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PREDICTING STUDENT TASK MOTIVATION: THE ROLE OF
ENDORSED
ACHIEVEMENT GOALS AND PERSONAL CHARACTERISTICS

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BY

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April 2016

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ABSTRACT

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This study is a quantitative experimental design that investigates the relationship between students' achievement outcomes (i.e., undesired outcomes, such as cheating behaviors and desired outcomes such as intrinsic motivation) and their achievement goals that were adapted for autonomous and controlling reasons. Additionally, this investigation considered students' individual values and their dispositional motives that are related to the need for achievement and to the fear of failure. In this research, 219 students participated and completed a set of questionnaires that were written in their native language (Turkish). The study was conducted in the School of English Language within a private non-profit university in Ankara, Turkey. The study had six conditions that encouraged students to adopt one out of three achievement goals (i.e., performance-approach, intrapersonal-approach and intrapersonal-avoidance) for two motivational reasons (i.e., autonomous and controlling). A controlling neutral condition was also conducted (i.e., no induced any goal nor underlying reason.). The manipulation check for analysis elicited that the conditions did not work successfully. Analysis showed that participants were not affected from either the

inducing achievement goals or from the induced underlying reasons. Some key findings of this study were that students who endorsed achievement goals for autonomous reasons (e.g., interest and enjoy the task) and controlling reasons (e.g., felt pressure and tension) during the task. Additionally, students who endorsed the goal for autonomous reasons did not show a tendency to cheating. Both the need for achievement and fear of failure predicted autonomous reasons that were underlying the endorsement of intrapersonal-approach goal. On the other hand, neither the need for achievement nor fear of failure predicted autonomous reasons underlying the endorsement of either performance-approach or intrapersonal-avoidance goal. Furthermore, students who have endorsed the value to pursue their own interest (i.e., self-enhancement value) are less likely to endorse the goal to improve themselves (intrapersonal-approach goal) during a particular task. The study concludes with recommendations and implications for the findings.

Key words: autonomous and controlled motivation, cheating, individual values, intrinsic motivation, need for achievement, fear of failure and achievement goals.

ÖZET

BİR GÖREV ÜZERİNDE ÖĞRENCİ MOTİVASYONLARINI TAHMİN ETME: EDİNİLMİŞ BAŞARI HEDEFLERİNİN ROLÜ VE KİŞİSEL KARAKTERLER

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Bu çalışmada deneysel tasarım yöntemi kullanılmış olup öğrencilerin başarı çıktıkları (ör; istenmeyen hedefler; kopya çekme davranışı ve istenilen hedefler; içsel isteklendirme) ile otonom ve kontrol nedenlerinin başarı hedefleri ile uyarlanmış ilişkisi araştırılmıştır. Ayrıca bu çalışmada öğrencilerin bireysel değerleri ve başarıya olan ihtiyaç ve başarısızlık korkusu güdülerine olan yatkınlıkları, öğrenci isteklendirme belirleyicisi olarak özel bir görevde kullanılmıştır. Bu çalışmada, Ankara ilindeki kar amacı gütmeyen özel bir üniversitenin İngiliz Dili Okulu'nun 219 öğrencisi katılmıştır. Öncelikle kendi dillerinde yazılmış (Türkçe) bir anket dizisi tamamlamışlardır ve sonrasında rastgele verilmiş yedi deneysel koşulu, iki isteklendirme nedenlerinden (ör; otonom ve kontrol) biri ile performans yaklaşımı ya da içsel yaklaşım ya da içsel kaçınma başarı hedeflerinden biri içselleştirmeleri teşvik edilmiştir. Deneye bir tarafsız kontrol koşulu dâhil edilmiştir (ör; ne hedef ne de altında yatan sebep teşvik edilmiştir). Manipülasyon kontrol listesi gösteriyor ki koşullar başarılı şekilde çalışmadı ve öğrenciler deneysel koşullarda önerilen nedenle başarı hedeflerini ister istemez benimseyemediler. Gerek otonom, gerekse kontrol nedenler koşula bakmaksızın öğrenciler tarafından belirlenmiştir. Bundan dolayı öğrencilerin edinmesi teşvik edilen başarı hedefi koşulu ve altında yatan neden yerine öğrencilerin

edindiđi özel neden için başarı hedefleri dikkate alınarak analiz yapılmıřtır. Bu alıřmada bazı önemli sonuçlar, özel bir görevde öğrenciler tarafından edinilmiş otonom nedenlerle hangi başarı hedefi olursa olsun, ilgi çekici ve eğlenceli bulundu oysaki kontrol nedenlerle herhangi bir başarı hedefi edinmiş öğrenciler, görev sırasında baskı ve gerilim hissettiler. Ayrıca otonom nedenler il bir hedefi edinenler kopya çekme davranışına meyletmediler. Diğer yandan hem başarıya olan ihtiyaç hem de başarısızlık korkusu içsel yaklaşım hedefi desteđi altında yatan otonom nedenlerle tahmin edildi oysa ne başarıya olan ihtiyaç ne de başarısızlık korkusu performans yaklaşımı ya da içsel kaçınım hedefinin altında yatan otonom nedenlerle tahmin edilemedi. Bunun yanında öğrenciler değer edinirken kendi ilgilerini izlediler (ör; kendini geliştirme değeri), öğrenciler kendilerini geliřtirmek için belirli bir görevde daha az olası hedef edinmişlerdir (içsel yaklaşım hedefi). Bu sonuçlarda, yönergeler ve bunları eğitim için uygulamalar yönünden tartışılmasının yanı sıra öğretmen eğitimine ilişkin önerilerde tartışılmıştır.

Anahtar Kelimeler: Otonom ve kontrol motivasyon, kopya çekme, bireysel değer, içsel motivasyon, başarı ihtiyacı, başarısızlık korkusu ve başarıma hedefleri.

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CHAPTER 1: INTRODUCTION

Introduction

This research aims to investigate the relationships among students' personal characteristics, motivation and educational outcomes. Specifically, it focuses on whether achievement goals proposed to students in an autonomous supportive or a controlling way are differentially related to students' cheating behavior and intrinsic motivation. It is also examined to what extent students' personal characteristics are related to their motivation. To this direction, the present research investigates the predictive value of students' tendency to approach success (need for achievement) or to avoid failure (fear of failure) for their situational motivation (i.e., during a specific task). Furthermore, it investigates whether individual values or achievement goals at school could be considered as additional predictors of students' situational motivation (i.e., during a specific task).

This chapter defines two aspects of students' motivation: named achievement goals and autonomous versus controlling reasons underlying achievement goals. These goals will also be defined as the need for achievement and fear of failure. Schwartz (1992) further identifies these goals as achievement motives and individual values.

Background

Achievement goals

In achievement goal theory, achievement goals have been defined as an individual's intention to gain competence (task involvement) or to demonstrate competence (ego involvement) (Nicholls, 1984). Task involvement requires intrinsic motivation to focus on the task at hand; students with a task involvement orientation act less under the pressure of fear of failure. Students with an ego involvement orientation want to increase their own ego. In this case, students feel more pressure in the face of failure because these students complete the tasks to prove their self-image.

The task and ego involvement orientation introduced by Nicholls (1984) were further developed by Dweck and associates (Dweck & Leggett, 1988) and Ames (1992) under the labels of "mastery goals" (for task involvement) and "performance goals" (for ego involvement). Mastery goals are related to several positive outcomes like intrinsic motivation and deep-learning (Vansteenkiste, Smeets et al., 2010); whereas performance goals are predictors of more negative learning outcomes such as depression (Elliot & Moller, 2003)

At the end of the 1990s, Elliott and his colleagues revised the mastery-performance goal dichotomy by incorporating aspects of Atkinson's (1957) approach and avoidance motivation (Elliot & Church, 1997; Elliot & Harackiewicz, 1996). In approach motivation if students do not have test-anxiety, their abilities decrease and if students have text-anxiety, their abilities increase (Atkinson & Feather, 1966). By

incorporating the approach and avoidance motivation into the achievement goal perspective, scholars proposed to conceptualize “achievement” in terms of “competence.” In this revised framework, performance goal construct is bifurcated to form performance-approach and performance-avoidance goals. Furthermore, a hierarchical model of achievement motivation was proposed by Elliot (1999) suggesting that several personal or contextual antecedents of achievement goals could be investigated. In this model, it tested excessively the need for achievement and fear of failure as well as competence beliefs as antecedents of the achievement goals. However researchers also assumed that other personal or contextual characteristics could be tested as potential antecedents of achievement goals (Elliot, 1999; Elliott & Church, 1997).

Through the hierarchical model of achievement motivation, achievement goals obtained a *valence* quality related to the approach (need for achievement) and avoidance (fear of failure) antecedents. Additionally, achievement goals are differentiated according to how students define their competence. These two fundamental dimensions of achievement goals, *valence* and *competence definition*, resulted in the introduction of a 2x2 achievement goal model. In this model, mastery goals also divided into mastery-approach and mastery-avoidance goals (Elliott & McGregor, 2001). Elliot and McGregor (2001) claimed that the 2x2 framework is more comprehensive than the mastery-performance dichotomy because it describes four different achievement goals that are related to different educational outcomes:

- *Mastery-approach goals* (absolute/interpersonal and positively valence) in the 2X2 model focus on approaching success and on self-based criteria in

competence evaluation and. Students with mastery-approach goals use the improvement of their performance as criterion for their competence and they improve their skill to achieve success.

- *Performance-approach goals* (normative and positively valance) focus on the attainment of other-based competence. Students with performance-approach goals focus on to perform better than other students.
- *Mastery-avoidance goals* (absolute/interpersonal and negatively valance) focus on self-based criteria for judging competence, but the avoidance of failure is also prominent. Students with mastery-avoidance goals focus on avoiding learning less than it is possible
- *Performance-avoidance goals* (normative and negatively valance) focus on avoidance of other-based incompetence. Students with performance-avoidance goals focus on not performing worse compared to others (Elliott, Murayama, & Pekrun, 2011).

Autonomous and controlled motivation

According to the Self-determination theory (SDT; Deci & Ryan, 2000), individual's motivations are either autonomous or controlled. In autonomous motivation individuals are volitionally engaged in an activity and they regulate their behavior by intrinsic or well-internalized extrinsic motives. In other words, they are interested in an activity because they enjoy it (intrinsic) or because it is of value to them (well-internalized extrinsic). An autonomous motivated student does his or her homework with sense of volition. In controlled motivation, individuals are engaged in an activity because of external demands and they regulate their behavior for either

external (e.g., to gain reward or avoid punishment) or *introjected* motives (e.g., to gain self-esteem and avoid feel guilty) (Vansteenkiste, Smeets et al., 2010; Deci & Ryan, 2000;). A controlled motivated student does his or her homework without a sense of volition. In recent years autonomous and controlled motivation has been combined with achievement goals and provides profound reasons for goal setting in achievement situations (Vansteenkiste, Smeets et al., 2010).

In educational settings, teachers can promote specific achievement goals to their students. Teachers' autonomous and controlling ways of inducing achievement goals can affect students' behaviors. If a teacher's goal is to control student behavior, this is a controlling way of inducing achievement goals. Alternatively, if the teacher intends to support students' interests, his or her actions might induce students to achieve goals autonomously (Reeve, Bolt, & Cai, 1999). Teachers' autonomous support is positively related to students' autonomous regulation, whereas teachers' controlling style is positively related to students' controlling regulation (Deci & Ryan, 2000).

Intrinsic motivation

Intrinsic motivation refers to engagement in activities for pleasure, enjoyment and challenge. Intrinsic motivation is at the very end of the self-determination continuum (Deci & Ryan, 2000), where autonomous motivation starts on one end when a behavior is monitored by identified regulation (i.e., personal benefits) and ends when a behavior is intrinsically regulated (i.e., interest and enjoyment). For this reason,

intrinsic motivation could be an inherent part of autonomous motivation. Many studies have examined the relationship between the achievement goals and intrinsic motivation. In this line with this research, *mastery goals* have been positively related to intrinsic motivation, whereas *performance goals* have been negatively related to it (Elliot & Harackiewicz, 1996). Furthermore, high achievement motivation (strong enjoyment in all situations) and low achievement motivation (enjoyment just with coherent targets) showed different intrinsic motivation on *performance goals* (Durik & Harackiewicz, 2003).

Personal characteristics

Achievement motives (Need for achievement & fear of failure)

McClelland, Atkinson, Clark and Lowell (1953) define achievement motives as “affect in connection with evaluated performance in which competition with a standard of excellence was paramount.” The achievement motives are acquired personality characteristics established in early age.

The need for achievement reflects a motive for success and anticipation of pleasure, whereas fear of failure reflects a motive to avoid failure (fear of failure) escorted by an anticipation of an unpleasant situation (Atkinson & Feather, 1966). The need for achievement has many positive educational outcomes, like intrinsic motivation. Fear of failure has some negative educational outcomes and is negatively related to intrinsic motivation (Elliot & Murayama, 2008; Elliot & McGregor, 2001).

Moreover, the need for achievement is positively related to students' approach

achievement goals, whereas fear of failure is positively related to students' avoidance achievement goals, as well as to students' performance-approach goals in an attempt to overcome the possibility of failure (Elliot & Church, 1997; Fryer & Elliot, 2007).

Individual values

For Schwartz, individual values are used to evaluate the situation, actions and people. He initially categorized individual values into ten basic ones: self-direction, stimulations, hedonism, achievement, power, security, conformity, tradition, benevolence and universalism (Schwartz, 1992, 2005a). However, more recently, Schwartz reconsidered and refined the individual values, suggesting nineteen distinct values defined in terms of their motivational goals. This more refined approach intended to reduce measurement problems (Schwartz et al., 2012).

The theory of the basic individual values orders them in a circular motivational continuum. In this circular continuum, 19 values are divided to four dimensions which are organized by similarities and dissimilarities. According to Schwartz's theory, *openness to change value* highlights openness to new ideas, experiences and actions; *self-enhancement value* highlights the importance of pursuing one's interest; *conservation value* highlights the avoidance tendency to change, the tendency to self-restriction and obey to orders; *self-transcendence value* highlights the importance of transcending one's own interest (Schwartz et al., 2012).

Problem

Within the educational environment, teachers can focus on specific achievement goals and they may try to induce their students to endorse them. But if the teacher decides what students are to learn, students can choose whatever they want based on their own decision. Such a situation suggests different reasons for students to adopt the teacher's achievement goal. Teachers' autonomous and controlling ways of inducing achievement goals can affect students' behaviors. If a teacher's goal is to control student behavior, this is a controlling way of inducing achievement goals; alternatively, if the teacher intends to support students' interests, his or her actions might induce students to achieve goals autonomously (Reeve, Bolt, & Cai, 1999).

In addition to teachers motivating styles, personal characteristics of students (i.e., fear of failure, need for achievement and individual values) could be related to their endorsement of particular achievement goals. However, up to now it was not clear how these personal and contextual characteristics were combined to produce specific goal endorsement. Nor were the reasons underlying goal endorsements understood. It was not also clear what the relation was between these two motivational variables: achievement goals and reasons in relation to students desired and undesired educational outcomes. Achievement Goal Theory (Elliot & McGregor, 2001) offers a theoretical framework that explains how different achievement goals of students may result in different cheating behaviors (Anderman & Danner, 2008), but what is the case if students adopt those achievement goals for autonomous or controlling reasons?

Purpose

This study seeks to gain insights into the relationship between students' desired and undesired educational outcomes (i.e., intrinsic motivation and cheating behavior) and their achievement goals adopted for autonomous or controlling reasons. It is also examined to what extent students' personal characteristics like their achievement motives (i.e., need for achievement and fear of failure), individual values and achievement goal at school are related to students' motivations.

Research Questions

The research questions are:

- Do inducing different achievement goals in either an autonomous or a controlling way affect students' cheating behaviors and intrinsic motivation?
- Do students' personal characteristics (i.e., fear of failure, need for achievement and individual values) predict students' autonomous versus controlling reasons for pursuing achievement goals during a task?

Significance

There are no experimental studies that investigate the causal effect of achievement goals—that may be induced in either an autonomous versus controlling way—on cheating behaviors and intrinsic motivation. Previous research used different methods, such as longitudinal design, to investigate the relation between achievement goals and educational outcomes (Daniels et al, 2009), correlation analysis (Diseth & Kobbeltvedt, 2010) and mediation analysis. Additionally, there

are no researches that investigate the relation of personal characteristics on the adoption of particular achievement goals for autonomous or controlling reasons.

Understanding the relation of students' personal characteristics with their motivation and the causal effect of achievement goals, induced in either an autonomous versus controlling way, on cheating behaviors and intrinsic motivation will help understand students' educational outcomes. The findings of this study will help improve educational practices as they will give insight into the quality of motivation teachers can focus on and how. It will also advise parents, or even students, about effective achievement motivation.

Definition of key term

Achievement goals, the goal endorsed in an achievement situation (mastery-approach and performance-approach) (Elliot & McGregor, 2001).

Autonomous reasons are engaging an activity volitionally and regulating behaviors by intrinsic motivation (Vansteenkiste, Smeets et al., 2010).

Cheating is an illegal and unfavorable behavior when the students complete the task to get answer (Anderman & Danner, 2008).

Controlling reasons reflect that one feels compelled by internal or external pressure to do something (Deci & Ryan, 2000).

Fear of failure a motive to avoid failure accompany by an anticipation of unpleasant (Atkinson & Feather, 1966).

Individual values that show the priorities of individuals which is used to evaluate the situation, actions and the people (Schwartz, 1992, 2005a).

Intrinsic motivation refers to engagement in activities for the inherent to the activity pleasure, enjoyment and challenge. Intrinsic motivation is the very end of the self-determination continuum (Deci & Ryan, 2000).

Need for achievement a motive for success and anticipation of pleasure (Atkinson & Feather, 1966).



CHAPTER 2: LITERATURE REVIEW

Introduction

The purpose of this literature review is to provide background information and context about the current study. Students endorse certain goals when they engage themselves in a task or class activity; each of these goals has reasons for which they are endorsed. During the engagement, students' aims and the reasons for endorsing these aims can result in desired or undesired educational outcomes. The current study investigated the relation between students' achievement goals, along with reasons that underlies both the desired outcome of students' intrinsic motivation and the undesired outcome of students' involvement in cheating. Additionally, this investigation considered students' individual values and their dispositional motives that are related to the need for achievement and to fear of failure. This consideration was included in the study because students' personal characteristics might be related to their motivation and outcomes.

The beginning of this chapter reports research findings related to the relationship between students' achievement goals and educational outcomes. Then, studies that investigate the relationship between autonomous versus controlled motivation and educational outcomes are summarized. Additionally, very recent findings regarding the relationship between the motivational complex of achievement goals and their underlying autonomous and controlling reasons with educational outcomes are reviewed. Finally, findings pertaining to the personal characteristics of individual values and dispositional motives and their relation to students' motivations will be reported.

The relationship of achievement goals to educational outcomes

Over the last decades, achievement goals have been conceptualized differently by various scholars (Hulleman, Schrager, Bodmann, & Harackiewicz, 2010). Depending on the conceptualization that researchers have (Hulleman, Durik, Schweigert, & Harackiewicz, 2008) and the age of the students (Bong, 2009), achievement goals have been linked with different antecedents (e.g., initial interest, perceived competence, achievement motives etc.) as well as with different educational outcomes (e.g., learning strategies, performance, cheating etc.). Regarding the relation of students' age with achievement goals, Bong (2009) found that younger students tend to strongly endorse mastery-approach goals, whereas early adolescent students tend to endorse performance-approach goals more often. Mastery-avoidance and performance-avoidance goals are the least endorsed among young students (Bong, 2009).

Cheating behavior has been associated with motivational orientations (Newstead, Franklyn-Stokes, & Arrnstead, 1996). One of the motivational perspectives for studying cheating behavior is the achievement goal theory (Ames & Archer, 1988; Maehr&Midgley, 1991). According to Jordan (2001), cheating behavior is related to lower mastery motivation and higher extrinsic motivation.

Regarding the different conceptualizations of achievement goals, Elliot and McGregor (2001) proposed a 2x2 framework to identify a number of relations. Individuals with mastery-approach goals use more advanced skills during studying. Mastery-approach goals have been also positively correlated with self-efficacy and

academic performance (Bong, 2009), as well as with intrinsic motivation (Elliot & Harackiewicz, 1996). On the other hand, mastery goals have not been related to cheating (Murdock, Miller, & Kohlhardt, 2004). As students with mastery goals desire to learn and improve themselves, cheating is not in their behavior repertoire (Anderman & Danner, 2008).

Mastery-avoidance goals have been positively related to students' inefficiency while studying for exam, including their anxiety and nervousness (Bong, 2009; Elliot & McGregor, 2001). However, mastery-avoidance goals are also positively correlated with intrinsic motivation, which is a desired positive experience for students (Elliot & Harackiewicz, 1996).

Elliot & McGregor (2001) link performance-approach goal adoption with both negative and positive educational outcomes. For instance, performance-approach goals are positively related with learning efficacy but also with the memorization of topics. Moreover, individuals who adopt performance-approach goals tend to cheat more compared to individuals who adopt mastery goals (Vansteenkiste, Mouratidis et al., 2010; Anderman, Griesinger, & Westerfield, 1998). Performance-approach goals have been also negatively related with intrinsic motivation (Elliot & Harackiewicz, 1996). Performance-avoidance goals have been negatively related to self-confidence and time management and also negatively related to learning efficacy and intrinsic motivation (Elliot, Murayama & Pekrun, 2011).

Elliot, Murayama & Pekrun (2011) in an improved 3X2 proposed achievement goal model, bifurcated mastery-approach goals to task-approach and intrapersonal-approach goals. Indeed, they found that students with task-approach goals were interested in and enjoyed the lesson (intrinsic motivation) and they easily understand difficult topics (learning efficacy). Furthermore, the study by Elliot, Murayama & Pekrun found that intrapersonal-approach goals are positive predictors of feeling motivated.

The relationship between autonomous versus controlled motivation to educational outcomes

In self-determination theory, autonomous motivation has been defined as being motivated by intrinsic or well-internalized extrinsic motives like personal interest, curiosity, and personal values. However controlled motivation indicates that one feels compelled by internal or external pressure to do something (Deci & Ryan, 2000).

The literature has pointed out that autonomous motivation is related to positive educational outcomes like deep learning, well-being, feeling satisfaction, concentration, and time management; whereas, controlled motivation is related to negative educational outcomes such as test anxiety, lack of self-confidence, and maladaptive coping strategies (Koestner et al., 2008; Ryan & Connell, 1989; Roth, Assor, Niemiec, Ryan & Deci, 2009; Vansteenkiste, Mouratidis et al., 2010).

According to Reeve & Jang (2006), autonomy-supporting teacher behaviors include taking into consideration what students want, allowing time for students to work in their own ways, offering encouragement, and providing rationales for tasks. These behaviors were correlated with students' autonomous motivations and positive educational outcomes such as social development and well-being. They emphasize that autonomy-supportive teacher behaviors help students internalizing activity, enabling them to reveal their personal values, interest and goals. On the other hand, controlling teachers' behaviors such as extensive teacher-talk (not giving students enough time to talk), criticizing students, asking controlling questions and giving solutions to students before they discover them on their own have been correlated with students' controlling motivation and negative educational outcomes.

One study by Vansteenkiste, Mouratidis and their colleagues (2010) investigated the relation of autonomous and controlling regulations on performance-approach goals with educational outcomes. In this study, they showed that the pursuit of performance-approach goals for autonomous reasons is positively related to enjoyable, stimulating, challenging, and deep cognitive processes. Students who endorse performance-approach goals for autonomous reasons show less stress and more concentration on the learning activity. However, the pursuit of performance-approach goals for controlling reasons is positively related to stress, test anxiety, and lack of task absorbed engagement. Regarding academic achievement, students who had autonomous reasons for adopting performance-approach goals had higher grades than students who had controlling reasons for adopting performance-approach goals (Vansteenkiste, Mouratidis et al., 2010).

Autonomous and controlled regulation of achievement goals

This section summarizes research findings pertaining to the relationship of achievement goals—along with their underlying autonomous versus controlling reasons—to educational outcomes. Vansteenkiste, Mouratidis et al. (2010) focused on performance-approach goals and their underlying autonomous and controlling reasons. They found that individuals with autonomous reasons behind performance-approach goals concentrate on their task and have self-discipline; however, individuals with controlling reasons tend to have test-anxiety and difficulty to concentrate on their task. They also found that individuals who autonomously endorse performance-approach goals tend to cheat less compared to individuals who endorse performance-approach goals for controlling reasons (Vansteenkiste, Mouratidis et al., 2010).

In a similar direction, Gillet and his colleagues (2014) conducted a study that investigated the effects of autonomous and controlled regulation of performance-approach goals on wellbeing. According to their hierarchical regression analyses, performance-approach goals were positively related to goal attainment (making considerable progress toward attaining the goal), autonomy (having free choices), competence (feeling efficient), positive affect (feeling excited and enthusiastic), and satisfaction (feeling satisfy with their university courses). In a second step, the researchers added autonomous and controlled reasons underlying performance-approach goals as predictors to the regression analysis; when they did this the initial picture changed. Performance-approach goals no longer predicted the outcomes; whereas, autonomous reasons had positive a relationship with goal attainment, competence, satisfaction and positive affect. Controlling reasons also had a negative

relationship with autonomy, competence and positive affect. This study has shown that adding autonomous and controlling reasons underlying performance-approach goals to the regression analyses reduced the effect of performance-approach goals effects.

Gaudreau (2012) examined the mastery-approach and performance-approach goals that pursue self-concordant reasons. The result of the study showed that mastery approach goals are positively related with academic satisfaction, while performance-approach goals are positively related with high performance. When these goals are compared, mastery-approach goals are connected with personal values and interest while performance-approach goals are connected with social and self-imposed pressure.

Michou, Vansteenkiste et al. (2014) introduced achievement motives (fear of failure and need for achievement) as antecedents of the goal complex; that is, the achievement goals and linked autonomous and controlling reasons. They also examined whether the autonomous and controlling reasons underlying learners' achievement goal mediate between achievement motives and educational outcomes. The need for achievement is positively related to both mastery-approach goals and performance-approach goals, as well as to autonomous reasons for pursuing the achievement goals. Fear of failure is positively related to performance-approach and performance-avoidance goals, as well as to controlling reasons underlying the achievement goals. Moreover, they pointed out that mastery-approach goals and autonomous underlying reasons mediate the relation between the need for

achievement and effective learning strategies. This mediation of the autonomous reasons was verified in a second study not only between need for achievement and learning strategies but also between need for achievement and cheating, although the link was negative. Furthermore, Michou and her colleagues found a direct positive relationship between fear of failure and cheating as well as a direct negative relationship between fear of failure to critical thinking. Direct positive relation was linked to the need for achievement with learning strategies.

Personal characteristics and their relation to student motivation

Life values and students motivation

The theory of the basic individual values order them in a circular motivational continuum (Schwartz et al., 2012). In this circular continuum, the 19 values are divided into four higher order dimensions based on their motivational goal.

One of the four dimensions is the *self-enhancement dimension* that includes the values of achievement, power, and hedonism. According to Schwartz's theory, the self-enhancement dimension defines as "the desire for personal success attained through normative competence, and power, that is, control over resources and people" (Schwartz, 2007).

Pulfrey and Butera (2013) found that adherence to self-enhancement values is related to the endorsement of performance-approach goals and to cheating among university students. When students value achievement, power, and the hedonistic aspects of life, they are more likely to cheat in order to gain social approval. Additionally, they claimed that students' competition and feeling pressured to win in the school environment increases stress levels to reach this achievement value.

The self-enhancement dimension in Schwartz's theory of basic values is very similar to extrinsic values defined by Kasser and Ryan (1993; 1996). Specifically, Ryan and Kasser (1996) have included fame, wealth, and image to the extrinsic values that are closely related to hedonism and power. The extrinsic values have been related to lower psychological well-being and higher distress. They assumed that the self-enhancement dimension of values is positively related to micro-worries which are defined one's personal health, social acceptance, success and finances.

▶ Schwartz' second dimension of basic values is *openness to change*. In this dimension stimulation, self-direction, and hedonism are included (Schwartz et al., 2012). The openness to change dimension highlights people's openness to new ideas, experiences and actions and seems to be more related to a focus on progress and improvement. For these reasons, adherence to openness to change value are more related to mastery goals (i.e., the goal to do better than I did before). Mastery goals have several positive outcomes like intrinsic motivation and deep-learning processing (Elliot & Harackiewicz, 1996; Vansteenkiste, Smeets et al., 2010).

A third dimension is *conservation value dimension* that highlights the tendency to avoid change. A conservation value contrast with openness to change values, and includes conformity, security, and tradition (Schwartz et al., 2012). According to the European Social Survey, conservation value and self-enhancement value are related to personal anxiety; whereas, openness to change value and self-transcendence value are not (Schwartz, 2010). According to Ros, Schwartz and Surkiss (1999), conservation values (e.g., job security and income for general security) are less important values for both teachers and education students. In contrast, self-

transcendence is the most important, followed by openness to change and self-enhancement value. Conservation value is positively related with extrinsic work (i.e., good salary, job security) values (Ros, Schwartz & Surkiss, 1999) and therefore it is considered as a value that does not promote students' optimal motivation.

The last dimension is *self-transcendence value* that highlights the importance of transcending one's own interest. Self-transcendence value contrasts with self-enhancement value and includes value of universalism and benevolence (Schwartz et al., 2012). Self-transcendence value negatively correlates with micro-worries and positively correlates with social work values (i.e., intrinsic region: meaningfulness, responsibilities, use of one's abilities; prestige region: achievement, advancement, status, recognition and independence) (Schwartz, 2010). For this reason, self-transcendence value is considered as an intrinsic value. Intrinsic values have been related with autonomous motivation and mastery-approach goals (Vansteenkiste, Timmermans, Lens, Soenens, & Van de Broeck, 2008)

Achievement motives and students motivation

In achievement motivation theory, the need for achievement highlights students tendency to approach success and fear failure highlights their tendency to avoid failure (Atkinson & MacClelland, 1953; Elliott & Church, 1997). The need for achievement has been positively related to desired educational outcomes such as intrinsic motivation and academic performance (Urda, 1997). Fear of failure has been positively related to negative educational outcomes such as low academic performance and task avoidance and has been negatively related to intrinsic motivation (Elliot & McGregor, 2001; Elliot & Murayama, 2008). Moreover, the

need for achievement has been positively related to students' approach achievement goals, whereas fear of failure has been positively related to students' avoidance achievement goals (Elliot & Church, 1997). The fear of failure has been also related to students' performance-approach goals because outperforming others can prevent the failure (Elliot & Church, 1997; Fryer & Elliot, 2007).

Elliot and Church (1997) proposed a model of achievement motivation in which the need for achievement and fear of failure were integrated as the antecedents of achievement goals and, more particularly, as the achievement motives that define the approach or avoidance valence of achievement goals. More recently, Michou, Vansteenkiste et al. (2014) proposed an enriched model in which the need for achievement and fear of failure were considered as antecedents of autonomous and controlled motivation. Specifically, Michou, Matsagouras and Lens (2014) found that the need for achievement positively related with autonomous motivation, whereas the fear of failure positively was related with controlled motivation in educational settings.

In conclusion, the current study aimed to understand the relationship between student's motivation, personal characteristics and educational outcomes.

Additionally, the study investigated the relation between students' achievement goals along with their underlying reasons to both students' intrinsic motivation and cheating.

CHAPTER 3: METHOD

Research design

This study is a quantitative experimental design; it sought to gain insights into the relationship between students' achievement outcomes (i.e., cheating behavior and intrinsic motivation) and their achievement goals that were adopted for autonomous or controlling reasons. As the main purpose at the study was to investigate the causal effect of inducing achievement goals in an autonomous or controlling way to cheating and intrinsic motivation, an experiment was conducted.

Experimental design investigates the causal connection between independent and dependent variables (Kirk, 2009). The main components of experimental design are the manipulation of independent variables, use of controls and the careful measurement of dependent variables. Through the experimental design, the researcher can extract the maximum amount of information by spending the minimum amount of resources (Kirk, 2009).

An experimental study usually involves a number of experimental groups and a control group. This study had six conditions that encouraged students to adopt performance-approach, intrapersonal-approach or intrapersonal-avoidance goals for either autonomous, controlling reasons. These six conditions (3 achievement goals X 2 reasons) were assigned to six experimental groups, while a neutral condition was assigned to a control group (i.e., no induced any goal nor underlying reason).

Students were randomly assigned to each condition and they performed series of spatial tasks. As randomization was important, particular attention was paid to make sure all participants had an equal chance of being assigned to any of the experimental or control conditions.

The independent and dependent variables of the experiment are presented below:

Independent variables:

- Achievement goals induced by the conditions for autonomous or controlling underlying reasons.
- Personal characteristics (i.e., individual values, achievement goals in schooling and need for achievement or fear of failure) measured by a survey.

Dependent variable:

- Cheating behavior while completing a spatial test
- Intrinsic motivation while completing a spatial test

Participants were given two series of spatial exercises to solve. The document containing the spatial exercises included cover page that instructed participants which goal to adopt; participants were given only one goal and were unaware of the other conditions. Which participants received which condition was randomly assigned, and some participants received no condition (i.e., control). After participants completed the spatial exercises participants, they answered some questions regarding the extent to which their assigned goal affected their completion of the problem-solving exercises. Finally, participants were asked about their

achievement goals, individual values and achievement motives for the English class in which they were currently enrolled.

Context

The study was conducted with preparatory students who were enrolled in the School of English Language, part of a private non-profit university in Ankara, Turkey.

The School of English Language is one of the largest institutions of its kind in Turkey and is comprised of three parts; the English Language Preparatory Program, the Faculty Academic English Program and the English and Translation Studies department. The large number of students attending this institution allowed for a sufficient population for participants to be randomly selected for each of the conditions in the experiment. The study was conducted within twenty-four different classrooms; each classroom was supervised and monitored by a qualified classroom teacher from the School of English Language.

Participants

The study involved 219 students who completed a set of questionnaire that was written in their native language (Turkish). The mean age of the participants was 19.25 and ranged from 18 to 21. Figure 1 summarizes the number of females and males participants in the study.

Gender	N	Percent of sample population
Females	105	50.23
Males	95	43.37
Gender not Given	19	6.40
Total	219	100

Figure 1: Number of females and males in the sample

Instrumentation

Experiment

Experimental conditions-independent variables

A 3X2 experimental design was used for developing the experimental conditions in this research. This design was composed of the following **three achievement goals**:

- 1) *intrapersonal-approach goal* focused on the improvement of the intrapersonal competence
- 2) *performance-approach goal* focused on gain normative competence
- 3) *intrapersonal-avoidance goal* focused on the avoidance of intrapersonal incompetence (Elliot, Murayama, & Pekrun, 2011)

The design also included the following **two underlying reasons** for endorsing **each** of these achievement goals:

- 1) *autonomous reasons* defined as volitional regulations
- 2) *controlling reasons* defined as pressuring regulations (Deci & Ryan, 2008).

The experiment included a control condition as well, in which neither an achievement goal nor an underlying reason was induced. Therefore, in total seven conditions were induced randomly to the participants.

Following is a description of each of the conditions and examples of how they were included in the questionnaire.

The intrapersonal-approach/autonomous condition focused on the choice that the participants have during the experiment to improve their personal skills in spatial exercises (see Appendix B). An example statement of the condition is the following: “Success and achievement are all about *personal improvement*, so you have the *opportunity* to work individually on the puzzles trying to improve your personal performance.”

The intrapersonal-approach/controlling condition focused on demanding the participants to improve their personal skills in spatial exercises (see in Appendix C). An example statement of the condition is the following: “Success and achievement are all about *personal improvement* and so *you are expected* to work individually on the puzzles, and to *prove* that you can improve on your personal performance.”

The performance-approach/autonomous condition focused on the choice that the participants have to do better than their classmates (see in the Appendix D). An example statement is the following: “Success and achievement are all about *who does best* and you have the *opportunity* to

work individually on the puzzles, trying to perform better than the other students.”

The performance-approach/controlling condition focused on instructing the participants to do better than their classmates (see in the Appendix E). An example statement is the following: “Success and achievement are all about *who does best* and so *you are expected* to work individually on the puzzles, and *to prove* that you can perform better than the other students.”

The intrapersonal-avoidance/autonomous condition focused on the choice that the participants have not to do worse in the second set of spatial exercises than they did in the first one (see in the Appendix F). An example statement is the following: “Success and achievement are all about making sure you *don’t do worse in each set of problems than you did in the previous one* so you have the *opportunity* to work individually on the puzzles, *trying to ensure that your personal performance doesn’t deteriorate.*”

The intrapersonal-avoidance/controlling condition focused instructing the participants not to do worse in the second set of spatial exercises than they did in the first one (see in the Appendix G). An example statement is the following: “Success and achievement are all about making sure *you don’t do worse in each set of problems than you did in the previous one* and so *you are*

expected to work individually on the puzzles and to prove that your personal performance doesn't deteriorate."

The Control condition did not induce any particular achievement goal or underlying reason. Participants were only given some instructions about the task (see in the Appendix A).

The experimental task - spatial exercises

After the participants were induced to adopt a particular achievement goal for either autonomous or controlling reasons, they were tasked to solve the spatial exercises individually. There were two series of spatial problems, each with six exercises. Spatial problems involve creating a line drawing; however, in this case, participants were instructed to create the drawings without lifting their pencil off the paper and without retracing any line. Some of the figures can be drawn without lifting the pencil off paper; but some of figures are impossible to create without lifting the pencil off paper or retracing lines. Therefore, the researcher can easily determine if a participant "cheated" if he or she completed a figure that was impossible to draw without lifting the pencil off paper. After participants completed each set of spatial problems, they were asked in the questionnaire to indicate if they were able to solve each task.

Manipulation check - endorsed achievement goal during the task

After completing the experimental task portion of the instrument, participants were asked to report on their endorsed achievement goal. For this reason, three items from

the Achievement Goal Questionnaire (AGQ; Elliot, Murayama, & Pecrun, 2011) (see Appendix K) were used to ascertain students' endorsed achievement goals. These questions served as a manipulation check for the endorsed achievement goal of the study. Following is the question given to the participants which includes the three items of the AGQ.

Which of the three goals mentioned below was most important to you? Please circle your uppermost goal.

- “Do better as I go through them.” This first item indicated an *intrapersonal-approach goal*.
- “Do better than other students on these exercises.” The second item indicated a *performance-approach goal*.
- “Avoid doing worse in the second set of exercises than in the first set.” This last item indicated an *intrapersonal-avoidance goal*.

Manipulation check - autonomous vs. controlling reasons of the endorsed achievement goal

After students' chose their uppermost achievement goal, they were asked to think about why they wanted to achieve this goal. They responded to items that assessed possible autonomous and controlling reasons underlying their achievement goal. These questions served as a manipulation check for the autonomous and controlling reasons associated with the participant's endorsed achievement goal. For the manipulation check Vansteenkiste et al.'s (2010a) items were used (see Appendix).

Two items that assessed autonomous reasons were *identified* regulation (“I find this a personally valuable goal”) and *intrinsic* regulation (“I find this a highly stimulating and challenging goal”). The mean of these two items represented an autonomous reasons score. Furthermore, the internal consistency between these two items defined by the Cronbach’s alpha which for the autonomous reasons was $\alpha = .64$.

Two items that assessed controlling reasons included one *external* regulation (“I have to comply with the demands of others”) and one *introjected* regulation (“I would feel bad, guilty or anxious if I didn’t”). The mean of these two items represented a controlling reasons score. The internal consistency between these two items defined by the Cronbach’s alpha which for controlling reasons was $\alpha = .61$.

Dependent variables

Cheating

During the exercises, participants tried to draw figures without lifting their pencil off the paper and without retracing any line twice. Some of tasks were unsolvable; it was considered cheating if the participant completed these unsolvable tasks and answered “yes” to the statement, “I was able to do [the] exercise.” The number of the unsolvable problems that the participant completed indicated the strength of the cheating variable. Of the 219 participants, 179 (82%) did not cheat; 28 (13%) cheated once; 5 (2.3%) cheated twice; 4 (1.8%) cheated three times; 2 (.91%) cheated four times, and 1 person (.46%) cheated on all the tasks.

Indicators of intrinsic motivation

Four subscales of the Intrinsic Motivation Inventory [IMI; (Deci, Eghrari, Patrick & Leone, 1994)] were used as indicators of participants' intrinsic motivation in the spatial test. The instrument assessed participants' interest/enjoyment, value/usefulness, felt pressure/tension and intention during the exercise. Each of these motivations is described below:

Interest /Enjoyment

Six items from the Intrinsic Motivation Inventory [IMI; (Deci, Eghrari, Patrick & Leone, 1994)] were used to assess participants' interest and enjoyment during the spatial exercises (e.g., "I enjoyed doing them very much"). The items were answered in a 7-point Likert type scale, 1 (totally disagree) to 7 (totally agree). The internal consistency between these six items defined by the Cronbach's alpha which for interest/enjoyment motivation was $\alpha = .64$.

Value/usefulness

Four items from the Intrinsic Motivation Inventory [IMI; (Deci, Eghrari, Patrick & Leone, 1994)] were used to assess participants' internalization of exercises, people who were internalize, give importance and respect to the exercises, they experienced valuable for themselves. Value/usefulness is showed positive effect of intrinsic motivation which is comes from within a person (e.g. "I believe this activity could be of some value to me"). The items were answered in a 7-point Likert type scale, 1 (totally disagree) to 7 (totally

agree). The internal consistency between these four items defined by the Cronbach alpha which for value/usefulness motivation was $\alpha = .91$.

Felt pressure and tension

Five items from the Intrinsic Motivation Inventory [IMI; (Deci, Eghrari, Patrick & Leone, 1994)] were used to assess participants' pressure/tension which is showed negative effect of intrinsic motivation (e.g. "I felt pressured while doing them"). The items were answered in a 7-point Likert type scale, 1 (totally disagree) to 7 (totally agree). The internal consistency between these five items defined by the Cronbach's alpha which for felt pressure and tension motivation was $\alpha = .78$.

Intention

Three items from the Intrinsic Motivation Inventory [IMI; (Deci, Eghrari, Patrick & Leone, 1994)] were used to assess participants' intention which is showed us participant's' willingness of doing this exercises again (e.g. "I would like to do more exercises like these in my spare time"). The items were answered in a 7-point Likert type scale, 1 (totally disagree) to 7 (totally agree). The internal consistency between these three items defined by the Cronbach's alpha which for intention motivation $\alpha = .94$.

Survey to measure personal characteristics

Need for achievement & fear of failure

The participants' need for achievement and fear of failure was assessed by a shortened version of the Achievement Motivation Scale (AMS; Lang & Fries, 2006).

This version included ten items using a 5-point Likert type scale, (1 =strongly disagree, 2 =disagree, 3 =neither agree, nor disagree, 4 =agree, 5 = strongly agree). The need for achievement was assessed with five items from the scale (e.g., “When I am confronted with a problem, which I can possibly solve, I am enticed to start working on it immediately.”) The internal consistency between these five items was defined by the Cronbach’s alpha; need for achievement’s was $\alpha = .90$. Fear of failure also assessed with 5 items (e.g. “I am afraid of failing in somewhat difficult situations, when a lot depends on me.”) The internal consistency between these five items was defined by the Cronbach’s alpha, which for fear of failure was $\alpha = .86$.

Achievement goals (3x2)

The participants’ achievement goal for their class was assessed by a 3X2 Achievement Questionnaire (Elliot, Murayama, & Pekrun, 2011) which was constructed with the following six subscales (containing three items each):

- *Task-approach* (e.g. “...to get a lot of questions right on the exams in this class.” Cronbach’s $\alpha = .22$).
- *Intrapersonal-approach* (e.g. “...to do better on the exams in this class than I typically do in this type of situation.” Cronbach’s $\alpha = .80$).
- *Performance-approach* (e.g. “...to outperform other students on the exams in this class.” Cronbach’s $\alpha = .76$).
- *Task-avoidance* (e.g. “...to avoid incorrect answers on the exams in this class.” Cronbach’s $\alpha = .83$).
- *Intrapersonal-avoidance* (e.g. “...to avoid doing worse on the exams in this class than I have done in past on these types of exams.” Cronbach’s $\alpha = .88$).

- *Performance-avoidance* (e.g. "...to avoid doing worse than other students on the exams in this class." Cronbach's $\alpha = .67$).

Schwartz values

The Schwartz Value Survey (SVS; Schwartz, 1992; 2006) was used to assess participants' 19 individual values. Fifty-seven statements which described people with different values were given and participants reported how much that person was or were not like them. Items were scored by 6-point Likert type scales, (1 =not like me at all, 2 =not like me, 3 =a little like me, 4 =moderately like me, 5 =like me, 6 =very much like me). In this survey, four dimensions were used to define individual values. These dimensions were organized by similarities and dissimilarities.

According to Schwartz theory, *openness to change value* highlights openness to new ideas, experiences and actions; *self-enhancement value* highlights the importance of pursuing one's interest; *conservation value* highlights the avoidance tendency to change, the tendency to self-restriction and obey to orders; *self-transcendence value* highlights the importance of transcending one's own interest (Schwartz et al., 2012). Therefore openness to change and conservation values are contrast while; self-enhancement is opposite to self-transcendence values. ***Openness to change value*** contains 2 subscales; self-direction and stimulation emphasized creativity, freedom and exciting life (Cronbach's $\alpha = .69$). ***Self-enhancement value*** contains 2 subscales; power and achievement emphasized success, ambition, authority and wealth (Cronbach's $\alpha = .73$). ***Conservation value*** contains 5 subscales; security, tradition, conformity, humility and face emphasized obedience, humility, devoutness and social order (Cronbach's $\alpha = .83$). ***Self-transcendence value*** contains 2 subscales;

universalism and benevolence emphasized social justice, equality, helpfulness (Cronbach's $\alpha = .84$).

Method of data collection

Approval from the Ethical Committee and a review committee from the School of English language gave the required permission to carry out the experiment. Informed consent was obtained from all participants before they took part in the experiment. In the consent form, it was clearly stated what the participant was expected to do, that data will be kept confidential and that they could withdraw from the study at any time. Students participated in the experiment anonymously.

Before conducting the experiment, the researchers met with the teachers from the School of Language and described the experiment and its procedure. Researchers especially emphasized that it was important to adhere to the time limits assigned for each portion of the surveys. Sets of surveys were prepared for each class—ensuring that an equal number of conditions were represented in each set. The teachers were instructed, however, that which student received which survey/condition should be randomly administered.

The students first filled in the spatial test and then the teacher gave them a survey on personal characteristics. The spatial test had two series of questions with six exercises each. For each set, students were given eight minutes to complete the exercises. After each set, students were given three minutes to respond to follow up questions about their ability to solve the exercises (i.e., manipulation check). For the

survey on individual characteristics, students were allotted 10 to 15 minutes. The whole procedure lasted around 40 minutes.

Method of data analysis

- Preliminary analysis (using SPSS 20): Descriptives statistics of measured variables which were antecedents of achievement goals, life values, achievement goals and dependent variables represented.
- Bivariate correlations: Correlations among the studied variables are represented in this part and significantly correlated variables are pointed.
- MANOVA: It was run to test whether there were statistically significant differences in the studied variables between males and female.
- Main analysis (using SPSS 20): Manipulations were analyzed to check whether experimental conditions worked and manipulations were also analyzed to check if the induced autonomous or controlling underlying reasons were adopted by the participants.
- Regression analysis: In order to examine to what extend personal characteristics predict the reasons underlying the endorsed *intrapersonal-approach* or other *achievement goals* (i.e., intrapersonal-avoidance or performance-approach goals), hierarchical multiple regression analyses were performed.

CHAPTER 4: RESULTS

Introduction

This chapter presents the preliminary analysis of the data that includes the means and standard deviation of the measured variables, the bivariate correlations among them as well as a MANOVA testing for gender differences. The main analysis follows in which a manipulation check for endorsed achievement goals analyzed whether the experimental conditions worked. Another manipulation check for the reasons behind the endorsed achievement goals analyzed whether the conditions worked. A one-way ANOVA tested the differences between the autonomous and controlling conditions regarding the underlying reasons the participants reported endorsed their achievement goals during the experimental task. This statistical analysis was also used to compare differences between students that endorsed intrapersonal goal in the manipulation check and students that endorsed another goal. Moreover, beta coefficients from hierarchical multiple regression analyses with achievement motives, performance goals and life value were used as predictors for autonomous and controlling reasons (endorsed intrapersonal approach goals& endorsed other approach goals). Lastly, beta coefficients from simple regression analyses with autonomous and controlling reasons were used as predictors for intrinsic motivation. (endorsed intrapersonal-approach goals& endorsed other approach goals.

Preliminary analysis

Descriptive statistics of measured variables are represented in Table 1.

Table 1. Descriptive statistics of measured variables

Variable	M	SD
<u>Antecedents of achievement goals</u>		
1.Need for achievement	4.20	.68
2.Fear of failure	3.10	.97
<u>Life values</u>		
3.Openness to change	4.54	.71
4.Self-enhancement	4.50	.72
5.Conservation	4.37	.63
6.Self-transcendence	4.58	.77
<u>Achievement goals</u>		
7.Task-approach	3.64	1.02
8.Intrapersonal-approach	3.63	1.00
9.Performance-approach	2.92	1.06
10.Task-avoidance	3.43	1.09
11.Intrapersonal-avoidance	3.54	1.08
12.Performance-avoidance	2.82	1.23
<u>Dependent variables</u>		
13.Interest/Enjoyment	4.41	1.52
14.Pressure/Tension	3.28	1.31
15.Value/Usefulness	3.79	1.65
16.Intention	4.09	1.92
17.Cheating	.28	.77

Table 2. Correlations among the studied variables

Variable	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
1. Need for achievement	1																
2. Fear of failure	.02	1															
3. Openness to change	.16*	-.04	1														
4. Self-enhancement	-.06	-.28**	-.21**	1													
5. Conservation	-.24**	.02	-.38**	.04	1												
6. Self-transcendence	.05	.13	-.35**	-.30**	-.37**	1											
7. Task-approach	.40**	.18*	.10	-.12	-.13	.09	1										
8. Intrapersonal-approach	.34**	.12	-.02	-.09	-.18*	.19*	.72**	1									
9. Performance-approach	.17*	.22**	.06	-.18*	-.15*	.07	.56**	.54**	1								
10. Task-avoidance	.29**	.31**	.02	-.17*	-.02	.09	.74**	.70**	.54**	1							
11. Intrapersonal-avoidance	.26**	.31**	.05	-.13	-.12	.17*	.67**	.73**	.54**	.71**	1						
12. Performance-avoidance	.10	.40**	.04	-.23**	-.04	.09	.45**	.41**	.80**	.54**	.53**	1					
13. Interest/Enjoyment	.42**	-.01	.14	-.04	-.12	.05	.17*	.21**	.03	.11	.08	-.03	1				
14. Pressure/Tension	-.03	.32**	.07	-.21**	-.09	.09	.10	.12	.28**	.21**	.10	.34**	-.17*	1			
15. Value/Usefulness	.23**	.09	.06	-.07	-.12	.11	.17*	.27**	.14	.15*	.14	.14	.68**	.02	1		
16. Intention	.27**	.08	.05	-.05	-.02	.07	.22**	.26**	.13	.15*	.18*	.17*	.70**	.03	.80**	1	
17. Cheating	-.13	.00	.00	.01	.08	-.00	-.08	-.05	.04	-.04	-.02	.04	-.09	-.13	-.16*	-.18*	1

**p<.01, *p<.05

Regarding the *need for achievement* as it is shown in Table 2, this appetitive motive was positively and significantly correlated with all the achievement goals except for the performance-avoidance goals. It was also positively and significantly correlated with interest/enjoyment, value/usefulness and openness to change, negatively and significantly correlated with conservation value.

Fear of failure is shown in Table 2, this appetitive motive was positively and significantly related with all the achievement goals except for the intrapersonal-approach goals. It seems that fear of failure, even its core avoidance nature, is also related to task-approach and performance-approach goals that are considered as means to avoid the aversive situation of a failure. Fear of failure, as it was expected because of its aversive nature, was also positively and significantly related to pressure and tension feelings during a task pressure/tension.

Regarding life values, as predicted by the theory the *openness to change* value was negatively and significantly related with all the other life values (self-enhancement, conservation and self-transcendence). The *self-transcendence* value was positively and significantly correlated with intrapersonal-approach and intrapersonal-avoidance goals. The *conservation* value was also negatively and significantly related with self-transcendence, intrapersonal-approach and performance-approach. The *self-enhancement* value was negatively and significantly related with self-transcendence, performance-approach, task-avoidance and performance-avoidance goals and pressure/tension.

All the achievement goals (task-approach, intrapersonal-approach, performance-approach, task-avoidance, intrapersonal-avoidance and performance-avoidance) were positively and significantly inter-correlated.

Regarding the educational outcomes, the indicators of intrinsic motivation (i.e., interest/enjoyment, value/usefulness and intention) were positively and significantly correlated with need for achievement and some approach achievement goals; whereas, pressure/tension was positively associated with fear of failure, performance-approach goals, and performance-avoidance, intrapersonal-avoidance and task-avoidance goals. Finally, regarding cheating, it was negatively and significantly correlated with the perceived usefulness of the task as well as the intention to repeat the task both indicators of intrinsic motivation.

A MANOVA was run to test whether there were statistically significant differences in the studied variables between males and females. The MANOVA was significant, Wilks's lambda ($\Lambda = .81$), $F(1,142) = 2.243$, $p < .05$, multivariate $\eta^2 = .18$ is used to determine multivariate significance in gender. The studied variables that presented statistically significant gender differences are the following (see Table 3): *fear of failure* $F(1,142) = 5.04$, $p < .05$, $\eta^2 = .063$, *intrapersonal-approach goals* $F(1, 142) = 4.96$, $p < .05$, $\eta^2 = .034$, *intention* $F(1, 142) = 4.51$, $p < .05$, $\eta^2 = .031$ and *task-avoidance approach goals* $F(1, 142) = 4.86$, $p < .05$, $\eta^2 = .033$.

This results showed that females compared to males had significantly higher fear of failure ($M = 3.35$ vs. $M = 2.86$, $SD = .94$ vs. $SD = .96$), higher intrapersonal-approach goals ($M = 3.80$ vs. $M = 3.46$, $SD = .89$ vs. $SD = .91$) higher intention to do exercises ($M = 4.56$ vs. $M = .38$, $SD = 1.91$ vs. $SD = 1.93$) and higher task-avoidance goals ($M = 3.69$ vs. $M = 3.32$, $SD = 1.04$ vs. $SD = .94$).

Table 3. Corrected model intercept

Value	df	F	Sig.	Partial eta squared
Fear of failure	1,14	5.04	.00	.06
Intrapersonal -approach goals	1,14	4.96	.03	.03
Intention	1,14	4.51	.04	.03
Task-avoidance goals	1,14	4.86	.03	.03

**p<.01, p<.05*

Main analysis

Manipulation check for endorsed achievement goals

In this part, manipulations were analyzed to check whether experimental conditions worked. The analysis checked whether the participants endorsed the induced achievement goals for the induced underlying reasons during the experimental task. Table 4 showed that participants' achievement goals endorsed during the task. As shown in Table 4, 135 participants chose intrapersonal-approach goals as their most important goal during the experimental task; therefore, many students did not indicate their induced goal for their questionnaire response.

Table 4. Achievement goals endorsed during the task

	Frequency	Percent
1.Performance-approach	33	15.9
2.Intrapersonal-approach	135	65.2
3.Intrapersonal-avoidance	14	6.8
Total	182	88.0
Missing	25	12.0
Total	207	100.0

In order to determine which condition was assigned to the 135 participants who endorsed intrapersonal-approach goals during the task, the sample was filtered to include only those 135 students. Table 5 shows how many of the 135 intrapersonal-approach students were assigned to each condition. According to Table 5, only 37 (27.4%) participants that endorsed intrapersonal-approach goal were actually assigned the intrapersonal-approach condition. This result showed that most of the participants (72.6%) did not endorse their induced condition achievement goal; in other words the conditions and manipulation did not work successfully.

Table 5. Achievement goals endorsed by participant practically in during the task

	Frequency	Percent
1. Performance-approach goal	42	29
2. Intrapersonal-approach goal	37	27
3. Intrapersonal-avoidance	44	30
4. Control	20	14
Total	135	100

Manipulation check for the reasons behind the endorsed achievement goals

Manipulation checks were conducted for the endorsed achievement goals. The manipulations determined whether induced autonomous or controlling underlying reasons were adopted by the participants. For this analysis, the six conditions were separated into two groups. The first group included all the *autonomous conditions* induced for autonomous reasons that underlie the achievement goals (performance-approach autonomous, intrapersonal-approach autonomous and intrapersonal-avoidance autonomous conditions). Second group included all the *controlling conditions* that induced the controlling reasons for endorsed achievement goals (performance-approach controlling, intrapersonal-approach controlling and intrapersonal-avoidance controlling conditions). The one-way ANOVA was used to examine differences between the autonomous and controlling conditions (for the underlying reasons) that the participants reported for their endorsed achievement goals during the experimental task. The analysis showed that there were no significant differences between the autonomous and controlling conditions among the underlying reasons. This result emphasized that participants were not affected by either the induced achievement goals or the induced underlying reasons. Hence, the

conditions did not work; for this reason the analysis was continued by taking into consideration the achievement goal and underlying reasons the participants reported during the manipulation check (i.e., the endorsed goal during the experimental task).

According to the manipulation check for the endorsed achievement goals, 135 participants endorsed intrapersonal-approach goals, 14 students endorsed intrapersonal-avoidance goals and 33 students endorsed performance-approach goals. Because of the small number of participants who endorsed intrapersonal-avoidance and performance-approach goals, the sample was separated in two groups: participants who endorsed intrapersonal-approach goals and participants who endorsed other achievement goals other than intrapersonal-approach goals.

A one-way ANOVA was used to test the differences between students that endorsed intrapersonal goal in the manipulation check and students that endorsed other goals. Following are the results of the analysis using the one-way ANOVA results to compare students who endorsed intrapersonal goal to students that endorsed another goal:

- A marginally significantly higher need for achievement $F(1,156) = 3.76, p = .055, M = 4.27$ vs. $M = 4.05, SD = .62$ vs. $SD = .78,$
- A significantly lower performance-approach goal $F(1,178) = 6.20, p < .05, M = 2.78$ vs. $M = 3.19, SD = .96$ vs. $SD = 1.20$
- A significantly lower performance-avoidance goal $F(1,177) = 7.70, p < .01, M = 2.64$ vs. $M = 3.18, SD = 1.20$ vs. $SD = 1.22$

- A significantly higher self-enhancement value $F(1,174) = 8.14, p < .01, M = .05$ vs. $M = .13, SD = .42$ vs. $SD = .34$.
- No significance fear of failure $F(1,154) = 1.68, M = 3.03$ vs. $M = 3.25, SD = 1.00$ vs. $SD = .97$.

Although fear of failure was not significant in the one-way ANOVA, fear of failure was considered a predictor for autonomous/controlling reasons.

Do personal characteristics predict autonomous versus controlling reasons underlying achievement goals?

In order to examine to what extent personal characteristics predict the reasons underlying the endorsed *intrapersonal approach* or other *achievement goals* (i.e., intrapersonal-avoidance or performance-approach goals), hierarchical multiple regression analyses were performed. In these regression analyses, the variables that were shown to be different between students' with intrapersonal goals and students with other goals were used as predictors (i.e., need for achievement, performance-approach and performance-avoidance goals). In addition to these predictors, fear of failure was also included as a dispositional characteristic that is often related to controlled motivation.

Restricting the sample to students who endorsed intrapersonal goals, the autonomous and controlling underlying reasons were regressed in a two-step process. The need for achievement and fear of failure were regressed in step one. In step two, performance-approach, performance-avoidance goals and self-enhancement value were added to the regression. As shown in Table 6, in the first step, the need for

achievement was a significant positive predictor for the autonomous reasons and a negative predictor for the controlling reasons. Fear of failure was shown to be a significantly positive predictor for both autonomous and controlling reasons. In the second step, after performance-approach goals, performance-avoidance goals and self-enhancement value were added as predictors, there was a significance decrease in the explained variance. However, none of the three predictors predicted the autonomous reasons, even though performance-approach goals were marginally significantly positive and self-enhancement value was a significantly positive predictor for controlling reasons. It seems that the dispositional achievement motives are strong predictors of the underlying reasons of intrapersonal achievement goals.

Table 6 Beta coefficients from hierarchical multiple regression analyses with achievement motives, performance goals and individual values as predictors for autonomous and controlling reasons (endorsed intrapersonal-approach goals)

Predictors	Autonomous	Controlling
Step 1		
Need for achievement	.24*	-.15
Fear of failure	.27**	.31**
F	7.35**	6.41**
Adjusted R ²	.11**	.10**
Step 2		
Need for achievement	.23*	-.19*
Fear of failure	.21*	.15
Performance-approach	.01	.26
Performance-avoidance	.04	.11
Self-enhancement	-.14	-.19*
F	3.39**	7.33**
F change in R ²	.78	7.14**
Adjusted R ²	.11	.24**

*p<.05; **p<.01

For the second group, hierarchical multiple regression analyses were run to predict autonomous and controlling reasons behind the other endorsed approach goals. The achievement motives (need for achievement, fear of failure) were used as predictors step one and achievement motives, performance-approach goal, performance avoidance goal and self-enhancement used as predictors in step two. According to the analysis, there was no significant relationship between predictors and outcomes in either of the steps, but self-enhancement value was a marginally significantly

positive predictor for autonomous reasons and fear of failure motive was a marginally significantly positive predictor for controlling reasons underlying other goals (performance-approach goals or intrapersonal-avoidance goals).

Table 7 Beta coefficients from hierarchical multiple regression analyses with achievement motives, performance goals and individual values as predictors for autonomous and controlling reasons (endorsed another goals)

Predictors	Autonomous	Controlling
Step 1		
Need for achievement	.02	-.09
Fear of failure	-.02	.30
F	0.01	1.92
Adjusted R ²	-.05	.04
Step 2		
Need for achievement	-.10	-.13
Fear of failure	-.04	.15
Performance-approach	.29	-.18
Performance-avoidance	-.05	.40
Self-enhancement	.34	.01
F	1.10	1.09
F change in R ²	1.83	-0.59
Adjusted R ²	.01	.11

*p<.05; **p<.01

Table 8 shows the β values in the relationship between intrinsic motivation and for each predictor in the endorsed intrapersonal-approach. Autonomous reasons have a significantly positive relationship with interest and value, they also have a significantly negative relationship with pressure; but there was no significant relationship with intention and cheating. Moreover, controlling reasons do have not a significant relationship any intrinsic motivation. On the one hand, when students adopt an intrapersonal-approach goal because they find it important or pleasant (i.e., autonomous reasons), it is more likely that these students will enjoy the task in which

they are engaged, to give value to the task and to be willing to repeat such a task in the future. On the other hand, when students adopt intrapersonal-approach goals because they feel obliged to or because of self-worth concerns (i.e., controlling reasons), it is less likely they will find interest or value in a task or to be willing to repeat a task. Controlling reasons have no significant relationship with any intrinsic motivation items.

Table 8 Beta coefficients from simple regression analyses with autonomous and controlling reasons as predictors for intrinsic motivation. (endorsed intrapersonal-approach goals)

Predictors	Interest	Pressure	Value	Intention	Cheating
Autonomous	.24**	-.04	.29**	.25**	-.05
Controlling	.01	.16*	.05	.04	.08
F	5.32**	1.74	6.68**	4.60*	.42
Adjusted R ²	.06**	.01	.08**	.05*	-.01

*p<.05; **p<.01

Table 9 Beta coefficients from simple regression analyses with autonomous and controlling reasons as predictors for intrinsic motivation. (endorsed another goals)

Predictors	Interest	Pressure	Value	Intention	Cheating
Autonomous	.39**	.21	.46**	.38**	-.41**
Controlling	-.11	.44**	.03	-.01	-.11
F	4.87*	11.0**	7.97**	4.64*	7.25**
Adjusted R ²	.12**	.25**	.19**	.11*	.20**

*p<.05; **p<.01

In Table 9, β values indicate the relationship between intrinsic motivation and each predictor endorsed in other goals. Autonomous reasons have significantly positive relationships with interest, pressure, value and intention and a significantly negative relationship with cheating. Controlling reasons only have a significantly positive relationship with pressure. On the one hand, when students adopt performance-approach goal or intrapersonal-avoidance goal because they find it important or pleasant (i.e., autonomous reasons), it is more likely for these students to enjoy the task in which they are engaged, to give value to the task and to be willing to repeat such a task in the future. They also feel pressure because they want to be better than others or have not to do worse than before. On the other hand, when students adopt a performance-approach goal or intrapersonal-avoidance goal because they feel obliged to or because of self-worth concerns (i.e., controlling reasons), it is less likely for these students to find an interest or a value in a task or to be willing to repeat a task. They feel pressure because they want to be better others or not to do worse than before.

CHAPTER 5: DISCUSSION

Introduction

The purpose of the present study was to examine students' motivation and its relationship with personal characteristics and educational outcomes. Specifically, the aims of the study were twofold.

First, the study investigated to what extent inducing different achievement goals to students during a specific task, in either an autonomous or controlling way, affect outcomes (i.e., their cheating behavior and intrinsic motivation about the task).

Second, the study examined whether students' personal characteristics, such as their tendency to approach success (i.e., need for achievement) or to avoid failure (i.e., fear of failure), along with their individual values and achievement goals were related to their motivation during a specific task. To say it differently, when students enter a task with specific characteristics, does this relate to their motivation for the task?

In this chapter, the findings from the research are summarized and discussed. It starts with an overview of the study and a discussion of the results and findings. The discussion continues with implications for Turkish Education and further research. This chapter concludes with the study's limitations.

Overview of study

This research was a quantitative experimental design that conducted two experiments to investigate the following relationships:

- The relationship between students' achievement outcomes (cheating behavior and intrinsic motivation) and their achievement goals that were adopted for autonomous or controlling reasons for a specific experimental task.
- The relationship between students' personal characteristics (need for achievement, fear of failure and individual values) and their achievement goals that were adopted for autonomous or controlling reasons for a specific experimental task.

The study was carried out with 219 preparatory students who were enrolled in a preparatory school of English language. Students initially completed a survey in which they reported their individual values, their need for achievement and fear of failure as well as their achievement goals in courses given in the preparatory department. The Schwartz Value Survey (SVS; Schwartz, 2006) was used to assess students' 19 individual values. Four dimensions were computed from these 19 individual values: openness to change, self-enhancement, and conservation and self-transcendence value. The Achievement Motivation Scale (AMS; Lang & Fries, 2006) was used for assesses students' achievement motives: need for achievement and fear of failure. Students' achievement goals were assessed by the Revised-Achievement Goal Questionnaire (R-AGQ; Elliot & Murayama, 2008).

After the survey, students were randomly assigned seven experimental conditions. Six experimental conditions consisted of an introductory passage (in which a performance-approach or intrapersonal-approach or intrapersonal-avoidance goal was induced in either autonomous or controlling way) and a series of spatial tasks. The seventh experimental condition was a control condition in which no achievement goal was induced. A manipulation check was performed to determine whether students adopted the given goal for the corresponding given reason. To perform the manipulation check, three items from the 3x2 Achievement Goal Questionnaire (AGQ; Elliot, Murayama, & Pekrun, 2011) were used to check the endorsed achievement goal and four items from Vansteenkiste, Mouratidis et al.'s (2010) study were used to check the autonomous and controlling reasons underlying students endorsed achievement goals. Four subscales of the Intrinsic Motivation Inventory (IMI; Deci et al., 1994) were used to assess students' intrinsic motivation (i.e., interest/enjoyment, value/usefulness, pressure/tension, intention). Cheating was assessed by determining when students drew an unsolvable task.

Major findings and conclusions

This study addressed two research questions. The findings related to these questions are presented and discussed in this section.

The first research question is: Do inducing different achievement goals in either an autonomous or a controlling way affect students' cheating behaviors and intrinsic motivation?

To answer this question, participants were requested to adopt (induced) a specific achievement goal related to each experimental condition.

In the performance-approach goal condition, students were instructed to do better in the experimental task than their classmates.

In the intrapersonal- approach goal condition, they were instructed to improve their performance in the second set of exercises than they did in the first one

In the intrapersonal-avoidance goal condition, they were instructed to not do worse in the second set of exercises than they did in the first one.

Furthermore, the achievement goal was given in an either autonomous or controlling manner. However, according to the findings, participants were not affected by the induced achievement goals or by the induced underlying reasons. After completing the spatial task, most of the participants chose the intrapersonal-approach goal as their most important goal irrespective of the condition under which they supposedly participated. This manipulation check showed that conditions did not work.

There were different assumptions researchers made to explain why the experiment did not work as it was expected. One of the assumptions was that students did not read the first page in which the achievement goal and underlying reasons were included. Students probably focused only on solving the spatial task. To check this assumption, the researcher retrospectively applied one of the experimental conditions (i.e., performance-approach goal for controlling underlying reasons) orally to a class. The researcher thought that if the goal and reason were given orally rather than expecting students to read them, they could follow the instructions and endorse the given goal for the given reason. But, experiment did not work again. An informal

discussion with the students who participated in this orally-given condition revealed that they were not interested in competing with their classmates (i.e., to endorse a performance-approach goal), mainly because the task was not related with their study subject. In the light of this information, further research is needed about doing tasks that are more germane to students' subject area and interest.

As the experimental conditions did not work, regarding the first research question one can conclude that inducing different achievement goals in either an autonomous or a controlling way did not affect students' cheating behaviors and intrinsic motivation. However, there are two important findings regarding the relationship of the autonomous or controlling reasons underlying the participants' endorsed goal and their intrinsic motivation and cheating during the experimental task.

The first finding concerns the relationship of the autonomous and controlling reasons underlying the endorsed intrapersonal-approach goal with participants' intrinsic motivation during the task. Students who endorsed the intrapersonal goal for autonomous reasons experienced interest and enjoyment in the experimental task, they found the task valuable and they showed intention to repeat in the future similar tasks. Also, students who endorsed the intrapersonal goal for autonomous reasons did not show any tendency to cheat. However, students who endorsed the intrapersonal goal for controlling reasons, felt pressure and tension during the experimental task; they were less willingness to repeat similar tasks in the future. This finding is in accordance with the findings of Gaudreau (2012), who found that students with low autonomous reasons underlying mastery-approach goals feel higher academic anxiety. Hence, the same intrapersonal-approach goal, when it was

endorsed for different underlying reasons (autonomous or controlling), is related differentially to intrinsic motivation.

The second finding concerns the relationship of the autonomous and controlling reasons underlying participants' endorsed performance-approach or intrapersonal-avoidance goals with participants' experience of intrinsic motivation during the task. Students who endorsed either a performance-approach or an intrapersonal-avoidance goal for autonomous reasons showed interest and enjoyment during the task, they found the task valuable, and they had the intention to repeat similar tasks in the future same as students who endorsed intrapersonal-approach goal with autonomous reasons. Also the findings showed that the autonomous reasons underlying an endorsed performance-approach or intrapersonal-avoidance goal were negatively related with cheating in the experimental task. Students who endorsed either a performance-approach or an intrapersonal-avoidance goal for controlling reasons felt only pressure and tension during the experimental task, and they less showed less willingness to repeat in the future similar tasks. Also, students who endorsed the performance-approach or intrapersonal-avoidance goal for controlling reasons did not show tendency to cheating but it was not significant predictors for controlling reasons.

This finding is in accord with Vansteenkiste, Smeets et al.'s (2010) study which pointed out that students who endorsed performance-approach goals for autonomous reasons showed less stress and more enjoyment in the learning activity, whereas when they endorse the same goals for controlling reasons stress and test anxiety

were high. The findings of the present study suggest that the autonomous and controlling reasons underlying an endorsed achievement goal are differentially positively related with positive and negative outcomes respectively.

The second research question is: *Do students' personal characteristics (fear of failure, need for achievement and individual values) predict students' autonomous versus controlling reasons for pursuing achievement goals during a task?*

The findings were discussed regarding the relation of the reason underlying the endorsed goal to students' personal characteristics.

The first finding showed that both the need for achievement and fear of failure predicted autonomous reasons underlying the endorsement of intrapersonal-approach goal, whereas neither the need for achievement nor fear of failure predicted autonomous reasons underlying the endorsement of performance-approach or intrapersonal-avoidance goal. At the same time, controlling reasons underlying the intrapersonal-approach goal were predicted either positively by fear of failure in the first step of a regression analysis or negatively by need for achievement at the second step of the analysis. Alternatively, the controlling reasons underlying performance-approach or intrapersonal-avoidance goal were predicted only by fear of failure. It seems that the tendency to approach success is positively related or unrelated to autonomous motivation, a result that is partially consistent with Michou, Matsagouras et al. (2014). In the present study, however, the tendency to avoid failure was related to both autonomous and controlling reasons, a result that does not correspond to previous research. For example, Michou, Matsagouras et al. (2014) found in three different samples, the need for achievement was consistently related to

autonomous motivation and fear of failure and was consistently related to controlled motivation. This discrepancy between the results of the present study and a previous one regarding the relation of need for achievement and fear of failure with autonomous and controlled motivation could be attributed to cultural differences between the Turkish sample of the present study and the Belgian, German and Greek participants of the previous one. However, further research is needed on this issue as up to now, only in Michou, Matsagouras et al. (2014) have investigated the relations of need for achievement and fear of failure to autonomous and controlled motivation.

Regarding students' performance-approach goals in their education as predictors of their autonomous and controlling reasons underlying achievement goals during a specific task, the study showed that controlling reasons underlying intrapersonal-approach goals were predicted positively by performance-approach goals. However, controlling reasons underlying any other achievement goal were positively and negatively predicted by performance-avoidance and performance-approach goals respectively. These are inconsistent results that prevent a clear conclusion about the role of students' academic performance goals in predicting their motivation during a specific activity.

Finally, regarding students' self enhancement values as predictors of their autonomous and controlling reasons underlying achievement goals during a specific task, the study showed that controlling reasons underlying intrapersonal-approach goals were predicted negatively by self-enhancement values, whereas the autonomous reasons underlying performance-approach or intrapersonal-avoidance

goal were predicted positively by self-enhancement values. It seems that when students have endorsed the value to pursue their own interest (self-enhancement value) for a particular task, it is less likely they will endorse the goal to improve themselves (intrapersonal-approach goal). The reasons for this inclination may be because others obliged them to do the task or they would feel guilty if they didn't do the task (controlling reasons). Furthermore, it is more likely in this situation they would endorse the goal to outperform others (performance-approach goal) because it is a stimulating and challenging goal. This finding shows that the self-enhancement values could be a preventive factor for controlled motivation.

In conclusion, autonomous reasons underlying an endorsed goal predicted positively intrinsic motivation and negatively cheating and controlling reasons underlying an endorsed goal predicted positively pressure and tension. Also, self-enhancement values predicted negatively controlling reasons underlying intrapersonal-approach goals and positively autonomous reasons underlying all the other goals.

Implications for practice

In the consideration of current study's result, there are some implications for teachers' training and education. Teachers should be aware of the importance of students' quality of motivation in the production of their educational outcomes. Students could endorse adaptive or less adaptive achievement goals for qualitative different reasons. The combination of different achievement goals with different underlying reasons can be instigated either by teachers' instructional behavior or by

student's personal characteristic and values. For this reasons, in teacher training programs, pre-service teacher awareness about students' internalization process should be raised as well as awareness about their interpersonal style during teaching.

Teachers with an autonomous motivating style provide a comfortable classroom environment for students and facilitate them to internalize schools values. When the teachers give choices to students, they permit them to participate in decision making and follow their pace in learning, students' are more likely to endorse and achievement goal for autonomous reasons. Teachers also can minimize students' anxiety and feeling pressure on a given task. By using polite language, providing feedback and guidelines and understanding students' difficulties during a task or by avoiding the use of controlling words and threatening voice, teachers can support students' inner resources and foster their autonomous motivation.

If teachers provide the environment for students have autonomous reasons underlying an endorsed goal, students' interest and willingness to participate in class activities will increase and they will not try to cheat. In this way, teachers' assessment and evaluation will be more accurate. In the way, teachers' assessment methods are also important for creating a supportive environment, punishment for mistakes and rewards for success should be avoided as these push students to reach their goal for controlling reasons. Pre-service and in-service teachers need to be well educated through experiential approaches so as to thoroughly practice the above effective instructional strategies to support students' autonomous motivation.

Regarding students' personal characteristics, the need for achievement and self-enhancement values predicted students' autonomous motivation. For this reason programs that will foster both these personal characteristics can be set up to promote students personal development. These programs can be the product of a collaboration of the school community (teachers, counselors and parents) so as the value of strengthen the "person" student to be spread in the society. It should not be forgotten that, teachers' support is not enough to promote students growth. Schools, authorities and families should work together to coordinate their efforts to fulfil students' needs.

Implications for further research

Further research is needed in order to invent an effective way to induce specific achievement goals for specific reasons to participants in experimental research. Firstly, experimental design should be prepared according to participants' subject area (i.e., if the researcher apply the task Biology class students, the task should be related Biology course). Secondly, researcher should take into consideration the culture in which the experiment takes place so as to prepare the experimental conditions and measures in an appropriate way. Questionnaires from previous studies may be reliable, but the culture and language could change the meaning of the measured constructs. Finally, the implementation of the experimental condition should be enough long to achieve an effect on participants answers.

Limitations

This study was carried out within the Turkish education system which is characterized more by controlling teaching from teachers and more controlled motivation from students. Therefore, the results may have been influenced by this particular cultural context. Implementation of the experiment in other cultures is needed in order to conclude whether the experimental conditions work or not. Another limitation was that the questionnaires and experiment conditions were translated from English and therefore some concepts may not been interpreted accurately. Finally, the present study was an experiment which took place under specific conditions and the validity of the results in the real classroom settings is not guaranteed. The final and most crucial limitation is that the current study failed to answer all research questions. It is hoped that further research, using the guidelines provided by the present study, will help overcome most of these limitations.

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APPENDICES

APPENDIX A: Control condition and spatial test



Hello.

We are an international research team currently carrying out a study on Spatial Exercises in the sciences. We would be grateful if you could help us by carrying out two series of exercises and giving us your opinion of them in a short questionnaire. Remember that all information you provide in the questionnaires will be treated confidentially.

Thank you very much in advance for your cooperation!

Spatial Exercises

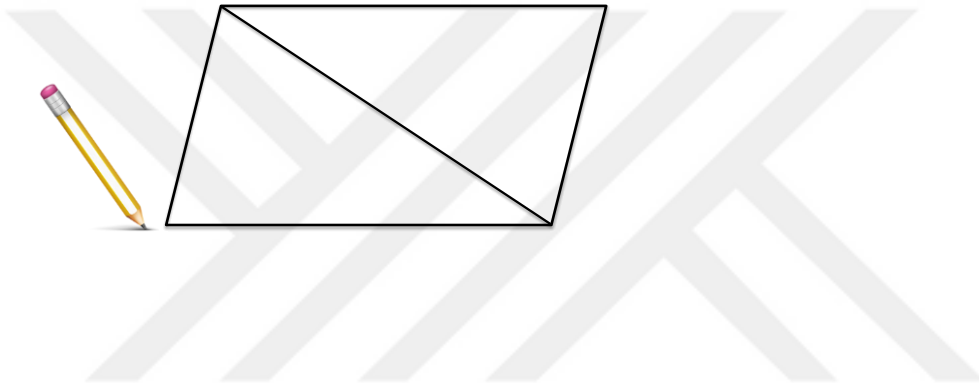
Over the page you will find a set of Spatial Exercises. There are two series of six spatial problems for you to try to solve individually. You will be given 8 minutes to solve each set of problems.

You will all receive the feedback scores once the whole study is completed.

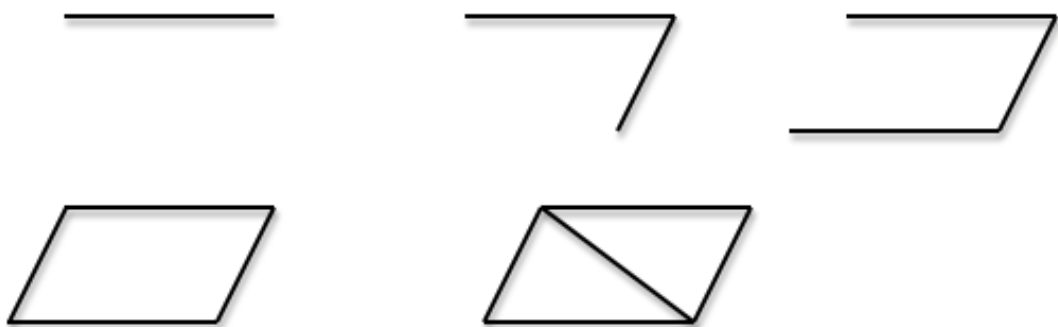
Your e-mail address: _____

Sample problem:

We would like you to draw the figure below **without** lifting your pencil off the paper and **without** retracing any line twice:



Here is one way to draw this:



You will have 8 minutes to solve the first set of 6 exercises.

Wait until we give you the signal to start to turn the page

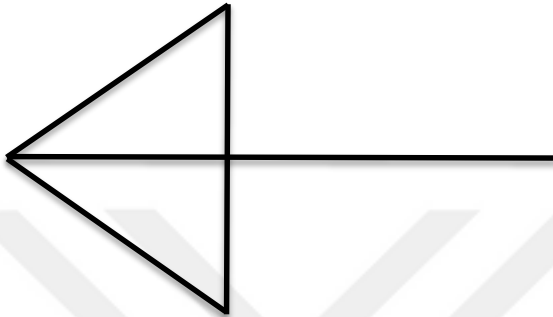


EXERCISES – SET ONE

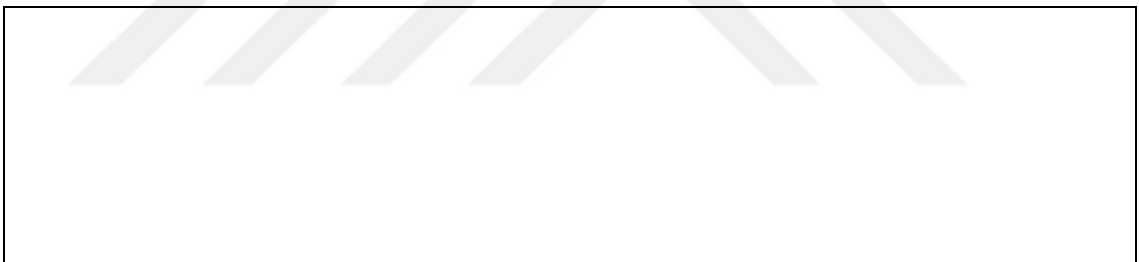
Important: These are individual exercises, so please make sure you work on your own.

Exercise 1:

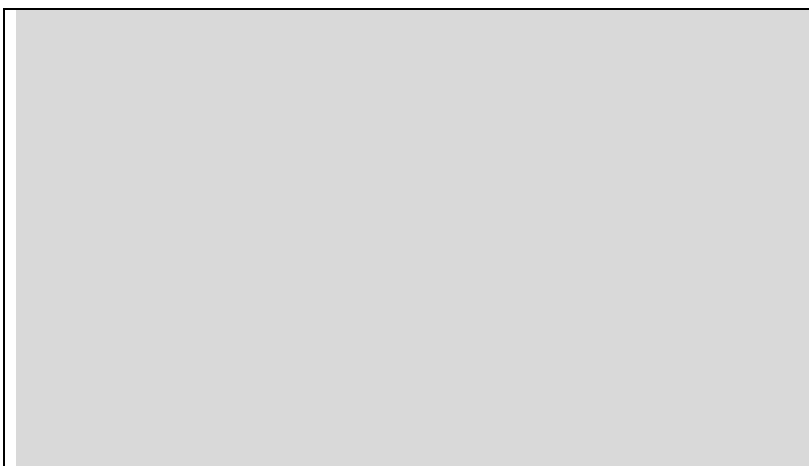
Have a go at drawing this figure **without** lifting your pencil off the paper and **without retracing any** line twice:



You may practice in this box:

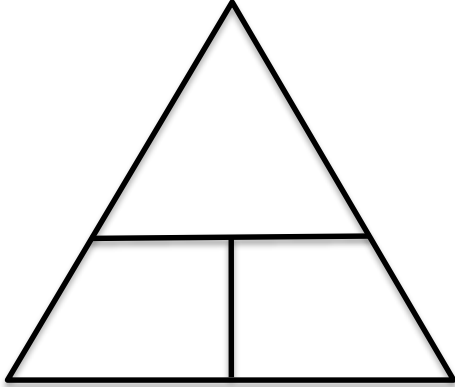


If you have succeeded in working out the problem, you can draw the figure in the box below:



Exercise 2:

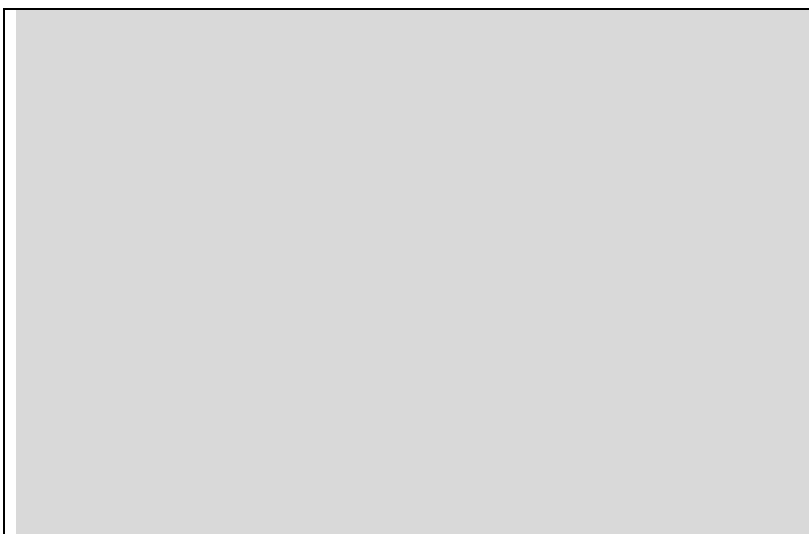
Have a go at drawing this figure **without** lifting your pencil off the paper and **without retracing any** line twice:



You may practice in this box:

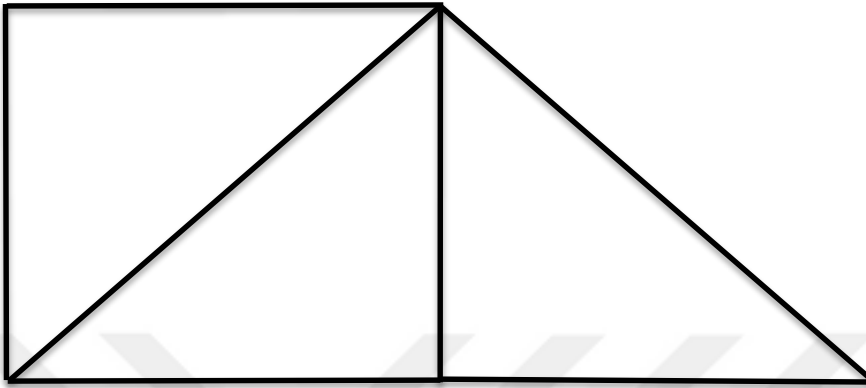


If you have succeeded in working out the problem, you can draw the figure in the box below:



Exercise 3:

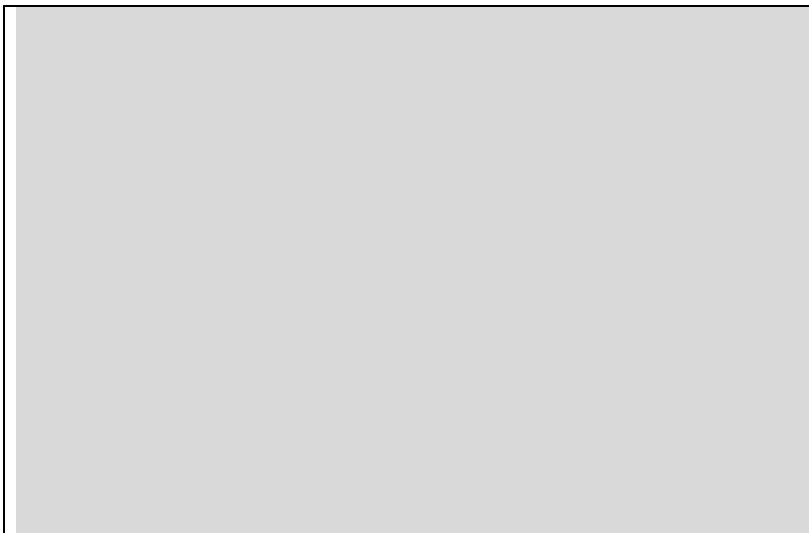
Have a go at drawing this figure **without** lifting your pencil off the paper and **without retracing any** line twice:



You may practice in this box:

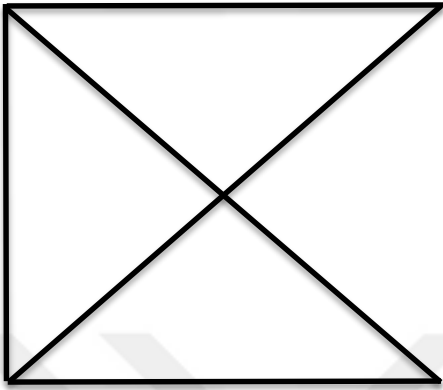


If you have succeeded in working out the problem, you can draw the figure in the box below:



Exercise 4:

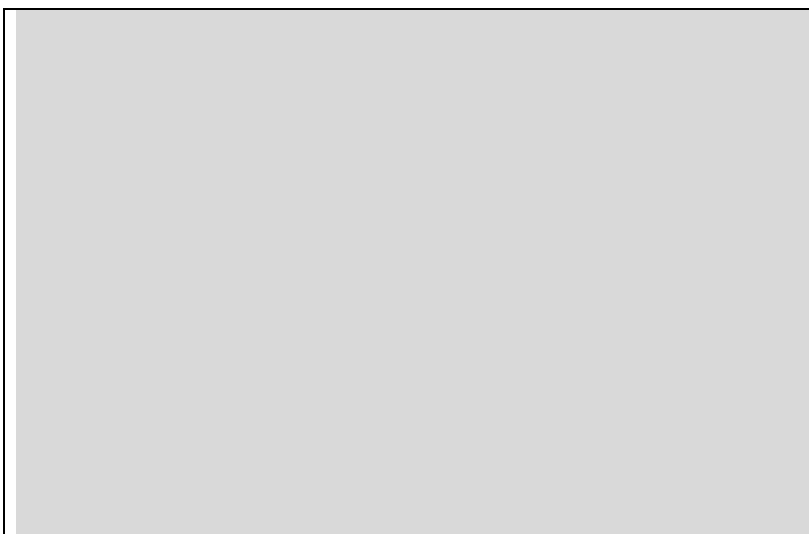
Have a go at drawing this figure **without** lifting your pencil off the paper and **without retracing any** line twice:



You may practice in this box:

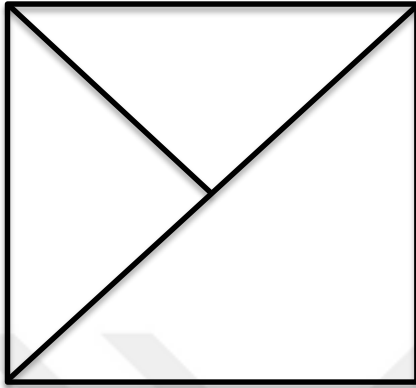


If you have succeeded in working out the problem, you can draw the figure in the box below:



Exercise 5:

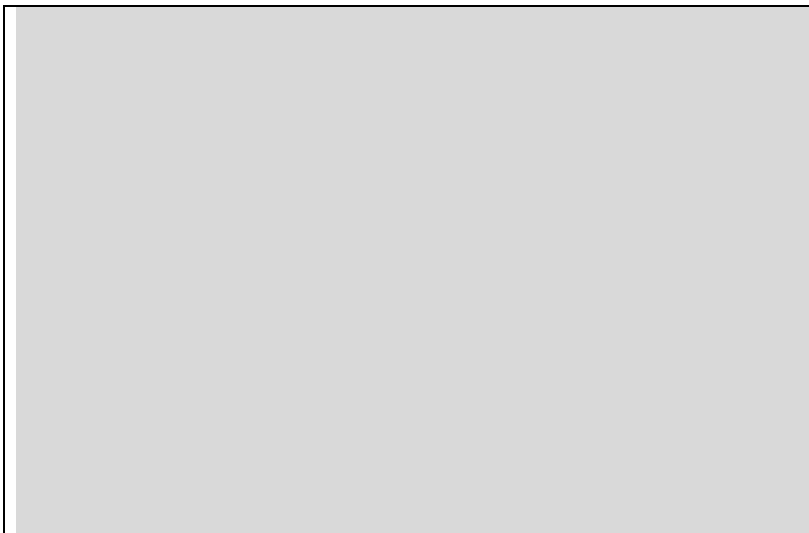
Have a go at drawing this figure **without** lifting your pencil off the paper and **without retracing any** line twice:



You may practice in this box:

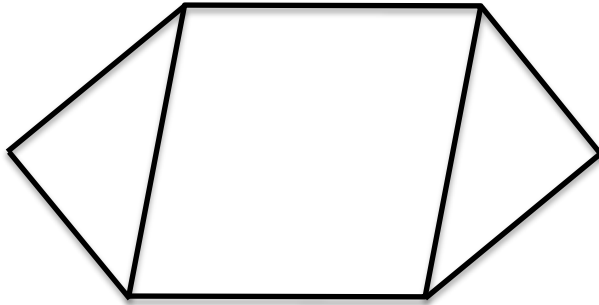


If you have succeeded in working out the problem, you can draw the figure in the box below:



Exercise 6:

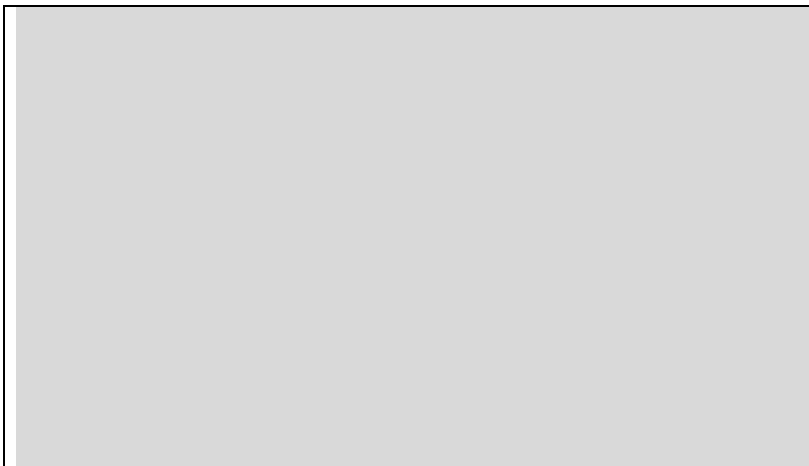
Have a go at drawing this figure **without** lifting your pencil off the paper and **without retracing any** line twice:



You may practice in this box:



If you have succeeded in working out the problem, you can draw the figure in the box below:



THE END OF SET ONE



RESULTS

Which exercises did you succeed in completing?

For exercises 1-6 please tick the appropriate box.

I was able to do exercise 1 : Yes

No

I was able to do exercise 2 : Yes

No

I was able to do exercise 3 : Yes

No

I was able to do exercise 4 : Yes

No

I was able to do exercise 5 : Yes

No

I was able to do exercise 6 : Yes

No

Now please turn the page

Don't forget that:

Success and achievement are all about personal improvement and so it's a good idea to keep focusing on the challenge of improving your solving skills in the second set.

You will receive all the feedback scores once the whole study is completed.

You will have 8 minutes to complete the second set of 6 exercises

Wait until we give you the signal to turn the page

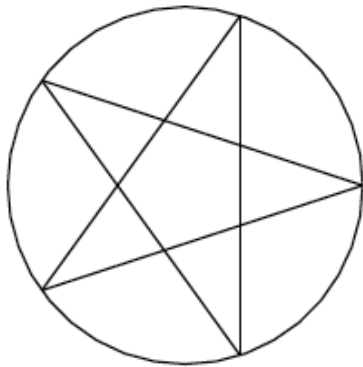


EXERCISES SET TWO

Important: These are individual exercises, so please make sure you work on your own.

Exercise 1:

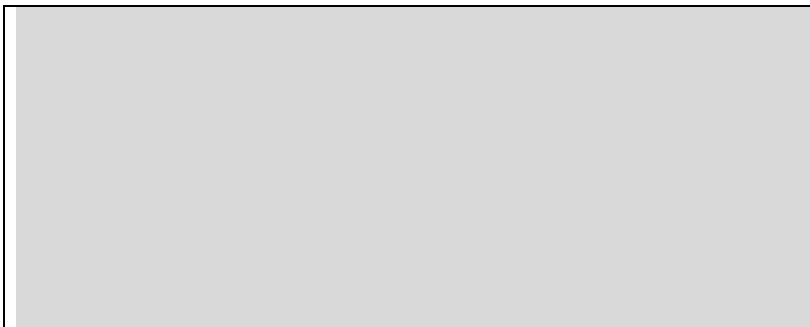
Have a go at drawing this figure **without** lifting your pencil off the paper and **without retracing any** line twice:



You may practice in this box:

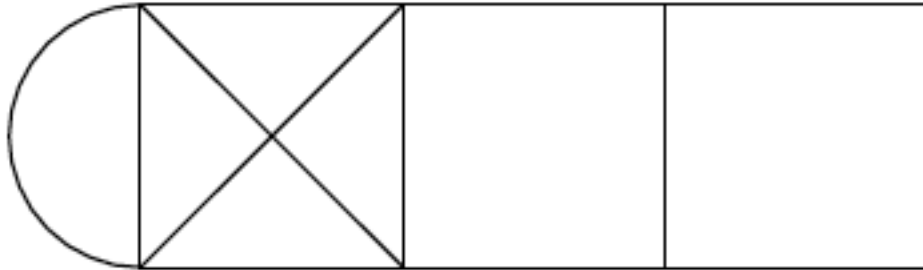


If you have succeeded in working out the problem, you can draw the figure in the box below:



Exercise 2:

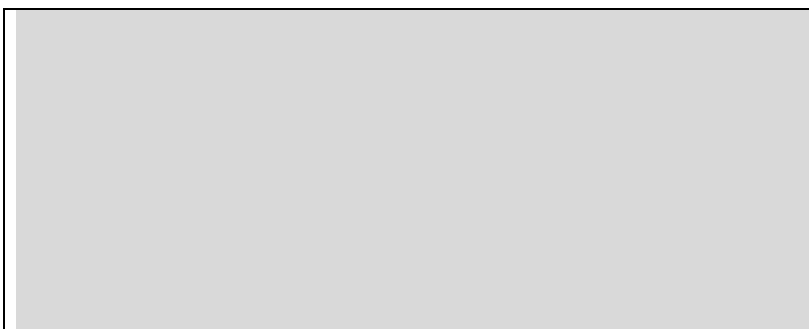
Have a go at drawing this figure **without** lifting your pencil off the paper and **without retracing any** line twice:



You may practice in this box:

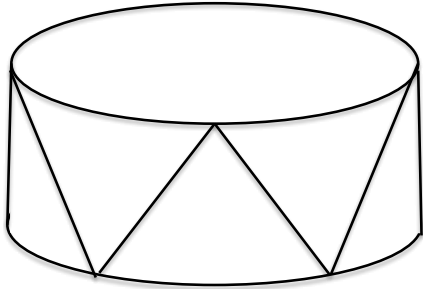


If you have succeeded in working out the problem, you can draw the figure in the box below:



Exercise 3:

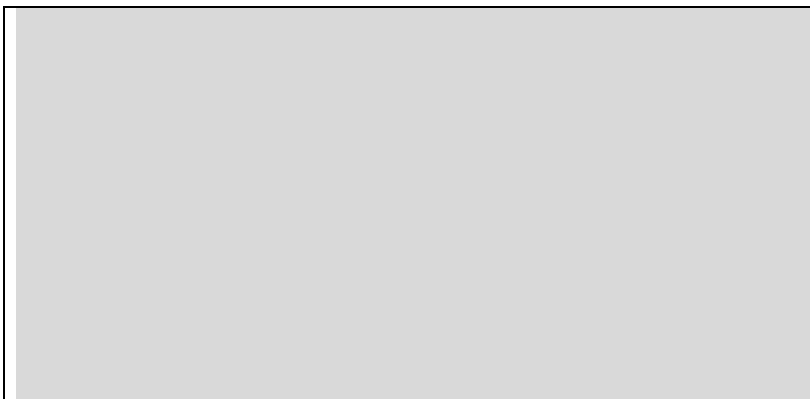
Have a go at drawing this figure **without** lifting your pencil off the paper and **without retracing any** line twice:



You may practice in this box:

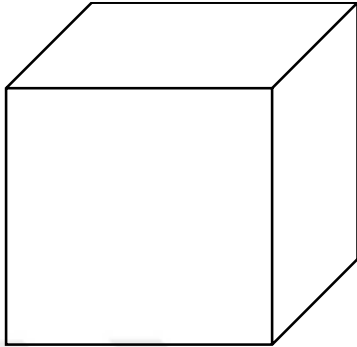


If you have succeeded in working out the problem, you can draw the figure in the box below:



Exercise 4:

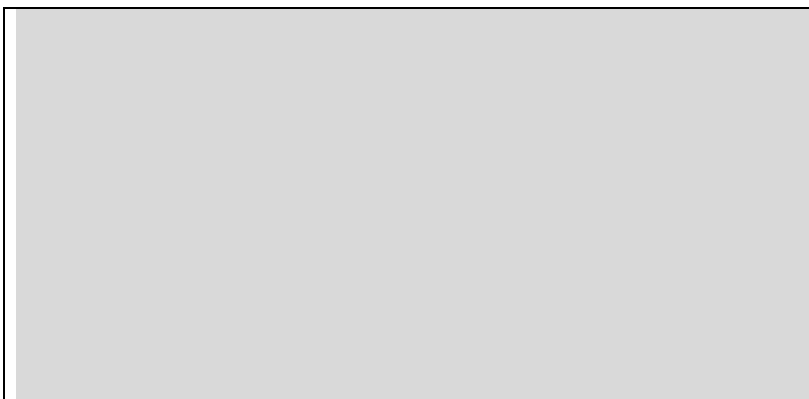
Have a go at drawing this figure **without** lifting your pencil off the paper and **without retracing any** line twice:



You may practice in this box:

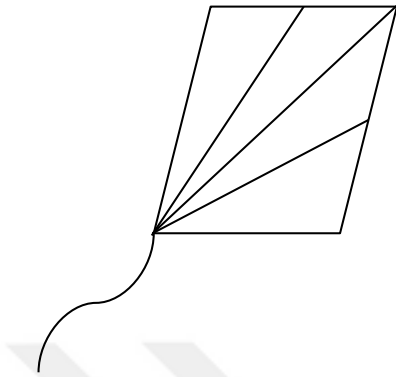


If you have succeeded in working out the problem, you can draw the figure in the box below:



Exercise 5:

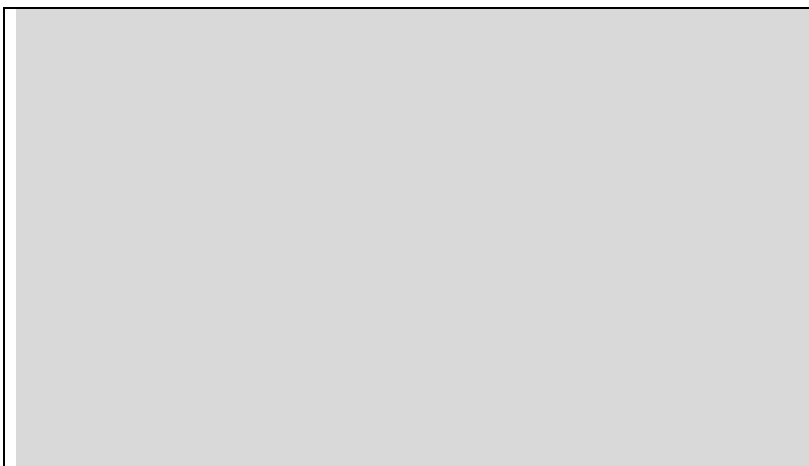
Have a go at drawing this figure **without** lifting your pencil off the paper and **without retracing any** line twice:



You may practice in this box:

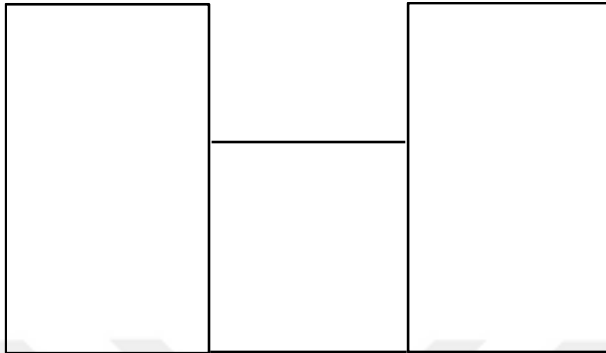


If you have succeeded in working out the problem, you can draw the figure in the box below:



Exercise 6:

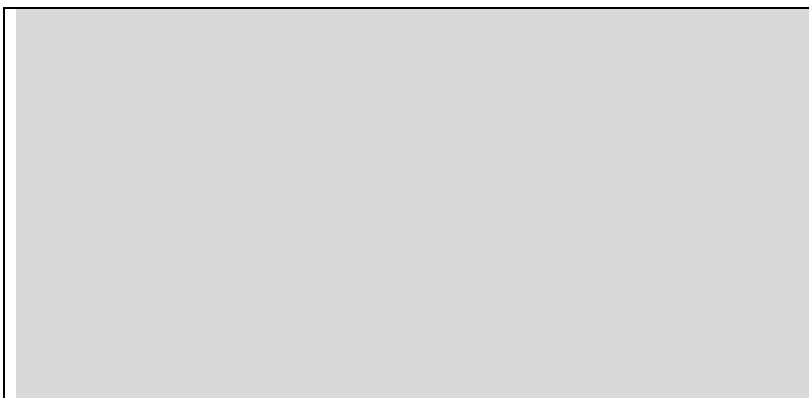
Have a go at drawing this figure **without** lifting your pencil off the paper and **without retracing any** line twice:



You may practice in this box:



If you have succeeded in working out the problem, you can draw the figure in the box below:



THE END OF SET TWO

APPENDIX I.I: Dependent variable; cheating



SET TWO

Which exercises did you succeed in completing?

For exercises 1- 6 tick the appropriate box.

I was able to do exercise 1 : Yes

No

I was able to do exercise 2 : Yes

No

I was able to do exercise 3 : Yes

No

I was able to do exercise 4 : Yes

No

I was able to do exercise 5 : Yes

No

I was able to do exercise 6 : Yes

No

Now please turn the page

APPENDIX B: Condition 1 (Autonomous regulated intrapersonal-approach goal)



Bilkent University

Hello.

We are an international research team currently carrying out a study on Spatial Exercises in the sciences. We would be grateful if you could help us by carrying out two series of exercises and giving us your opinion of them in a short questionnaire. Remember that all information you provide in the questionnaires will be treated confidentially.

Thank you very much in advance for your cooperation!

Spatial Exercises

Over the page you will find a set of Spatial Exercises, which most students find an interesting challenge. There are two series of six spatial problems for you to try to solve individually. You will be given 8 minutes to solve each set of problems.

Success and achievement are all about personal improvement and so you have the opportunity to work individually on the puzzles, trying to improve your personal performance.

Therefore, why not look upon this task as a personal challenge, and see if you can improve your score by solving more puzzles in the second set than in the first.

Focus on the challenge of improving your solving skills in the second set. You will all receive the feedback scores once the whole study is completed.

Your e-mail address: _____

APPENDIX C: Condition 2 (Controlled regulated intrapersonal-approach goal)



Hello.

We are an international research team currently carrying out a study on Spatial Exercise Testing in the sciences. We would be grateful if you could help us by carrying out two series of exercises and giving us your opinion of them in a short questionnaire. Remember that all information you provide in the questionnaires will be treated confidentially.

Thank you very much in advance for your cooperation!

Spatial Exercise Test

Over the page you will find a Spatial Exercise Test, which evaluates your capacity for logical spatial insight. There are two series of six spatial problems you must try to solve individually. You will have to finish each set of problems within 8 minutes.

Success and achievement are all about personal improvement and so you are expected to work individually on the puzzles, and to prove that you can improve on your personal performance.

Therefore, you ought to look upon this task as a way of impressing others by solving more puzzles in the second set than in the first.

Focus on the fact that you need to improve your solving skills in the second set.

You will all receive the feedback scores once the whole study is completed.

Your e-mail address: _____

APPENDIX D: Condition 3 (Autonomous regulated performance-approach goal)



Bilkent University

Hello.

We are an international research team currently carrying out a study on Spatial Exercises in the sciences. We would be grateful if you could help us by carrying out two series of exercises and giving us your opinion of them in a short questionnaire. Remember that all information you provide in the questionnaires will be treated confidentially.

Thank you very much in advance for your cooperation!

Spatial Exercises

Over the page you will find a set of Spatial Exercises, which most students find an interesting challenge. There are two series of six spatial problems for you to try to solve individually. You will be given 8 minutes to solve each set of problems.

Success and achievement are all about who does best and you have the opportunity to work individually on the puzzles, trying to perform better than the other students.

Therefore, why not look upon this task as a personal challenge and see if you can get more puzzles correct than the others.

Focus on the challenge of being among the top performers.

You will all receive the feedback scores once the whole study is completed.

Your e-mail address: _____

APPENDIX E: Condition 4 (Controlled regulated performance-approach goal)



Bilkent University

Hello,

We are an international research team currently carrying out a study on Spatial Exercise Testing in the sciences. We would be grateful if you could help us by carrying out two series of exercises and giving us your opinion of them in a short questionnaire. Remember that all information you provide in the questionnaires will be treated confidentially.

Thank you very much in advance for your cooperation!

Spatial Exercise Test

Over the page you will find a Spatial Exercise Test, which evaluates your capacity for logical spatial insight. There are two series of six spatial problems you must try to solve individually. You will have to finish each set of problems within 8 minutes. Success and achievement are all about who does best and so you are expected to work individually on the puzzles, and to prove that you can perform better than the other students

Therefore, you ought to look upon this task as a way of impressing others by getting more puzzles correct than the others.

Focus on the fact that you need to be among the top performers.

You will all receive the feedback scores once the whole study is completed.

Your e-mail address: _____

APPENDIX F: Condition 5 (Autonomous regulated intrapersonal-avoidance goal)



Bilkent University

Hello.

We are an international research team currently carrying out a study on Spatial Exercise Testing in the sciences. We would be grateful if you could help us by carrying out two series of exercises and giving us your opinion of them in a short questionnaire. Remember that all information you provide in the questionnaires will be treated confidentially.

Thank you very much in advance for your cooperation!

Spatial Exercise Test

Over the page you will find a set of Spatial Exercises, which most students find an interesting challenge. There are two series of six spatial problems for you to try to solve individually. You will be given 8 minutes to solve each set of problems.

Success and achievement are all about making sure you don't do worse in each set of problems than you did in the previous one so you have the opportunity to work individually on the puzzles, trying to ensure that your personal performance doesn't deteriorate.

Therefore, why not look upon this task as a personal challenge, and see if you can avoid the deterioration of your score by solving the same number of puzzles in the second set as in the first.

Focus on the challenge of not letting your performance deteriorate in the second set.

You will all receive the feedback scores once the whole study is completed.

Your e-mail address: _____

APPENDIX G: Condition 6: Controlled regulated intrapersonal-avoidance goal)



Bilkent University

Hello.

We are an international research team currently carrying out a study on Spatial Exercise Testing in the sciences. We would be grateful if you could help us by carrying out two series of exercises and giving us your opinion of them in a short questionnaire. Remember that all information you provide in the questionnaires will be treated confidentially.

Thank you very much in advance for your cooperation!

Spatial Exercise Test

Over the page you will find a Spatial Exercise Test, which evaluates your capacity for logical spatial insight. There are two series of six spatial problems you must try to solve individually. You will have to finish each set of problems within 8 minutes.

Success and achievement are all about making sure you don't do worse in each set of problems than you did in the previous one and so you are expected to work individually on the puzzles and to prove that your personal performance doesn't deteriorate.

Therefore, you ought to look upon this task as a way of impressing others by avoiding the deterioration of your score by solving the same number of puzzles in the second set as in the first.

Focus on the fact that you must not let your performance deteriorate
You will all receive the feedback scores once the whole study is completed.

Your e-mail address: _____

APPENDIX H: Manipulation check, achievement goals and underlying reasons for spatial task

Research in Spatial Logic

Finally, we'd like to know your reactions to this sort of problem-solving exercise. Please answer the following questions.

Which of the three goals mentioned below was **most** important to you? Please circle your uppermost goal:

1. Do better than other students on these exercises
2. Do better as I go through them
3. Avoid doing worse in the second set of exercises than in the first set

Now think about **why** you wanted to achieve this goal and answer the following questions:

I wanted to achieve this goal because...	Totally dis-agree	Don't agree	Rather dis-agree	No opinion	Quite agree	Agree	Totally agree
I have to comply with the demands of others (e.g.: teachers, friends, parents, researcher)							
I would feel bad, guilty or anxious if I didn't							
I find this a personally valuable goal							

I wanted to achieve this goal because...

Totally disagree

Don't agree

Rather disagree

No opinion

Quite agree

Agree

Totally agree

I find this a highly stimulating and challenging goal



APPENDIX I: DEPENDENT VARIABLES, INTRINSIC MOTIVATION

Concerning these problem-solving exercises...	Totally dis-agree	Don't agree	Rather dis-agree	No opinion	Quite agree	Agree	Totally agree
I enjoyed doing them very much							
They were fun to do							
I thought they were boring							
They didn't hold my attention at all							
I would describe them as very interesting							
While I was doing them, I was thinking about how much I enjoyed them							
I did not feel nervous while doing them							
I felt very tense while doing them							
I was very relaxed while doing them							
I was anxious while working on them							
I felt pressured while doing them							
I believe this activity could be of some value to me							
I would be willing to do this again because it							

Concerning these problem-solving exercises...	Totally dis-agree	Don't agree	Rather dis-agree	No opinion	Quite agree	Agree	Totally agree
has some value to me							
I believe doing this activity could be beneficial to me							
I think this is an important activity							
I would like to do more exercises like these another time							
I'd like to do some more exercises like these in my spare time							
I'd like to take some of these exercises to do at home							

If you would like to do more exercises like these in your spare time, how many would you like to have?

_____ (write the number of exercises you would like to receive).

If you would like to receive more exercises like these at home, as well as a problem-solving bulletin, write your email address in the space below:

My email: _____

Well done and thank you for participating!

APPENDIX K: SURVEY; ACHIEVEMENT GOALS AND UNDERLYING REASONS FOR ENGLISH CLASS

Date: _____ Gender M / F Age _____

The following statements represent types of goals that you may or may not have for this class. Circle a number to indicate how true each statement is of you. There are no right or wrong responses, so please be open and honest.

My goal in this course is	Not true for me	Slightly true for me	Moderately true for me	Very true for me	Extremely true for me
	1	2	3	4	5
1. ...to get a lot of questions right on the exams in this class.	1	2	3	4	5
2. ...to avoid incorrect answers on the exams in this class.	1	2	3	4	5
3. ...to do better on the exams in this class than I typically do in this type of situation.	1	2	3	4	5
4. ...to avoid missing a lot of questions on the exams in this class.	1	2	3	4	5
5. ...to outperform other students on the exams in this class.	1	2	3	4	5
6. ...to avoid doing worse than other students on the exams in this class.	1	2	3	4	5
7. ...to perform better on the exams in this class than I have done in the past on these types of exams.	1	2	3	4	5
8. ...to avoid doing worse on the exams in this class than I normally do on these types of exams.	1	2	3	4	5
9. ...to answer a lot of questions correctly on the exams in this class.	1	2	3	4	5
10. ...to do better than my classmates on the exams in this class.	1	2	3	4	5
11. ...to avoid performing poorly on the exams in this class compared to my typical level of performance.	1	2	3	4	5
12. ...to know the right answers to the questions on the exams in this class.	1	2	3	4	5
13. ...to avoid performing poorly relative to my fellow students on the exams in this class.	1	2	3	4	5
14. ...to do well on the exams in this class relative to how well I have done in	1	2	3	4	5

the past on such exams.

15. ...to avoid doing poorly in comparison to others on the exams in this class.	1	2	3	4	5
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16. ...to do well compared to others in the class on the exams.	1	2	3	4	5
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17. ...to avoid getting a lot of questions wrong on the exams in this class.	1	2	3	4	5
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18. ...to avoid doing worse on the exams in this class than I have done on prior exams of this type.	1	2	3	4	5
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APPENDIX L: SCHWARTZ VALUES

Here we briefly describe different people. Please read each description and think about how much that person is or is not like you.

	Not like me at all	Not like me	A little like me	Moder- ately like me	Like me	Very much like me
1. It is important to him to develop his own understanding of things.	1	2	3	4	5	6
2. It is important to him that there is stability and order in the wider society.	1	2	3	4	5	6
3. It is important to him to have a good time.	1	2	3	4	5	6
4. It is important to him to avoid upsetting other people.	1	2	3	4	5	6
5. It is important to him to protect the weak and vulnerable people in society.	1	2	3	4	5	6
6. It is important to him that people do what he says they should.	1	2	3	4	5	6
7. It is important to him never to be boastful or self-important.	1	2	3	4	5	6
8. It is important to him to care for nature.	1	2	3	4	5	6
9. It is important to him that no one should ever shame him.	1	2	3	4	5	6
10. It is important to him always to look for different things to do.	1	2	3	4	5	6
11. It is important to him to take care of people he is close to.	1	2	3	4	5	6
12. It is important to him to have the power that money can bring.	1	2	3	4	5	6
13. It is very important to him to avoid disease and protect his health.	1	2	3	4	5	6
14. It is important to him to be tolerant toward all kinds of people and groups.	1	2	3	4	5	6
15. It is important to him never to violate rules or regulations.	1	2	3	4	5	6
16. It is important to him to make his own decisions about his life.	1	2	3	4	5	6
17. It is important to him to have ambitions in life.	1	2	3	4	5	6
18. It is important to him to maintain traditional values and ways of thinking.	1	2	3	4	5	6

19. It is important to him that people he knows have full confidence in him.	1	2	3	4	5	6
20. It is important to him to be wealthy.	1	2	3	4	5	6
21. It is important to him to take part in activities to defend nature.	1	2	3	4	5	6
22. It is important to him never to annoy anyone.	1	2	3	4	5	6
23. It is important to him to have his own original ideas.	1	2	3	4	5	6
24. It is important to him to protect his public image.	1	2	3	4	5	6
25. It is very important to him to help the people dear to him.	1	2	3	4	5	6
26. It is important to him to be personally safe and secure.	1	2	3	4	5	6
27. It is important to him to be a dependable and trustworthy friend.	1	2	3	4	5	6
28. It is important to him to take risks that make life exciting.	1	2	3	4	5	6
29. It is important to him to have the power to make people do what he wants..	1	2	3	4	5	6
30. It is important to him to plan his activities independently.	1	2	3	4	5	6
31. It is important to him to follow rules even when no-one is watching.	1	2	3	4	5	6
32. It is important to him to be very successful.	1	2	3	4	5	6
33. It is important to him to follow his family's customs or the customs of a religion.	1	2	3	4	5	6
34. It is important to him to listen to and understand people who are different from him.	1	2	3	4	5	6
35. It is important to him to have a strong state that can defend its citizens.	1	2	3	4	5	6
36. It is important to him to enjoy life's pleasures.	1	2	3	4	5	6
37. It is important to him that every person in the world have equal opportunities in life.	1	2	3	4	5	6
38. It is important to him that every person in the world have equal opportunities in life.	1	2	3	4	5	6

39. It is important to him to be humble.	1	2	3	4	5	6
40. It is important to him to expand his knowledge.	1	2	3	4	5	6
41. It is important to him to honor the traditional practices of his culture.	1	2	3	4	5	6
42. It is important to him to be the one who tells others what to do..	1	2	3	4	5	6
43. It is important to him to obey all the laws.	1	2	3	4	5	6
44. It is important to him to have all sorts of new experiences..	1	2	3	4	5	6
45. It is important to him to own expensive things that show his wealth	1	2	3	4	5	6
46. It is important to him to protect the natural environment from destruction or pollution.	1	2	3	4	5	6
47. It is important to him to take advantage of every opportunity to have fun.	1	2	3	4	5	6
48. It is important to him to concern himself with every need of his dear ones.	1	2	3	4	5	6
49. It is important to him that people recognize what he achieves.	1	2	3	4	5	6
50. It is important to him never to be humiliated.	1	2	3	4	5	6
51. It is important to him that his country protect itself against all threats.	1	2	3	4	5	6
52. It is important to him never to make other people angry.	1	2	3	4	5	6
53. It is important to him that everyone be treated justly, even people he doesn't know.	1	2	3	4	5	6
54. It is important to him never to do anything dangerous.	1	2	3	4	5	6
55. It is important to him never to seek public attention or praise.	1	2	3	4	5	6
56. It is important to him that all his friends and family can rely on him completely.	1	2	3	4	5	6
57. It is important to him to be free to choose what he does by himself.	1	2	3	4	5	6
58. It is important to him to accept people even when he disagrees with them.	1	2	3	4	5	6

Generally speaking, in my life ...	Strongly disagree	Disagree	Neither agree, nor disagree	Agree	Strongly agree
1. I like situations, in which I can find out how capable I am.	1	2	3	4	5
2. When I am confronted with a problem, which I can possibly solve, I am enticed to start working on it immediately.	1	2	3	4	5
3. I enjoy situations, in which I can make use of my abilities	1	2	3	4	5
4. I am appealed by situations allowing me to test my abilities	1	2	3	4	5
5. I am attracted by tasks, in which I can test my abilities.	1	2	3	4	5
6. I am afraid of failing in somewhat difficult situations, when a lot depends on me.	1	2	3	4	5
7. I feel uneasy to do something if I am not sure of succeeding.	1	2	3	4	5
8. Even if nobody would notice my failure, I'm afraid of tasks, which I'm not able to solve.	1	2	3	4	5
9. Even if nobody is watching, I feel quite anxious in new situations	1	2	3	4	5
10. If I do not understand a problem immediately, I start feeling anxious.	1	2	3	4	5

APPENDIX M: Consent form



Bilkent University

Informed Consent Form

We are an international research team currently carrying out a study on Spatial Exercises in the sciences. This research is being conducted by Ayse Ozdemir and Fulya Kahraman, master students in the Graduate School of Education at Bilkent University. We would be grateful if you could help us by carrying out two series of exercises and giving us your opinion of them in a short questionnaire as well as your view about your achievement goals and values in the academic domain in a series of questionnaires. Remember that all information you provide in the questionnaires will be treated confidentially.

The entire exercises and questionnaires will not take more than 40 minutes. There are no risks associated with participating in the study. The information you provide during the experiment is completely anonymous; at no time will your name be associated with the responses you give. If you have any questions about the spatial exercises or any item of the questionnaires or even about the study itself, please feel free to ask us now or at any other time during your participation

Participation in this study is voluntary. You also have the right to withdraw from the study at any time. In the case, you choose to withdraw from the study all information you provide will be destroyed and omitted from the final paper. Insights gathered by you and other participants will be used in writing a quantitative research report. Your name and other identifying information won't be collected.