

STUDENTS' ACHIEVEMENT GOALS AND UNDERLYING REASONS: THEIR
RELATION TO INTRINSIC MOTIVATION AND CHEATING

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June 2014

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ABSTRACT

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Using an experimental design, this study investigated the causal-effect relationship of achievement goals (AGs) and their underlying reasons (goal complexes) on students' intrinsic motivation and cheating behaviour. The design included giving participants a specific task under experimental conditions. Additionally, a cross-sectional design was used to examine the relationship between the outcomes of a given task and the endorsed goal complexes students have for their classes. The study population included 219 students who participated voluntarily; they were from an English Language Preparatory Program at a private non-profit university in Ankara, Turkey. Seven experimental conditions were induced to the participants through a given spatial task. The seven conditions randomly assigned to the students consisted of three different AGs (i.e., an intrapersonal-approach goal, an intrapersonal-avoidance goal, and a performance approach goal) along with two motivational styles (i.e., autonomous and controlling), as well as a control (neither goal nor reason given). In addition to the experiment, a survey was administered to assess students' endorsed AGs and their underlying reasons (autonomous or

controlling) for their English classes. The manipulation checks for the analysis revealed that the experimental conditions were not successful; more specifically, students were not induced to endorse their randomly assigned goal and reason. Moreover, very few students cheated during the task. The survey results indicated that during task engagement, autonomously-regulated AGs predict intrinsic motivations, and control-regulated AGs promote a sense of pressure. One key finding of this study was that while students who have controlling reasons behind their AGs for an educational class tend to have controlling reasons for a specific task, which was not found among students with autonomous reasons. Finally, recommendations to improve the experimental design and implications of the results for education and teaching practices are discussed.

Key words: autonomous and controlled motivation, achievement goals, intrinsic motivation and cheating, goal complex

ÖZET

ÖĞRENCİLERİN BAŞARI HEDEFLERİ VE ALTINDA YATAN SEBEPLER: İÇSEL MOTİVASYON VE KOPYA ÇEKME İLE İLİŞKİLERİ

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Deneysel tasarım yönteminin kullanıldığı bu çalışmada başarı hedefleri (BH'ler) ve altında yatan sebeplerin (hedef-sebepe kompleks) öğrencilerin içe yönelik motivasyonu ve kopya çekme davranışları üzerindeki neden-sonuç ilişkisi araştırılmaktadır. Bu yöntem, deneysel koşullar altında öğrencilere belirli bir görev verilmesini içermektedir. Ayrıca verilen görevin arzu edilen sonuçları ile öğrencilerin derse ilişkin belirttiği hedef birleşimi arasındaki ilişkiyi incelemek amacıyla kesitsel yöntem kullanılmıştır. Ankara ilindeki kar amacı gütmeyen özel bir okuldaki 219 öğrenci, çalışmaya gönüllü olarak katılmıştır. Uzamsal bir görev ile katılımcılar, yedi deneysel koşulu içselleştirmeye ikna etmek amaçlanmıştır. Öğrencilere rastgele dağıtılan yedi koşul, üç BH (kişisel yaklaşım hedefi, kişisel kaçınma hedefi, performans yaklaşım hedefi) ile iki motivasyon biçiminin (otonom, kontrol) farklı şekillerde birleşimi ve kontrolden (hedef ve neden verilmemesi) oluşmuştur. Yapılan deneyin yanı sıra öğrencilerin (İngilizce dersi için) belirttiği BH'ler ile bunların altında yatan nedenleri (otonom veya kontrol) belirlemek üzere bir anket uygulanmıştır. Deney sonrasında uygulanan manipülasyon kontrol listesi,

deneysel kořulların bařarılı olmadıđını, öđrencilerin kendilerine dađıtılan hedef ve nedenleri belirtmeye ikna edilemediđini ortaya koymuřtur. Ayrıca ok az sayıda öđrenci görev sırasında kopya ekmiřtir. Anket sonularına göre görev sırasında otonom nedenler ile dzenlenen BH'ler ie ynelik motivasyonu ortaya koyarken kontrol nedenleri ile dzenlenen BH'ler, baskı hissi ile sonulanmıřtır. Bu alıřmanın sonularından birisi, bir derse ynelik BH'lerin altında kontrol nedenleri yatan öđrencileri belirli bir görev iin de kontrol nedenleri edinme eđiliminde olurken otonom biime sahip öđrencilerde bu durumla karřılařılmadıđı ynndedir. Son olarak deneysel tasarım ynteminin iyileřtirilmesi ve sonuların eđitim ve öđretim uygulamaları aısından yansımaları ele alınmaktadır.

Anahtar Kelimeler: Otonom ve kontrol motivasyon, bařarma hedefleri, isel motivasyon ve kopya ekme, hedef-sebep kompleksi

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CHAPTER 1: INTRODUCTION

Introduction

Students perform many tasks in their classrooms throughout the day. While they are engaging in these tasks, they set and endorse certain goals. Some may have goals to complete the task to outperform other students; others have goals that focus on self-improvement to benefit from the task. In association the selection of these goals, students have *reasons* for setting and endorsing the goals. The reasons for endorsing a goal can differ. For example, two students studying for a test may have the same goal to get a higher grade than the rest of the students in the class; however, one student endorses the goal because he knows his father has promised him a bike if he performs well, while the other endorses the goal because to her it is important to perform well. Hence, the goal may be the same, but the reasons motivating them to pursue the goal are different. Accordingly, the reasons motivating students to pursue a goal may affect students learning outcomes (actions and behaviors); some of these behaviors are positive (for example, studying longer hours) and others may be negative (for example, cheating).

Students' motivations can be described in part by the achievement goals they adopt in the classroom. Another important part of students' motivations is the reasons for adopting those goals which lead them, in conjunction with their achievement goals, to particular educational outcomes. This study will focus on students' endorsed achievement goals and the underlying reasons for pursuing the goals, along with associated desired and undesired educational outcomes. In particular, this study will

focus on the undesired educational outcome of cheating, as well as on desired educational outcomes associated with intrinsic motivation while completing a task. The main question of the study is whether different reasons underlying the same achievement goal relate differently to intrinsic motivation and cheating for a given task. Furthermore, the present study will investigate whether the reasons underlying achievement goals in a specific achievement situation (e.g., an English class) can predict the reasons underlying achievement goals in another achievement task (e.g., a spatial test) as well as the students' intrinsic motivation and cheating in this task.

Background

Achievement goals

In the 1980's, Ames (1984), Dweck (1986), Maehr (1980) and Nicholls (1984) developed the achievement goal concept for describing motivation in achievement settings (Elliot, Murayama, & Pekrun, 2011). These theorists posited that an achievement goal is the purpose for striving for competence (Elliot & Harckiewicz, 1996). Initially, achievement goal theorists offered a dichotomous conceptualized achievement goal framework that included mastery and performance achievement goals. In the framework, both mastery and performance goals were approach-oriented. A mastery approach goal was defined as students' desire to develop competence and task mastery, a performance approach goal was defined as students' desire to demonstrate competence (Dweck & Leggett, 1988). According to Elliot and Dweck (2005), desire for competence influences behavior to adapt within the current environment by developing either an avoidance or an approach orientation. Fear of failure motivates individuals to establish an avoidance orientation to protect them.

Conversely, need for achievement motivates individuals to establish an approach orientation (Elliot and Dweck, 2007).

To improve the dichotomous model of achievement goals, Elliot and Church (1997) set up a new achievement goal framework; they suggested a trichotomous model that consists of mastery goals as well as performance-approach and performance-avoidance goals. In this model, mastery and performance-approach goals were linked to the approach tendency related to the need for achievement, whereas performance-avoidance goals were linked to the inhibitory tendency associated with the fear of failure. In 2001, Elliot and McGregor (2001) designed an even more advanced 2X2 achievement goal framework adding the concept of the mastery-avoidance goal. In this framework, they put competence in the core of the definition for achievement goals. Figure 1 shows conceptualized achievement goals based on the definition and valence (i.e., positive in terms of approaching success and negative in terms of avoiding failure) of competence.

		Definition	
		Mastery	Performance
Valence	Approach	Mastery-approach goal	Performance-approach goal
	Avoiding	Mastery-avoidance goal	Performance-avoidance goal

Figure 1. The 2X2 achievement goal framework.

In 2X2 framework, competence could be defined by self-based or task-based, as well as by “other”-based criteria. Valence of competence could be explained either by avoidance- or approach-orientation. If a student has task-based or self-based competence criteria (definition), with a desire to approach success (valence), according to the 2X2 framework he endorses a *mastery-approach goal*; however, when a student has the same self-based or task-based competence criteria (definition) with a desire to avoid incompetence (valence), he is considered a student with a *mastery-avoidance goal*.

Students who have mastery-approach goals engage in tasks to improve themselves or to complete the requirements of the tasks. On the other hand, students who have mastery-avoidance goals, try not to do worse than before or try not to make errors while completing a task. Students who have other-based competence criteria (definition) with a desire to approach success (valence) adopt *performance-approach goals*; whereas students who might have the same criteria but show a desire to avoid showing incompetence adopt *performance-avoidance goals* (Elliot & McGregor, 2001). Finally, students with performance goals focus on demonstrating their competence compared to peers by performing better than them in the classroom (approach). These students focus on demonstrating that they are not incompetent compared to peers by not performing worse than other students in the classroom (avoidance).

Elliot et al. (2011) went one step further to improve this framework by dividing the mastery goals into two: task-based goals and intrapersonal goals. They made this adjustment because the 2X2 framework conceptualized the mastery goals with two

evaluation criteria of competence: task-based and self-based criteria. The authors claimed, however, that these two competence criteria do not have the same ability to evaluate competence for one goal construct. Therefore, Elliot et al. (2011) introduced a 3X2 framework, in which the two criteria are separated to evaluate competence of two different goals. According to the new goal construct, the task-based goal criteria belong to the task-based goal and the self-based goal criteria belong to the intrapersonal goals (Elliot et al., 2011).

Different from the task-based criteria, with self-based criteria the individual is concerned with how she performs on a task *compared to how she did before* rather than compared to the absolutely correct completion of the task. Elliot et al. (2011) explained that a task-based person solves a puzzle to complete all the words (not by comparing to his or her previous performance), while a self-based person will solve the puzzle to find more words compared to his or her previous performance. In other words, a self-based person does not strive to complete the task, but to do better than he did before. The 3X2 framework of achievement goals, using the definition of competence criteria and the valence of the goals, suggested the following achievement goals: task-approach (TAp), task-avoidance (TA_v), intrapersonal-approach (INAp), intrapersonal-avoidance (INAv), performance approach (PAp), and performance-avoidance (PA_v) goals.

Another contribution of Elliot and Murayama (2008) to the achievement goal theory has to do with the conceptualization and operationalization of the achievement goals. According to Elliot and Murayama (2008), theorists used to combine a number of aim-reasons to assess individuals' achievement goals. The problem with this

combination is that it is not clear if an achievement goal's correlate has a strong association with the "aim" part or the "reason" part of the achievement goal.

Therefore, they suggested separating the *aim* of setting an achievement goal from the *reasons* for pursuing that goal because there is often more than one reason behind a goal. According to Vansteenkiste, Mouratidis and Lens (2010a), assessing goals and reasons separately is needed to understand the conceptual clarity of the achievement goal. Further, it clarifies whether an outcome is associated with the underlying reasons, with the achievement goals, or with both.

In this vein, the same achievement goal defined as a "pure" aim can give different outcomes if it is combined with different reasons behind its pursuit. In this respect, aims for doing a task is the "what" part of achievement motivation, while the reason for endorsing that goal is the "why" part (Vansteenkiste, Lens, Elliot, Soenens & Mouratidis, 2014). It is important to consider both these parts simultaneously to fully understand students' motivations in achievement situations. To clarify types of reasons behind goals, Self-Determination Theory (SDT) will be discussed next.

Self-determination theory (SDT)

When examining underlying reasons separately from achievement goals, a need to conceptualize the reasons emerged. Vansteenkiste et al. (2014) conceptualized the underlying reasons through Self Determination Theory (SDT). SDT focuses on three basic requirements of human development: (1) the satisfaction of need for autonomy (sense of self and willingness), (2) the satisfaction of need for competence (sense of effectiveness), and (3) the satisfaction of need for relatedness (sense of connectedness and caring for other people) (Ryan & Deci, 2000). These three

psychological needs come from human nature and are core concepts in SDT (Deci & Vansteenkiste, 2004). Satisfaction or frustration with these three basic psychological needs affect an individual's achievement goal setting and the reasons for which they select the goal. While people are engaging in a task, depending on their needs satisfaction, they can pursue their goals either for autonomous or for controlling reasons. *Autonomous reasons* mean that a student engages herself in a task willingly. It has different subcomponents: finding the task enjoyable or interesting and challenging (intrinsic reasons); finding the task personally meaningful (identified reasons); and finding the task is part of their personal values (integrated reasons) (Vansteenkiste et al., 2014). A student, who has autonomous reasons, tends to act with full endorsement and sense of self.

In contrast, *controlling reasons* mean that a student feels pressure from external environments or from themselves while they are engaging in a task or pursuing a goal (Vansteenkiste, Smeets, Soenens, Lens, Matos & Deci, 2010b). Controlling reasons are composed of two subcomponents which are *external reasons* and *introjected reasons*. In the case of external reasons, students can involve themselves in a task just because their parents will reward or punish them. Students, who have introjected reasons for endorsing an achievement goal, engage in a task to avoid feeling guilty; for this reason they exert a self-imposed pressure on themselves (Vansteenkiste et al., 2014).

According to the SDT, students' intentions to act for particular reasons depend on teachers' (or parents) motivating style which could be either autonomous supportive or controlling. When teachers (or parents) meet the three basic needs of students

(autonomy, competence and relatedness) they are encouraging students to become involved in a task with internal volition, thus validating students' interests or preferences. This way of motivation is called *autonomous support* (Reeve & Jang, 2006). In this vein, when teachers ask students how they may want to adjust the lesson plan according to their psychological needs, they nurture students' inner endorsement of classroom activities (Reeve & Jang, 2006). When teachers frustrate the fundamental basic needs of students and direct students to attend to external motives (regardless of students' inner volition), they apply a controlling motivating style (Reeve & Jang, 2006). Therefore, frustrating students' own intentions and controlling behaviors makes them feel pressured to complete a task; they complete a task to fulfill the demands of external conditions such as a teacher's rewards or punishments (Reeve & Jang, 2006).

Problem

Students set their achievement goals and adopt them for particular reasons whether they are engaged in a task or participating in their educational classes. Even though two students could have the same goal to score higher on an exam than they did previously (self-improvement), the reasons for this goal can vary. The reasons may be to feel better about themselves, to seek an award from their parents or to gain skills by mastering the exam's subject matter. These underlying reasons of these goals are part of students' motivation which leads to different educational outcomes, some desired some undesired.

Regarding the desired outcomes, intrinsic motivation for task engagement is important. Indicators of intrinsic motivation in task engagement include the

following: the interest and enjoyment of the task, the non-pressure in task engagement, the value of the task, or the intention to repeat the task. Cheating is one example of an undesired educational outcome. Van Yperen, Hamstra & Klauw (2011) noted recently students' attitudes toward cheating are becoming more accepting. In the current literature, there is little investigation into students' achievement goals and their underlying reasons in relation to educational outcomes. To better understand students' motivations in educational settings, more studies are needed to examine this relationship.

Purpose

The present study focuses on the “what” and the “why” aspect of students' achievement motivation and their effect on students' educational outcomes. This focus is an issue that has not yet been investigated in the literature. For this reason, an experimental study was designed to investigate the causal relationships between students' goal complex (i.e., achievement goals and underlying reasons) and educational outcomes.

More specifically, the present study focuses on the effects of intrapersonal-approach (INAp), interpersonal-avoidance (INAv) (which is newly introduced by Elliot, Murayama & Pekrun, 2011) and performance-approach (Pap) goals (which are the most debated goals regarding their adaptive character for students' optimal function) and their underlying reasons for these goals. These underlying reasons include autonomous and controlling reasons that affect students' educational outcomes while engaged in a given task. These outcomes include interest and enjoyment, feeling pressure, interest in solving similar exercises, and cheating.

Finally, the present study will investigate whether the reasons underlying achievement goals in a specific achievement situation (e.g., an English class) can predict the reasons underlying achievement goals in another achievement task (e.g., a spatial task) as well as the students' intrinsic motivation and cheating in this task.

Research questions

The present study took place in Turkey and the sample population came from an English preparatory school within a private, non-profit University. The study will address the following questions:

1. Does encouraging students to adopt different achievement goals to complete a task, and presenting these goals in either an autonomous or a controlling way, affect students' intrinsic motivation and cheating while engaged in the task?
2. Do autonomous and controlling reasons underlying endorsed achievement goals (INAp, INAv or Pap) predict intrinsic motivation when engaged in the spatial task?
3. Do the autonomous and controlling reasons underlying students' achievement goals for their educational classes predict different outcomes of students when engaged in a specific task?
4. Can the underlying reasons for achievement goals when engaged in a specific task be predicted by the autonomous or controlling reasons underlying students' achievement goals for their educational classes?

Significance

In the literature, there are no experimental studies investigating the causal effect of achievement goals and their underlying autonomous or controlling reasons on students' intrinsic motivation and cheating behaviors. Therefore, the results of this study will give insights into this relationship. In particular, the study's findings will reveal aspects of the hidden curriculum which includes teacher's motivating style, students' motivations, as well as educational outcomes. This research will help to understand students' cheating aims and the antecedents of students' interest and engagement in a task. Therefore, the criteria for assessing the students' performance may be reconsidered to include their motivations and rather than just their test results. This study will also provide new insights to research that focuses on students' competence and motivation. The results of this study could contribute to changes in the content of teachers' professional development; especially regarding their motivating style in the classroom, helping them to guide students toward more desirable educational outcomes.

Definition of key terms

Achievement goals are the purpose of engaging in a task in a competence-relevant behavior; either for demonstrating competence (performance goal) or for developing (mastery goal) competence (Elliot & McGregor, 2001).

Autonomous reasons are the volitional and willing endorsement of the achievement goal engaging in the task because one finds it enjoyable, interesting and challenging (Vansteenkiste, et al., 2010a),

Controlling reasons mean engaging in a task (pursuing a goal) with the compulsion of external pressures (e.g., punishments or rewards) or with one's own compulsion to avoiding feeling guilty (Benita, Roth & Deci, 2013).

Cheating is an illicit behavior while completing a task and obtaining an answer (Anderman & Danner, 2008).

Intrinsic motivation means engaging in a task for satisfaction regardless of extrinsic rewards. Intrinsic behaviors self-reported by participants include interest and enjoyment; feeling non-pressure; finding value and worth; intention to repeat and continue (Deci, Eghrari, Patrick & Leone, 1994).

Goal complex is the combination of “why” and “what” aspects of achievement goals. On the other words, goal complex combines aim and reason for a particular goal. Different underlying reasons of pursuing same goal can cause to give different outcomes (Elliot & Trash, 2001).

CHAPTER 2: REVIEW OF RELATED LITERATURE

Introduction

As discussed in chapter one, students have different aims (achievement goals) during task engagement where they focus on doing well or poorly (competence) either in comparison to their previous experience (self-based criterion) or to their peers (other-based criterion). The results of pursuing their aims have undesired or desired educational outcomes, such as feeling pressured or joyful. However, two students with the same aim can have different educational outcomes because their reasons for adopting those goals can be either autonomous (willingness) or controlling (compulsion from outside). In chapter one, the combination of achievement goals (AGs) and their underlying reasons was defined as goal complex. This study aims to investigate the effect of different goal complexes on the intrinsic motivation of students (desired outcome) and cheating (undesired outcome). In the literature, there are various studies that examined either the effect of AGs or the effect of the reasons on educational outcomes; however, the investigation of the relationship between students' goal complex and educational outcomes is not extensive. To better understand students' motivations in educational settings, more studies are needed to examine this relationship.

In the first subsection of this chapter, research studies investigating the relationships between students' achievement goals and their educational outcomes will be summarized. Additionally, the controversy regarding the pursuit of mastery-approach or multiple goals as a prerequisite for optimal educational functioning will be discussed. In the second section, literature findings regarding the relation of

autonomous and controlling motivation with educational outcomes will be reported. Lastly, findings of the most recent studies about goal complexes (combination of AGs and reasons) and their relation with educational outcomes will be summarized.

Achievement goals and their relationship with educational outcomes

There were several studies carried out during the early 2000's that investigated the relationship between achievement goals and educational outcomes (e.g., exams, grades, interest in lessons, studying strategies etc.) (Senko, Hulleman, & Harackiewicz, 2011). While some authors claimed the superiority of one goal over other goals in terms of their outcomes, some suggested combining goals for better outcomes that is discussed in the multiple goal perspective.

Elliot and McGregor (2001) conducted studies with undergraduate students to examine the relationship between outcomes and AGs within their proposed 2X2 framework. The findings of the studies indicated that students with a performance-avoidance goal (PAv) tend to use superficial studying strategies, such as memorizing and have difficulty with time management. The exam performance of these students (i.e., overall exam performance, multiple choice and short answer/essay performance) is negatively predicted by their PAv goal (Elliot & McGregor, 2001; Elliot et al., 2011). Another finding is that the adoption of the PAv goal is positively associated with visiting university health centres during exam periods. In relation to exams, PAv is negatively linked to self-confidence of one's ability to understand the hardest topics (learning efficacy) and positively related to worrying about the exams. Furthermore, the research findings have revealed that the adoption of PAv goals is

linked negatively with intrinsic motivation assessed by measuring students' interest and enjoyment in the class (Elliot et al., 2011).

Similar to the adoption of PAv goals, students who pursue mastery avoidance goal (MAv) tend to be disorganized when preparing for exams and feel anxious that they will not do as well as they can. Additionally, students who endorse MAv goals feel nervous *during* the exams, an outcome different to the previously reported outcomes of students who adopt PAv goals (Elliot & McGregor, 2001).

Regarding the adoption of performance approach goals (PAp) there is a debate in the literature regarding positive or negative consequences of students' adaptive patterns of behaviour and affect. Findings report both positive and negative links between PAp goals and desired educational outcomes (Elliot and McGregor, 2001; Elliot et al., 2011). These studies agreed on the positive effect of the PAp goals on overall exam performance, including multiple choices and short answer/essay and learning efficacy. However Elliot and McGregor (2001) indicated that students who adopt PAp goals are prone to use superficial learning strategies, such as memorizing, when preparing for exams. A study from Vansteenkiste and his colleagues (Anderman & Danner 2008; Vansteenkiste et al., 2010b) indicated that and PAp oriented students tend to cheat more than MAp-oriented students because cheating is a way to reach their goals (performing better than others). Van Yperen et al. (2011) conducted two studies in Netherlands. The first study demonstrated that in education there is the highest cheating intentions compared to work and sport domains and, as pointed out by Anderman and Danner (2008), in all domains people who pursue performance goals, (whether approach or avoidance) have stronger cheating intentions. The

second study was an empirical study that further revealed that PAp-oriented people tended to cheat more than MAp-oriented. However considerable research has shown that the PAp goals have a positive relationship with well-being outcomes (i.e., positive affect and satisfaction) (Gillet, Lafrenière, Vallerand, Huart, & Fouquereau, 2012).

Regarding the adoption of MAp goals, there is much agreement about their adaptive character related to the attainment of desired educational outcomes. Students who endorse MAp goals use more advanced thinking skills when studying (for example, they develop their own ideas and understandings) and these students visit health centres less often during the exam period (Elliot & McGregor, 2001). Some correlational studies found that students who set mastery goals use more constructive learning strategies compared to students who strive for performance goals. Mastery achievement goal students can connect existing concepts to new ideas and find learning interesting; when faced with difficulties, these students persist and seek help when needed (Darnon, Butera, & Harackiewicz, 2007; Harackiewicz, Barron, Tauer, Carter, & Elliot, 2000; Levy, Kaplan, & Patrick, 2004; Pekrun, Elliot, & Maier, 2006; Wolters, 2004). Although mastery goals are unrelated to exam performance, these students perform better than others (Hulleman, Schragar, Bodmann, & Harackiewicz, 2010). Anderman and Danner (2008) revealed that mastery goal students do not tend to cheat because they focus on learning and improving themselves.

When Elliot et al. (2011) offered a 3X2 model to divide mastery goals into intrapersonal and task goals (see in Figure 2), they conducted studies to predict

outcomes. According to them, students who follow task-approach goals were more likely to enjoy the class and find it interesting and valuable for them (intrinsic motivation). It was also evidenced that students who endorsed task-approach goals felt more absorbed in the lesson and believed in their ability to understand even the hardest topic (learning efficacy). Regarding PAp goals, there is a positive relation to learning efficacy, whereas intrapersonal-approach goals are related with feeling energetic during the class.

		Definition		
		Task-based	Self-based	Performance-based
Valance	Approach	Task-approach goal	Intrapersonal-approach goal	Performance-approach goal
	Avoiding	Task-avoidance goal	Intrapersonal-avoidance goal	Performance-avoidance goal

Figure 2. The 3X2 achievement goal framework.

In the literature, theorists debate the optimal motivation for students to perform better and to be successful in their coursework (Barron & Harackiewicz, 2001). Dweck and Legget (1988) claimed that the adoption of mastery-approach goals has adaptive consequences because mastery goals focus on learners challenging themselves to improve knowledge and skills. However, the adoption of performance-approach goals has maladaptive consequences because performance goals focus on demonstrating one's ability to outperform others. Students with performance goals tend to avoid challenging tasks because they fear to demonstrate their inabilities.

Theorists who developed a different achievement goal framework (Ames & Archer, 1988; Nicholls, 1984; Dweck, 1986) agreed with the superiority of mastery goals over performance goals regarding the educational benefits. Some studies, however, revealed that except for the positive aspects of mastery goals, performance-approach goals are positively linked with academic performance, whereas the “adaptive” mastery-approach goals are not (Senko, Durik, & Harackiewicz, 2008). Thus, some theorists accepted *the multiple goal perspective* that is the adoption of both performance and mastery goals in order to achieve optimal educational outcomes (Harackiewicz, Barron, & Elliot, 1998). Barron and Harackiewicz (2001) supported this multiple goal perspective with their findings; students’ interest was linked to mastery goals and students’ performance in a math activity was linked to performance goals. When the mastery-approach and performance-approach goals interact (i.e., M_{Ap} X P_{Ap}), students tend to perform better and show interest in the class activities.

Autonomous and controlling reasons and their relation to educational outcomes

The achievement motivation includes “what” goals are endorsed and also “why” those goals are endorsed. The reasons for pursuing achievement goals were conceptualized using the self-determination theory (SDT) as “autonomous” (willingness in task engagement) versus “controlled” (internal or external compulsion) motivation.

Studies in the literature indicated that autonomous motivation gives more positive outcomes compared to controlled motivation. Ryan and Connel (1989) conducted a study with elementary school students to find out the effect of autonomous versus

controlled motivation on educational outcomes. The results supported the superiority of autonomous motivation on positive outcomes compared to controlled motivation outcomes. According to their results, autonomous motivation is associated with concentration, persistence time management and deep learning; however, controlled motivation is associated with maladaptive coping strategies, test anxiety and superficial learning. More recent studies support the positive consequences of autonomous motivation compared to controlled motivation (Roth 2008; Roth, Assor, Niemiec, Ryan, & Deci, 2009). For instance autonomous motivation promotes creativity, better conceptual understanding and better grades, effective problem solving, psychological health; whereas, controlled motivation promotes lower psychological well-being, poorer performance in heuristic tasks and more maladaptive behaviors.

The studies summarized thus far refer to the relationship of educational outcomes to either achievement goals or to autonomous and controlled motivation. However, these studies were limited because the researchers did not measure the unique contributions of each component of students' motivation, (i.e., aims in schooling and the underlying reasons) on the educational outcomes (Benita et al., 2013). Based on Elliot's (2005) suggestion to detach reasons from aims and to investigate them separately, several research studies have been conducted to investigate the specific combination of both achievement goals and underlying reasons (goal complex) and the relationship of this complex to educational outcomes (Benita et al., 2013).

Some of these studies focused only on the autonomous and controlling reasons underlying the debated PAp goals and their relation with outcomes. Vansteenkiste et

al. (2010b) demonstrated that, autonomous reasons for pursuing PAp goal were positively related to learning and studying strategies. For instance, students with PAp goals tend to have reasoning and organizational skills to process new information, linking it to what they already know (information processing). They have the ability to distinguish main ideas from less important information and are less likely to have test anxiety. Students who have autonomous reasons for adopting their PAp goals are more likely to have time management skills, ability to concentrate on task engagement, positive attitudes toward achieving success, self-discipline and willingness to put the required effort to complete a task. In contrast, controlling reasons for pursuing PAp goal is negatively associated with concentration during task engagement and positive attitudes toward college whereas positively related to test anxiety. Furthermore, Vansteenkiste et al. (2010b) showed that the controlling reasons of PAp goal were related to positive attitudes toward cheating (approving cheating) and to cheating behaviors; whereas, autonomous reasons underlying PAp have a negative relationship with cheating. In terms of academic achievement (performance on exams), students who had controlling reasons behind their PAp goals were less successful.

Another study conducted with university students reported different outcomes when endorsing a PAp goal for autonomous or controlling reasons (Gillet, et al., 2012). Gillet and his colleagues' study found that endorsing a PAp goal (defined as aim) is associated with goal attainment, autonomy (free in choices in university courses) and competence (feeling efficient in courses). Individuals who pursue a PAp goal are more likely to be enthusiastic, inspired and determined (positive affect) as well as satisfied from their University courses. However, Gillet et al.'s (2012) study reported

that when the autonomous and controlled regulation of PAp goal was entered into the regression, the PAp goals lost their significance regarding the above mentioned outcomes. In this second step of the regression analysis, the autonomous regulation for pursuing PAp goals was now associated with goal attainment, need satisfaction (i.e., autonomy, competence, relatedness), satisfaction from university courses and positive emotions; whereas, the controlling regulation of PAp goals was negatively related with need satisfaction (i.e., autonomy, competence, relatedness) and positive emotions. Therefore, the study demonstrated that autonomous or controlling reasons accounted more for the outcomes than the PAp goals alone.

Studies on the relation of pursuing PAp goal for autonomous reasons or controlling reasons with achievement outcomes have not only been conducted in education, but in sport settings as well. Vansteenkiste et al. (2010a) investigated the relation of pursuing PAp goal for autonomous or controlling reasons to soccer players' well-being and moral functioning. The results demonstrated that the soccer players who pursued PAp goal for autonomous reasons tended to be more enthusiastic and reported more vitality during the game compared to soccer players who pursued PAp goals for controlling reasons. Additionally, soccer players with controlling reasons underlying PAp goals were more likely to be irritated during the game. In a second study by Vansteenkiste et al. (2010a), the results found that soccer players who focused on outperforming others (PAp) during the game for controlling reasons perceived their opponents as a barrier that they should surpass at all costs (objectifying attitude). Although soccer players with controlling reasons underlying PAp goals viewed aggressive behavior during the game positively, neither PAp nor

autonomous reasons for pursuing PAp goals were correlated with objectifying attitudes and immoral outcomes.

After detaching reasons from aims in the achievement goal literature, the studies on different outcomes of the PAp goal complexes (PAp X autonomous or controlling reasons) supported that the autonomous reasons—more than controlling reasons—for pursuing PAp goal promote adaptive outcomes (in both sports and educational areas). In line of this research, Benita et al. (2013) went one step further conducting two studies to investigate whether mastery goals adopted for autonomous or controlling reasons are differently related to educational outcomes. The results of their first study indicated that the autonomous reason behind MAp goal during task engagement is positively related to a sense of purpose when participating in a task. Students with autonomous reasons underlying MAp goals reported more interest and enjoyment and less tension during task engagement. The second study investigated the outcomes of students with high and low perceptions of choice (autonomy) underlying their MAp goal. It revealed that students who perceive a high sense of choice tend to find classwork interesting and enjoyable, and continue to engage in learning tasks after school hours.

The present research

As mentioned earlier in this chapter, after Elliot (2005) suggested that reasons be detached from aims in the achievement goal literature, only a few studies have investigated the relation of the goal complexes (AGs X Autonomous/controlling reasons) with educational outcomes. Nonetheless, this limited number of studies showed a clear pattern of positive educational outcomes linked with autonomous

reasons underlying both the “debated” PAp and the “adaptive” MAp goals. Furthermore, they showed a clear pattern of negative educational outcomes linked with controlling reasons underlying PAp and MAp goals.

The present experimental study aimed to further investigate these new trends in achievement goal theory by researching the cause-effect relationship of students’ achievement goals adopted for either autonomous or controlling reasons when completing a task. Additionally, the study sought to examine the effect of this relationship on students’ positive and negative educational outcomes, specifically intrinsic motivation and cheating.

CHAPTER 3: METHOD

Introduction

The aim of this study was to investigate the effect of achievement goals—endorsed for either autonomous or controlling reasons—on cheating and on students’ intrinsic motivation during a particular task. For this reason, the researcher developed an experimental study as well as a supplementary cross-sectional survey.

Research design

Experimental design

Experimental design looks for the cause and effect relationship between variables. The different conditions of an experiment are the independent variables that are manipulated. The effects of the experimental conditions (i.e., independent variables) on specific variables—the dependent variables—are recorded. In an experimental study, researchers pay particular attention to controlling the effects of other unrelated factors (i.e., nuisance variables on the experimental conditions variables). It is important in such a study to specify the exact number of the participants in each condition and to randomly assign the participants to them. Manipulation of the independent variables and randomization of assigning of participants selected conditions (independent variables) distinguishes experimental design from other types of research (Kirk, 2013).

Cross-sectional design

Cross-sectional studies aim to estimate the frequencies or levels of specific attributes in a defined population within a set amount or period of time. It obtains relevant

information from the participants about having or not having a particular attribute or attributes. This type of study collects data from participants at a particular moment or point of time during the study (dos Santos Silva, 1999).

The experimental design consisted of manipulating students' achievement goals and underlying reasons for their goals to investigate their effect on cheating and on students' subjective experience during a task. In addition to the experimental design, a cross-sectional survey was conducted to assess students' motivation in their English class. Specifically, students reported their achievement goals in their English class and the autonomous or controlling reasons for endorsing these goals.

Context

This study was conducted within a school of English language that is part of a private non-profit university in Ankara, Turkey. The school is made up of three different programs: the English Language Preparatory program, the Faculty Academic English Program (FAE), and the English and Translation Studies (ETS).

The sample for the study came from the English Language Preparatory Program. This program aims to bring students to the required English level for the private university which uses English as its medium of instruction. In the program, students are divided into different classrooms according to their English level: elementary, pre-intermediate, intermediate, upper intermediate and pre-faculty. The study population was comprised of scholarship and non-scholarship students. The school has its own English exam called COPE (Certificate of Proficiency in English

Examination) which all students have to pass to start their studies in the university associated with the program.

Participants

For this study, 219 students from the English Language Preparatory Program in the school of English language of a private non-profit university participated voluntarily. Of the participants, 105 (47.9 %) were female and 95 (43.4 %) were male. A few of the participants did not report their gender ($N=19$; 9.1%). The mean age of the students was $M_{\text{age}}= 19.24$ ($SD= 0.97$) years; this does not include the 20 students who did not provide their age (9.1%). The participants were informed about the general purpose of the study. However, to preserve the integrity of the design they were unaware that they were being randomly assigned to different conditions.

Instrumentation

Items for the instruments used in this study were taken from other studies that have developed valid and reliable survey instruments and questionnaires. Instruments were translated from English to Turkish by the researchers who are Turkish native speakers. An English native speaker who has 30 years experience in Turkish language translated the researchers' translation back to English. When there were disagreements about translations, consensus was achieved through discussion.

Conditions (independent variables)

In this study, there are seven experimental conditions created through a 3X2 design. Regarding this design, each of three different achievement goals (i.e., an

intrapersonal-approach goal, an intrapersonal-avoidance goal, and a performance approach goal) were induced along with two motivating styles (i.e., autonomous and controlling). This 3 X 2 design resulted in six conditions along with seventh condition which was the control (no inducements). Four of the conditions were adapted from a study that was conducted in Switzerland by Dr. Caroline Pulfrey and Dr. Maarten Vansteenkiste. The other two conditions (i.e., autonomous and controlled regulations of INAv goal) were constructed by the researchers using parallel language to the study in Switzerland. The two newly constructed conditions were sent to Dr. Pulfrey and Dr. Vansteenkiste to receive feedback. After corrections based on the feedback, the conditions were translated into Turkish by five English Literature master students and the researchers.

The conditions were given to the participants in a written passage on the cover page of a document they received during the experiment. The document contained spatial tasks students were to complete. The researcher intended students to read the passage before conducting a set of spatial tasks and endorse the condition (the goals and underlying reasons) presented to them. These passages can be found in Appendices A to G (pages 67-73) and are described briefly below:

- In order to induce the *intrapersonal-approach goal (INAp)*, the passage contained statements like “Success and achievement are all about personal improvement... improve your solving skills in the second set.”
- In order to induce the *intrapersonal-avoidance goal (INAv)*, the passage contained statements like “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 ...do not let your performance deteriorate in the second set.”

- Finally, for the *performance-approach goal (PAP)* inducing, it was emphasized that “Success and achievement are all about who does best... perform better than the other students.”

The motivational style that was used to induce these three achievement goals was either autonomous or controlling.

- For the *autonomous motivational style*, it was stated that “you have the opportunity to work individually on the puzzles, trying to...”
- For the *controlling motivational style*, it was stated that “you are expected to work individually on the puzzles and to prove that ...” were used.

Spatial task

There were two sets of spatial exercises, each with six trials. The exercises directed participants to try to re-draw twelve different figures without lifting their pencil off the paper and without retracing any line twice. Within each set of six trials, three diagrams were possible, three were impossible to replicate unless one retraced a line or lifted his or her pencil off the paper. For each trial, participants were provided with two blank boxes; the first one was for practicing and the second a box was for redrawing their solution *only if* they had succeeded in solving the problem (see Appendix H, page 74). In other words, if they could not replicate the figure, they were to leave the second box blank.

For the first set, participants were allowed about the eight minutes to complete the first six exercises. After eight minutes, time was called and they were asked to go to the next page which included questions that asked which exercises they were able to solve. After participants completed the questions, there were six affirmations that

stated “I was able to do exercise 1, 2, 3...etc.” with options boxes “yes” and “no.” When all participants completed this part, on the same page written conditions (goals with autonomous or controlling reasons) they were instructed to complete the second set of spatial exercises. Once again, they were given eight minutes and after eight minutes answered a series of questions regarding their success.

Prior to conducting the tasks, they were instructed to read the written passage that described the condition randomly assigned to them (goals with autonomous or controlling reasons). Through this manner, the researcher intended to manipulate the student’s endorsed goal and underlying reason for the goal while completing the task.

Endorsed achievement goals during the test (manipulation check)

To determine if the participants actually adopted their randomly assigned condition, a manipulation check was conducted. This check involved asking participants to report what was their most important goal when they were completing the tasks.

Participants reported their goal by choosing from one of three items the researcher adapted from the *3 X 2 Achievement Goal Questionnaire* (Elliot, Murayama, & Pekrun, 2011) (see Appendix J, page 91). One item referred to Performance-approach goals, one to Intrapersonal-approach goals and one to Intrapersonal-avoidance goals. These items corresponded to the three goals that were induced by the different experimental conditions (i.e., INAp, INAv and PAp). Participants were asked to circle the most important goal that they endorsed during the experiment.

Performance-approach (PAp) goal was stated by the item “My most important goal was to do better than other students on these exercises”; *Intrapersonal-approach*

(INAp) goal was represented by the item “My most important goal was to do better as I go through them”; *Intrapersonal avoidance* (INAv) was indicated by the item “My most important goal was to avoid doing worse in second set of exercises than in the first set.”

Autonomous and controlling reasons for the endorsed achievement goal during the test (manipulation check)

Similar to the manipulation check for the achievement goals, the researcher assessed if participants actually adopted the induced underlying reasons for the assigned goals. For this check, corresponding items from Vansteenkiste et al.’s (2010a) study were used (see Appendix J, page 91). The participants reported whether they pursued their most important achievement goal for controlling (i.e., pressuring) or autonomous (i.e., volitional) reasons. The items were rated on a 7-point Likert scale ranging from 1 (*totally disagree*) to 7 (*totally agree*). Four reasons followed the statement “I wanted to achieve this goal because...” Two of them represented the controlling reasons and two of them the autonomous reasons.

The controlling reasons were assessed by two items: one item that represented *external regulation* (e.g., “I have to comply with the demands of others, such as my teachers, friends, parents, the researcher”) and one item that represented *introjected regulation* (e.g., “I would feel bad, guilty or anxious if I didn’t”). Autonomous reasons were also assessed by two items: one for *identified regulation* (e.g., “I find this a personally valuable goal”) and one for *intrinsic regulation* (e.g., “I find this a highly stimulating and challenging goal”). In order to create the controlling reasons score, *external* and *introjected* items ratings were averaged ($\alpha = .61$). The

autonomous reason score was created by averaging *intrinsic* and *identified* items rating ($\alpha = .64$).

Dependent variable: cheating

Cheating was assessed by using Lobel and Levanon's (1988) approach. After each set of spatial exercises, the participants were asked to confirm if they completed each figure or not. Cheating was considered to have occurred if the student drew an unsolvable exercise and reported at the end of the set that she or he had completed it (see Appendix I, page 82 and 90). In the spatial task, 179 students (80.6%) did not cheat, 28 students (12.6%) cheated on one of the unsolvable exercises, 5 students (2.3%) cheated on two of the exercises, 4 students (1.8%) cheated on three of the exercises, 2 students (0.9%) cheated on four of the exercises and 1 student (0.5%) cheated on all six of the unsolvable exercises. There were also 3 students (1.4%) who did not report if they completed the unsolvable exercises or not.

Dependent variable: intrinsic motivation (interest and enjoyment, intension, value and usefulness, pressure and tension)

The Intrinsic Motivation Inventory (IMI) is a six subscale questionnaire (Deci et al., 1994) which was used to assess participants' intrinsic motivation; interest and enjoyment, intention, value and usefulness, pressure and tension, perceived competence, and effort. In this study, four subscales of the IMI were used to assess students' *interest and enjoyment* for spatial exercises (six items included statements such as "They were fun to do", "they didn't hold my attention at all"; $\alpha = .89$), their *intention* to repeat spatial exercises (three items such as "I'd like to take some of these exercises to do at home"; $\alpha = .94$), the *value and usefulness* of the spatial

exercises (four items such as “I believe doing this activity could be beneficial to me”, “I think this is an important activity”; $\alpha = .92$), and the *pressure and tension* during the test (five items such as “I was very relaxed while doing them”, “I felt pressured while doing them”; $\alpha = .78$). The four subscales included 18 items in total and were rated on a 7-point Likert type scale ranging from 1 (*Totally disagree*) to 7 (*Totally agree*) (see Appendix K, page 92).

Survey instruments

In addition to the experiment, a survey was conducted to assess following variables:

- endorsed achievement goals in English class
- autonomous and controlling reasons of endorsing achievement goals in English class
- Autonomous reasons
- Controlling Reasons

Information about the survey and the assessed variables is found below.

Endorsed achievement goals in English class

Students’ achievement goals in their English class were assessed with four items from the Elliot & Murayama’s *Revised-Achievement Goal Questionnaire* (2008) (see Appendix L, page 93-94). Participants responded to a 5-point Likert-type scale ranging from *Strongly disagree* (1) to *Strongly agree* (5) to what extent they endorsed an INAp goal “My goal in this course is to learn as much as possible”; a PAp goal “My goal in this course is to perform better than the other students”; a PAV goal “My goal in this course is to avoid performing worse compared to others”; or a

INAv goal “My goal in this course is to avoid learning less than it is possible to learn.”

Autonomous and controlling reasons of endorsing achievement goals in English class

To detect whether students endorsed achievement goals for autonomous or controlling reasons, the researcher asked students to check their achievement goals' score. If their goals' score were higher than three, they were asked to report why they endorsed the corresponding goal. Eight items from Vansteenkiste et al.'s (2010a) survey followed each of the four achievement goals (see Appendix L, page 93-94). *Intrinsic reasons* were assessed by two items (e.g., “I found learning as much as possible a challenging goal”). *Identified reasons* were also assessed by two items (e.g. “I found learning as much as possible a personally important goal”). *External reasons* were assessed by one item (e.g. “Others [teacher, parents] obliged me to do so”) and *introjected reasons* were assessed by three items (e.g., “Only then I could feel myself worthwhile and special”). Participants were asked to rate these eight items in a 5-point Likert-type scale ranging from *Strongly disagree* (1) to *Strongly agree* (5).

Autonomous reasons

Autonomous reason scores for each of the four different achievement goals were created by averaging the responses of the items for intrinsic and identified reasons. Internal consistency of autonomous reasons (intrinsic and identified) for pursuing INAp goals was $a = .75$; internal consistency of autonomous reasons (intrinsic and identified) for pursuing PAp goals was $a = .85$; internal consistency of autonomous

reasons (intrinsic and identified) for pursuing PAV goals was $a = .81$; and internal consistency of autonomous reasons (intrinsic and identified) for pursuing INAv goals was $a = .81$.

Controlling reasons

Like autonomous reasons, scores of controlling reasons were calculated by averaging scores of external and introjected reasons. Separated controlling scores were created for the four achievement goals; internal consistency of controlling reasons (external and introjected) for pursuing INAp goals was $\alpha = .68$; internal consistency of controlling reasons (external and introjected) for pursuing PAp goals was $\alpha = .71$; internal consistency of controlling reasons (external and introjected) for pursuing PAV goals was $\alpha = .80$; internal consistency of controlling reasons (external and introjected) for pursuing INAv goals was $\alpha = .75$.

Method of data collection

Academic staffs working in the English Language preparatory school were trained by the researcher to administer the experiment and the instruments used for this study. All the students completed a consent form to indicate their voluntary participation. The study was approved by Bilkent Ethical committee. During a class hour, the seven different experimental conditions were distributed randomly to the students. It was emphasised to students to put their ID on the first page and read it carefully. This page contained the passage giving students their experimental condition. Thus, the intention was to encourage participants to endorse or adopt a given goal and underlying reason for the goal when completing the tasks.

The completion of the experiment (spatial exercises, manipulation check and measurement of the dependent variables) lasted around 25 minutes. In the second section of the class hour, questionnaires pertaining to the students' goals and underlying reasons for their English class were distributed. In that questionnaire, participants were asked to report their gender, age and ID number. The ID number was used to match the questionnaire with the spatial exercise documents.

Method of data analysis

The quantitative data was analysed by using SPSS (Statistical Package for the Social Sciences v. 20). The analysis was divided as preliminary and main analysis. In preliminary analysis descriptive statistics of the measured variables and their correlations were presented. MANOVA analysis was also used to examine the gender difference. The main analysis includes the manipulation checks and the analysis for research questions. First, to investigate whether experimental conditions worked descriptive statistics and ANOVA analyses were conducted. Second, to investigate the predictors of intrinsic motivation and cheating, simple regression analyses were conducted. Last, a regression analysis was conducted to investigate whether the reasons behind endorsed AGs for English class predict the underlying reasons of AGs followed during the spatial task.

CHAPTER 4: RESULTS

Introduction

The purpose of the present study was to investigate the effect of students' achievement goals (AGs) and their underlying reasons on the educational outcomes of intrinsic motivation and cheating. With this aim, a preliminary analysis was conducted to present descriptive statistics of the measured variables and their correlations. The preliminary analysis uses MANOVA to investigate gender differences as well.

The main analysis determines to what extent the experimental conditions worked effectively, including the results of the manipulation check (see Chapter 3). To analyze the relation of the reasons underlying the endorsed AGs with the outcomes in different situations, the data was analyzed for the endorsed goals and underlying reasons for both the spatial task and the English class. For each situation, regression analyses were conducted to find significant predictors of intrinsic motivation and cheating. Finally, a regression analysis was conducted to investigate whether the underlying reasons of AGs in English class predict the reasons of endorsed AGs during the spatial task.

Preliminary analysis

Descriptive statistics of the variables in the study are presented in Table 1. AG results include responses of all participants who answered the questions. Participants were asked to respond to questions about the underlying reasons *only* if they

endorsed an AG for English class with a value of three or above. For that reason, sample size (N) is different for the various underlying reasons in the English class.

Table 1
Descriptive statistics of studied variables

	N	M	SD
<u>AGs for the English class</u>			
1.INAp	85	3.99	.72
2.PAp	68	2.68	.72
3.INAv	94	3.88	.75
4.PAv	63	3.65	.68
<u>Reasons for AGs of the English class</u>			
5.INAp autonomous	82	3.76	.80
6.INAP controlling	82	2.97	.78
7.INAv autonomous	93	3.56	.77
8.INAv controlling	93	3.03	.80
9.PAp autonomous	66	3.57	.85
10.PAp controlling	66	2.13	.68
11.PAv autonomous	61	3.58	.75
12.PAv controlling	61	3.15	.80
<u>Reasons for the AGs of the spatial task</u>			
13.Autonomous manipulation	198	4.20	1.69
14.Controlling manipulation	196	2.57	1.40
<u>Dependent variables</u>			
15.Interest/Enjoyment	199	4.42	1.51
16.Pressure/Tension	198	3.29	1.31
17.Value	198	3.80	1.65
18.Intention	198	4.10	1.92
19.Cheating	209	.30	.79

To determine whether gender could be considered as a predictor of the dependent variables, a MANOVA analysis was conducted. The results showed that gender did

not present any statistically significant differences in the measured variables.

Therefore gender was not used as a covariate in the subsequent analysis.

Correlations between the studied variables are presented in Table 2. With respect to the endorsed goals in English class, PAp and PAv goals were strongly correlated to each other, whereas INAp and INAv goals are less strongly correlated. In addition, while PAv and INAv goals are significantly and positively correlated, there is not a significant correlation between PAp and INAp goals. Regarding the reasons underlying students' English class AGs, it was found that all the variables correlated positively to each other. Autonomous reasons of the four assessed AGs were strongly and positively intercorrelated and they were also significantly (but less strongly) and positively correlated with controlling reasons of all AGs endorsed in the English class. In the same way, the controlling reasons of AGs for English class were positively and strongly intercorrelated. Additionally, all AGs in English class are strongly and positively correlated to their underlying reasons.

Regarding the reasons underlying AGs for the spatial tasks, both autonomous reasons and controlling reasons were significantly and positively intercorrelated. The reasons underlying the endorsed AGs in the spatial task were also mostly significantly correlated with the AGs and their underlying reasons for the English class.

According to this, the controlling reasons underlying the endorsed AGs for the spatial task are positively and significantly associated with all the controlling reasons underlying the AGs in English class; however, autonomous reasons for the experimental endorsed AGs had no significant relationship with autonomous reasons for the English class's AGs. The controlling reasons in the task have positive and

significant correlations with PAp, PAv and INAv goals in English class.

Additionally, the reasons underlying the experimental endorsed AGs (during the task) have significant association with the dependent variables; autonomous reasons underlying AGs during the spatial test were positively and significantly related to the interest in the test ($r = .31, p < .01$), to the value of the test ($r = .36, p < .01$), and to the intention doing more similar exercises ($r = .29, p < .01$); whereas, controlling reasons are only significantly correlated to pressure ($r = .32, p < .01$).

With respect to the relations among the dependent variables, interest was positively associated with the value of the task as well as with the intention to do more spatial exercises. On the other hand, interest was negatively and significantly associated with pressure during the task while value and intention were positively interrelated. The dependent variable of cheating is negatively and significantly correlated to perceived value of the task ($r = -.14, p < .05$) and to intention for repeating the task ($r = -.16, p < .05$).

Goals that were endorsed in English class also have significant relationship with outcomes of spatial task. INAp goal is positively and significantly associated with value. While PAp goal has significant and negative correlation with interest ($r = -.25, p < .05$), it is correlated significantly and positively with pressure ($r = .34, p < .05$).

Table 2
Bivariate correlations of studied variables

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
<u>AGs for the English class</u>																			
1.INAp	-																		
2.PAp	.19	-																	
3.PAv	.23*	.65**	-																
4.INAv	.35**	.18	.32**	-															
<u>Reasons for AGs of the English class</u>																			
5.INAp-aut.	.41**	.26**	.16	.34**	-														
6.INAp-cntr.	.17	.48**	.46**	.17	.37**	-													
7.PAp-aut.	.06	.44**	.50**	.26*	.46**	.63**	-												
8.PAp-cntr.	-.05	.46**	.56**	.17	.25*	.67**	.75**	-											
9.INAv-aut.	.38**	.28**	.25*	.50**	.49**	.36**	.54**	.39**	-										
10.INAv-cntr.	.17	.56**	.46**	.11	.24*	.66**	.50**	.65**	.65**	-									
11.PAv-aut.	-.01	.47**	.47**	.41**	.62**	.51**	.79**	.57**	.58**	.51**	-								
12.PAv-cntr.	.02	.48**	.46**	.17	.29**	.71**	.68**	.78**	.50**	.79**	.73**	-							
<u>Reasons for the AGs of the experiment</u>																			
13.Aut. manip.	.05	.04	.02	.14	.16	.27**	.11	.11	.14	.08	.06	.12	-						
14.Cntr. manip.	.13	.23*	.24*	.20*	.18*	.41**	.15	.26*	.08	.27**	.26*	.36**	.22**	-					
<u>Dependent variables</u>																			
15.Interest	.15	-.25**	-.10	-.14	.07	-.05	-.02	-.11	.00	-.16	-.15	-.16	.31**	.02	-				
16.Pressure	.03	.34**	.26**	.12	.15	.30**	.28**	.24*	.12	.28**	.32**	.31**	.08	.32**	-.17*	-			
17.Value	.26*	.01	.20*	.08	.11	.15	.28**	.21	.19*	.10	.09	.14	.36**	.11	.68**	.02	-		
18.Intention	.16	-.07	.13	-.01	.08	.09	.11	.02	.074	-.03	.02	-.04	.29**	.08	.70**	.03	.80**	-	
19.Cheating	.023	.05	.10	-.041	-.15	.06	-.12	-.04	-.09	-.07	-.08	-.04	-.13	-.01	-.09	-.11	-.14*	-.16*	-

Note. * $p < .05$. ** $p < .01$. INAp= Intrapersonal approach goal; INAv= Intrapersonal avoidance goal; PAp= Performance approach goal; PAv= performance avoidance goal; Aut. Manipulation= Autonomous manipulation; Cnt. Manipulation= Controlling manipulation.

Main analysis

Manipulation check of the assigned AGs

The conditions, described in Chapter 3, involved randomly assigning an AG and underlying reason to a student which they were to adopt while completing a series of spatial exercises. With the assignment, it was hoped to manipulate students' AGs during the experiment. As part of the manipulation check, items that participants answered regarding their supposedly adopted goals and reasons were analyzed. This section investigates whether the manipulation was effective; that is, if the participants endorsed the given AGs. Table 3 shows how many participants actually endorsed each AG. According to the table, 136 (65.1%) of the participants chose INAp goal as their most important goal or goal that they pursued during spatial task.

Table 3
Important goal endorsed during spatial task

	Frequency	Percent
1.INAp	136	65.1
2.PAp	34	16.3
3.INAv	14	6.7
Total	184	88.0
Missing	25	12.0
Total	209	100.0

To check which goals were actually assigned through the experimental conditions to those 136 participants, the data were filtered to include only the students who chose INAp as their driving goal. Table 4 shows which AG was actually assigned (or induced) to these 136 participants. As the table shows, of the 136 INAp participants,

only 37 (27.2%) were assigned that goal as part of the condition; the rest were assigned other AGs. In other words, 99 of the participants received a condition different than the one they endorsed; apparently, they ignored their induced condition and chose to endorse the INAp goal during the spatial task. Because the participants endorsed their own goals during the spatial task and ignored the condition, the AG and reason manipulation was unsuccessful.

Table 4
AGs assigned through the condition to 136 INAp participants

	Frequency	Percent
1. PAp controlling	21	15.4
2.INAp controlling	19	14.0
3.PAp autonomous	14	10.3
4.INAp autonomous	18	13.2
5.INAv autonomous	22	16.2
6.INAv controlling	22	16.2
7.Control	20	14.7
Total	136	100

Manipulation check of the assigned underlying reason for AGs

As with the manipulation check for AG, data was collected to analyze the success of the underlying reason inducement. The six conditions (the underlying reasons not including the control condition) were collapsed into two categories regardless of AGs. One category, named *autonomous conditions*, contained all the conditions in which autonomous reasons underlying the AGs were induced (i.e., INAp autonomous, INAv autonomous and PAp autonomous conditions). The other category, named *controlling conditions*, contained all the conditions in which

controlling reasons underlying the AGs were induced (i.e., INAp controlling, INAv controlling and PAp controlling conditions). An ANOVA analysis was used to compare these two categories of conditions underlying the endorsed AGs. Results showed that there were no significant differences between the *autonomous* and *controlling* conditions underlying the endorsed AG. This finding indicates that the induced reasons had no effect on the participants. Therefore the conditions worked for neither the induced AGs nor for the induced underlying reasons. Consequently, the analysis was based only on the participants' own (rather than induced) AGs and their underlying reasons during the spatial test.

Do autonomous and controlling reasons underlying the endorsed AGs predict intrinsic motivation in the spatial task?

As mentioned above, most of the students (N = 136) endorsed an INAp goal during the spatial test, whereas very few students endorsed an INAv goal (N = 14) or a PAp goal (N = 34). For this reason, the sample was divided into those who endorsed an INAp goal and to those who endorsed any other AG. This division was done to have enough participants in each category to do the analysis. Simple regression analyses were conducted to predict intrinsic motivations from the autonomous and controlling reasons of endorsing the INAp goal.

The results of this analysis (Table 5) indicated that autonomous reasons of endorsing INAp goal significantly predicted interest in the task, value of the task and intention to repeat the task; whereas controlling reason predicted only pressure felt during the task. However, no reason was found to predict cheating. These results suggest that participants who endorsed INAp goal for autonomous reasons tended to solve more

spatial task and found the task valuable and enjoyable, while participants with controlling reasons felt pressure during the spatial task.

Table 5
Simple regression analysis for reasons of endorsing INAp goal predicting intrinsic motivation during spatial task.

Predictors	Interest	Pressure	Value	Intention	Cheating
Autonomous	.27**	-.04	.29**	.25**	-.03
Controlling	.01	.18*	.05	.04	.12
F	5.40**	2.07	6.91**	4.76*	.91
Adjusted R ²	.062**	.016	.082**	.054*	-.001

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

As mentioned previously, the sample was divided into two groups: those who endorsed an INAp goal and those who endorsed all the other goals. In the following analysis, the researcher selected those that endorsed any other goal except of INAp (i.e. PAp or INAv) during the spatial test. A regression analysis was conducted to investigate to what extent the autonomous and controlling reasons for all the other AGs (i.e. with PAp or INAv impgoal) predict intrinsic motivation. Similar to the previous analysis, autonomous reasons endorsing other AGs (INAv and PAp) significantly predicted interest, value and intention; whereas, controlling reason predicted only pressure. Different from the previous results though, it was found autonomous reasons behind endorsing INAv and PAp goals negatively predicted cheating.

Table 6
Simple regression analysis for reasons of endorsing other AGs (i.e. INAv and PAp) predicting intrinsic motivation during spatial task.

predictors	Interest	Pressure	Value	Intention	Cheating
Autonomous	.39**	.20	.46**	.38**	-.42**
Controlling	-.10	.43**	.03	-.02	-.11
F	5.01**	10.36**	8.05**	4.66*	7.46**
Adjusted R ²	.12**	.24**	.19**	.11*	.18**

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

Do autonomous and controlling reasons underlying the endorsed AGs in the English class predict intrinsic motivation in the spatial task?

While the previous sections analysis focused on the spatial tasks results, this section looks at the predictive value of the AGs and underlying reasons in the English class. As with the spatial task, analyses were conducted on the AGs students endorsed in their English class to investigate to what extent their reasons for endorsing a particular AG in a specific situation (i.e., the English class) can predict intrinsic motivation.

As done previously, the data related to the English class was divided as into two categories; those who endorsed the INAp goal for either underlying autonomous or controlling reasons and those who endorsed any other AG (i.e., INAv and PAp) for either underlying autonomous or controlling reasons. First, a regression analysis was conducted to investigate to what extent the autonomous or controlling reasons for INAp goals were endorsed in an English class could predict the intrinsic motivation in the spatial task. According to the results, only the sense of pressure was

significantly predicted by controlling reasons for endorsing the INAp goal in their English class.

Table 7
Simple regression analysis for reasons of endorsing INAp goal predicting intrinsic motivation in English class.

predictor	Interest	Pressure	Value	Intention	Cheating
Autonomous	.15	.12	.14	.12	-.23
Controlling	-.19	.27*	.05	.03	.18
F	1.52	4.77*	1.02	.66	2.25
Adjusted R ²	.01	.09*	-.00	-.01	.03

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

For the second category, a composite score for autonomous and controlling reasons of all the other AGs (i.e., INAv and PAp) was created. In order to determine whether autonomous and controlling reasons for the other AGs (i.e. INAv and PAp) in English class could predict intrinsic motivation, a regression analysis was conducted. Unlike the results for the spatial task which had several significant predictors, only one dependent variable (value) could be significantly predicted by the autonomous reason for endorsing INAv and PAp goals in English class (Table 8).

Table 8
 Simple regression analysis for reasons of endorsing other AGs (i.e. INAv and PAp)
 predicting intrinsic motivation in English class.

Predictor	Interest	Pressure	Value	Intention	Cheating
Autonomous	.19	.12	.26*	.20	-.14
Controlling	-.22	.20	.01	-.08	.12
F	1.70	4.73*	3.80*	1.42	.70
Adjusted R ²	.01	.07*	.05*	.01	-.01

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

Do underlying reasons for English class AGs' predict the autonomous and controlling reasons of endorsed AGs during spatial task?

A regression analysis was conducted to find out if there was any relationship between underlying reasons for endorsing AGs during specific task and the underlying reasons for endorsing AGs in an English class. A composite score for autonomous and controlling reasons of all the other AGs (i.e., INAv and PAp) was created for the English class. As shown in Table 9, controlling reasons for endorsing AGs in English class was found to predict the controlling reasons for endorsing an AGs during the spatial task.

Table 9
 Simple regression for prediction of underlying autonomous and controlling reasons
 of AGs during spatial test

Predictors	<u>During spatial task</u>	
	Autonomous reasons	Controlling reasons
<u>In English class</u>		
Autonomous reasons	.21	-.06
Controlling reasons	.08	.38**
F	3.88*	6.84**
Adjusted R ²	.05*	.10**

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

In conclusion, autonomous reasons behind the AGs predicted the positively intrinsic motivation and negatively cheating behavior whereas controlling reasons behind the AGs promoted pressure and tension. Additionally, only the controlling reasons of pursuing INAp goal for the English class predicted pressure in the task engagement. In terms of reasons underlying the AGs for task engagement and for English class, controlling reasons in the English class predicted the controlling reasons during the task engagement. The conclusions and implications of the results for practice will be discussed in chapter five.

CHAPTER 5: DISCUSSION

Introduction

The findings from the research are discussed in this chapter. The discussion begins with an overview of the study that includes information about participants, method of data collection and the instruments. The overview is followed by major findings and conclusions. Finally, the results will be discussed in terms of their implications for teaching practices and further research. Limitations of the study will be also presented in a last section.

Overview of the study

This research study consisted of an experiment designed to conduct three investigations:

- The effect of different goal complexes (achievement goals [AG] X underlying reasons) on students' intrinsic motivation and cheating behavior while participating in an assigned task.
- The relationship between students' autonomous or controlling reasons underlying their AGs in their classwork and their learning outcomes (intrinsic motivation and cheating behavior) for the assigned task.
- The relationship between reasons (autonomous and controlling) behind students' AGs during task engagement and the reasons for pursued AGs in their classwork.

The experimental study was conducted with 219 students from The English Language Preparatory Program who agreed to participate in the study. As part of the experiment, students were to complete a series of spatial exercises. Via the written

instructions on the document with the exercises, they were randomly assigned one of seven experimental conditions (3 AGs [PAp, INAp, INAv] X 2 Reasons [autonomous, controlling] and 1 control condition).

A manipulation check was performed after the experiment to examine whether students adopted the given goal and the given reason. In this manipulation check, three items from the *3X2 Achievement Goal Questionnaire* (Elliot et al., 2011) were used to assess students' endorsed AGs and four items from Vansteenkiste, Mouratidis, et al.'s (2010) study were used to assess students' underlying reasons regarding their endorsed AG. *The Intrinsic Motivation Inventory* (IMI), a six subscale questionnaire (Deci et al., 1994) was used to assess students' intrinsic motivation, while cheating was assessed by using Lobel and Levanon's (1988) approach. For this experiment, cheating was considered to have occurred if the student drew an unsolvable exercise and reported at the end of the set that she or he had completed it. The manipulation checks reported that the experimental conditions did not work. Therefore the data were analyzed from the perspective of students' own endorsed AG and their underlying reasons instead of the assigned (induced) AG.

As mentioned above, this study had three investigations. In addition to the spatial exercise and induced AG, aspects of the students' classwork and goals were investigated. Students' achievement goals in their English class were assessed using four items from the Elliot & Murayama's *Revised-Achievement Goal Questionnaire* (2008) and the underlying reasons in English class were assessed by Vansteenkiste, Mouratidis, et al.'s (2010) items. The results from these items were analysed using

regression analyses to investigate the extent to which students' AG and underlying reasons could predict student learning outcomes (the dependent variables of cheating and intrinsic motivation).

Major findings and conclusions

The findings for each research question of the study are discussed below:

First research question: *Does encouraging students to adopt different achievement goals to complete a task, and presenting these goals in either an autonomous or a controlling way, affect students' intrinsic motivation and cheating while engaged in the task?*

The study analyzed the causal relationship between goal complexes, induced under experimental conditions, on students' education outcomes (intrinsic motivation or cheating). As noted in Chapter 4, the manipulation checks showed that the conditions were not successfully implemented. Therefore, there is inadequate evidence to infer any causal relationship between the studied variables. However the findings related to cheating on Table 7 and 8 were supported by findings in literature showing that the obtained results were to the expected direction. According to the results controlling reasons behind AGs were positively related to cheating whereas autonomous reasons were negatively related to cheating.

The researcher has assumed several reasons for the experiment's failure. One assumption is related to the strategy used to induce the AGs and underlying reasons. This strategy involved instructing students to read the first page of the assigned task (spatial exercises); this page contained the given the condition's AG and underlying

reasons. It is possible that the students went through the spatial test without reading the important first page, perhaps because the task was not part of their coursework.

To check into this assumption, the researcher repeated the exercise with a different class (i.e., an Educational Psychology class). In this replication, a PAp goal for controlling underlying reasons (see Appendix B, page 68) was induced orally by the researcher to all the participants rather than expecting them to read it on the paper and internalize it. Once again, the experiment did not work; despite the instructions, most of the students endorsed the INAp goals. An informal discussion with the participants revealed that some students did not feel competent taking spatial tests and therefore did not want to endorse a competitive goal (i.e., PAp goal). Other students reported that they are not interested in competing with their classmates (i.e., endorsing a PAp goal) because the given task was like a math task not related to their course. Therefore, the researcher suggests that if this study is repeated in the future, efforts be taken to limit participants' judgment or bias regarding the assigned task. In particular, the task should be in line with students' competence level and relevant to one or more of the subject areas topics students are studying.

A second assumption for why the experiment was unsuccessful concerns the wording of the experimental conditions. English language graduate students were requested to translate four of the seven experimental conditions into Turkish. It is possible conditions were translated incorrectly which could have affected the validity of the instructions. Also, two out of the seven experimental conditions were created by the researcher in English and then translated into Turkish. The validity of these newly introduced conditions is also unsure.

A third assumption regarding the unsuccessful experiment is that it was affected by the instrument being administered by classroom teachers rather than the researcher. Although the teachers were trained by the researcher, it is not possible to ensure the instruments were administered correctly. In particular, it is not known if teachers instructed students to read the first page carefully nor if the correct amount of time was allocated for each spatial test.

Second research question: *Do autonomous and controlling reasons underlying the endorsed AGs predict intrinsic motivation in the spatial task?*

There are two important findings regarding the research question on whether autonomous or controlling reasons underlying INAp, INAv or PAp goals in a specific task promote different outcomes during the task. The first finding revealed that following INAp goals for autonomous reasons promoted following intrinsic motivations when engaged in a task: interest and enjoyment, valuing, and the intention to repeat the task. In contrast, feelings of pressure and tension during the task occurred when participants followed INAp goals with controlling reasons. These findings parallel Gillet et al. (2012) study which revealed a positive relation between pursuing MAp goal for autonomous reasons on interest and enjoyment and a negative relationship between pressure and tension and this same goal and reasons. This finding supports the conclusion that the same goal can lead to different outcomes based on the reasons behind it.

The second finding was that individuals who pursued any other AGs (i.e., INAv, PAp) with autonomous reasons during a specific task tended to report desired educational outcomes such as, interest and enjoyment in the task, value of the task,

intention to repeat the task (intrinsic motivation). Interestingly, it was found that although autonomous reasons for pursuing an INAp goal is not related to cheating, following *other* AGs for autonomous reasons is negatively related to cheating behavior. Moreover, the findings for pursuing any AG were opposite for controlling or compulsive reasons (either external or internal) compared to autonomous reasons. These students who pursued other AGs because of external reasons (i.e., controlled reasons), felt pressure while engaging in the spatial task.

Although the current study did not check the effect of AGs on educational outcomes, in the literature different AGs (i.e., INAp, INAv and PAp) have been related to different adaptive or maladaptive outcomes in educational area. However, when AGs are combined with the autonomous or controlling reasons (in the goal complex concept), more variance is explained of the outcomes in regression analysis. Therefore, the outcomes are categorized according to the reasons behind the AG rather than according the AGs; it seems that the autonomous or controlling reasons are strong motivators that influence the educational outcomes regardless of the goal content. In the literature two studies have supported this finding, reporting that when the performance approach goals are entered as predictors in the an hierarchical regression, along with the underlying reasons, the significant effects of the goal content loses its significant effect on the outcomes (Gillet et al., 2012; Vansteenkiste et al., 2010a; Vansteenkiste et al.,2010b).

To reiterate, the study revealed that regardless of which AGs the students endorsed (i.e., aiming to be better than peers [PAp] in the class, to do better in a task compared to previous experience [INAp], or not to do worse than peers or previous experiences

[INAv]), the reasons underlying the AGs affect the outcomes of a specific task.

Therefore, autonomous reasons promote interest in and enjoyment from the task, increase the value of the task and support intentions to continue or repeat the task.

On the other hand, controlling reasons promote pressure and tension when engaged in the task.

Third research question: *Do autonomous and controlling reasons underlying the endorsed AGs in the English class predict intrinsic motivation in the spatial task?*

The third research question concerned whether the goal complexes for an educational class can predict the outcomes of a specific task. If this is the case, then students' goal complexes for a specific class could be generalized to be motivators for students' learning activities. The results related to this question displayed that 1) only students who pursued INAp goal with controlling reasons for an educational class tended to feel pressure during task engagement and 2) students who pursued the other goals (i.e., INAv, PAp) with autonomous reasons for educational class, tended to give value to the task. It seems that, in general, students' motivation in an educational class (with the exception of the two above mentioned cases) was not transferrable to the spatial test activity they participated in during this experiment. Overall, rather than generalizing their motivation to all achievement situations, the results displayed that students' motivations are differentiated based on their specific learning situations.

Fourth research question: *Can the underlying reasons for achievement goals when engaged in a specific task be predicted by the autonomous or controlling reasons underlying students' achievement goals for their educational classes?*

Regarding the fourth research question, the findings showed that individuals who have controlling reasons behind the AGs for their educational class tended to endorse the same reasons behind their AGs when engaged in a specific task. However, no relationship was found between the autonomous reasons behind the AGs in educational class and the autonomous reasons behind the AGs in a specific task. This could be because controlling reasons were instigated by external agents like teachers and parents that encourage rewards or threats. These external motives could have enough power to be transferred to any achievement situation regardless of the context. Concerning the autonomous reasons underlying AGs, however, it seems that the context is relevant. In other words, autonomous reasons behind AGs do not transfer from one situation automatically; they need contextual support. This result has considerable implications for teachers who need to think seriously about how they support their students' autonomous motivations in each specific situation.

Therefore, the current study revealed that the autonomous reasons behind the other AGs (i.e., INAv, PAp) have positive predictive values. It is also revealed that students who are motivated with control (either external or internal) are more likely to feel pressure and tension during task engagement. Furthermore, control motivated students retain their motivation throughout their classes and tasks, while learning context may affect motivation retention of autonomously motivated students. Two other findings unrelated to these research questions deserve to be discussed. The first finding has to do with the significant positive correlation between the autonomous and controlling reasons behind students' AGs during the task engagement. This result could be explained by controlled and autonomous motivation being two poles of a continuum rather than opposite constructs. Other researchers support this

continuum concept (Vansteenkiste et al., 2010a; Gillet et al., 2012). According to this continuum of self-determination (Deci & Ryan, 2000) individuals could internalize the controlled motivation and turn it into autonomous motivation.

Unfortunately, the internalization and transformation process is unclear.

The second finding unrelated to the research questions has to do with the fact that students in general did not cheat during the task engagement. The reason might be a moral issue; they do not find cheating acceptable. It might also be explained by the high autonomous motivation the students had ($M=4.20$) during the task engagement compared to the controlled one ($M= 2.57$). It could be hypothesized that autonomous motivation as it promotes positive outcomes (mentioned also in literature) could prevent cheating behavior during the task engagement.

Implications for practice

The present results may have important implications for teacher training programmes and education. Courses related to students' motivation and the promotion of desired educational outcomes could be integrated into teacher training programs. Trainee teachers could practice strategies to support students' autonomous motivation. As students' motivation has been revealed as an important correlate of educational outcomes, pre-service teachers can examine the effect of endorsed goal complex in different achievement situations; they can learn which motivational styles best obtain the desired educational outcomes.

The results of this study provided some suggestions about effect of AGs and their underlying reasons (goal complexes) on intrinsic motivation and cheating. Teachers should support students' autonomous motivation for learning rather than controlling

motivators. This support could be achieved by satisfying students' three psychological needs: need for autonomy, need for competence and need for relatedness (Reeve & Jang, 2006). Teachers may adjust tasks, lessons and the class environment to support autonomy. For instance, rather than the teacher determining all class content, students can be given the sense that they have some choice regarding class activities (Reeve & Jang, 2006). Also by providing a positive classroom environment with logical rewards for task engagement, teachers can guide students to value their class experiences and learning situations. To reduce students' sense of pressure, teachers can avoid using threatening or controlling language, setting unreasonable deadlines and promising unrealistic or irrelevant rewards. In addition, it is important that teachers' assessment methods to be consistent with his/her motivation type. For instance, they could provide clear expectations before assessment and informational feedback during the task engagement to promote students' need for competence and, therefore, students' autonomous motivation. Zhou (1998) indicated that such students who have informational feedback during task engagement and are autonomously motivated give rise to the most creative ideas.

Finally, a notable finding of study this study was that students tend not to retain their autonomous motivation when in different learning situations, while controlled motivation styles are more persistent. Therefore, it is important for educators to know that autonomous motivating styles need to be supported in all classes and learning situations. Teachers and the school community should work collaboratively to promote students' optimal learning behaviors.

Implications for further research

The present research study has considerable implications for further research that will investigate the causal-effect relationship between goal complexes and educational outcomes. The first suggestion is to improve the design of the experiment, especially to make the task relevant to students' subject area to avoid bias. Through such an improvement, it may be possible to better specify the outcomes of the different goal complexes—goals and their underlying reason—and therefore to contribute in the achievement goal literature. A second improvement is students' AGs could be assessed with Likert-type scale in order to have a continuum variable and better correlate AG with other variables. The third recommendation is the researcher should take into consideration individual differences among the participants, such as fear of failure and need for achievement. These differences could help with the prediction of the AGs and the underlying reasons.

Limitations

The main limitation is that the experimental design used for this study did not provide answers to the research questions. It is hoped that this limitation will be addressed in future studies. Another limitation is the experiment used a cross-sectional design to assess students' achievement goals and underlying reasons in an educational class. This cross-sectional design prevented showing causal relationship between variables. Finally, the research was conducted with university students who are typically evaluated via norm-criteria; this situation may have prevented autonomous manipulation of the students. It is also important to be mentioned in the limitations that the present research carried out in Turkey which is a collectivistic society with particular cultural characteristics and it could be assumed that the

findings concern only a Turkish population. However the present results are in accord with previous finding of research that took place in U.S and Belgium. Thus culture may not affect students' responses but, as the present study is the first research on goal complexes in Turkey, further research is needed in order to investigate deeply relation of goal complexes with educational outcomes in different cultural context.

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APPENDICES

APPENDIX A: Control condition



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: _____

APPENDIX B: Condition 1(Controlled regulated PAp 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 C: Condition 2 (Controlled regulated INAp 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 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 PAp 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 (Autonomous regulated INAp 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 F: Condition 5 (Controlled regulated INAv 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 G: Condition 6 (Autonomous regulated INAv 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.

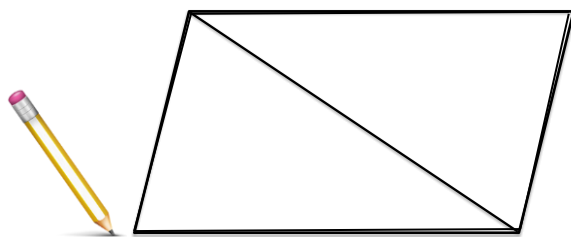
You will all receive the feedback scores once the whole study is completed.

Your e-mail address: _____

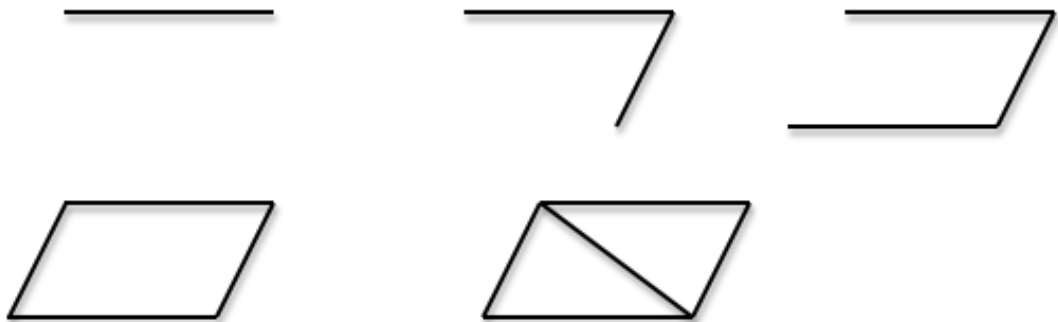
APPENDIX H: Spatial task

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

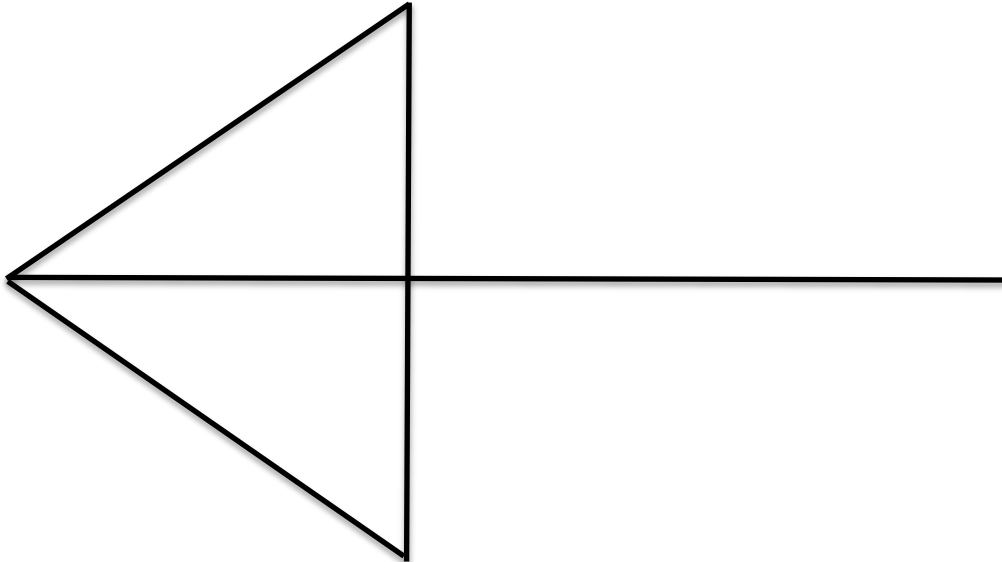


EXERCISES – SET ONE

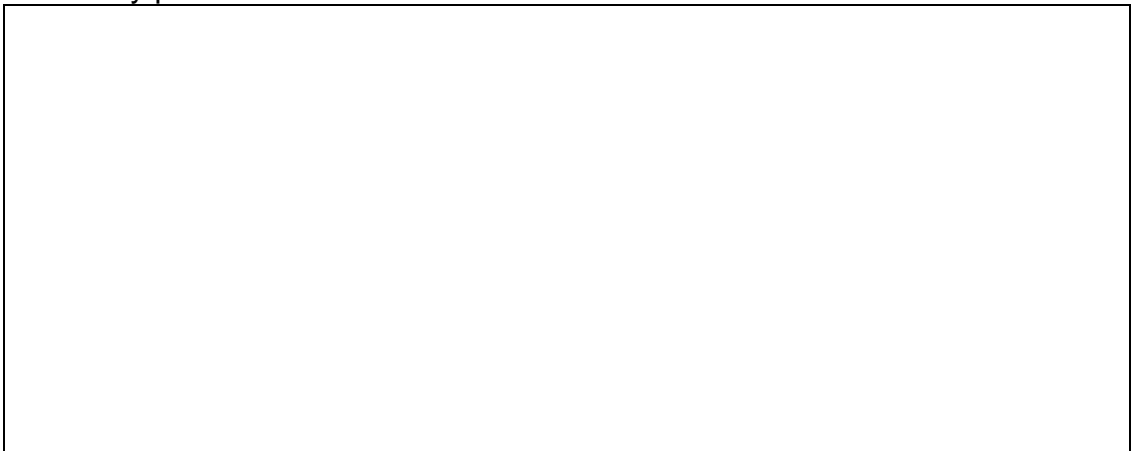
Important: These are individual exercises, so please make sure you work on your own.

Exercise 1:

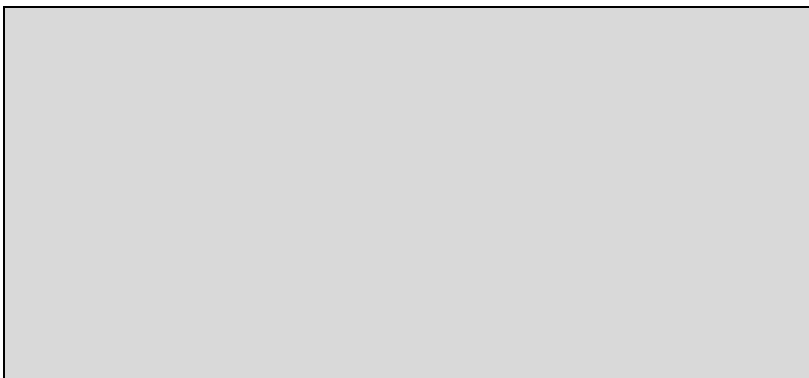
Have a go at drawing this figure **without** lifting your pencil off the paper and **without retracing any** line twice:



You may practice in this box:

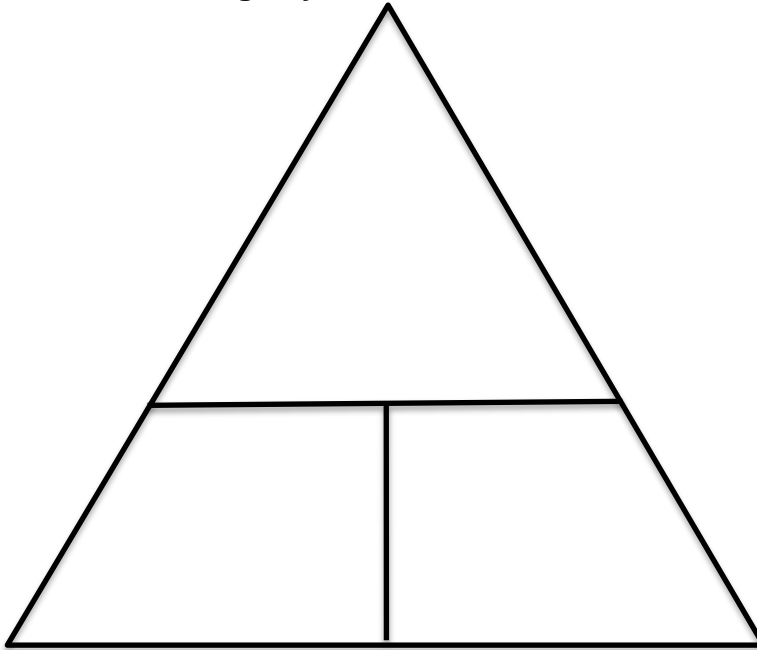


If you have succeeded in working out the problem, you can draw the figure in the box below:



Exercise 2:

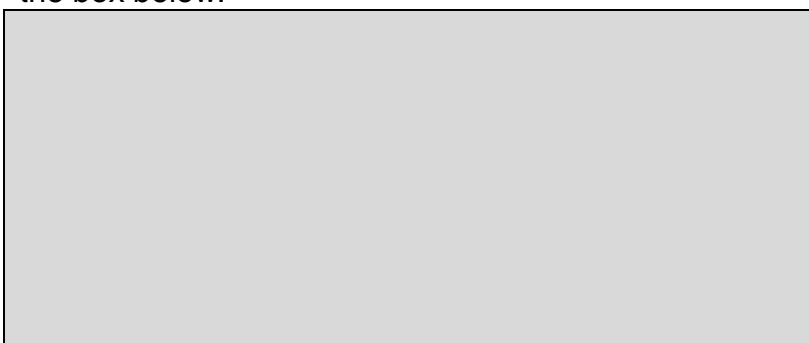
Have a go at drawing this figure **without** lifting your pencil off the paper and **without retracing any** line twice:



You may practice in this box:

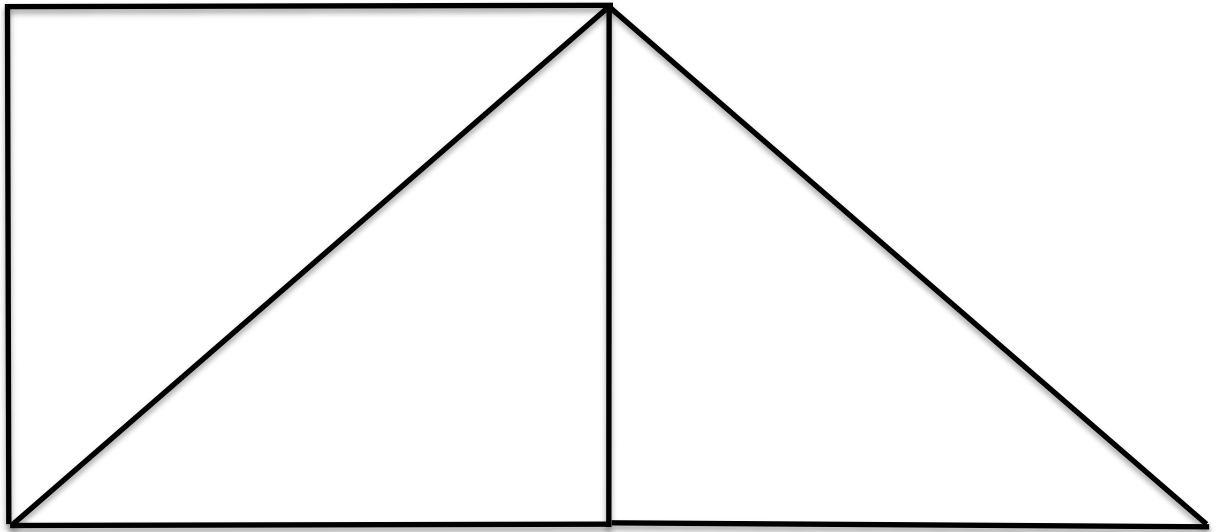


If you have succeeded in working out the problem, you can draw the figure in the box below:



Exercise 3:

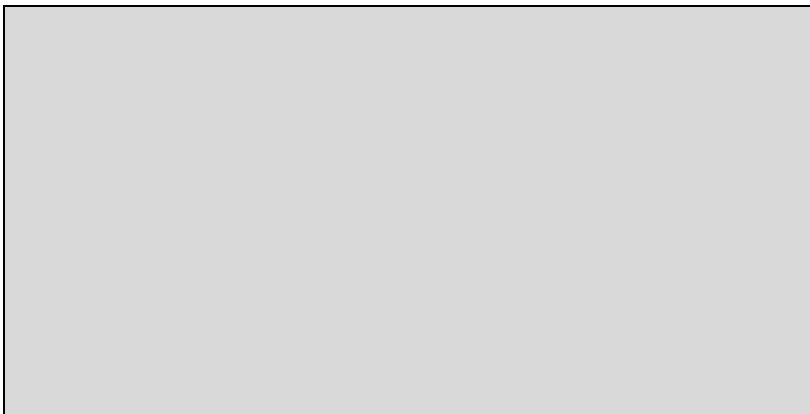
Have a go at drawing this figure **without** lifting your pencil off the paper and **without retracing any** line twice:



You may practice in this box:

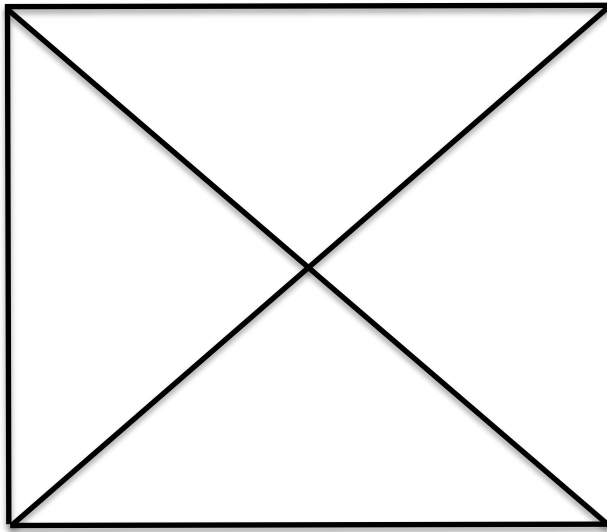


If you have succeeded in working out the problem, you can draw the figure in the box below:



Exercise 4:

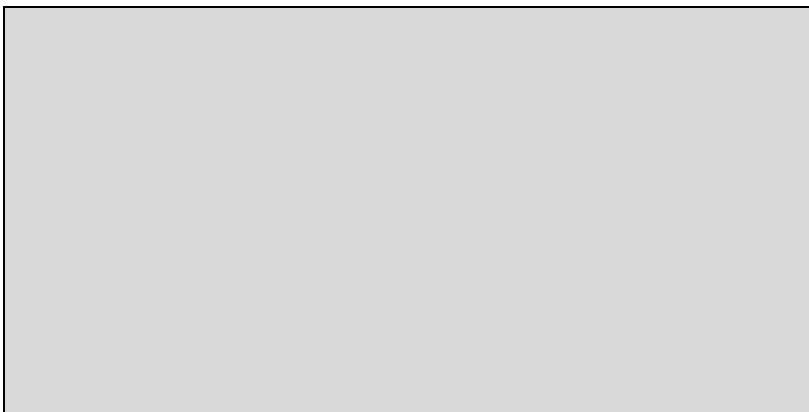
Have a go at drawing this figure **without** lifting your pencil off the paper and **without retracing any** line twice:



You may practice in this box:

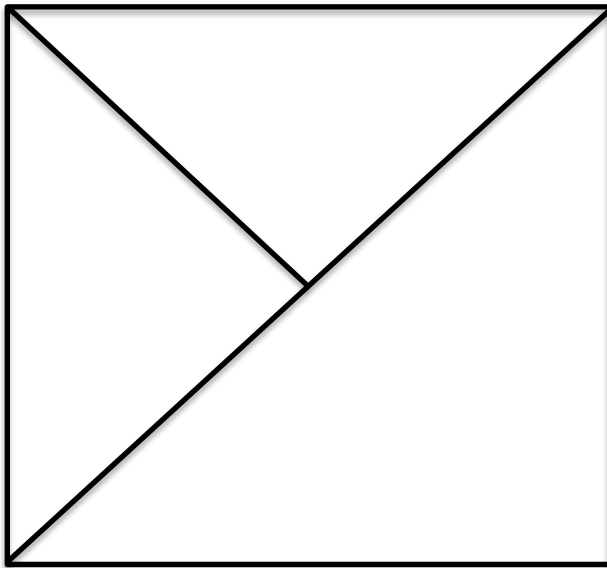


If you have succeeded in working out the problem, you can draw the figure in the box below:

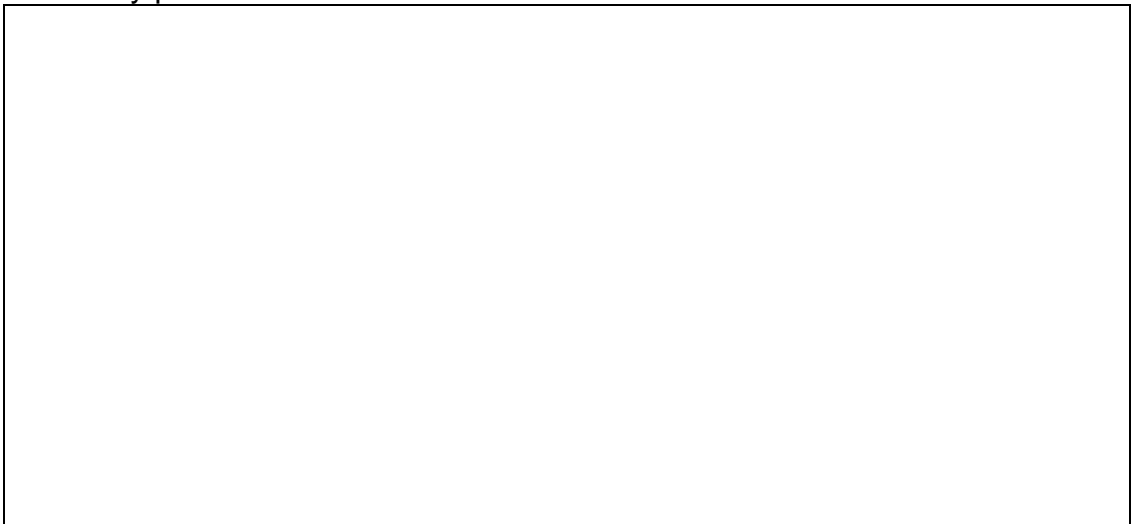


Exercise 5:

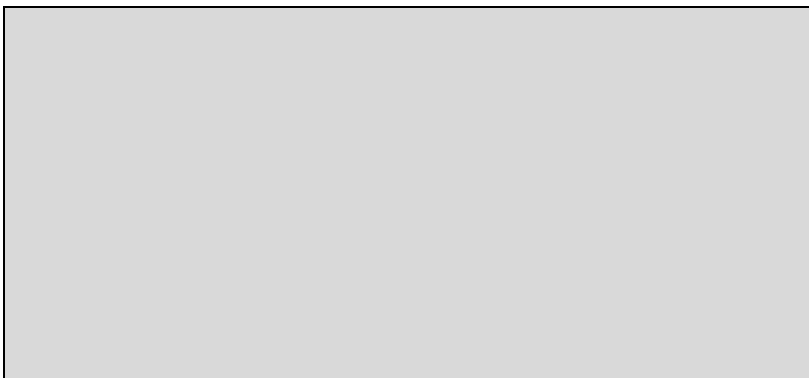
Have a go at drawing this figure **without** lifting your pencil off the paper and **without retracing any** line twice:



You may practice in this box:

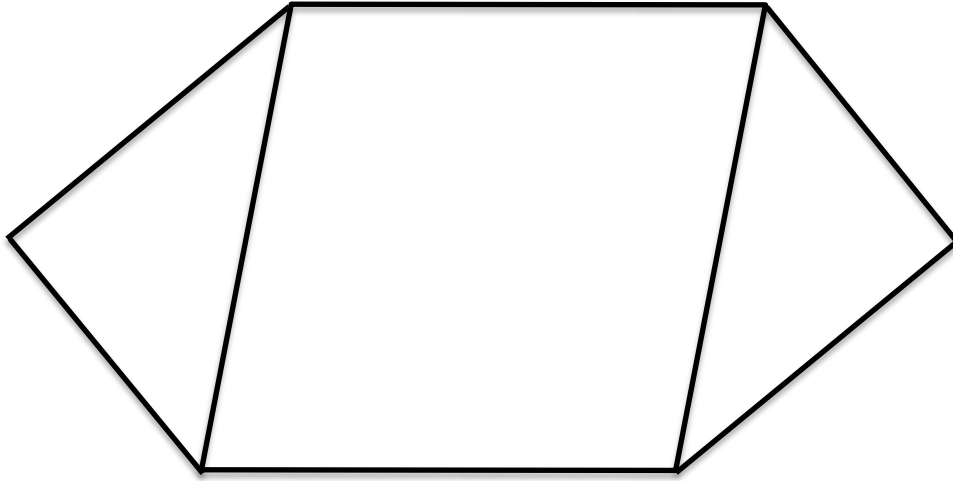


If you have succeeded in working out the problem, you can draw the figure in the box below:



Exercise 6:

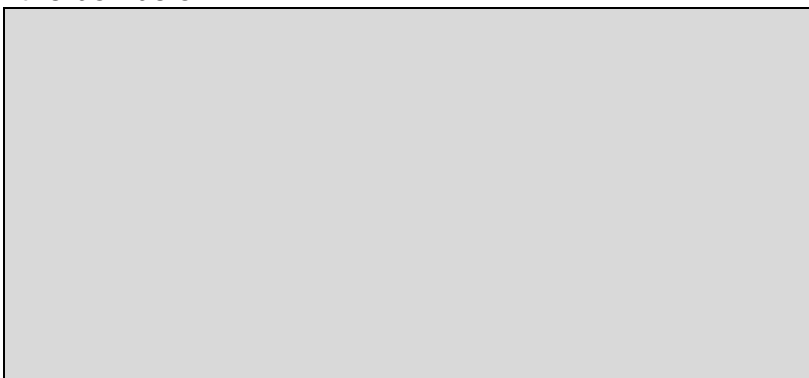
Have a go at drawing this figure **without** lifting your pencil off the paper and **without retracing any** line twice:



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

APPENDIX I.I: Dependent variable; cheating



RESULTS

Which exercises did you succeed in completing?

For exercises 1-6 please tick the appropriate box.

	Yes	No
I was able to do exercise 1 :	<input type="checkbox"/>	<input type="checkbox"/>
I was able to do exercise 2 :	<input type="checkbox"/>	<input type="checkbox"/>
I was able to do exercise 3 :	<input type="checkbox"/>	<input type="checkbox"/>
I was able to do exercise 4 :	<input type="checkbox"/>	<input type="checkbox"/>
I was able to do exercise 5 :	<input type="checkbox"/>	<input type="checkbox"/>
I was able to do exercise 6 :	<input type="checkbox"/>	<input type="checkbox"/>

Now please turn the page

Don't forget that:

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

Wait until we give you the signal to turn the page

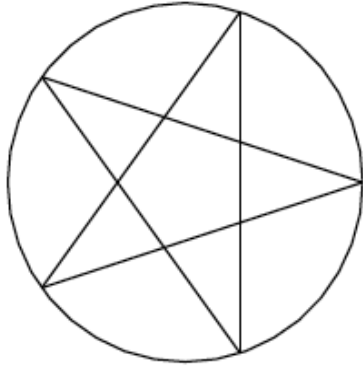


EXERCISES SET TWO

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

Exercise 1:

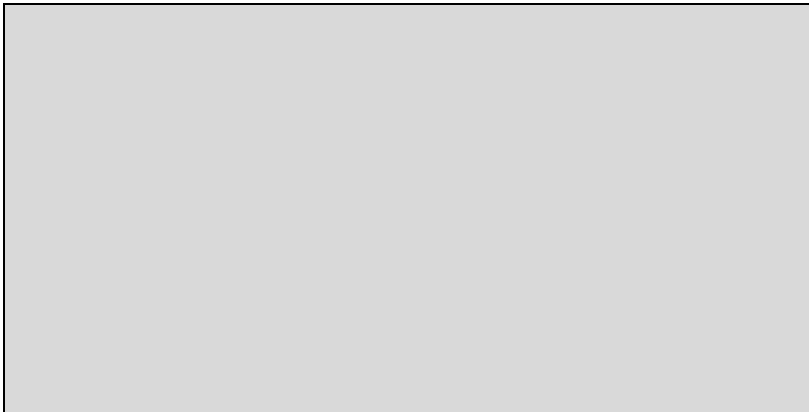
Have a go at drawing this figure **without** lifting your pencil off the paper and **without retracing any** line twice:



You may practice in this box:

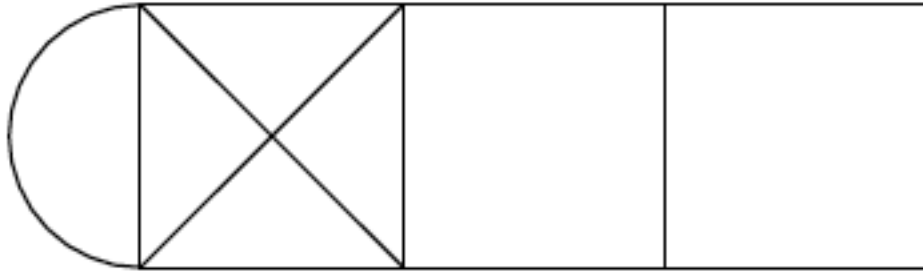


If you have succeeded in working out the problem, you can draw the figure in the box below:

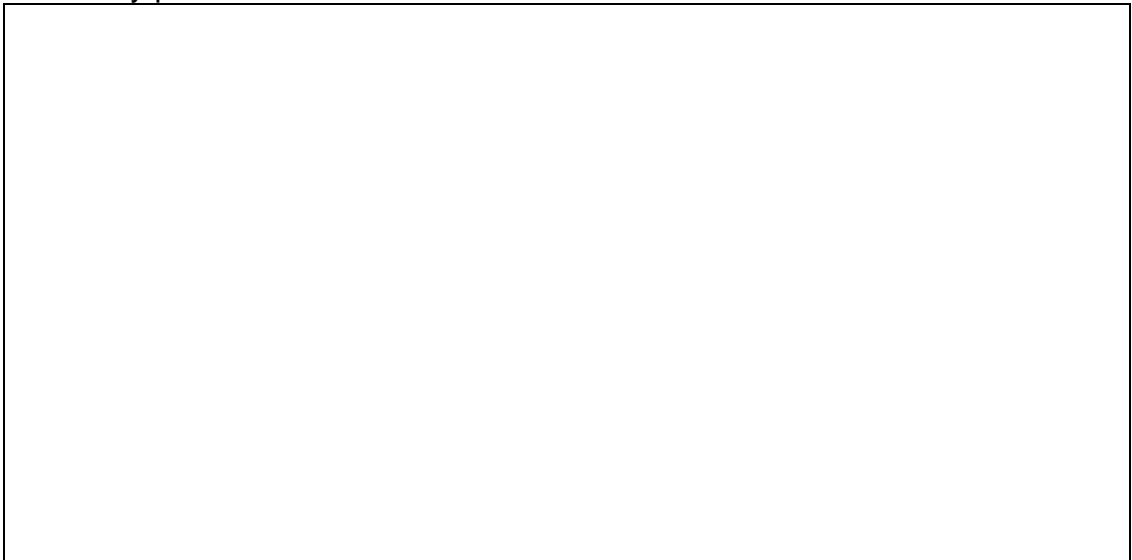


Exercise 2:

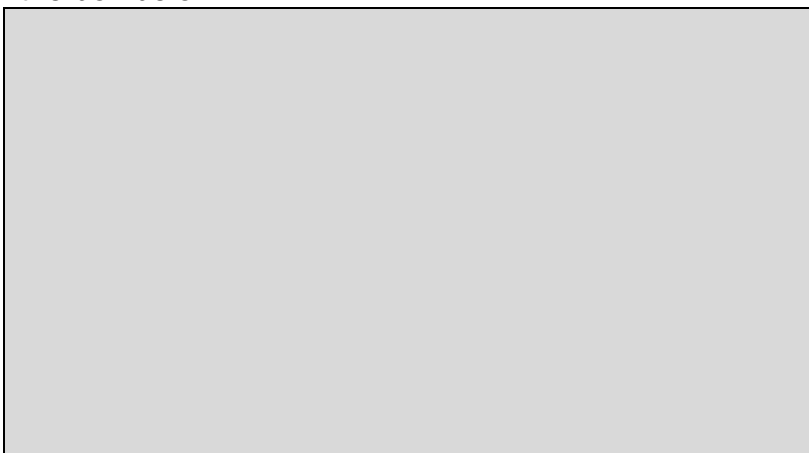
Have a go at drawing this figure **without** lifting your pencil off the paper and **without retracing any** line twice:



You may practice in this box:

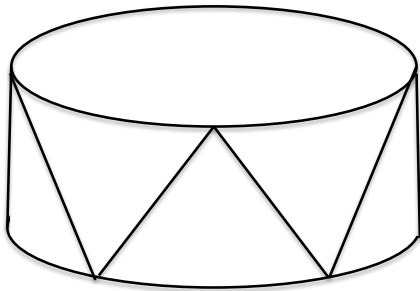


If you have succeeded in working out the problem, you can draw the figure in the box below:



Exercise 3:

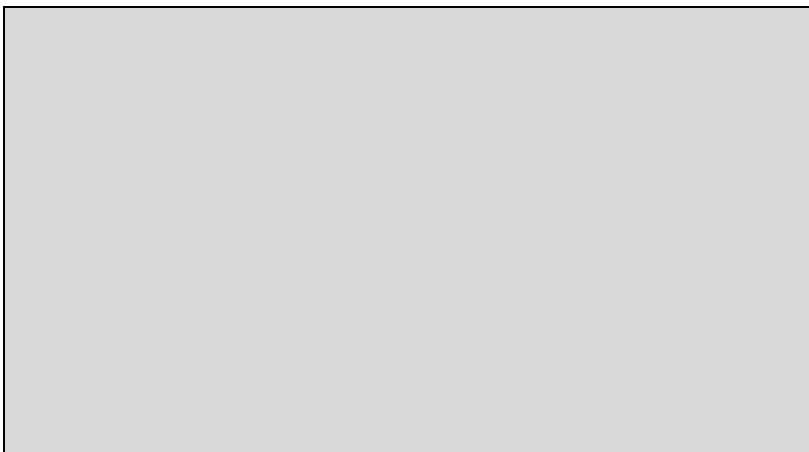
Have a go at drawing this figure **without** lifting your pencil off the paper and **without retracing any** line twice:



You may practice in this box:

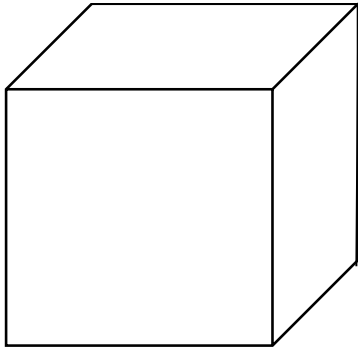


If you have succeeded in working out the problem, you can draw the figure in the box below:

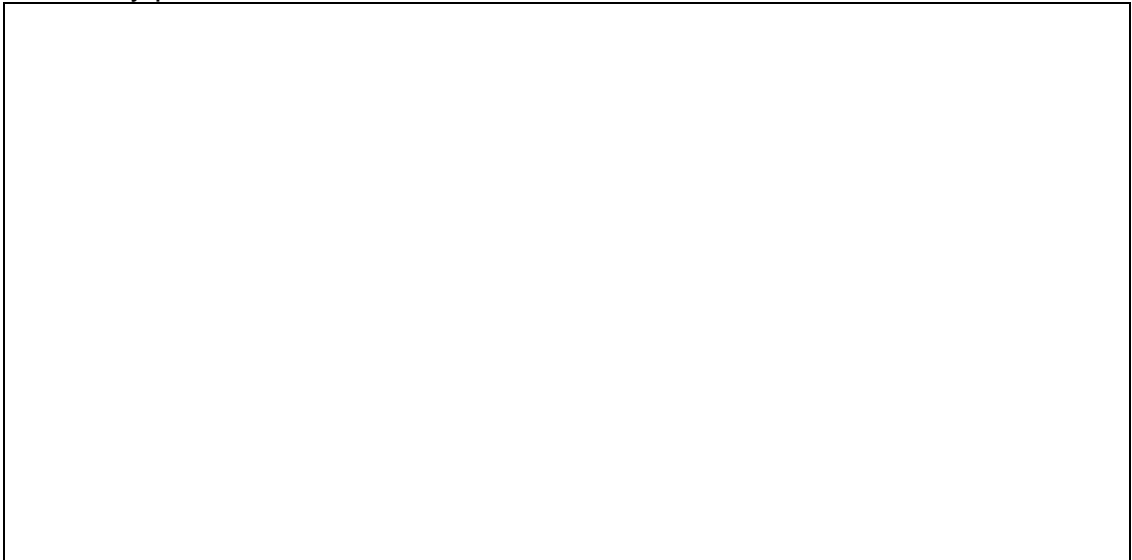


Exercise 4:

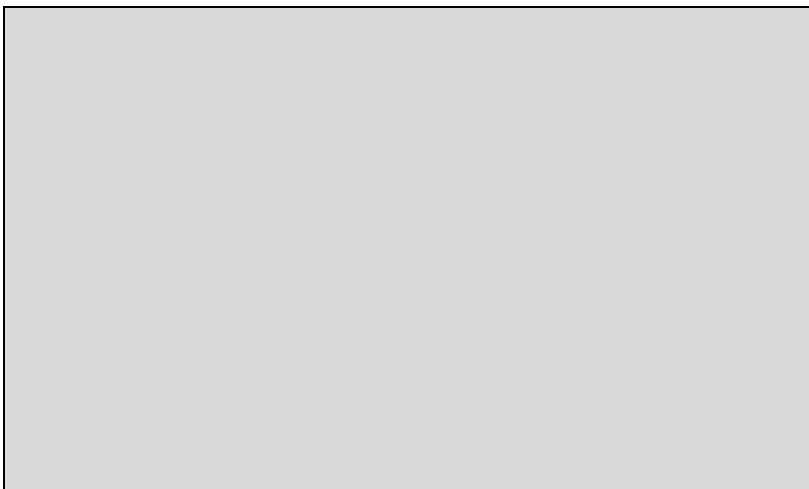
Have a go at drawing this figure **without** lifting your pencil off the paper and **without retracing any** line twice:



You may practice in this box:

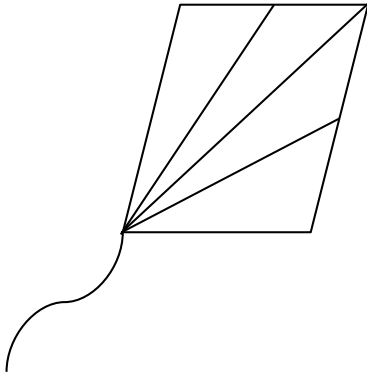


If you have succeeded in working out the problem, you can draw the figure in the box below:

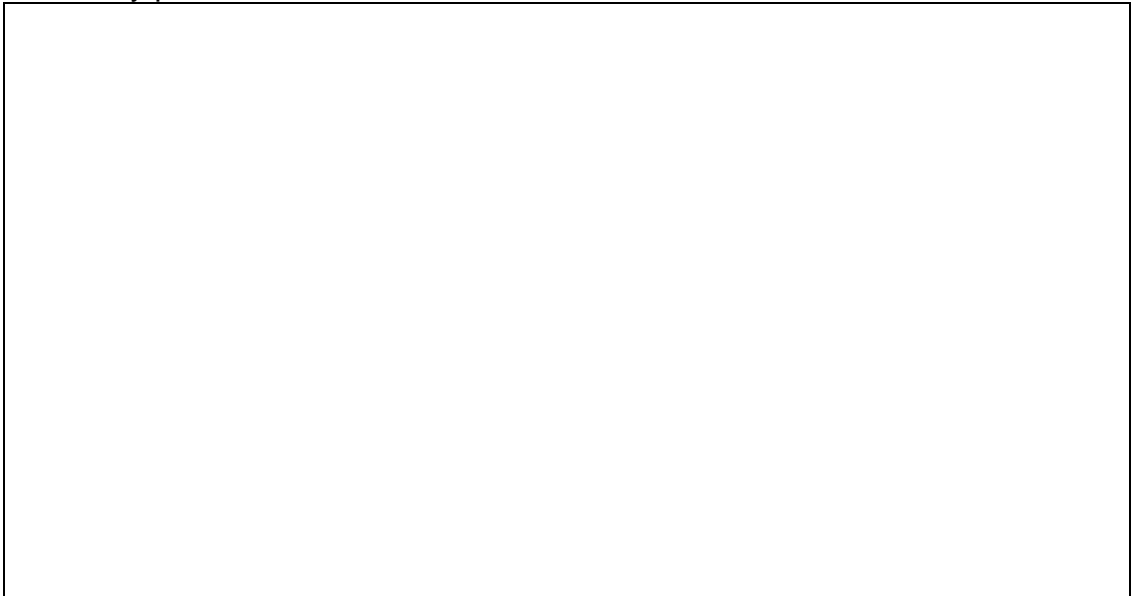


Exercise 5:

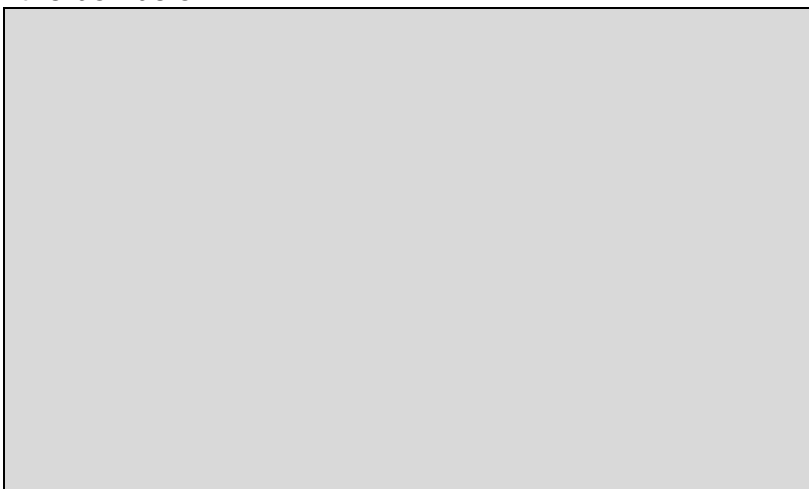
Have a go at drawing this figure **without** lifting your pencil off the paper and **without retracing any** line twice:



You may practice in this box:

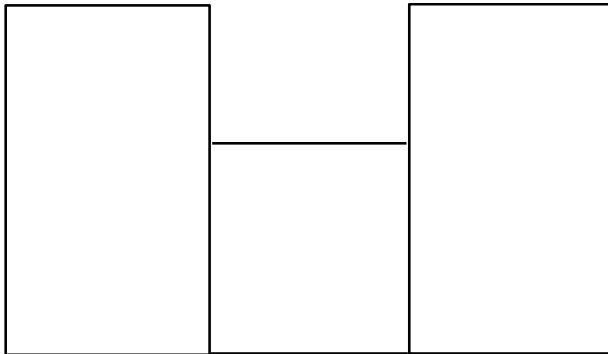


If you have succeeded in working out the problem, you can draw the figure in the box below:

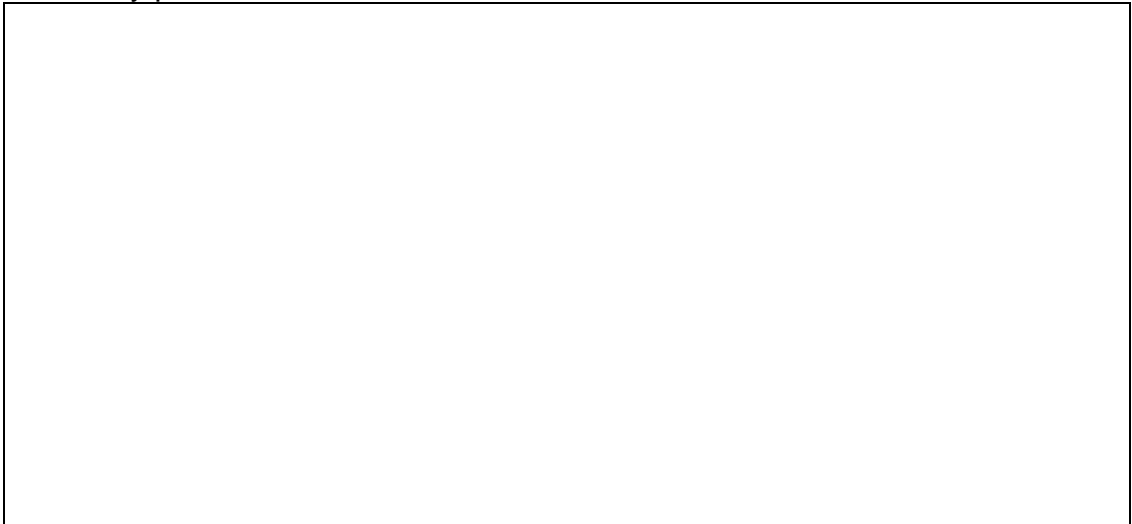


Exercise 6:

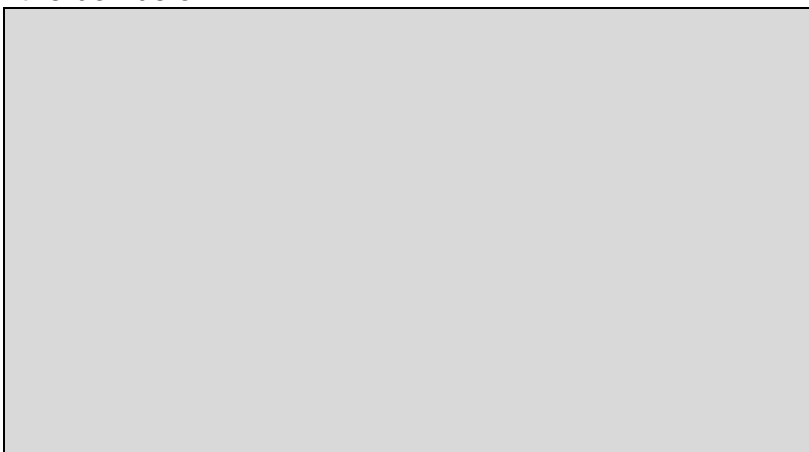
Have a go at drawing this figure **without** lifting your pencil off the paper and **without retracing any** line twice:



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.II: Dependent variable; cheating



SET TWO

Which exercises did you succeed in completing?

For exercises 1- 6 tick the appropriate box.

	Yes	No
I was able to do exercise 1 :	<input type="checkbox"/>	<input type="checkbox"/>
I was able to do exercise 2 :	<input type="checkbox"/>	<input type="checkbox"/>
I was able to do exercise 3 :	<input type="checkbox"/>	<input type="checkbox"/>
I was able to do exercise 4 :	<input type="checkbox"/>	<input type="checkbox"/>
I was able to do exercise 5 :	<input type="checkbox"/>	<input type="checkbox"/>
I was able to do exercise 6 :	<input type="checkbox"/>	<input type="checkbox"/>

Now please turn the page

APPENDIX J: Manipulation check; AGs 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 four 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 find this a highly stimulating and challenging goal							

APPENDIX K: Dependent variable; 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 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							

Well done and thank you for participating!

APPENDIX L: Survey; AGs 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.

Please, indicate to what extent you agree or disagree with each statement by using the following statements.

	Strongly disagree	Disagree	Neither agree, nor disagree	Agree	Strongly agree
1. My goal in this course is to learn as much as possible	1	2	3	4	5
Wait! If you scored 3 or higher, respond to the following questions: Why do you aim to learn as much as possible?					
Because ...					
... others (teacher, parents) obliged me to do so	1	2	3	4	5
... I like to learn as much as possible	1	2	3	4	5
... I would have felt bad, guilty or anxious if I didn't do it	1	2	3	4	5
... I needed to prove to myself that I can learn as much as possible	1	2	3	4	5
... I found learning as much as possible a personally important goal	1	2	3	4	5
... Only then I could feel myself worthwhile and special	1	2	3	4	5
... I found learning as much as possible a challenging goal	1	2	3	4	5
... I fully recognized myself when I learn as much as possible	1	2	3	4	5

2. My goal in this course is to perform better than the other students.	1	2	3	4	5
Wait! If you scored 3 or higher, respond to the following questions: Why do you aim to perform better than the other students? Because ...					
... I needed to prove to myself that I can perform better than others	1	2	3	4	5
... Only then I could feel myself worthwhile and special	1	2	3	4	5
... others (teacher, parents) obliged me to do so	1	2	3	4	5
... I fully recognize myself when I perform better than others	1	2	3	4	5
... I would have felt bad, guilty or anxious if I didn't	1	2	3	4	5
... I found performing better than the other students a challenging goal	1	2	3	4	5
... I like to perform better than others	1	2	3	4	5
... I found performing better than others a personally important goal	1	2	3	4	5

3. My goal in this course is to avoid learning less than it is possible to learn	1	2	3	4	5
Wait! If you scored 3 or higher, respond to the following questions: Why do you aim to avoid learning less than it is possible to learn? Because ...					
... I fully recognize myself when I avoid learning less than it is possible to learn	1	2	3	4	5
... I like to pursue this goal	1	2	3	4	5
... Only then I could feel myself worthwhile and special	1	2	3	4	5
... I would have felt bad, guilty or anxious if I didn't do it	1	2	3	4	5
... I found avoiding learning less than it is possible to learn a personally important goal	1	2	3	4	5
... I needed to prove it to myself	1	2	3	4	5
... others (teacher, parents) obliged me to do so	1	2	3	4	5
... I found avoiding learning less than it is possible to learn a challenging goal to pursue	1	2	3	4	5

APPENDIX M: Consent form



Bilkent University

Unil

UNIL | Université de Lausanne



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.

I have read the information provided above. I have been given an opportunity to ask questions and all of my questions have been answered to my satisfaction.

Signature: _____

Date: _____

APPENDIX N: Turkish conditions (same order with English)



Bilkent University

Merhaba,

Biz uluslararası araştırma ekibi olarak çeşitli alanlarda Boyutsal Alıştırma Testi üzerine bir çalışma yürütüyoruz. Eğer iki serilik testi tamamlayıp ve kısa bir anketle düşüncelerinizi belirterek bizlere yardımcı olursanız çok memnun kalacağız. Anketlerde verdiğiniz tüm bilgiler saklı tutulacaktır.

İşbirliğiniz için şimdiden çok teşekkür ederiz.

Boyutsal Alıştırma Testi

Önünüzdeki sayfalarda boyutsal alıştırma testini göreceksiniz. Her biri altı boyutsal sorudan oluşan testi tek başınıza çözmeye çalışınız. Her bir problem seti 8 dakika içerisinde bitirilmelidir.

Skorları tüm çalışma tamamlandıktan sonra öğreneceksiniz.

e-mail : _____

Merhaba,

Biz uluslararası araştırma ekibi olarak çeşitli alanlarda Boyutsal Alıştırma Testi üzerine bir çalışma yürütüyoruz. Eğer iki serilik testi tamamlayıp ve kısa bir anketle düşüncelerinizi belirterek bizlere yardımcı olursanız çok memnun kalacağız. Anketlerde verdiğiniz tüm bilgiler saklı tutulacaktır.

İşbirliğiniz için şimdiden çok teşekkür ederiz!

Boyutsal Alıştırma Testi

Önünüzdeki sayfalarda boyutsal kavrama kapasitenizi değerlendirecek olan boyutsal alıştırma testini göreceksiniz. Her biri altı boyutsal sorudan oluşan iki serilik testi tek başınıza çözmeye çalışınız. Her bir problem seti 8 dakika içerisinde bitirilmelidir.

Başarı ve elde etme kimin en iyi olduğuyla ilgilidir. Bu nedenle sizden bulmacaları tek başınıza çözeniz ve sınıftaki diğer öğrencilerden daha iyi performans gösterebileceğinizi kanıtlamanızı bekliyoruz.

En iyiler arasında olmanız gerektiğine odaklanın!

Skorları tüm çalışma tamamlandıktan sonra öğreneceksiniz.

e-mail : _____

Merhaba,

Biz uluslararası araştırma ekibi olarak çeşitli alanlarda Boyutsal Alıştırma Testi üzerine bir çalışma yürütüyoruz. Eğer iki serilik testi tamamlayıp ve kısa bir anketle düşüncelerinizi belirterek bizlere yardımcı olursanız çok memnun kalacağız. Anketlerde verdiğiniz tüm bilgiler saklı tutulacaktır.

İşbirliğiniz için şimdiden çok teşekkür ederiz!

Boyutsal Alıştırma Testi

Önünüzdeki sayfalarda boyutsal kavrama kapasitenizi değerlendirecek olan boyutsal alıştırma testini göreceksiniz. Her biri altı boyutsal sorudan oluşan iki serilik testi tek başınıza çözmeye çalışınız. Her bir problem seti 8 dakika içerisinde bitirilmelidir.

Başarı ve elde etme tamamen kişisel gelişimle ilgilidir. Bu yüzden sizden bulmaca üzerinde tek başınıza çalışmanızı bekliyoruz ve bunu kanıtlamak için kişisel performansınızı geliştirebilirsiniz.

Bu yüzden bu çalışmayı, ikinci sette birincisinden daha fazla soruyu doğru cevaplayarak diğerlerini etkilemenin bir yolu olarak görün.

İkinci sette problem çözme yeteneğinizi geliştirmeniz gerektiğine odaklanın!

Skorları tüm çalışma tamamlandıktan sonra öğreneceksiniz.

e-mail : _____

Merhaba,

Biz uluslararası araştırma ekibi olarak çeşitli alanlarda Boyutsal Alıştırma Testi üzerine bir çalışma yürütüyoruz. Eğer iki serilik testi tamamlayıp ve kısa bir anketle düşüncelerinizi belirterek bizlere yardımcı olursanız çok memnun kalacağız. Anketlerde verdiğiniz tüm bilgiler saklı tutulacaktır.

İşbirliğiniz için şimdiden çok teşekkür ederiz!

Boyutsal Alıştırma Testi

Önünüzdeki sayfalarda pek çok öğrencinin zorlu ancak ilginç bulunduğu boyutsal alıştırmaları göreceksiniz. İki seri, altı boyutsal sorudan oluşan testi tek başınıza çözmeye çalışınız. Her bir problem seti 8 dakika içerisinde bitirilmelidir.

Başarı ve elde etme kimin en iyi olduğuyla ilgilidir. Bu nedenle sizden bulmacaları tek başınıza çözen ve sınıftaki diğer öğrencilerden daha iyi performans gösterme fırsatı veriyoruz.

Bu yüzden neden bu çalışmayı kişisel bir meydan okuma olarak görüp diğerlerinden daha fazla soruyu doğru olarak cevaplamıyorsunuz.

Kendinizi en iyiler arasında olmanın zorluğuna odaklayın.

Skorları tüm çalışma tamamlandıktan sonra öğreneceksiniz.

e-mail : _____

Merhaba,

Biz uluslararası araştırma ekibi olarak çeşitli alanlarda Boyutsal Alıştırma Testi üzerine bir çalışma yürütüyoruz. Eğer iki serilik testi tamamlayıp ve kısa bir anketle düşüncelerinizi belirterek bizlere yardımcı olursanız çok memnun kalacağız. Anketlerde verdiğiniz tüm bilgiler saklı tutulacaktır.

İşbirliğiniz için şimdiden çok teşekkür ederiz!

Boyutsal Alıştırma Testi

Önünüzdeki sayfalarda pek çok öğrencinin zorlu ancak ilginç bulunduğu boyutsal alıştırma testini göreceksiniz. İki seri, altı boyutsal sorudan oluşan testi tek başınıza çözmeye çalışınız. Her bir problem seti 8 dakika içerisinde bitirilmelidir.

Başarı ve elde etme tamamen kişisel gelişimle ilgilidir bu yüzden bulmaca üzerinde tek başınıza çalışma fırsatınız var ve kişisel performansınızı geliştirmeye çalışınız.

Bu yüzden neden bu çalışmayı kişisel bir meydan okuma olarak görüp, ikinci sette birincisinden daha fazla soruyu doğru cevaplayarak skorunuzu geliştirip geliştirmediğinizi görün.

İkinci sette problem çözme yeteneğinizi geliştirmenin zorluğuna odaklanın!

Skorları tüm çalışma tamamlandıktan sonra öğreneceksiniz.

e-mail : _____

Merhaba,

Biz uluslararası araştırma ekibi olarak çeşitli alanlarda Boyutsal Alıştırma Testi üzerine bir çalışma yürütüyoruz. Eğer iki serilik testi tamamlayıp ve kısa bir anketle düşüncelerinizi belirterek bizlere yardımcı olursanız çok memnun kalacağız. Anketlerde verdiğiniz tüm bilgiler saklı tutulacaktır.

İşbirliğiniz için şimdiden çok teşekkür ederiz!

Boyutsal Alıştırma Testi

Önünüzdeki sayfalarda boyutsal kavrama kapasitenizi değerlendirecek olan boyutsal alıştırma testini göreceksiniz. İki seri, altı boyutsal sorudan oluşan testi tek başınıza çözünüz. Her bir problem seti 8 dakika içerisinde bitirilmelidir.

Başarı ve elde etme her bir problem setini çözerken bir önceki yaptığınızdan daha kötü yapmamaktan emin olmakla ilgilidir, bu sorular üzerinde tek başınıza çalışmanız beklenmekte ve kişisel performansınızın düşmediğini kanıtlayınız.

Bu yüzden bu çalışmayı diğerlerini etkilemenin bir yolu olarak görüp, ikinci sette birinci settekiyle aynı sayıda soruyu doğru cevaplayıp skorunun düşmesinden kaçınınız.

Performansınızın düşmesine izin vermemeye odaklanın!

Skorları tüm çalışma tamamlandıktan sonra öğreneceksiniz.

e-mail : _____

Merhaba,

Biz uluslararası arařtırma ekibi olarak eřitli alanlarda Boyutsal Alıřtırma Testi  zerine bir alıřma y r t yoruz. Eęer iki serilik testi tamamlayıp ve kısa bir anketle d ř ncelerinizi belirterek bizlere yardımcı olursanız ok memnun kalacaęız. Anketlerde verdięiniz t m bilgiler saklı tutulacaktır.

İřbirlięiniz iin řimdiden ok teřekk r ederiz!

Boyutsal Alıřtırma Testi

 n n zdeki sayfalarda pek ok  ğrencinin zorlu ancak ilgin bulduęu boyutsal alıřtırma testini g receksiniz. İki seri, altı boyutsal sorudan oluřan testi tek bařınıza  zmeye alıřınız. Her bir problem seti 8 dakika ierisinde bitirilmelidir.

Bařarı ve elde etme her bir problem setini  zerken bir  nceki yaptığınızdan daha k t  yapmamaktan emin olmakla ilgilidir, bu sorular  zerinde tek bařınıza alıřabilme fırsatınız var, kiřisel performansınızın d řmedięinden emin olmaya alıřınız.

Bu y zden neden bu alıřmayı kiřisel bir meydan okuma olarak g r p, ikinci settekiyle aynı sayıda soruya doęru cevap verip performansınızın d řmesinden kaınıp kaınamadığınızın g r n z.

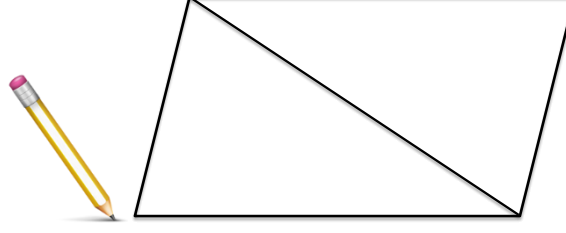
İkinci sette performansınız d řmesine izin vermemenin zorluęuna odaklanınız!

Skorları t m alıřma tamamlandıktan sonra  ğreneceksiniz.

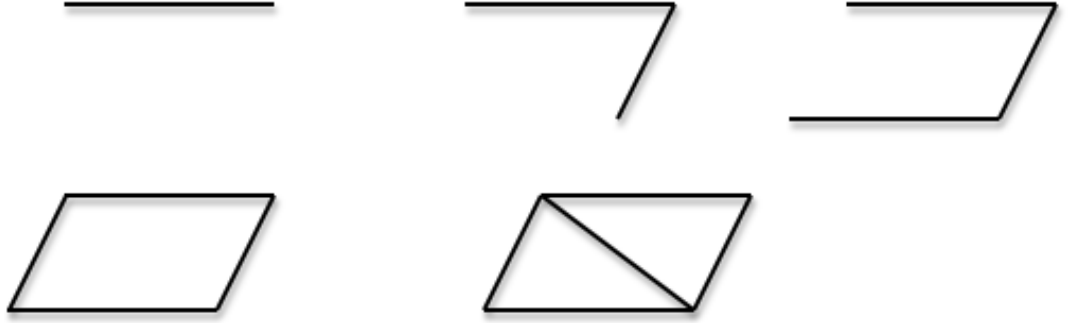
APPENDIX O: Uzamsal görev

Örnek problem:

Aşağıdaki şekli kaleminizi kâğıttan kaldırmadan ve bir çizginin üzerinden iki kez geçmeden çiziniz.



İşte bu şekli çizmenin bir yolu:



6 alıřtırmadan oluřan ilk seti özmeniz için 8 dakika verilecektir.

Biz sayfayı evir ve bařla iřareti verene kadar bekleyiniz.

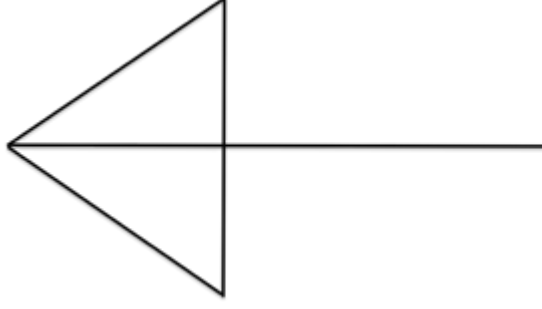


Alıřtırmalar- Set-I

Önemli: Bunlar bireysel alıřtırmalardır, bu yüzden tek başınıza çalışmalısınız.

Alıřtırma-1:

Ařağıdaki řekli kaleminizi kâğıttan kaldırmadan ve bir çizginin üzerinden iki kez geçmeden çiziniz.

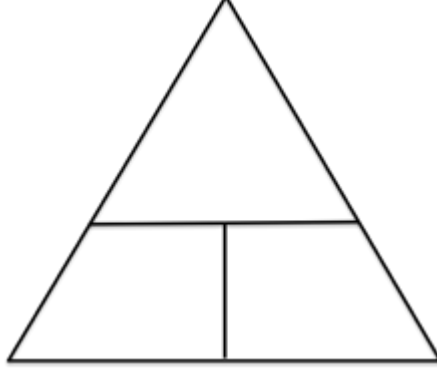


Bu kutunun içinde pratik yapabilirsiniz.

Eğer problemi çözmeyi başardıysanız, řekli ařağıdaki kutuya çiziniz.

Alıştırma-2

Aşağıdaki şekli kaleminizi kâğıttan kaldırmadan ve bir çizginin üzerinden iki kez geçmeden çiziniz.



Bu kutunun içinde pratik yapabilirsiniz.

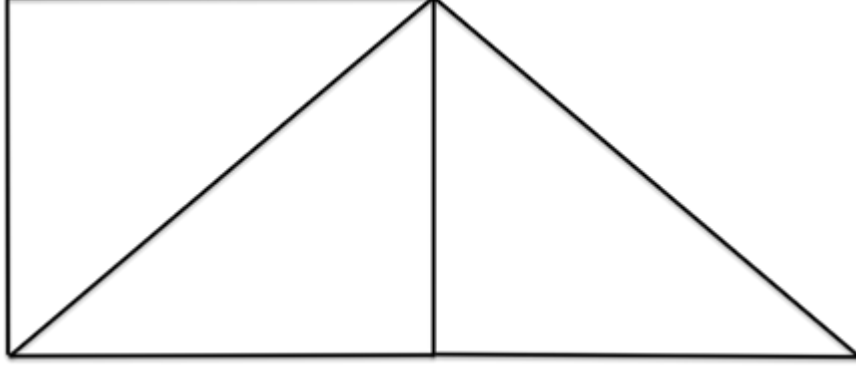


Eğer problemi çözmeyi başardıysanız, şekli aşağıdaki kutuya çiziniz.

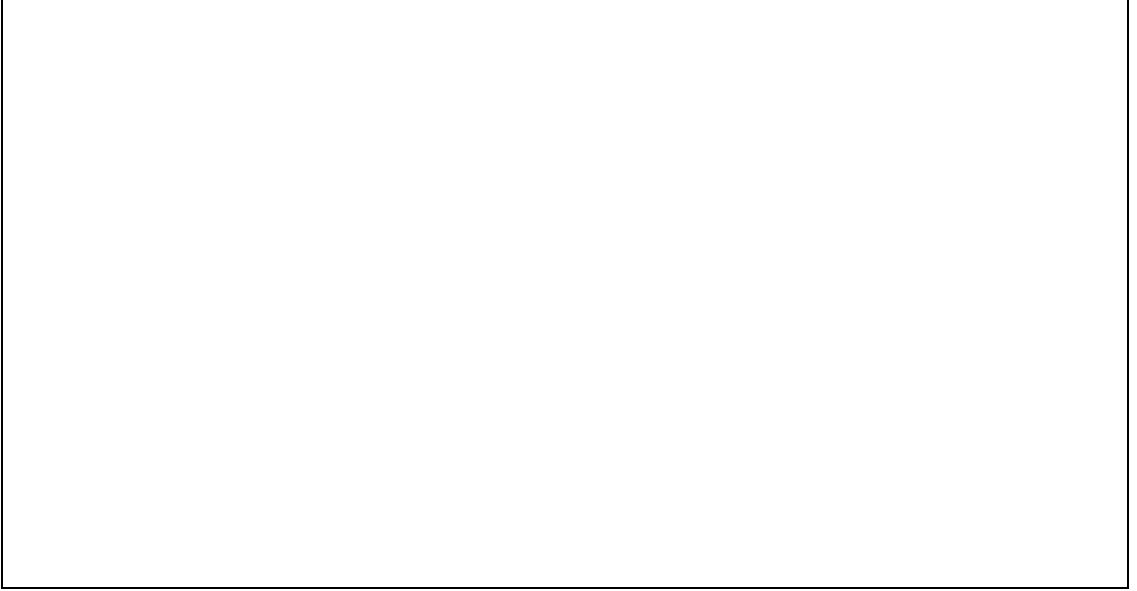


Alıştırma-3

Aşağıdaki şekli kaleminizi kâğıttan kaldırmadan ve bir çizginin üzerinden iki kez geçmeden çiziniz.



Bu kutunun içinde pratik yapabilirsiniz.

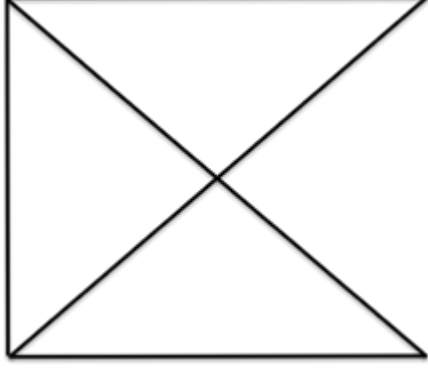


Eğer problemi çözmeyi başardıysanız, şekli aşağıdaki kutuya çiziniz.

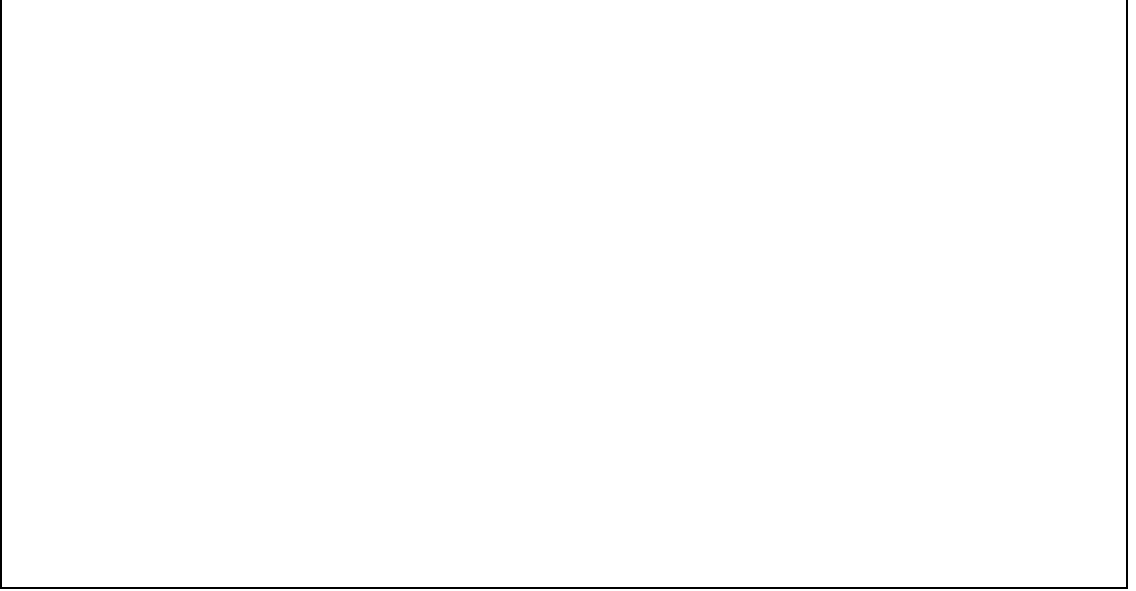


Alıştırma-4

Aşağıdaki şekli kaleminizi kâğıttan kaldırmadan ve bir çizginin üzerinden iki kez geçmeden çiziniz.



Bu kutunun içinde pratik yapabilirsiniz.

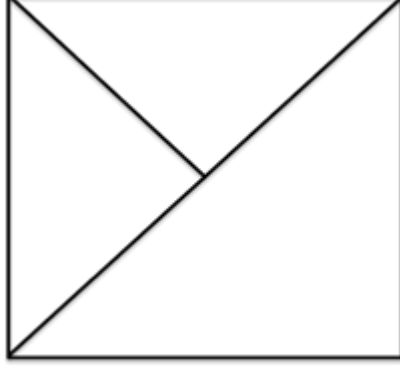


Eğer problemi çözmeyi başardıysanız, şekli aşağıdaki kutuya çiziniz.

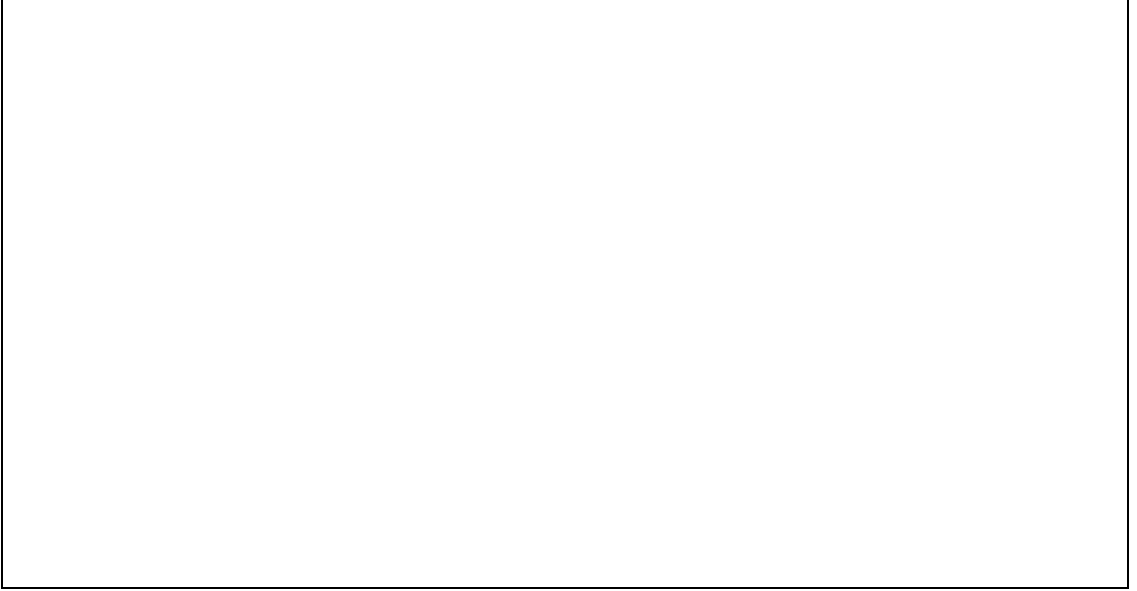


Alıştırma-5

Aşağıdaki şekli kaleminizi kâğıttan kaldırmadan ve bir çizginin üzerinden iki kez geçmeden çiziniz.



Bu kutunun içinde pratik yapabilirsiniz.

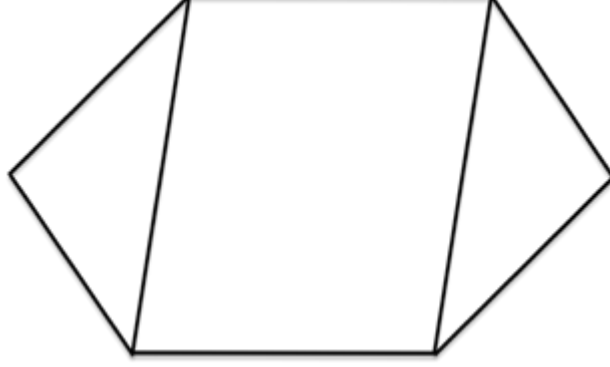


Eğer problemi çözmeyi başardıysanız, şekli aşağıdaki kutuya çiziniz.

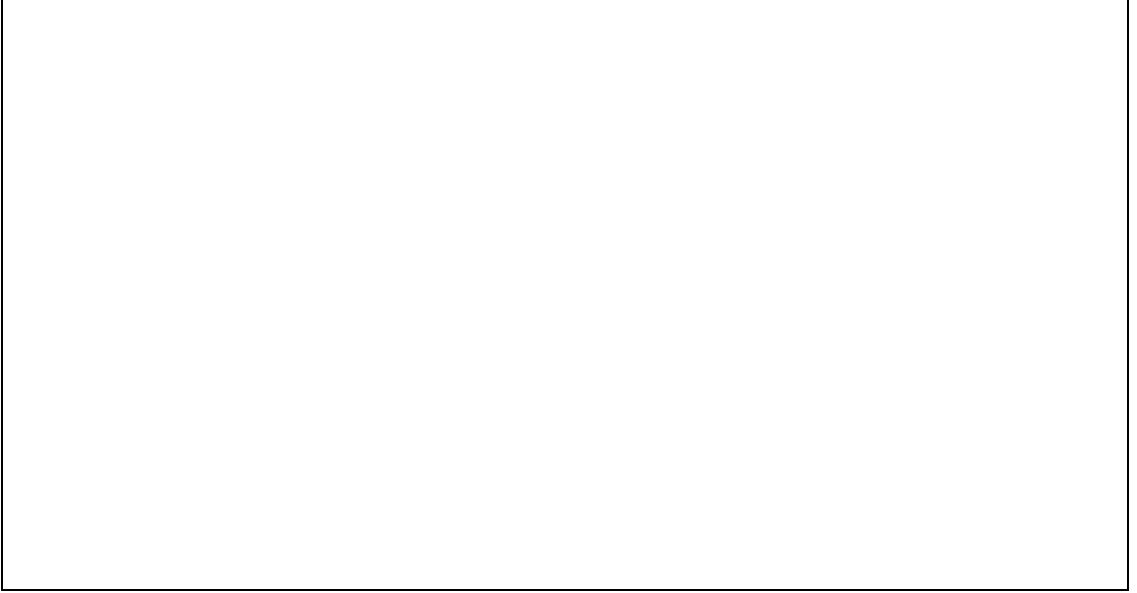


Alıştırma-6

Aşağıdaki şekli kaleminizi kâğıttan kaldırmadan ve bir çizginin üzerinden iki kez geçmeden çizin.



Bu kutunun içinde pratik yapabilirsiniz.



Eğer problemi çözmeyi başardıysanız, şekli aşağıdaki kutuya çizin.



-Birinci Setin Sonu-

APPENDIX P.I: Bağımlı deęişken; kopya çekme



SONUÇLAR

Hangi alıştırmaları başarıyla tamamladınız?

1- 6 arasındaki alıştırmaların uyanlarına işaret koyunuz.

	Evet	Hayır
1. Alıştırmayı yapabildim	<input type="checkbox"/>	<input type="checkbox"/>
2. Alıştırmayı yapabildim	<input type="checkbox"/>	<input type="checkbox"/>
3. Alıştırmayı yapabildim	<input type="checkbox"/>	<input type="checkbox"/>
4. Alıştırmayı yapabildim	<input type="checkbox"/>	<input type="checkbox"/>
5. Alıştırmayı yapabildim	<input type="checkbox"/>	<input type="checkbox"/>
6. Alıştırmayı yapabildim	<input type="checkbox"/>	<input type="checkbox"/>

Bunu unutmayın!

6 alıştırımadan oluşan ilk seti çözeniz için 8 dakika verilecektir.

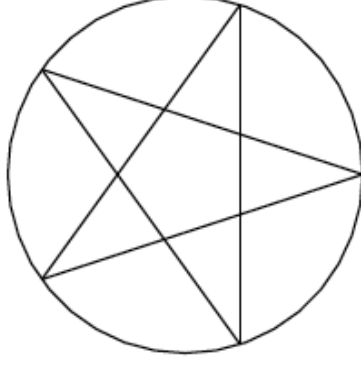
Biz sayfayı çevir ve başla işareti verene kadar bekleyiniz.



Alıřtırmalar - Set-II

Alıřtırma-1:

Ařađıdaki řekli kaleminizi kâđıttan kaldırmadan ve bir çizginin üzerinden iki kez geçmeden çiziniz.

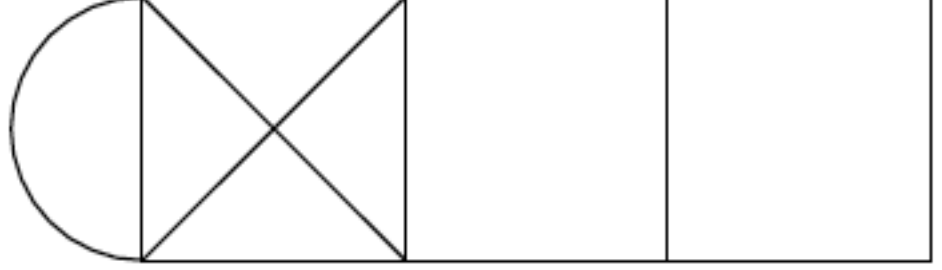


Bu kutunun içinde pratik yapabilirsiniz.

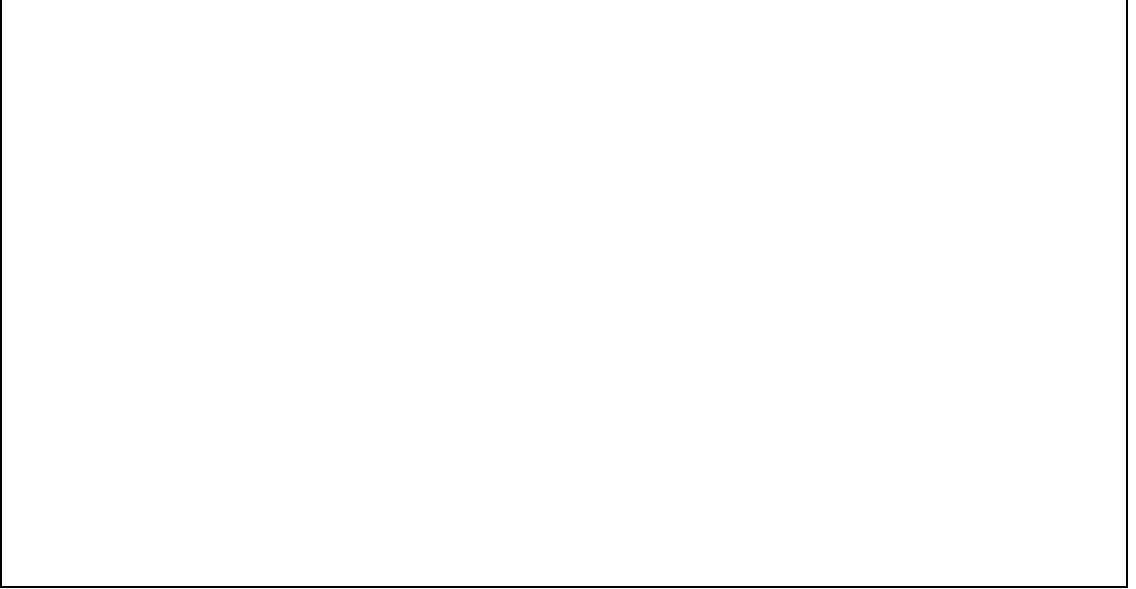
Eđer problemi çözmeyi başardıysanız, řekli ařađıdaki kutuya çiziniz.

Alıştırma-2

Aşağıdaki şekli kaleminizi kâğıttan kaldırmadan ve bir çizginin üzerinden iki kez geçmeden çiziniz.



Bu kutunun içinde pratik yapabilirsiniz.

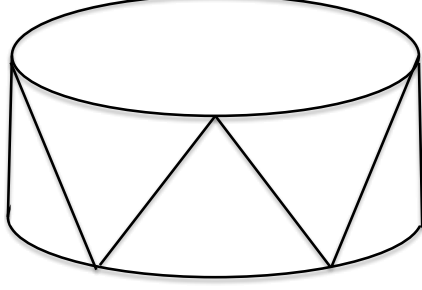


Eğer problemi çözmeyi başardıysanız, şekli aşağıdaki kutuya çiziniz.



Alıştırma-3

Aşağıdaki şekli kaleminizi kâğıttan kaldırmadan ve bir çizginin üzerinden iki kez geçmeden çiziniz.



Bu kutunun içinde pratik yapabilirsiniz.

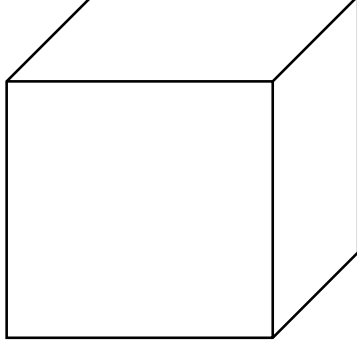


Eğer problemi çözmeyi başardıysanız, şekli aşağıdaki kutuya çiziniz.

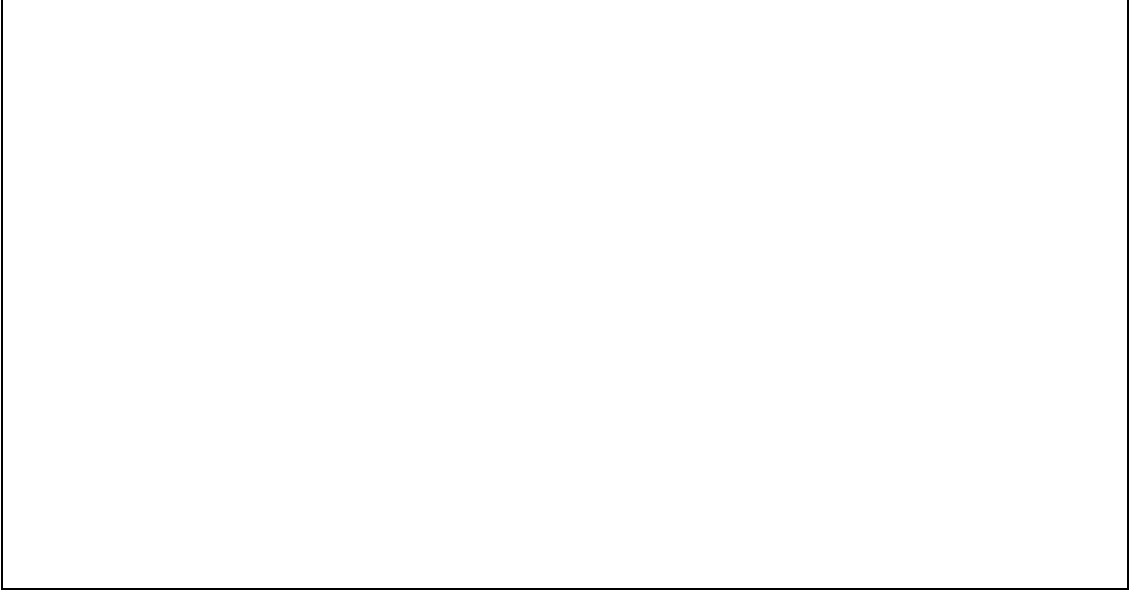


Alıştırma-4

Aşağıdaki şekli kaleminizi kâğıttan kaldırmadan ve bir çizginin üzerinden iki kez geçmeden çiziniz.



Bu kutunun içinde pratik yapabilirsiniz.

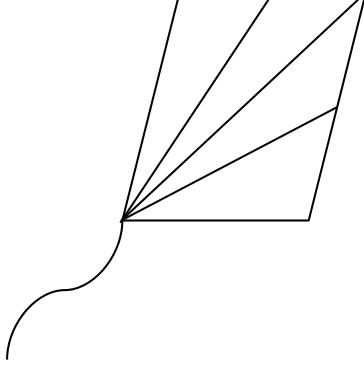


Eğer problemi çözmeyi başardıysanız, şekli aşağıdaki kutuya çiziniz.



Alıştırma-5

Aşağıdaki şekli kaleminizi kâğıttan kaldırmadan ve bir çizginin üzerinden iki kez geçmeden çizin.



Bu kutunun içinde pratik yapabilirsiniz.

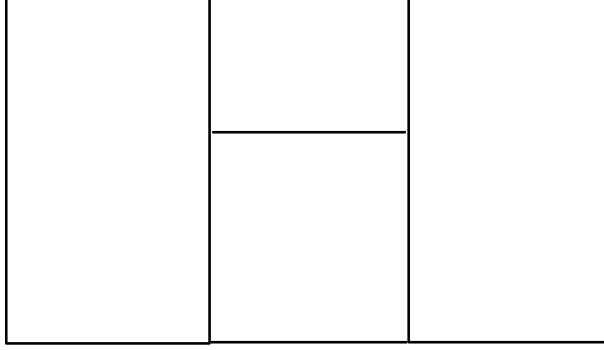


Eğer problemi çözmeyi başardıysanız, şekli aşağıdaki kutuya çizin.



Alıştırma-6

Aşağıdaki şekli kaleminizi kâğıttan kaldırmadan ve bir çizginin üzerinden iki kez geçmeden çiziniz.



Bu kutunun içinde pratik yapabilirsiniz.



Eğer problemi çözmeyi başardıysanız, şekli aşağıdaki kutuya çiziniz.



APPENDIX P.II: Bağımlı deęişken; kopya çekme



SONUÇLAR

Hangi alıştırmaları başarıyla tamamladınız?

1- 6 arasındaki alıştırmaların uyanlarına işaret koyunuz.

	Evet	Hayır
1. Alıştırmayı yapabildim	<input type="checkbox"/>	<input type="checkbox"/>
2. Alıştırmayı yapabildim	<input type="checkbox"/>	<input type="checkbox"/>
3. Alıştırmayı yapabildim	<input type="checkbox"/>	<input type="checkbox"/>
4. Alıştırmayı yapabildim	<input type="checkbox"/>	<input type="checkbox"/>
5. Alıştırmayı yapabildim	<input type="checkbox"/>	<input type="checkbox"/>
6. Alıştırmayı yapabildim	<input type="checkbox"/>	<input type="checkbox"/>

APPENDIX R: Manipulasyon kontrolü; uzamsal görevdeki BH'ler ve sebepleri

Uzaysal Mantık Testi Araştırması

Sonuç olarak, bu çeşit problemleri çözerken nasıl tepkiler verdiğinizi bilmek istiyoruz.

Lütfen takip eden soruları cevaplayınız.

Aşağıda belirtilen 4 amaçtan hangisi sizin için daha önemli? Lütfen birinci amacınızı yuvarlak içine alınız:

1. Diğerlerinden daha iyi olmak
2. Kendi yapabileceğimin en iyisini yapmak
3. İkinci sette birinci setteki yaptığımdan kötü yapmaktan kaçınmak

Şimdi **neden** bu amacı başarmak istediğinizi düşünün ve aşağıdaki soruları cevaplandırınız.

Bu amaca ulaşmak istedim

çünkü...

	Kesinlikle Katılmıyorum	Katılmıyorum	Ne katılıyorum ne katılmıyorum	Bir fikrim yok	Oldukça katılıyorum	Katılıyorum	Tamamen katılıyorum
Başkalarının isteklerine uymak zorundayım (öğretmenler, arkadaşlar, ailem, araştırmacılar)							
Yapamazsam kötü, suçlu ya da endişeli hissederim.							
Bunu kişisel değerli bir amaç olarak buluyorum.							
Bunu son derece teşvik edici ve zorlu bir hedef olarak buluyorum.							

APPENDIX S: Bağımlı değişken; içsel motivasyon

Bu problem çözme aktivitesine dair..	Kesinlikle Katılmıyorum	Katılmıyorum	Ne katılıyorum ne katılmıyorum	Bir fikrim yok	Oldukça katılıyorum	Katılıyorum	Tamamen katılıyorum
Genel olarak dikkatimi çekmedi							
Çok ilginç diye tanımlayabilirim							
Alıştırmaları yaparken onlardan ne kadar hoşlandığımı düşünüyordum.							
Alıştırmaları yaparken kendimi gergin hissetmedim							
Onları yaparken çok gergin hissettim.							
Onları yaparken çok rahatlamış hissettim.							
Alıştırmaları çözerken endişeliydim.							
Onları yaparken üzerimde baskı hissettim.							
Bu aktivitenin benim için bir değeri olacağına inanıyorum							
Bu alıştırmaları tekrar çözmek için istekli olurdum çünkü bana bazı değerler katacak							
Bu alıştırmaları yapmanın benim için faydalı olduğuna inanıyorum.							
Bence bu önemli bir aktivite.							
Başka bir zaman bunun gibi daha fazla alıştırma yapmak isterdim.							
Boş zamanlarımda bunun gibi daha fazla alıştırma yapmak isterim.							
Bu alıştırmalardan birazını evde yapmak için almak isterdim							

KATILIMIZ İÇİN TEŞEKKÜR EDERİZ!

APPENDIX T: Anket; İngilizce dersindeki BH' ler ve sebepleri

Tarih: _____ Cinsiyet K / E Yaş _____

Aşağıdaki ifadeler sizin bu dersteki amaçlarınızı temsil edebilir ya da etmeyebilir. Lütfen ifadelerin size göre doğruluğunu gösteren numaraları yuvarlak içine alınız. Herhangi bir doğru ya da yanlış cevap yoktur bu yüzden lütfen **açık ve dürüst olunuz**.

Aşağıdaki ölçeği kullanarak her bir maddeye ne derecede katılıp katılmadığınızı lütfen belirtiniz.

	Kesinlikle katılmıyorum	Katılmıyorum	Ne katılıyorum ne katılmıyorum	Katılıyorum	Kesinlikle katılıyorum
1. Bu derste amacım olabildiğince fazla şey öğrenmektir.	1	2	3	4	5
DİKKAT ! Eğer puanınız 3 veya üzerindeyse, aşağıdaki soruları cevaplayınız.					
Neden olabildiğince fazla şey öğrenmeyi hedefliyorsun? Çünkü...					
... Buna başkaları (öğretmenim, ailem) tarafından zorlanıyorum.	1	2	3	4	5
... Olabildiğince fazla şey öğrenmek hoşuma gidiyor.	1	2	3	4	5
... Bunu yapmazsam, kendimi kötü, suçlu ve endişeli hissediyorum.	1	2	3	4	5
... Bunu yapabileceğimi kendime kanıtlamam gerekiyor.	1	2	3	4	5
... Bu amacı önemli bir kişisel hedef olarak görüyorum.	1	2	3	4	5
... Ancak o zaman kendimi değerli ve özel hissediyorum.	1	2	3	4	5
... Olabildiğince fazla öğrenmeyi kendimi zorlayabildiğim bir hedef olarak görüyorum.	1	2	3	4	5
... Olabildiğince çok şey öğrendiğimde kendimi daha iyi tanıyorum.	1	2	3	4	5

2. Bu dersteki amacım sınıftaki diğer öğrencilerden daha başarılı olmaktır.	1	2	3	4	5
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DİKKAT ! Eğer puanınız 3 veya üzerindeyse, aşağıdaki soruları cevaplayınız.

Neden diğer öğrencilerden daha başarılı olmayı hedefliyorsun? Çünkü...					
... Diğerlerinden daha iyi yapabildiğimi kendime kanıtlamam gerekiyor.	1	2	3	4	5
... Ancak o zaman kendimi değerli ve özel hissediyorum.	1	2	3	4	5
... Buna başkaları (öğretmenim, ailem) tarafından zorlanıyorum.	1	2	3	4	5
... Diğerlerinden daha başarılı oldukça kendimi daha iyi tanıyorum.	1	2	3	4	5
... Böyle yapmazsam, kendimi kötü, suçlu ve endişeli hissediyorum.	1	2	3	4	5
... Diğer öğrencilerden daha başarılı olmayı kendimi zorlayabildiğim bir hedef olarak görüyorum.	1	2	3	4	5
... Diğerlerinden daha başarılı olmak hoşuma gidiyor.	1	2	3	4	5
... Bunu önemli bir kişisel hedef olarak görüyorum.	1	2	3	4	5

3. Bu dersteki amacım, mümkün olandan daha az şey öğrenmekten kaçınmaktır	1	2	3	4	5
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DİKKAT ! Eğer puanınız 3 veya üzerindeyse, aşağıdaki soruları cevaplayınız:

Neden mümkün olandan daha az şey öğrenmekten kaçınıyorsun? Çünkü ...					
... Mümkün olandan daha az şey öğrenmekten kaçındıkça kendimi daha iyi tanıyorum.	1	2	3	4	5
... Bu amacı takip etmek hoşuma gidiyor.	1	2	3	4	5
... Ancak o zaman kendimi değerli ve özel hissediyorum.	1	2	3	4	5
... Böyle yapmazsam, kendimi kötü, suçlu ve endişeli hissediyorum.	1	2	3	4	5
... Bunu önemli bir kişisel hedef olarak görüyorum.	1	2	3	4	5
... Bunu yapabildiğimi kendime kanıtlamam gerekiyor.	1	2	3	4	5
... Buna başkaları (öğretmenim, ailem) tarafından zorlanıyorum.	1	2	3	4	5
... Bunu kendimi zorlayabildiğim bir hedef olarak görüyorum.	1	2	3	4	5

