaştıklarında ise kendi becerilerini, yeteneklerini suçlamakta ve daha düşük öz yeterlilik inancına sahip olmaktadırlar.
- Başarısızlığın gelecek planlarını olumsuz bir şekilde etkileyeceğini düşünen öğrenciler üst bilişsel stratejileri daha etkili biçimde kullanmakta, akademik

bir başarısızlıkla karşılaştıklarında ise kendilerini ve başkalarını suçlamakta ve başarısızlığı görmezden gelmeye, önemsememeye çalışmaktadırlar.

- Başarısızlık sonucu çevreden gördükleri sosyal ilgiyi kaybedeceklerini düşünen öğrenciler öğrenme sürecini planlama, denetleme ve değerlendirme gibi üst bilişsel stratejileri daha az etkili kullanmamak, akademik bir başarısızlık karşısında başkalarını suçlamakta ve başarısızlığı görmezden gelmeye çalışmaktadırlar.
- Başarsızlıklarının aileleri veya öğretmenleri gibi önem verdikleri kişileri üzeceğini düşünen öğrenciler fen bilgisine en düşük notu almaktan kaçınmak, veya başkaları önünde küçük düşmemek için çalışmakta ve akademik bir başarısızlık karşısında başkalarını suçlamak yerine bunu görmezden gelmeye çalışmakta.
- Ailelerinden fen bilgisinde kişisel gelişimin, öğrenmenin önemli olduğunu algılayan öğrenciler fen bilgisine yeni şeyler öğrenmek, becerilerini geliştirmek veya öğrenememeyi engellemek için çalışmakta, fen bilgisini öğrenme kapasiteleri konusunda pozitif inançlara sahip olmakta, fen bilgisi dersindeki etkinlikleri ilginç, önemli bulmakta ve bir başarısızlıkla karşılaştıklarında nerede hata yaptıklarını bulmaya veya bir dahaki sefer daha fazla çalışmayı denemektedirler.
- Ailelerinden fen bilgisinde yüksek notlar almanın veya becerinin önemli olduğunu algılayan öğrenciler fen bilgisine yüksek notlar almak, kendilerini göstermek veya düşük not almamak için çalışmaktadırlar.
- Fen bilgisi öğretmenlerinden fen bilgisinde kişisel gelişimin, öğrenmenin önemli olduğunu algılayan öğrenciler fen bilgisine yeni şeyler öğrenmek, becerilerini geliştirmek için çalışmakta, fen bilgisini öğrenme kapasiteleri konusunda pozitif inançlara sahip olmakta, fen bilgisi dersindeki etkinlikleri ilginç, önemli bulmakta ve üst bilişsel stratejileri daha etkili kullanmaktadırlar.
- Fen bilgisi öğretmenlerinden fen bilgisinde yüksek notlar almanın veya becerinin önemli olduğunu algılayan öğrenciler bir başarısızlıkla

karşılaştıklarında hem kendilerini hem başkalarını suçlamakta ve başarısızlığı görmezden gelmeyi denemektedirler.

- Fen bilgisi dersinde yeni şeyler öğrenmek, veya becerilerini arttırmak için çalışan öğrenciler bir akademik başarısızlıkla karşılaştıklarında nerede yanlış yaptıklarını bulmayı, bir dahaki sefer daha fazla çalışmayı denemekte, başarısızlıkları karşısında başkalarını daha az suçlamaktadırlar.
- Fen bilgisi dersinde yanlış anlamayı veya herhangi bir noktayı anlayamamayı engellemek için çalışan öğrenciler bir akademik başarısızlıkla karşılaştıklarında sadece kendilerini değil diğer insanları da bu başarısızlıktan sorumlu görmektedirler.
- Fen bilgisi dersinde yüksek notlar almak için, yeteneklerini diğer insanlara göstermek için çalışan öğrenciler akademik bir başarısızlıkla karşılaştıklarında nerede yanlış yaptıklarını bulmaya çalışmakta ve bir sonraki sefer daha fazla çalışma yöntemini seçmektedirler.
- Fen bilgisi dersinde kötü notlar almamak için veya başkaları önünde küçük düşmemek için ders çalışan öğrenciler öğrenme sürecini planlama, denetleme veya değerlendirme gibi üst bilişsel stratejileri diğerlerine göre daha etkili kullanmaktadırlar.