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EFFECTS OF DEADLINE CONDITIONS ON LEARNERS OF DIFFERENT
PROCRASTINATION TENDENCIES IN AN ONLINE COURSE

by

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A dissertation submitted in partial fulfillment of the requirements
for the degree of Doctor of Philosophy
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at the University of Central Florida
Orlando, Florida

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2011

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ABSTRACT

The purpose of this study was to investigate the effects of three deadline conditions (i.e., frequent-instructor-set-deadline condition, flexible-instructor-set-deadline condition, and self-imposed-deadline condition) on students of different academic procrastination levels (high, medium, and low) in terms of their perceived learning, academic performance, and course satisfaction in an online course. A 3 x 3 factorial quasi-experimental design was adopted for this study. One hundred and seventy three students from three classes of different majors voluntarily participated in the study with 50 students majoring in Agriculture, 61 in International Trading, and 62 in Food Manufacturing. The three classes were randomly assigned to three deadline conditions. Data were collected through an online survey and a final exam.

This study found that there were significant differences in perceived learning and course satisfaction among high, medium, and low procrastinators, but there was no significant difference in academic performance among students at different procrastination levels. Low and medium procrastinators had significantly higher perceived learning and were significantly more satisfied with the course than high procrastinators. Among the three deadline condition groups, there were no significant differences in perceived learning and course satisfaction, however, the difference in academic performance was significant. The flexible deadline group achieved the best academic performance followed by the frequent and the self-imposed deadline groups. There was no interaction effect between procrastination and deadline conditions on any of the dependent variables. Limitations of the present study, recommendations for future research, and implications for practice are discussed.

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CHAPTER ONE: INTRODUCTION

The Internet and technology are advancing so fast that they have become an integral part of reshaping the ways people live and learn in the digital age. In today's training and education, they play an important role in designing, developing, and delivering instructional content. In the report sponsored by the Sloan Consortium (Allen & Seaman, 2010), courses that incorporate the Internet are categorized into three types: Web-facilitated, mixed mode/ blended/hybrid, and online/Web-based. According to Allen and Seaman, Web-facilitated courses use Web-assisted technologies to facilitate what is essentially a face-to-face course without reducing face-to-face meeting time. A typical example of a Web-facilitated course is the use of a learning management system or Web sites to post syllabus and assignments. Mixed mode courses blend online and face-to-face delivery and have 30%-80% of the course content delivered over the Internet, which will substitute for some classroom meetings (Allen & Seaman). Online courses have most (at least 80%) or all of the content delivered online and typically have no face-to-face meetings (Allen & Seaman).

Online Courses

The advent of advanced technology and the Internet have enabled distance learning to evolve from print-based correspondence courses to interactive online courses over time (Yukselturk & Bulut, 2009). Instructor-learner and peer-peer interactions in online courses can be achieved through different technology applications. The asynchronous communication tools (e.g., email, threaded discussion boards, newsgroups) allow students and the instructor to interact

with each other at different times, while synchronous communication tools (e.g., chat rooms, webcasting, desktop audio/video technology) enable communication at the same time but from different locations (Shivers, Muilenburg, & Tanner, 2001; USDoE, 2009). In terms of the interaction level and communication methods used, there are four types of online courses: (a) online tutorials which have instructive Web pages allowing a completely self-paced and self-operated journey through the material with no instructor-learner and peer-peer interactions, (b) self-paced courses through which a student can progress at his or her own pace with some instructor-learner interactions and no peer-peer interactions, (c) asynchronous cohort courses through which a group of students can explore the course with substantial instructor-learner and peer-peer asynchronous interactions, and (d) synchronous cohort courses which have fixed start and end dates so that a group of students can complete the course as an instructor-led group with synchronous instructor-learner and peer-peer interactions in addition to asynchronous interactions (Lehmann, 2004).

Online courses have become more and more popular with educational institutions seeking to replace some traditional courses (Allen & Seaman, 2010). Overall, the number of online learners has been expanding dramatically in recent years. Based on the survey responses from more than 2,500 colleges and universities in the U.S., Allen and Seaman reported that the number of online learners increased from 1.6 million in fall 2002 to 4.6 million (accounting for over 25% of all U.S. higher education students) in fall 2008 with a compound annual growth rate of 19%, which greatly exceeds the annual growth rate of the overall higher education enrollments (1.5%). According to Allen and Seaman, bad economic times will have an increasing demand for online courses, as it is widely agreed that higher fuel costs will lead to

more students selecting online courses, and the rising unemployment will prompt more working adults to seek online education.

Online courses have many advantages compared to traditional face-to-face courses. Convenience is one of the advantages often identified in online learning literature. The Internet provides a convenient learning environment for online courses and allows students to access to knowledge at any time and at any place with a broadband connection (Chen, 2009). Online learners were happy to be able to complete assignments at any time without having to travel to a college campus to take classes (Song, Muilenburg, & Vallerand, 2004; USDoE, 2009). Independence from time and location restraints cuts students' travel expenses, reduces time spent in commuting and parking, and provides equal participation opportunities (Davis, 2007; Piskurich, 2006). Online learning environments better accommodate a variety of learning styles by supporting linear and nonlinear representation of learning materials and providing a variety of learning tools (Dabbagh, 2007). Several research studies obtained students' perspectives on online learning and reported that asynchronous online learning can encourage students to think more deeply about the subject areas and promote more reflections than what might occur in some face-to-face classrooms (Petrides, 2002; Vonderwell, 2003). In addition, content in online classes can be updated instantaneously, making the information more accurate and useful for a longer period of time (Rosenberg, 2001).

There are always advantages and disadvantages of things and online learning is in no exception. The chief disadvantage of asynchronous online learning lies in its inability to host face-to-face interactions — one of the most important elements of a learning experience (Burbles, 2004). Due to the absence of personal contact in asynchronous online learning, some social learning experiences, such as mimicking others' actions, cannot be obtained (Howard,

2003). Additionally, the lack of interpersonal communication with the instructor and other students in online learning may result in a sense of isolation (Hodges, 2005). Although text-based communication via Internet can promote reflective interaction, it may generate misunderstandings that adversely affect learning due to the reduced non-verbal social cues (i.e., facial expressions and voice inflections) (Rovai, 2004). Delayed responses from other students and the instructor in asynchronous online learning may also frustrate students (Song et al., 2004; Vonderwell, 2003). Also, the technological dependence of online learning can be a disadvantage if there is an Internet connection failure or a similar technological problem that prevents students from completing a task. If there is no “backup plan” in the case of a technological hindrance, students will miss out on the learning activity that was scheduled (Colorado State University, 2005). Furthermore, the design and development of online courses are time-consuming, and the delivery of online courses demands more time from the facilitator (Piskurich, 2006).

Due to differences between online courses and traditional courses, students who are successful learners in traditional courses may not necessarily succeed in online courses. Marino (2000) reported that some students encountered difficulty adjusting to online courses because of time management problems and failure in maintaining self-motivation. One important characteristic that successful online learners must have is the self-regulated or self-directed learning ability due to the physical absence of the instructor and the requirement of students’ high autonomy in online courses (Artino, 2007; Cheurprakobkit, Hale, & Olson, 2002; Hodges, 2005; Irizarry, 2002; Tuckman, 2007). Self-regulated learners are those who “possess a great deal of knowledge or skill concerning various cognitive strategies,” are metacognitively aware of their own learning, and “exhibit an array of adaptive motivational beliefs and attitudes that include high levels of self-efficacy and an orientation toward mastery goals” (Wolters, 2003, p.

179). Chen (2009) acknowledged that self-regulated learning ability is an important factor affecting academic performance in online courses. Schrum and Hong (2002) also reported that most experts regarded self-discipline as one of the most important factors that contributes to success in online learning.

Besides self-regulated learning ability, interpersonal and communication skills via online learning technologies are important competencies identified with successful online learners (Dabbagh & Bannan-Ritland, 2005; Williams, 2003). In addition, technical computing skills are also critical for the success of online learning (Cheurprakobkit et al., 2002; Schrum & Hong, 2002). Dabbagh (2007, P. 221) suggested four skills and characteristics critical to the success of online learners:

- 1. Be skilled in the use of online learning technologies, particularly communication and collaborative technologies*
- 2. Have a strong academic self-concept and good interpersonal and communication skills*
- 3. Have a basic understanding and appreciation of collaborative learning and develop competencies in related skills*
- 4. Acquire self-directed learning skills through the deployment of time management and cognitive learning strategies*

Statement of Problem

Procrastinatory behavior is a common phenomenon in the academic domain among students, particularly at the college and university levels (Lee, 2005). The nature of distance learning allows students to control much of their own learning such as decisions about when to study and respond to assignments (Wilkinson & Sherman, 1990). A lack of supervision and

reliance on learners' self-initiative often leads to students' excessive procrastination, long recognized as a problem in distance learning (Tuckman, 2005). In a survey study conducted by Wilkinson and Sherman (1990) with 432 distance educators from 142 telecommunication-based distance programs, almost all the educators regarded procrastination as a problem in distance learning. Online courses, the most popular form of distance learning these days, may provide more opportunities for students to procrastinate than their traditional counterparts because online courses empower students with more freedom for self-management and more control over their own study, i.e., where, when and how they will study (Romano, Wallace, Helmick, Carey, & Adkins, 2005). Moreover, regular face-to-face lectures in traditional courses will force even the most problematic procrastinators to be exposed to some of the material earlier than they might otherwise encounter (Elvers, Polzella, & Graetz, 2003).

It has been frequently mentioned in literature that self-regulated learning is critical to successful online learning (Artino, 2007; Chen, 2009; Cheurprakobkit et al., 2002; Hodges, 2005; Irizarry, 2002; Tuckman, 2007), but not all online learners regulate their own learning well and procrastination stands in contrast to self-regulated learning (Steel, 2007; Wolters, 2003). So, it is important to help procrastinators curb procrastination and increase their chances of achieving success in online learning. It has been revealed in literature that procrastination is related to poor time management and poor organizational skills (Jackson, Weiss, Lundquist, & Hooper, 2003; Noran, 2000; Pychyl, Morin & Salmon, 2000). Procrastinators may not manage their time wisely and postpone academic assignments for a later time, while focusing on unproductive activities (Jackson et al., 2003). Many researchers have expressed their concern that online courses without inherent structure or study schedule would make online learners more vulnerable to procrastination and suggested instructors set rigid deadlines for students (Elvers et

al., 2003; Graham, Cagiltay, Lim, Craner, & Duffy, 2001; Tuckman, 2007) or require students to turn in an assignment schedule made by students themselves (Grenier-Winther, 1999). Research studies indicate that deadline conditions of less flexibility are effective in dealing with procrastination problems (Lamwers, & Jazwinski, 1989; Majchrzak, 2001; Wesp & Ford, 1982). Nevertheless, rigid deadlines may eliminate the opportunity for students to master course content at their own rate (Roberts & Semb, 1990).

Online courses with a flexible time frame for learning allow learners enough time to achieve mastery of the course material at the pace with which they are comfortable, which makes the individual personalities complimented (Baker, 2009). Moreover, flexible pacing may afford learners more time flexibility to arrange required activities in order of importance and enable learners to deal with minor illness, heavy surges in requirements in other courses, and other unforeseen problems while progressing through the course (Wesp & Ford, 1982), however, online learning with a flexible schedule may not be beneficial for all the students. As Semb, Glick, and Spencer (1979) stated, “Eliminating instructor-set deadlines may provide the pacing flexibility needed to accommodate individual differences in learning rates, but their absence may mean, for some students, loss of vital cues about how to respond in an undefined situation” (p. 24). Since online learning requires self-regulation learning skills, students who have a tendency to engage in dilatory behavior, are prone to be at a disadvantage in a relatively unstructured online learning environment (Tuckman, 2007). Students who reported they were self-regulated and had the ability to maintain their own pace were most suited to flexible-paced courses, while students who felt they tend to procrastinate would choose courses in a more structured format (Leasure, Davis, & Thievon, 2000). Great pace flexibility may be good for those who excel at managing their own study pace and less likely to procrastinate, but not for high procrastinators.

Given the individual differences and learning styles, one strategy may be good for one group of students but not for another. Many research studies have been conducted to investigate the effects of various types of deadline conditions on student learning and course attitude, but few studies have been carried out in an online course (Ariely & Wertenbroch, 2002; Lim & Morris, 2005; Majchrzak, 2001; Roberts & Semb, 1990). Moreover, this researcher has not found research to date in the literature that examined the interaction effect between deadline conditions and students' academic procrastination. Such research is necessary to help identify the most ideal deadline condition for students at different levels of academic procrastination.

Purpose of the Study

The current study will investigate how three deadline conditions (i.e., frequent-instructor-set-deadline condition, flexible-instructor-set-deadline condition, and self-imposed-deadline condition) work for students at different procrastination levels (high, medium, and low) in terms of their perceived learning, academic performance, and course satisfaction. In addition, this study will explore students' attitudes toward the three deadline conditions investigated.

Research Questions

Four research questions were developed for this study:

1. Is there a difference in academic performance between the procrastination groups (high, medium, and low), between the treatment groups (frequent-instructor-set-deadline condition, flexible-instructor-set-deadline condition, and self-imposed-deadline condition), and is there an interaction between procrastination and treatment group?

2. Is there a difference in perceived learning between the procrastination groups, between the treatment groups, and is there an interaction between procrastination and treatment group?
3. Is there a difference in course satisfaction between the procrastination groups, between the treatment groups, and is there an interaction between procrastination and treatment group?
4. What are students' attitudes toward frequent-instructor-set-deadline, flexible-instructor-set-deadline, and self-imposed-deadline conditions?

Significance of the Study

This study will present evidence on, and add to the existing knowledge about the effects of procrastination and three commonly used deadline conditions on students' perceived learning, academic performance, and course satisfaction in an online course. The current study extends the research on deadline conditions and procrastination by investigating their interaction effect, which has not been considered in previous studies. Findings of this study may provide scientifically driven evidence to inform or support a decision about the kinds of deadline condition that work best for high, medium or low procrastinators. Results of this study may also serve as the basis for further research on deadline conditions and procrastination in online courses.

In addition, the research findings will have potentially important implications for decision-makers to make the right choice of deadline condition in online courses. The research

findings may also provide specific guidance for online instructors to implement deadlines in a more proper and efficient way to improve students' online learning.

Limitations

The following limitations were identified with this study: Firstly, this study was done with 173 participants enrolled in an online English as a Foreign Language (EFL) course at Beijing University of Agriculture. The findings of this study have quite limited generalizability and should be interpreted cautiously because they represent a very restrictive set of conditions.

Secondly, this study was conducted in an online course of which the assignments accounted for only a small proportion of the course grade (20%), which may affect students' attitudes toward assignments and influence the effects of deadline conditions on student learning and course attitude.

Thirdly, the survey was not conducted anonymously, and thus the responses of some participants who didn't provide their identity were excluded from the data analysis.

Definition of Terms

Online course

Online courses refer to courses that have most (at least 80%) or all of the content delivered online and typically have no face-to-face meetings (Allen & Seaman, 2010).

Procrastination

Procrastination is defined as the tendency to put off or completely avoid an activity under one's control (Tuckman and Sexton, 1989 as cited in Tuckman, 1991). It has been described as a self-regulatory style that postpones the start or completion of a task (Ferrari & Tice, 2000).

Frequent-instructor-set-deadline condition

The frequent-instructor-set-deadline condition employs biweekly delivery of one learning unit. Under this condition, students must turn in the assignments of each unit no later than the due date posted for each unit to avoid penalty. If students submit assignments after the due date, but before the listed penalty due date, score will be deducted by 10% of the late assignments. No assignment is accepted after its respective penalty due date.

Flexible-instructor-set-deadline condition

In the flexible-instructor-set-deadline condition, one assignment deadline is assigned to each half of the course. No assignments are accepted after each due date.

Self-imposed-deadline condition

The self-imposed deadline condition allows students to set assignment due dates by themselves with provided external constraints at the beginning of the course.

Tertile split

It is a statistical method to divide an ordered distribution into three parts, each containing a third of the population.

High procrastinator

Students were classified into low, medium, and high procrastinators by the use of a tertile split on an aggregated score of Tuckman Procrastination Scale. Students who scored 39 to 59 are high procrastinators.

Medium procrastinator

Students who scored 34 to 48 are medium procrastinators.

Low procrastinator

Students who scored 21 to 33 are low procrastinators.

Organization of the Study

This dissertation is composed of five chapters. Chapter 1 contains an introduction of online courses, statement of problem, purpose of the study, research questions, significance of the study, and definitions of terms. Chapter 2 provides a review of literature related to procrastination, cognitive theoretical foundation of the study, effects of procrastination, and previous studies on deadline conditions. Chapter 3 describes the research methodology of this study, including research questions, subjects, course context, variables and measurement, interventions, research design, implementation procedures, and data analysis. Chapter 4 reports the research results of the study. Chapter 5 includes a discussion of the research findings, limitations of the study, recommendations for future research, implications for deadline implementation, and a conclusion.

CHAPTER TWO: LITERATURE REVIEW

This study is conducted to investigate how three typical deadline conditions work for students at different procrastination levels in an online course. To gain a better understanding of procrastination and why it is necessary to conduct this study, this chapter starts by introducing several aspects of procrastination, including its definitions, its prevalence in online courses, and how it is related to time management. Then, the cognitive theoretical foundation is presented. In addition, empirical studies investigating the effects of procrastination on academic performance and course attitude are described. Last but not least, empirical studies on deadline conditions are reported.

Procrastination

Definitions of Procrastination

There is no universally accepted definition of procrastination in literature. Procrastination is defined as the tendency to put off or completely avoid an activity under one's control (Tuckman and Sexton, 1989 as cited in Tuckman, 1991). It has been described as a self-regulatory style that postpones the start or completion of a task (Ferrari & Tice, 2000). Academic procrastination particularly refers to the procrastination in academic domain and can be described as that one doesn't accomplish the activity within desired time frame as he is supposed to be (Senecal, Koestner, & Vallerand, 1995). Rothblum, Solomon, and Murakami (1986, p. 387) defined academic procrastination as the "tendency to always or nearly always put off academic

tasks, and always or nearly always experience problematic anxiety associated with this procrastination.” A common example of academic procrastination is to delay working on assignments or studying for an exam (Milgram, Batin, & Mower, 1993).

Many adults procrastinate on a regular basis (Janssen & Carton, 1999). Procrastinatory behavior has been regarded as a common phenomenon in the academic domain among students, particularly at the college and university levels (Lee, 2005). It was estimated that about 80% to 95%, a majority of college students procrastinate (Ellis & Knaus, 1977; O’Brien, 2002) and about 50% procrastinate in a consistent and problematic manner (Day, Mensink, & O’Sullivan, 2000). In a survey done by Solomon and Rothblum (1984) with 342 undergraduates, nearly half of the subjects (46%) reported that they nearly always or always procrastinate on writing a term paper, over 25% reported that they nearly always or always procrastinate when studying for an exam, and 30% reported they nearly always or always procrastinate on keeping up with weekly readings. In a recent survey study with 100 undergraduate and graduate students (Charlebois, 2007), the percentages of nearly always or always procrastinating on writing a term paper, studying for an exam, and keeping up with weekly readings are 56%, 40%, and 46% respectively, which indicates a more serious procrastination problem with this group of students. Ferrari and Beck (1998) found that over 70% of college students engaged in academic procrastination especially with writing a term paper.

More Procrastination in Online Courses

In online courses, students are more susceptible to procrastination. In a study by Elvers et al. (2003), there are significantly more students in online classes than in the corresponding

lecture classes reporting they do not like the class because it is easy to get behind. Leasure et al. (2000) stated that besides perception of increased opportunity for interaction and immediate feedback, another reason students reported for choosing traditional classroom section was the decreased opportunity to procrastinate. The increased opportunity of procrastination in online courses can be partly attributed to the fact that in online courses, students are empowered with more freedom for self-management and more control over their own study, i.e., where, when and how they will study (Romano et al., 2005). In online courses, there is usually no one to remind students of the approaching assignment deadlines and to push students to start working on the coursework, so online students are more likely to procrastinate (Montgomery College, 2006). Ushida (2005) reported that students found it was difficult to self-direct their learning in an online English course and thus tend to procrastinate.

The Internet, through which online courses are delivered, is also conducive to more opportunities for procrastination in online courses due to the alluring entertainment activities made available by the Internet (Liu, 2004). The Internet provides all kinds of useful tools to make researching, writing, and studying easier than ever, but at the same time, it provides a great number of distractors, such as entertainment news, online games, and online chat, and is frequently used as a means of procrastination and escape (Thatcher, Wretschko, & Fridjhon, 2008). A new term, Internet Procrastination was coined for the kind of procrastination taking place over the Internet. Marron (2000) defined Internet Procrastination, namely cyberslacking or online procrastination, as the wasting of time by entertaining oneself on the Internet when one should be working or studying. Internet Procrastination is a widely spread phenomenon among Internet users and is prevalent among college students (Liu, 2004). Lavoie and Pychyl (2001) conducted an online survey with 308 participants from various regions of North America and the results

verified that Internet Procrastination is common among Internet users in that 50.7% of the sampled participants procrastinated through Internet use on a frequent basis and that 47% of the time spent online for all the participants involved self reports of procrastination.

The theory of procrastination proposed by Silver and Sabini (1981) might be used to explain the potential of Internet as a procrastination tool (Lavoie & Pychyl, 2001; Liu, 2004). Silver and Sabini suggested that a particular style of procrastination involves the irrational fragmentation of time into short intervals to delay working toward a task. When choosing an activity for the next immediate time period (e.g., the next 5 minutes), the individual justifies engaging in some minor pleasure instead of committing to the intended task. This justification is based on a rationalization that the task can wait a few minutes while one engages in a short-term pleasure, during which time long-term cost is not experienced. According to Silver and Sabini, this cycle of “rational” task postponement can continue until the individual realizes that a 5-minute interval will be costly to the completion of the intended task. This type of procrastination is easily applied to Internet use due to the fact that many online activities (e.g. checking emails, exploring the web pages), which are brief and can be easily stopped, are the potential candidates for the short-term pleasure (Lavoie & Pychyl, 2001; Liu, 2004).

Silver and Sabini (1981) also brought forward the notion of dramatizing commitment to a task. In this situation, an individual procrastinates by searching for off-task distractions at the same time of keeping an appearance of committing to the intended task. They also suggested that an individual is especially vulnerable to any activity that does not require leaving the present location, involves minimum commitment, and lacks immediate averseness. Lavoie and Pychyl (2001) indicated that while working via the Internet, an individual who is not fully attentive to accomplishing the intended task will tend to be distracted by the online distractions such as

flashing hyperlinks, which just need a minimum commitment by clicking mouse button. Even when the individual is engaged in off-task online distractions, he will still be convinced that he is accomplishing the task because he never left the computer desk to procrastinate.

Time Management and Procrastination

Although procrastination may be somehow related to individual personality traits such as identity style, perfectionism and public self-consciousness (Lay & Silverman, 1996; Saddler & Buley, 1999), procrastination can also be the result of ineffective time management (Wilkinson & Sherman, 1990).

Several studies suggest that poor time management contribute to procrastination. In a study by Lay and Schouwenburg (1993), it was found that procrastinators engaged in less time management than non-procrastinators. Jackson et al. (2003) examined how procrastination and time spent on social and recreational activities contribute to GPA at the end of the academic semester using a sample of 219 undergraduate students drawn from first year psychology classes. The Tuckman Procrastination Scale indicated procrastination; a two-item scale created by the researchers assessed the time spent on social and recreational activities. This study reveals time management contributes to procrastination. In other words, students who procrastinate are engaging in social and recreational activities, rather than studying. Thus, students who procrastinate do not adequately plan for study, and dedicate more time to social and recreational activities.

Pychyl et al. (2000) conducted a study to investigate the relationship between a student's planning fallacy and procrastination with 32 undergraduate students who enrolled in a face-to-

face, second-year social psychology course. Planning fallacies are “optimistic estimates of task completion despite the fact that most similar tasks have been completed later than anticipated” (p. 136). Planning fallacies were indicated by the differences between participants’ predicted study time and their actual study time for two exams. Aitken Procrastination Inventory and the General Procrastination Scale measured students’ procrastination. Of the 32 participants, the majority of them (n=26) reported studying more than they predicted. Results revealed that high procrastinators tended to study more in the last few days prior to an exam, as compared to low procrastinators who spread their studying out more evenly. Moreover, high procrastinators were found not only to predict less study time but also to study less than low procrastinators.

Procrastination is “often presented as a time management problem,” and “wasting time is a common perception of the procrastinator’s plight” (Pychyl et al., 2000, p. 136). One common method to help procrastinators manage their time better is to assign deadlines. Thus, in this study the author will investigate the effects of different deadline conditions on students of different academic procrastination levels in measurement of their perceived learning, academic performance, and course satisfaction in an online course.

Cognitive Theoretical Foundation

Automatic process, namely automaticity can be defined as “performance that involves fast, ballistic, effortless unconscious processing, for which little or no attention is required and which is not hindered by disruption of interfering events” (Serrano, 2011, p. 119). Automatic processes “allow us to perform complex cognitive tasks smoothly, quickly, and without undue attention to details” (Bruning, Schraw, Norby, & Ronning, 2004, p. 7). There is no shortcut to

automatic process but through extended practice, which is true for physical skills as well as cognitive skills (Brunning et al., 2004). Dekeyser (2007) applied Anderson's ACT-R skill acquisition theory to explain adult second language learning process and pointed out that adult second language learning involves similar cognitive mechanisms required for the acquisition of other complex cognitive skills. Learners first have an access to the second language material through declarative knowledge (e.g. lexical items, grammar rules) and then such declarative knowledge is proceduralized through practice until automatic performance is achieved and consciously referring to the previously learned declarative knowledge is no longer necessary.

Distributed and Massed Practice

Based on how the practice time is allocated, practice is generally classified into distributed practice and massed practice. Distributed practice is generally defined as “the learning of tasks spread out over several time periods alternated with periods of rest,” and massed practice as “the learning of tasks concentrated into one time period” (Moss, 1995, p. 8). Brunning et al. (2004) pointed out that regular periods of practice (e.g., daily piano practice) falls into distributed practice, and in contrast, irregular periods of intensive practice (e.g., cramming for a test) are massed practice.

Substantial research studies have been conducted to compare the effects of these two types of practice and the majority of them were done on motor skills with research evidence being overwhelmingly in favor of distributed practice over massed practice (Donovan & Radosevich, 1999; Lee & Genovese, 1988; Moss, 1995). An important factor that could account

for the superiority of distributed practice in motor skills over massed practice is muscles' fatigue, which may negatively affect performance and learning (Murray & Udermann, 2003).

A few research studies have also been carried out with cognitive tasks such as multiplication problems, statistical operations, and computer video games and all demonstrated the superiority of distributed practice in performance (Corneliu & Modigliani, 1985; Metalis, 1985; & Smith & Rothkopf, 1984, as cited in Mumford, Costanza, Baughman, Threlfall, & Fleischman, 1994). In addition, 81% of the articles (103) on verbal information (know and state facts) reviewed by Moss showed the distributed practice was more effective than massed practice. The advantage of distributed practice in these cognitive tasks could be explained by brain fatigue, which may occur as a result of massed practice (Murray & Udermann, 2003). With massed practice, students will gradually lose their attention and focus and thus the effect of practice on learning may decrease.

Research results on distributed and massed practice could lend some insights to this study, as deadline conditions could somehow affect students' distribution of their learning time spent in the online course.

Effects of Procrastination

Procrastination has been found to be correlated with poorer mental health (Stead, 2010) and emotional distress like anxiety, depression, guilt, low self-esteem, and fear of failure (Haycock, et al., 1998; Owens & Newbegin, 2000; Tice & Baumeister, 1997; Zhang & Cai, 2010). Moreover, it was indicated that dilatory behavior may be beneficial to the health of students early in a semester, but may be deleterious to the well-being late in the semester (Tice &

Baumeister, 1997). Since this study examined how procrastination would affect students' learning and course satisfaction, emphasis will be put on the report of relevant literature of these topics.

Procrastination and Academic Performance

The effects of procrastination on academic performance have received tremendous attention from researchers. Jackson et al. (2003) stated that procrastination may hinder task performance for four main reasons: (a) procrastinators cope with anxiety and threat of initiating tasks by actively avoiding them until there is insufficient time to perform optimally; (b) procrastinators might underestimate the amount of time required for specific tasks and consequently they may not invest the time and effort necessary for performing well; (c) procrastinators may perform less well due to unforeseen obstacles or delays; and (d) procrastinators often assert that they work best under pressure and the stress associated with attempting to meet a fast-approaching deadline can also impede optimal performance.

The negative effect of procrastination on task performance may be mediated by the difficulty of the intended goal (Jackson, 2002). If the goal seems easy enough for learners, time pressure as a result of procrastination may lead to more efficient task performance. In addition, Jackson pointed out the procrastination may be beneficial for performing creative tasks, because delay may provide extra time to gain new insights and ideas.

Quite a few empirical studies have been done to examine the relationship between procrastination and academic performance with the majority of them indicating higher procrastination is related to lower academic performance. Akinsola, Tella, and Tella (2007)

observed that students' self-reported academic procrastination and their mathematics performance measured by their Grade Point Average (GPA) were significantly correlated. They further investigated the differences in performance among students of different procrastination levels and found that low procrastinators achieved significantly better academic performance than moderate and high procrastinators, but there was no significant difference between moderate and high procrastinators.

Tice and Baumeister (1997) conducted a study with 44 students taking a health psychology course and found that procrastinators received significantly lower grades than nonprocrastinators on both the term paper and the two exams. Tice and Baumeister did a follow-up study and obtained similar results indicating that procrastinators were more likely to submit assignments later and earn lower scores than nonprocrastinators.

Wesley (1994) found that procrastination accounted for a significant portion of variance in students' GPA in college. Tuckman (2002) reported that high procrastinators earned significantly lower course grades (a cumulative performance on 216 learning performance activities) than either low or moderate procrastinators in a web-facilitated "study skill" course. Fritzsche, Rapp Young, and Hickson (2003) indicated that academic procrastination was associated with postponement of activities, lower overall GPAs, and lower grades in a writing intensive course. Rothblum, Solomon, and Murakami (1986) reported that self-reported procrastination was positively correlated with delay on self-paced quizzes and procrastination was negatively correlated with GPA for the semester. Michinov, Brunnot, Bohec, Juhel, and Delaval (2011) found a negative relationship between procrastination and course grade in a 10-week online course. In addition, a significant inverse correlation emerged between self-reported

assignment procrastination and course grades in an introductory psychology course (Howell, Watson, Powell, & Buro, 2005).

Although many studies have observed significant relationships between procrastination and performance, some studies failed to detect such a relationship. Pychyl et al. (2000) did a study with 62 undergraduate students enrolled in a second-year social psychology class and reported that students scoring high on procrastination studied less and later than non-procrastinators, but their performance measured on two exams was surprisingly not significantly different from the students who scored low on procrastination. The correlation between exam performance and procrastination was also not significant. Moon and Illingworth (2005) reported that self-reported procrastination did not predict test performance with the exception of the relationship between self-reported procrastination and performance on Test 4 (the fourth test). Elvers, Polzella, and Graetz (2003) revealed that procrastination was a good predictor of performance for each of the five tests in the class for the online students, but not a good predictor of performance for any of the five tests for the lecture students. Morales (2007) obtained mixed research results that the association between procrastination measured by the time lessons started and the score earned for the reflective assignment was statistically significant, but the associations between procrastination, exam grades, and final grades were not statistically significant.

The majority of the above reviewed research studies examining the relationship between procrastination and academic performance have used self-report procrastination measures and employed final grades (performance in a specific course), and GPA (overall academic performance) to measure academic performance. Some of the research studies have some methodology problems and limitations, which will affect the validity of the research results. For

example, Akinsola et al. (2007) mistakenly used several paired t-tests without Bonferroni Adjustment to examine the differences in academic performance among high, moderate, and low procrastinators, which may increase the risk of making a type I error. In the study by Howell et al. (2005), a self-developed procrastination scale was used to measure students' procrastination, but its validity and reliability were not examined. Pychyl et al. (2000) had only a small number of participants and high attrition rate in their study, so the research findings may not be generalizable to other student populations. The results on this topic are not conclusive and only two of the above reviewed research studies are conducted in an online setting, so the relationship between procrastination and academic performance needs to be examined in further studies especially in an online course.

Procrastination and Course Attitude

The relationship between procrastination and course attitude has obtained much less attention and only two studies have been identified on this topic. In Elvers et al.'s (2003) study, participants were randomly assigned to either the online class or the face-to-face class. The students in the online class had access to the class Website and came to class only to take four noncomprehensive exams and one final exam. Students in the face-to-face class met twice a week for 75 minutes and were also accessible to the class Website. The results indicated that students' procrastination was negatively related to their course satisfaction in the online class but not in the face-to-face one, however, the results should be taken with cautions, because students' procrastination was measured by calculating means of the differences between the date of the first access to the Webpage covering that exam and the date of the exam. This type of

measurement of students' procrastination may seem problematic, because students in the face-to-face class could start their learning without accessing the course Website.

Romano et al. (2005) analyzed the secondary data collected with students enrolled in a course of two instructional formats: online and blended. Research results indicated that online students' course satisfaction was comparable across procrastination levels, but blended students who were procrastinating rated the course more negatively than those who were on schedule. The validity of the study results is affected by one obvious limitation that students were not randomly assigned to the two course formats but self-selected the format.

Research results in the above two studies indicate that the relationship between procrastination and course attitude may be different in various instructional formats. The results about the effect of procrastination on course attitude in online course are not consistent. Due to the limited number of studies on this topic, more research should be done.

Empirical Studies on Deadline Conditions

Research Studies in Personalized Instructional System Courses

Many research studies were conducted on deadline conditions in the 1970s and 1980s as personalized system of instruction (PSI) brought forward by Keller became popular. PSI is featured with self-pacing, mastery of units to an established criterion level, the use of lectures and demonstrations for motivational purposes, the use of student proctors, and primary dependency upon reading materials instead of lectures (for course content delivery) (Keller,1968). Among all these features, self-pacing, which allows students to work at their own pace accommodates individual differences in learning rates and is regarded as an important

means of enabling all students to reach mastery learning of a given task (Bloom, 1968 as cited in Reiser, 1984). Nevertheless, procrastination is a big problem associated with self-pacing, for many students tend to procrastinate when they are allowed to pace themselves through a course (Morris, Surber, & Bijou, 1978; Reiser, 1984). Studies have indicated that procrastination resulted in higher withdraw rates and inefficient use of instructional facilities and staff (Morris et al., 1978; Reiser & Sullivan, 1977; Semb et al., 1979).

In order to seek alternative pacing procedures to reduce student procrastination without affecting learning achievement and course attitude, researchers started to compare the effects of different pacing procedures on withdraw rate, pacing rate, student learning, and course attitude in PSI courses (e.g., Hobbs, 1981; Reiser & Sullivan, 1977; Robin & Graham, 1974). In the following parts, only those studies, which measured either student learning or course attitude, are reported.

Self-pacing versus Instructor-pacing

Researchers did quite a few studies to examine the effects of self-pacing and instructor pacing. Self-paced format in the following reviewed studies unanimously refers to the condition that allows students to progress through the course at their own pace within the course semester, while the details of instructor-paced format vary from study to study.

Robin and Graham (1974) conducted such a study to compare the effects of self-pacing and instructor pacing. In their study, students were randomly assigned to either of the two pacing conditions. In one condition, students could take a test at any class day. By contrast, students in another condition should complete the course at the rate of one unit per week. The absence and

presence of weekly deadlines did not produce significant differences in final examination scores, however, students in self-pacing condition rated their pacing schedule significantly ($p < .05$) higher than students in another pacing condition.

Reiser and Sullivan (1977) randomly assigned 62 undergraduate students enrolled in a sophomore level PSI instructor research course to either a self-paced group or an instructor-paced group. Students in self-paced group could progress through the course at whatever pace they wanted and students in instructor-paced group were provided with the choices of four schedules to earn a grade of A, B, C or D. Students were penalized if they failed to follow the schedule they chose. Research results indicated that there was no significant difference in students' final examination achievement and their course attitude.

In a study by Morris, Surber, and Bijou (1978), students in the self-paced group were allowed to work at their own pace within the semester's time. Students in the instructor-paced group had to master at least one unit of material per week and could earn more points for passing unit quizzes a week ahead of schedule. Results showed that even though the self-paced group procrastinated, while the instructor-paced group did not, both scored similarly on pre-, post-, and retention tests and were equally satisfied with the course.

Hobbs (1981) did a study in two traditional classes of the course, Principles of Psychology, to compare the effects of self-paced format and instructor-paced format. Students ($n=46$) in the self-paced class had a minimum performance of 80% imposed on their 10-item unit recognition tests and can retest up to three times on a unit, while students ($n=83$) in the instructor-paced class were required to study through the course at the rate of one chapter (two self-paced units) per week and had one re-test opportunity on the 20-item chapter tests. Results indicated that students in the instructor-paced group achieved significantly higher score in the

final examination than students in the self-paced group, but little difference was found between the two groups in terms of students' average ratings of the course. The research studies should be evaluated cautiously because students were not randomly assigned into the treatment groups.

In the above studies comparing self-paced format and instructor-paced format, only one study found significant difference in students' learning between groups and no study obtained results of significant difference in students' course attitude. The lack of significant difference may be partly related to the experimental procedure, which only permitted students who completed the course to take the final examination and the course survey. Had those withdrawn students also participated the final exam and the course survey, significant difference between groups may be obtained.

Comparison of Other Deadline Conditions

Besides the studies comparing self-pacing and instructor pacing, many studies have also been done to compare other different deadline conditions in PSI courses. Bitgood and Segrave (1975) divided a summer term into three equal intervals. Students were randomly assigned to one of the three conditions. In the fixed-point condition, students received 10 points for each unit completed in every interval of the course; in the decreasing-point condition a completed unit earned 12 points in the first interval, 10 in the second, and eight in the last; in the increasing point condition, completed units earned 8, 10, 12 points in successive intervals of the course. No significant difference was found in the final examination scores among the three conditions.

Wesp and Ford (1982) compared three deadline conditions of different flexibility degrees. One hundred and eighty-two students enrolled in three introductory psychology classes were the

subjects of this study. Three deadline conditions were randomly assigned to the three classes. In one class, one deadline was assigned to each unit; in a second class, one deadline was assigned to every three units; in a third class, only one end-of-course deadline was assigned to all the units. Research results indicated that there were no significant differences in the final exam scores among the three groups. One obvious limitation with study is that similarity of the entrance level of students from the three classes was not ensured. In addition, no penalty was imposed on students for missing the deadlines, so students may be less likely to follow the instructor-set deadlines.

Brooke and Ruthven (1984) examined the effects of different contingency contracting on student performance. Thirty students enrolled in a PSI principles of educational psychology class during a 4-week summer term were randomly assigned to short contract (SC) group, long contract (LC) group, or self-paced (SP) group. Students in Group SC signed a short-term contract for the first unit (10 units in total for the course) and then switched to self-pacing for the remainder of the term once the short contract for completion of one unit by the assigned deadline was satisfied. Students in Group LC signed a long-term contract for a total of six units and switched to self-pacing for the remainder of the term once the contract was fulfilled. In self-pacing group, students were on a self-pacing schedule throughout the term. Group LC performed significantly better than the self-pacing group. Due to the small sample size and the brevity of the experiment, the results should be taken with cautions.

Reiser (1984) examined the effects of three deadline conditions (i.e. reward, penalty, and control conditions) with 100 undergraduate students enrolled in a 10-week introductory speech communication course, which consisted of six self-instructional units. Participants were randomly assigned to either of the three treatment groups. All the students were given the same

course schedule listing the suggested deadlines for mastering each unit, but the consequences of following the schedule were different across groups. In the reward group or penalty group, students received or lost two points for each instructional unit they mastered or failed to master by the deadline; in control group, there was no consequence at all of following the suggested schedule. According the research results, penalty was most efficient in curbing students' procrastination, for students in penalty group met significantly more deadlines than control group, $t(76)=3.47, p<.001$, however, no significant differences were found in students' final examination performance and course attitude among the three treatment groups.

In Roberts and Semb's study (1989), 92 students enrolled in a course of introductory developmental psychology were allowed to choose either instructor-set or self-set deadlines for the five course tasks. Classes met 5 days per week for a total of 37 class days. Students who chose the self-set deadline condition were permitted to revise their deadlines submitted before coursework at any time if they were ahead of schedule. If students failed to meet self- or instructor-set deadlines, they were required to attempt course tasks daily until the scheduled task was completed. Failure to attempt daily course tasks resulted in a course grade of F. There was no significant difference between the self-set deadline condition and the instructor-set deadline condition in the final exam scores.

Roberts and Semb (1990) conducted a study to examine the effect of student-set deadlines and instructor-set deadlines in a personalized psychology course composed of nine tasks. Students were assigned randomly to either student-set deadline condition or instructor-set deadline condition. In instructor-set deadline condition, students had to follow the nine instructor-set deadlines and in the student-set deadline condition, students were allowed to assign deadlines for the nine course tasks with the requirement that the self-set deadlines for Unit 1 test

and the final exam should be on or before the corresponding instructor-set deadlines. Research findings revealed that deadline conditions produced no significant differences in Review Exams 1, 2, and 3, final exam, and course grade. Roberts and Semb repeated this study in a five-task personalized psychology course and obtained the same research findings.

Table 1: Summary of Research Studies on Various Deadline Conditions in PSI Courses

Study	Subjects	Deadline Conditions Examined	Results	
			Significant Differences in Student Learning	Significant Differences in Course Attitude
Bitgood & Segrave (1975)	Not specified	Fixed-point condition Decreasing-point condition Increasing-point condition	No	N/A
Wesp & Ford (1982)	182 U	Weekly deadline condition Quarterly deadline condition End-of-course deadline condition	No	N/A
Brooke & Ruthven (1984)	30 U	Short contract group Long contract group Self-paced group	Yes	N/A
Reiser (1984)	100U	Reward condition Penalty condition Control condition	No	No
Roberts & Semb (1989)	92 U	Instructor-set deadline Self-set deadline	No	N/A
Roberts & Semb (1990)	84 U	Instructor-set deadlines Student-set deadlines	No	N/A

Note: U=undergraduate; N/A= Not applicable

According to Table 1, all but one study reported significant difference in student learning between deadline conditions. In comparison, course attitude received much less attention from researchers, for only one of the six reported studies examined course attitude.

Research Studies in Non-PSI courses

Compared to the number of studies on deadline conditions in PSI courses, much less studies have been carried out in non-PSI courses. Several studies reported no significant differences in student learning and course attitude among groups of different deadline conditions. For example, Lim and Morris (2005) examined the effect of flexible delivery format and fixed delivery format on students' perceived learning and application of learning in an online course. The subjects of this study were 102 undergraduate students. Participants were asked to attend the first and last class meeting for course orientation and group project presentation respectively. At the first class meeting, participants were allowed to select either flexible or fixed delivery format. The fixed learning delivery format employed weekly delivery of one learning unit at a time and the flexible delivery format provided multiple learning units of the online course for a four to five week period. The results indicated that different delivery formats didn't influence online learners' perceived learning and application of learning. In this study, participants were not randomly assigned to each treatment but were asked to select the treatment by themselves, so the result of this study will not be applicable to other situations.

Majchrzak (2001) investigated the effects of three deadline conditions in a Web-facilitated course. Participants enrolled in an undergraduate instructional technology course on HTML were randomly assigned to three deadline conditions: (a) the deadlines were recommended with one deadline at the end of the treatment interval; (b) the deadlines were conditional with opportunities to earn bonus and penalty points for early and late work; and (c) The deadlines were absolute with no assignment accepted for credit after its due date. Courseware on HTML was distributed to each student on a CD-ROM containing lessons,

assignments, and reference materials at the beginning of the study. All students met at the same time twice per week in a mass lecture with one of two lead instructors taking turns instructing them. Students submitted all their assignments online. Many problems experienced by students in absolute deadline group made findings in this group inconclusive, but research results indicated that conditional deadline was superior in reducing procrastination and enhancing memory, and there was no significant difference in participants' academic performance measured by a post-test, and course satisfaction.

Some other studies have revealed significant differences in student learning among groups treated with different deadline conditions. Ariely and Wertenbroch (2002) did a study in a semester-long executive-education course with 99 professionals participating in it. As required in the course, students need to write three short papers. Two sections of the course were randomly assigned to two treatments: fixed and evenly spaced deadlines (i.e., students must turn in a paper at the end of each third of the course) and self-imposed deadlines (i.e., students were provided detailed instructions to set their own deadlines at the beginning of the course.). Results revealed that students with fixed and evenly spaced deadlines achieved significantly higher grade points than those with self-imposed deadlines. In another study by Ariely and Wertenbroch, three types of deadline conditions were compared. A total of 60 students were recruited to proofread three texts with 100 deliberately planted grammatical and spelling errors in each text. Participants were randomly assigned to three experimental conditions: evenly spaced deadline condition (submit one proofread text every 7 days), the end-deadline condition (submit all three proofread texts at the end of 3 weeks), and the self-imposed-deadlines condition (set one's own deadline for each text within the 3 weeks of the study). As predicted, the task performance was best in the evenly-spaced-deadline condition, followed by the self-imposed-deadline condition, with the

lowest performance in the end-deadline condition. Different from other studies, these two studies evaluated students' task performance instead of exam performance.

Summary

The purpose of the study is to examine the effects of three typical deadline conditions on students of different academic procrastination levels in the measurement of their perceived learning, academic performance, and course satisfaction in an online course. A thorough review of the empirical studies on deadline conditions has been provided. Many studies have been conducted to examine the effects of various types of deadline conditions on students' learning and course satisfaction, but no consistent research findings have been reached. Among all the above mentioned studies, only one study was carried out with an online course. Moreover, none of the studies have taken students' procrastination into consideration and examined if there is an interaction between deadline conditions and students' procrastination levels. To make up the gap in the literature, this study appears to be extremely necessary.

CHAPTER THREE: METHODOLOGY

Chapter three describes the method that was used to address the research questions in this study in regard to the effects of three deadline conditions (i.e., frequent-instructor-set-deadline, flexible-instructor-set-deadline, and self-imposed-deadline conditions) on students' perceived learning, academic performance, and course satisfaction. This chapter consists of a description of research questions, subjects, course context, variables and measurements, interventions, research design, implementation procedures, and data analysis. The intent of this chapter is to provide readers with sufficient details to judge the capacity of the methodology to produce accurate results.

Research Questions

The current study was conducted to examine the effects of frequent-instructor-set-deadline, flexible-instructor-set-deadline, and self-imposed-deadline conditions and their interactions with students' procrastination levels. The following four research questions were developed for this study.

1. Is there a difference in academic performance between the procrastination groups (high, medium, and low), between the treatment groups (frequent-instructor-set-deadline condition, flexible-instructor-set-deadline condition, and self-imposed-deadline condition), and is there an interaction between procrastination and treatment group?

2. Is there a difference in perceived learning between the procrastination groups, between the treatment groups, and is there an interaction between procrastination and treatment group?
3. Is there a difference in course satisfaction between the procrastination groups, between the treatment groups, and is there an interaction between procrastination and treatment group?
4. What are students' attitudes toward frequent-instructor-set-deadline, flexible-instructor-set-deadline, and self-imposed-deadline conditions?

Subjects

Participants of this study were drawn from a population of undergraduate students enrolled in an online course titled *The New Horizon College English Viewing, Listening & Speaking* at Beijing University of Agriculture. This is a required English as a Foreign Language (EFL) course for all the non-English major undergraduate students in many universities in China. The students (n=183) for this study were from three classes (facilitated by the same instructor) and were invited on a voluntary basis to participate in the study in spring, 2010. A purposeful sample was selected from the population for this study in order to conduct in-depth examination based on characteristics of the research variables. Two extra points were added to the final score (100 being the full score) for participants who joined the study and completed the survey. Students in the same class all had the same major. A total of 173 students voluntarily participated in the study with 50 students majoring in Agriculture, 61 in International Trading, and 62 in Food Manufacturing. In total, 156 students responded to the survey, 172 students participated in

the post-test, and 155 students participated in both the survey and the post-test. In the end, 139 students' data were regarded as valid and used for data analysis. All the participants were freshmen. Among the 139 participants, two thirds of the students were female, and the majority of the students were from 18 to 20 years old.

Course Context

The New Horizon College English Viewing, Listening & Speaking is an English as a Foreign Language (EFL) course required for all the non-English major undergraduate students in many universities in China. Students need to take this course for four consecutive semesters from the first semester of their university study to earn two credits each semester. The difficulty of the course content increases gradually from semester to semester. The purpose of the course is to improve students' English listening and speaking abilities, and to get them ready for the College English Test Band 4 (CET-4). The CET-4 is a national EFL test in China, and is mandatory for university non-English major students. It is important for Chinese college students to pass the CET-4, because the CET-4 certificate is a prerequisite for a bachelor's degree.

The course is delivered through the Internet and allows students to progress at their own pace with some instructor-learner interactions and no peer-peer interactions. The instructor and the students interact through emails and bulletin boards within the online account. This study was conducted with students who were taking this course in their second semester, so it was titled *the New Horizon College English Viewing, Listening & Speaking 2*, which is 16-week long and consists of eight units with one unique topic for each unit. The following eight topics are covered:

1. Roll Over, Beethoven
2. What's On At That Theater?
3. Every Jack Has His Jill!
4. Be Aware Of Ads!
5. Does Your Best Friend Have Four Legs?
6. What's In Fashion?
7. Does Money Talk?
8. Crime Does Pay!

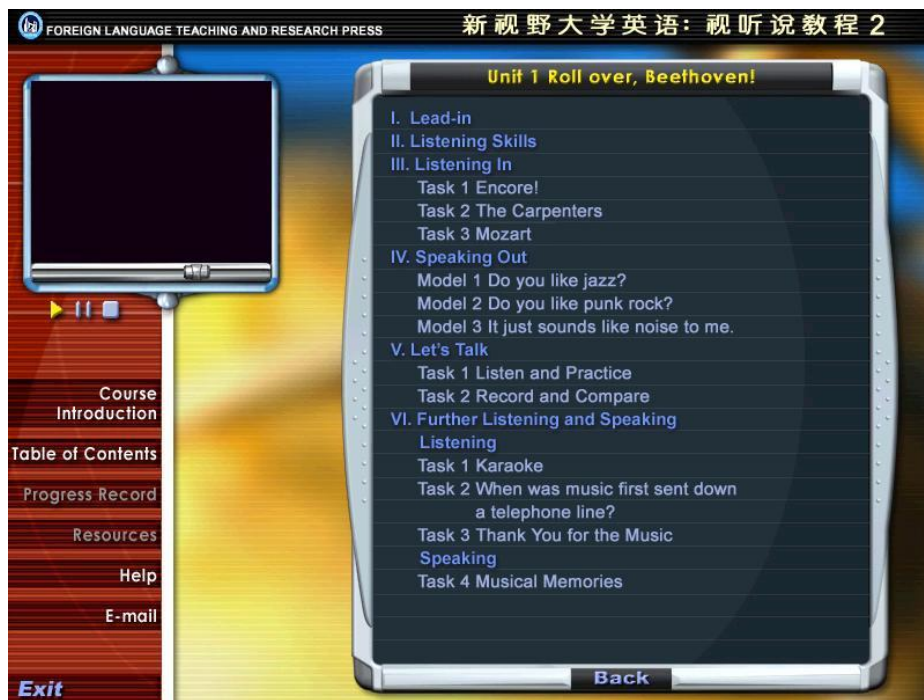


Figure 1: Example of Unit Structure

Note: Permission to use this picture was shown in Appendix J.

As displayed in Figure 1, each unit has six sections: “lead-in,” “listening skills,” “listening in,” “speaking out,” “let’s talk,” and “further listening and speaking.” The “lead-in” section presents students with three to four questions related to the unit topic to stimulate relevant prior knowledge. For example, if the unit topic is music, students need to answer questions like: “Do you like singing karaoke and why?” The “Listening Skills” section train students to master some specific listening skills in each unit such as listening to numbers. In the remaining four sections, students need to complete quite a few listening and speaking exercises. At the beginning of each section, cultural tips and word tips are listed in order to assist students’ understanding if necessary. Listening exercises are in the form of short conversation, long conversation, and short passage followed by several multiple-choice questions. Students can listen to the conversations and passages as many times as possible before submitting their final answers, which are graded automatically. The course management system keeps records of the time and date when the answer to each question is submitted. Speaking exercises usually include the following types: “read after the example,” “retell the main idea of the passage referring to the given key words.” Students need to record their answers to the exercises and then submit them to the instructor by email. The instructor graded the speaking exercises and provided feedback to students via email.

Students can get access to this online course through computers in the library and visual-audio classrooms, and their own computers. In this mandatory course, students will get an “F” and have to re-take the course in the next semester if they drop out of it. As long as the students complete over 70% of the assignments and participate in the final exam, they gain credit for completing the course.

Variables and Measuring Instruments

The independent variables in this study are “different deadline conditions” and “students’ procrastination tendencies.” The dependent variables are “perceived learning,” “academic performance,” and “course satisfaction.” One independent variable (students’ procrastination tendencies) and two dependent variables (perceived learning & course satisfaction) were measured by an online survey. Another dependent variable (academic performance) was measured by an English Listening and Speaking Test conducted one week after the end of the course.

Online Survey

The online survey is composed of three instruments: the Procrastination Scale developed by Tuckman (1991); the Perceived Learning Measurement adapted from other instruments; and the Course Satisfaction Scale adapted from Arbaugh and Duray’ satisfaction scale (2002). A total of 33 items make up this survey, which is provided in Appendix A and B. In addition to the items of the above three instruments, three open-ended questions were asked to get students’ opinions of the deadline conditions they encountered in this course. Another section of the survey has three questions regarding the ways of gaining access to this online course, the convenience of taking this online course, and the willingness to spend time on this course. In addition, two questions are included to obtain students’ demographic information such as gender and age. At the end of the survey, participants were asked to disclose their student number and name, so the researcher could match the survey results to the final test scores, and identify who completed the survey so as to reward the survey participants with extra points. Participants were

assured that their survey information would not be made known to their instructor, and that all the individual's information would be deleted as soon as the data was analyzed.

Procrastination Tendencies

Students' procrastination tendencies were measured with the Tuckman Procrastination Scale (TPS) (See Appendix A). Tuckman (1991) developed TPS to detect whether undergraduates tend to procrastinate at completing college requirements. Ferrari, Johnson, and McCown (1995, p. 54) stated, "This scale provides a general index of academic procrastination resulting from a student's ability to self-regulate or control task schedules." This 16-item scale is a general self-measurement of the tendencies to delay task initiation (e.g. "I postpone starting on things I don't like to do") or completion (e.g. "I needlessly delay finishing jobs, even when they're important"), as well as tendencies toward indecisiveness (e.g. "I delay making tough decisions") and poor time management in the completion of tasks (e.g. "I am a time waster now but I can't seem to do anything about it") (Tuckman, 1991). Students respond on a four-point Likert scale (i.e., 1=that's not me for sure, 2=that's not my tendency, 3=that is my tendency, 4=that's me for sure). The ratings were summed after appropriate reverse scoring, resulting in a total score ranging from 16 to 64, where higher scores indicated higher levels of procrastination.

The coefficient alpha of this instrument with the Tuckman's samples was 0.86 (n=50), 0.90 (n=183) (Ferrari et al., 1995), and 0.94 (n=219) (Jackson, Weiss, Lundquist, & Hooper, 2003). Validity evidence was provided by significant correlation between scale scores and a behavioral measure of procrastination (Howell et al., 2005; Tuckman, 1991). Students who scored higher on the Procrastination Scale were more likely to submit their assignments late than

those students who scored lower on the Procrastination Scale. After conducting factor analysis with an original longer scale, Tuckman (1991) obtained the 16-item one-dimensional scale, which accounted for 30% of the common variance.

Perceived Learning

Perceived learning is defined as “the self-evaluation by the participant as to the knowledge and skill acquired” (Johnson, Johnson, & Golden, 1996, p. 23). The instrument used to measure perceived learning is composed of four items adapted from Kuyath’s scale (2008). “This topic” in the original scale was changed to “English listening and speaking abilities.” A 7-point Likert scale ranging from “strongly agree” to “strongly disagree” was used. The ratings were summed resulting in a total score ranging from 4 to 28, where higher scores indicated more perceived learning. This scale was a reliable measure of student perceived learning in Kuyath’s study (2008) with a reported coefficient alpha of 0.92. All items were heavily loaded onto a single factor. Please refer to Appendix A for the entire scale.

Course Satisfaction

Another dependent variable in this study, students’ course satisfaction, was measured by a course satisfaction instrument adapted from Arbaugh and Duray’s (2002) scale of satisfaction with course experience. The original scale is composed of 12 items and a factor analysis revealed that all these items are loaded onto two factors: (1) satisfaction with the medium (eight items loading at 0.61 or higher; coefficient alpha=0.93); and (2) satisfaction with

the course (four items loading at 0.63 or higher; coefficient alpha=0.89). Only the four items loaded onto the second factor were used for the purpose of this study, because the researcher intended to measure students' satisfaction with the course in terms of student experience rather than with the medium of the course. These four items inquire about expectations and needs met, relative quality of the course, and the way the course works out. A 7-point Likert scale (i.e., 7=strongly agree to 1=strongly disagree) was adopted for students to respond. The word "MBA" was removed from the items in the instrument due to the nature of the subject in this study. Please refer to Appendix A for the entire scale.

Pilot Study

To ensure students have no difficulty understanding the survey directions and questions, the survey was translated to Chinese by the researcher and proofread by three Chinese native speakers who also have a good command of English. In order to test and further validate the survey instrument in Chinese, a pilot study was conducted in March, 2010, with 30 freshmen enrolled in a face-to-face English Intensive Reading class from college of Foreign Languages at Beijing University of Agriculture. After notifying students of the pilot study's purpose, a copy of the survey was handed out to each student who was willing to offer help. Students were asked to complete the survey and to make comments on the clarity of directions and statements, length of the survey, and structure of the survey. Participants could choose to provide feedback either by writing comments directly on the survey or by speaking out their comments on the spot.

The results of the pilot study indicated the length of the survey was appropriate and 10 minutes was sufficient to complete the survey. Based on students' feedback and comments,

question 22 was modified by changing “compared to my other courses” to “compared to my other English courses.” Some students commented that they had no idea how to answer question 26 and question 27, which were used to solicit students’ opinions of the deadline condition their instructor used in the course. To help students understand the questions better, the researcher made changes to these two questions as shown below:

Q26: What do you like best about the deadline condition used for this course? (Original)

What do you think are the advantages of the deadline conditions used for this course?

(Modified)

Q27: What do you like least about the deadline condition used for this course?

What do you think are the disadvantages of the deadline conditions used for this course?

(Modified)

Some students expressed they would not answer the survey faithfully because they were required to disclose their identity at the beginning. To diminish the side effects of identity exposure, participants’ names and student numbers were asked at the end of the survey, instead of at the beginning, and students were constrained so that they could not go back to the previous pages to change their answers.

Listening and Speaking Test

Academic performance was measured by a final listening and speaking test (See Appendix C for a sample of the test). Listening test was composed of three sections: dialogue, passage, and compound dictation. In the dialogue section there were eight short conversations and two long conversations. At the end of each conversation, one or more questions were asked

about what was said. In the passage section students listened to three passages and answered three to four questions at the end of each passage. All the conversations, passages, and the questions were spoken only once and students had to choose the best answer from the provided four choices. In the dictation section students listened to a short passage three times, and were required to fill in blanks with missing information. Right after the listening test, students proceeded to take the speaking test, which consisted of three parts: (a) read out a short paragraph; (b) read a short story and then retell it with provided key words; and (c) tell a story based on the provided pictures. The computer scored the listening test and the course instructor marked the speaking test according to rubrics.

Interventions

In the previous semester, the instructor provided students an assignment deadline for every two units, but there was no penalty for missing the deadlines, so students were actually allowed to progress in the course at their own pace. The interventions in this study were three deadline conditions: frequent-instructor-set-deadline condition, flexible-instructor-set-deadline condition, and self-imposed-deadline condition.

The frequent-instructor-set-deadline condition employed biweekly delivery of one learning unit. Under this condition, students had to turn in the assignments of each unit no later than the due date of each unit to avoid penalty. If students submitted assignments after the due date, but before the listed penalty due date, scores were reduced by 10% of the late assignments. No assignments were accepted after their respective penalty due dates.

In the flexible-instructor-set-deadline condition, an assignment deadline was assigned to each half of the course. In this 8-unit course, students were required to submit the assignments of the first four units before the first due date, and those of the rest four units before the second due date. No assignments were accepted after each due date. Students were also provided with the schedule of the class under frequent-instructor-set-deadline condition, and were encouraged to follow the schedule in order to spread out the time spent on the assignments.

The self-imposed-deadline condition allowed students to set assignment due dates independently at the beginning of the course. Four external constraints were set regarding the due dates: first, students had to pick assignment due dates from the provided dates, and should select at least two assignment due dates; second, students had to email the instructor their self-made schedules by 03/05/2010; third, the due dates were final and could not be changed; and fourth, the due dates were binding, so no late assignments would be accepted. Students were also encouraged to make small evenly-paced deadlines to curb procrastination and spread their time out on the assignments.

The frequent deadline condition has the advantage of helping curb students' procrastination; the flexible deadline condition provides students sufficient time to achieve mastery at their own pace, while at the same time, dealing with heavy school work; the self-imposed deadline condition offers students the opportunity to set their own deadlines catering to their busy schedules.

Research Design

This study is intended to explore the effects of procrastination tendencies and deadline conditions on “perceived learning,” “academic performance,” and “course satisfaction.” A 3 x 3 factorial quasi-experimental design was adopted to examine between subjects differences in deadline conditions (frequent-instructor-set-deadline condition, flexible-instructor-set-deadline condition, and self-imposed-deadline condition) and within subjects differences in perceived learning, academic performance, and course satisfaction among high, medium, and low procrastinators. Table 2 illustrates the design of the study.

Table 2: Design of the Study

Deadline conditions	Academic Procrastination		
	High procrastinator (HP)	Medium procrastinator (MP)	Low procrastinator (LP)
Frequent-instructor-set-deadline condition	HP in frequent-instructor-set-deadline condition	MP in frequent-instructor-set-deadline condition	LP in frequent-instructor-set-deadline condition
Flexible-instructor-set-deadline condition	HP in flexible-instructor-set-deadline condition	MP in flexible-instructor-set-deadline condition	LP in flexible-instructor-set-deadline condition
Self-imposed-deadline condition	HP in self-imposed-deadline condition	MP in self-imposed-deadline condition	LP in self-imposed-deadline condition

Implementation Procedures

This research study was reviewed and approved by the University of Central Florida Institutional Review Board (UCFRIB) (See Appendix D). Permission to conduct this research in an online listening and speaking course in Beijing Agriculture University was obtained from Yan Xin, the online instructor (See Appendix E). This study was carried out from March 2010 to June 2010, and lasted for 16 weeks.

On the first day of the semester (03/01/2010), the instructor sent students an email with a consent form (See Appendix F and G) in the attachment to introduce them to this research study. Students replied to the instructor no later than 03/03/2010 if they decided to take part in the study. Participants who completed the survey received two extra credits added to their final scores in this course. Those who declined to join the study kept their original deadline condition (one deadline for every two units). Then, the three classes used for this study were randomly assigned to the three deadline conditions by the researcher and students in each class then went through the course with that particular condition. Participants in the frequent deadline condition group had to adhere to the provided frequent-instructor-set-deadline schedule. Participants in flexible deadline condition could go through the course at their own pace as long as they submitted the assignments of the first half of the course before the middle of the semester, and complete the assignments of the second half of the course before the end of the course. Participants in the self-imposed deadline condition group were free to choose assignment due dates from the provided dates independently. After a random assignment, participants in each class were sent an email with details about the deadline condition that they would follow throughout course (See Appendix H and I for email details).

The researcher made records of student assignment completion, including the dates when each student submitted their last assignment of each unit, the number of completed assignments of each unit, and the scores earned for each unit. The scores students earned on the listening and speaking exercises in each unit accounted for 20% of their final course score.

An online survey was administered to participants from week 14 to 16 by the researcher. The researcher posted a notice with the survey link on the homepage of the course. Students had three weeks to respond to the survey.

A final listening and speaking test, proctored by the instructor, was conducted one week after the end of the course in a visual-audio classroom. Performance on the final examination accounted for 80% of students' course score.

Data Analysis

Once data was collected, it was statistically analyzed with SPSS 16.0 for Windows. Inter-item correlation and factor analysis (maximum Likelihood) were conducted to examine the construct validity of the three scales. Inter-item correlations was used to test whether items in a scale measure the same underlying construct by determining the correlation coefficient between each pair of variables in a correlation matrix. Factor analysis was adopted to provide evidence of the number of underlying factors that each scale measured. Cronbach alpha was run to establish the internal consistency of the three scales. Descriptive statistics and Chi-Square test were performed to analyze the demographic information and study factors to increase an understanding of the participants in the present study. One-way ANOVA was conducted to examine students' entrance level to ensure participants in the three treatment groups had similar

English listening and speaking abilities. Two-way ANOVA was used to answer the first three research questions presented at the beginning of this chapter. For all statistical analysis, alpha was set at .05. In addition, students' responses to the open-ended questions, regarding their attitudes toward different deadline conditions, were analyzed with qualitative data analysis methods.

CHAPTER FOUR: RESULTS

The purpose of the study was to investigate the effects of three deadline conditions (i.e. frequent-instructor-set-deadline condition, flexible-instructor-set-deadline condition, and self-imposed-deadline condition) on students of different procrastination levels (high, medium, and low). A 3 x 3 factorial quasi-experimental design was adopted for this study. The following four research questions were developed to answer:

1. Is there a difference in academic performance between the procrastination groups (high, medium, and low), between the treatment groups (frequent-instructor-set-deadline condition, flexible-instructor-set-deadline condition, and self-imposed-deadline condition), and is there an interaction between procrastination and treatment group?
2. Is there a difference in perceived learning between the procrastination groups, between the treatment groups, and is there an interaction between procrastination and treatment group?
3. Is there a difference in course satisfaction between the procrastination groups, between the treatment groups, and is there an interaction between procrastination and treatment group?
4. What are students' attitudes toward the three deadline conditions?

Questions 1, 2, and 3 were answered with two-way ANOVA and question 4 was answered with qualitative data analysis.

Research results are organized in three sections. Section one reports the descriptive statistics of participants and compares the demographic information, study factors, and entrance

level across the three treatment groups. Section two presents the reliability and validity of the survey. Section three focuses on reporting the results of the four research questions.

Description of Participants

Among the 173 participants in the study, a total of 156 students responded to the survey with a response rate of nearly 90% and 172 students participated in the post-test. In total, 155 students participated in both the survey and the post-test. After examining students' assignment completion record, 7 of the 155 students were excluded from data analysis, due to over 30% of uncompleted assignments prior to the deadlines. Another nine students were also taken out of the data because they didn't provide their identity at the end of the survey and it was impossible to match their survey data with their final test scores. In the end, 139 students' survey responses and post-test scores were put into SPSS for data analysis. Of the 139 students, 45 students who were majoring in International Trading were treated with frequent instructor-set deadline condition (referred as Group 1 in the following description); fifty-three students who were majoring in Food Manufacturing were treated with flexible instructor-set deadline condition (referred as Group 2); forty-one students who were majoring in Agriculture were treated with self-imposed deadline condition (referred as Group 3). Before conducting data analysis to answer the research questions, the researcher did a preliminary analysis to check if participants' demographic information, entrance level, and study factors in the three treatment groups were similar.

Demographic Information

A chi square test of independence was conducted to evaluate whether the demographic information, including gender and age, was similar among the three treatment groups.

Table 3: Gender

Gender	Group 1		Group 2		Group 3		Total	
	Count	Group %	Count	Group %	Count	Group %	Count	Group %
Male	16	35.6%	15	28.3%	16	39.0%	47	33.8%
Female	29	64.4%	38	71.7%	25	61.0%	92	66.2%
Total	45		53		41		139	

Notes: a. Group 1 was treated with frequent instructor-set deadlines; Group 2 was treated with flexible instructor-set deadlines; and Group 3 was treated with self-imposed deadlines. b. Group % refers to percent within group.

As shown in Table 3, the majority of the participants were females. Overall, 92 students (66.2%) were females and 47 (33.8%) were males. The number of female participants was almost twice of the male participants.

Table 4: Chi-Square Tests of Gender

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	1.278	2	.528
Likelihood Ratio	1.288	2	.525
Linear-by-Linear Association	.094	1	.759
N of Valid Cases	139		

Table 4 indicated that there was no significant difference in gender distribution among the three groups, Pearson $\chi^2(2, N = 139) = 1.28, p = .528$.

Table 5: Age

Age	Group 1		Group 2		Group 3		Total	
	Count	Group %	Count	Group %	Count	Group %	Count	Group %
18 - 20	40	88.9%	40	75.5%	31	75.6%	111	79.9%
> 20	5	11.1%	13	24.5%	10	24.4%	28	20.1%
Total	45		53		41		139	

Notes: a. Group 1 was treated with frequent instructor-set deadlines; Group 2 was treated with flexible instructor-set deadlines; and Group 3 was treated with self-imposed deadlines. b. Group % refers to percent within group.

As show in Table 5, among the 139 participants, the majority of them (79.9%) were between 18 to 20 years old, and only 20.1% of students were over 20 years old. None of them were below 18 years old.

Table 6: Chi-Square Tests of Age

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	3.375	2	.185
Likelihood Ratio	3.664	2	.160
Linear-by-Linear Association	2.422	1	.120
N of Valid Cases	139		

Table 6 provided evidence that there was no significant difference between the three groups by age, Pearson $\chi^2(2, N = 139) = 3.38, p = .185$.

Study Factors

To investigate where students usually studied this course, a multiple-choice-multiple-answer question was asked, and students were able pick all the answers that may apply.

Students' responses were summarized in Table 7, which indicated that the most common place for students to access this course was visual-audio classroom followed by dormitory, home, and library respectively.

Table 7: Course Access

Course Access	Group 1		Group 2		Group 3		Total	
	Count	Group %	Count	Group %	Count	Group %	Count	Group %
Home	12	26.7%	17	32.1%	5	12.2%	34	24.5%
Dormitory	14	31.1%	22	41.5%	16	39.0%	52	37.4%
Library	6	13.3%	6	11.3%	2	4.9%	14	10.1%
Visual-audio classroom	38	84.4%	51	96.2%	33	80.5%	122	87.8%
Total Students	45		53		41		139	

Notes: a. Group 1 was treated with frequent instructor-set deadlines; Group 2 was treated with flexible instructor-set deadlines; and Group 3 was treated with self-imposed deadlines. b. "Group %" refers to percent within group. c. "Total students" stands for the total number of students in each group.

Students were further asked how convenient it was for them to access this online course. Based on the responses summarized in Table 8, the majority of students (85.5%) considered it was convenient to access this online course with 24.6% of them feeling very convenient and 69.9% feeling somewhat convenient; however, there were still 14.4% of students considering it was somewhat or very inconvenient to take this online course.

Table 8: Convenience

Convenience	Group 1		Group 2		Group 3		Total	
	Count	Group %	Count	Group %	Count	Group %	Count	Group %
very convenient	10	22.7%	13	24.5%	11	26.8%	34	24.6%
somewhat convenient	27	61.4%	33	62.3%	24	58.5%	84	60.9%
somewhat inconvenient	6	13.6%	6	11.3%	2	4.9%	14	10.1%
very inconvenient	1	2.3%	1	1.9%	4	9.8%	6	4.3%
Total	44		53		41		138	

Note: a. Group 1 was treated with frequent instructor-set deadlines; Group 2 was treated with flexible instructor-set deadlines; and Group 3 was treated with self-imposed deadlines. b. “Group %” refers to percent within group.

Table 9 indicated that there was no significant difference in students’ convenience of course access among the three groups, Pearson $\chi^2(6, N = 138) = 5.86, p = .44$.

Table 9: Chi-Square Tests of Convenience

	Value	df	Asymp.Sig. (2-sided)
Pearson Chi-Square	5.855	6	.440
Likelihood Ratio	5.636	6	.465
Linear-by-Linear Association	.015	1	.901
N of Valid Cases	138		

When asked about their willingness to spend time on this course, 33.8% of students were very willing, 52.5% of them were somewhat willing, 11.5% of them were somewhat unwilling, and only 2.2% of them were very unwilling to spend time on this course (See Table 10).

Table 10: Willingness

Willingness	Group 1		Group 2		Group 3		Total	
	Count	Group %	Count	Group %	Count	Group %	Count	Group %
very willing	20	44.4%	16	30.2%	11	26.8%	47	33.8%
somewhat willing	19	42.2%	28	52.8%	26	63.4%	73	52.5%
somewhat unwilling	6	13.3%	8	15.1%	2	4.9%	16	11.5%
very unwilling	0	.0%	1	1.9%	2	4.9%	3	2.2%
Total	45		53		41		139	

Notes: a. Group 1 was treated with frequent instructor-set deadlines; Group 2 was treated with flexible instructor-set deadlines; and Group 3 was treated with self-imposed deadlines. b. "Group %" refers to percent within group.

Table 11 provided evidence that there was no significant difference between the three groups in students' willingness to spend time on the course, Pearson $\chi^2(6, N = 139) = 8.82, p = .184$.

Table 11: Chi-Square Test of Willingness

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	8.820	6	.184
Likelihood Ratio	9.721	6	.137
Linear-by-Linear Association	1.563	1	.211
N of Valid Cases	139		

Entrance Level

Their listening and speaking test scores of the previous semester were used to evaluate students' entrance level of the three groups. The researcher obtained their scores from the

instructor and ran a one-way ANOVA analysis. Table 12 indicated that students in Group 2 had the highest score (M=62.33) followed by Group 3 (M=62.23) and Group 1 (M=61.71).

Table 12: Descriptive Statistics of Students' Listening and Speaking Scores Prior to the Treatment

	<i>Group</i>			
	<i>1</i>	<i>2</i>	<i>3</i>	<i>Total</i>
Mean	61.713	62.331	62.230	62.084
Std. Deviation	15.7097	15.9026	13.7634	15.1599
N	61	62	50	173

Note: Group 1 was treated with frequent instructor-set deadlines; Group 2 was treated with flexible instructor-set deadlines; and Group 3 was treated with self-imposed deadlines.

There was no statistical significant difference ($F_{2,170}=.028, p=.972>.05$) in scores among the three groups as shown in Table 13, which indicated that students' entrance levels were similar in terms of their listening and speaking abilities.

Table 13: ANOVA Summary Table of Students' Listening and Speaking Scores Prior to the Treatment

Source	Type III Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared
Group	13.228	2	6.614	.028	.972	.000
Error	39516.306	170	232.449			
Total	508830.750	173				
Corrected Total	39529.535	172				

Reliability and Validity of the Survey

Internal consistency reliability analysis was conducted with the three scales used to measure students' academic procrastination, perceived learning, and course satisfaction. Table 14 displayed the analysis results. The Cronbach alpha of the three scales ranged from .84 to .90, which implied that all the three scales were sufficiently reliable.

Table 14: Cronbach Alpha Summary

Scales	Cronbach Alpha
Tuckman Procrastination Scale	.86
Perceived Learning Scale	.90
Course Satisfaction Scale	.84

An exploratory factor analysis was also conducted with the three scales to ensure their construct validity. Sixteen items in the Tuckman procrastination scale were all loaded to one factor, accounting for 47.69% of the common variance. All the items in the perceived learning scale were heavily loaded onto one factor, accounting for 71.86% of the common variance. Four items in the course satisfaction scale were also highly loaded onto one factor, accounting for 59.60% of the common variance.

Research Question One

Is there a difference in academic performance between the procrastination groups (high, medium, and low), between the treatment groups (frequent-instructor-set-deadline condition,

flexible-instructor-set-deadline condition, and self-imposed-deadline condition), and is there an interaction between procrastination and treatment group?

A 16-item Tuckman Procrastination Scale was used to measure students' academic procrastination. Students' responses to each item were summed, ranging from 16 to 64, where higher scores indicated higher levels of procrastination. Results in Table 15 showed that students' actual scores ranged from 21 to 59 with a mean of 35.92 (SD=6.70).

Table 15: Descriptive Statistics of Procrastination

	Minimum	Maximum	Mean	Std. Deviation
Academic Procrastination	21	59	35.92	6.696

Note: A total of 131 out of 139 students completed this procrastination scale.

A tertile split was used to classify students into low (21-33), medium (34-38), and high (39-59) procrastinators with 43 students being identified as low procrastinators, 45 as medium procrastinators, and 43 as high procrastinators (See Table 16).

Table 16: The Distribution of Procrastinators in the Three Groups

Procrastination levels	Group			Total
	1	2	3	
low	13	17	13	43
medium	16	17	12	45
high	12	19	12	43
Total	41	53	37	131

Note: Group 1 was treated with frequent instructor-set deadlines; Group 2 was treated with flexible instructor-set deadlines; and Group 3 was treated with self-imposed deadlines.

Two-way ANOVA was used to explore the impact of procrastination and different deadline conditions on academic performance measured by a listening and speaking test conducted one week after the end of the semester. Results in Table 17 indicated there was no significant difference ($F_{2,121}=.106$, $p=.899$) in academic performance among students of different procrastination levels.

Table 17: Two Way ANOVA Summary Table of Academic Performance

Source	Type III Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared
Procrastination	40.082	2	20.041	.106	.899	.002
Group	1766.573	2	883.286	4.689	.011	.072
Procrastination * Group	620.681	4	155.170	.824	.513	.027
Error	22793.718	121	188.378			
Total	710463.25	130				
Corrected Total	25191.848	129				

Note: A total of 130 out of 139 students completed procrastination scale and attended the final listening and speaking test.

As shown in Table 18, low procrastinators ($M=72.71$) had slightly higher mean score than medium ($M=72.64$) and high procrastinators ($M=72.45$).

Table 18: Descriptive Statistics of Academic Performance among Students of Different Procrastination Levels

Procrastination Level	Mean	Std. Deviation	N
Low	72.71	13.73	42
Medium	72.64	14.10	45
High	72.45	14.40	43
Total	72.60	13.97	130

As shown in Table 17, there was a significant difference ($F_{2,121}=4.69$, $p=.011<.05$) in academic performance among the three treatment groups. Treatment of different deadline conditions accounted for about 7% of the variance in academic performance, so its effect size was moderate according to Cohen's convention (1988).

To further explore how the three treatment groups differed from each other in academic performance, a post hoc test using Scheffe was conducted. Table 19 showed that Group 2 ($M=76.62$) treated with flexible instructor-set deadlines obtained the highest mean score followed by Group 1 ($M=71.81$) and Group 3 ($M=67.70$). Group 2 had significantly higher mean score than Group 3. There was no significant difference in the test mean scores between other groups.

Table 19: Post Hoc Test of Academic Performance between Treatment Groups

(I) Group	(J) Group	Mean Difference (I-J)	Sig.
1 (M=71.81)	2	-4.810	.251
	3	4.110	.425
2 (M=76.62)	1	4.810	.251
	3	8.920(*)	.012
3 (M=67.70)	1	-4.110	.425
	2	-8.920(*)	.012

Notes: a. Group 1 was treated with frequent instructor-set deadlines; Group 2 was treated with flexible instructor-set deadlines; and Group 3 was treated with self-imposed deadlines. b.*The mean difference is significant at the .05 level.

There was no significant interaction effect ($F_{4,121}=.824$, $p=.513$) between procrastination and treatments of deadline conditions on academic performance (See Table 17).

Research Question Two

Is there a difference in perceived learning between the procrastination groups, between the treatment groups, and is there an interaction between procrastination and treatment group?

Two-way ANOVA was performed to explore the impact of procrastination and different deadline conditions on perceived learning, which was measured by a 4-item scale adapted from the literature. The sum of the responses to the four items could range from 4 to 28 with higher scores representing higher perceived learning. As shown in Table 20, there was a significant difference ($F_{2,120}=8.93$, $p<.01$) in perceived learning among students of different procrastination levels. Procrastination can account for almost 13% of the variance in perceived learning, so its effect size was between medium to large according to Cohen's convention (1988).

Table 20: Two Way ANOVA Summary Table of Perceived Learning

Source	Type III Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared
Procrastination Group	281.404	2	140.702	8.926	.000	.129
Procrastination* Group	53.674	2	26.837	1.702	.187	.028
Error	51.690	4	12.922	.820	.515	.027
Total	1891.652	120	15.764			
Corrected Total	42375.000	129				
	2324.388	128				

Note: A total of 129 out of 139 students completed both procrastination scale and perceived learning scale.

To further explore how students of different procrastination levels differed from each other in perceived learning, a post hoc test using Tukey was conducted. Table 21 showed that the mean scores for low procrastinators ($M=19.16$) and medium procrastinators ($M=18.28$) were

significantly higher than that of high procrastinators ($M=15.42$), however, low procrastinators did not differ significantly from medium procrastinators in perceived learning.

Table 21: Post Hoc Test of Perceived Learning between Students of All Procrastination Levels

(I) Procrastination Levels	(J) Procrastination Levels	Mean Difference (I-J)	Sig.
low procrastinator ($M=19.16$)	medium procrastinator	.88	.588
	high procrastinator	3.74(*)	.000
medium procrastinator ($M=18.28$)	low procrastinator	-.88	.588
	high procrastinator	2.86(*)	.003
high procrastinator ($M=15.42$)	low procrastinator	-3.74(*)	.000
	medium procrastinator	-2.86(*)	.003

Note: * The mean difference is significant at the .05 level.

Results in Table 20 indicated there was no significant difference ($F_{2,120}=1.70$, $p=.187$) in perceived learning among groups treated with different deadline conditions, although Group 1 ($M=18.65$) had higher mean score than Group 2 ($M=17.11$) and Group 3 ($M=17.22$) as shown in Table 22. In addition, there was no significant interaction effect ($F_{4,120}=.82$, $p=.515$) between procrastination and treatments of deadline conditions on perceived learning (See Table 20).

Table 22: Descriptive Statistics of Perceived Learning among Treatment Groups

Group	Mean	Std. Deviation	N
1	18.65	3.386	40
2	17.11	4.140	53
3	17.22	5.139	36
Total	17.62	4.261	129

Note: Group 1 was treated with frequent instructor-set deadlines; Group 2 was treated with flexible instructor-set deadlines; and Group 3 was treated with self-imposed deadlines.

Research Question Three

Is there a difference in course satisfaction between the procrastination groups, between the treatment groups, and is there an interaction between procrastination and treatment group?

Two-way ANOVA was also performed to explore the impact of procrastination and different deadline conditions on course satisfaction, which was measured by a 4-item instrument adapted from Arbaugh’s (2002) scale of satisfaction with course experience. The sum of the responses to the four items could range from 4 to 28 with higher scores representing higher course satisfaction. As shown in Table 23, there was a significant difference ($F_{2,117}=4.11, p<.05$) in course satisfaction among students of different procrastination levels. Procrastination can account for almost 6.6% of the variance in course satisfaction, so its effect size was moderate according to Cohen’s convention (1988).

Table 23: Two Way ANOVA Summary Table of Course Satisfaction

Source	Type III Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared
Procrastination	123.621	2	61.810	4.109	.019	.066
Group	14.432	2	7.216	.480	.620	.008
Procrastination *	10.343	4	2.586	.172	.952	.006
Group						
Error	1760.148	117	15.044			
Total	45419.000	126				
Corrected Total	1924.706	125				

Note: A total of 126 out of 139 students completed both procrastination scale and course satisfaction scale.

To further explore how students of different procrastination levels differed from each other in course satisfaction, a post hoc test using Scheffe was conducted. Table 24 showed that the mean scores for low procrastinators (M=19.48) and medium procrastinators (M=19.18) were significantly higher than that of high procrastinators (M=17.10), however, low procrastinators did not differ significantly from medium procrastinators in course satisfaction.

Table 24: Post Hoc Test of Course Satisfaction between Students of All Procrastination Levels

(I) Procrastination Levels	(J) Procrastination Levels	Mean Difference (I-J)	Sig.
low procrastinator (M=19.48)	medium procrastinator	.29	.942
	high procrastinator	2.38(*)	.024
medium procrastinator (M=19.18)	low procrastinator	-.29	.942
	high procrastinator	2.09(*)	.048
high procrastinator (M=17.10)	low procrastinator	-2.38(*)	.024
	medium procrastinator	-2.09(*)	.048

Note: * The mean difference is significant at the .05 level.

Table 23 indicated there was no significant difference ($F_{2, 117}=.48, p=.62$) in course satisfaction among groups treated with different deadline condition, although Group 1 ($M=19.12$) had higher mean score than Group 2 ($M=18.30$) and Group 3 ($M=18.36$) as shown in Table 25. In addition, there was no significant interaction effect ($F_{4, 117}=.172, p=.952$) between procrastination and treatments of different deadline conditions on course satisfaction (See Table 23).

Table 25: Descriptive Statistics of Course Satisfaction among Treatment Groups

Group	Mean	Std. Deviation	N
1	19.12	3.963	40
2	18.30	3.845	50
3	18.36	4.037	36
Total	18.58	3.924	126

Note: Group 1 was treated with frequent instructor-set deadlines; Group 2 was treated with flexible instructor-set deadlines; and Group 3 was treated with self-imposed deadlines.

Research Question Four

What are students' attitudes toward frequent-instructor-set-deadline, flexible-instructor-set-deadline, and self-imposed-deadline conditions?

To investigate students' attitudes toward the three deadline conditions of this study, the following three questions were asked in the survey:

1. What do you think the advantages of the deadline conditions used for this course are?
2. What do you think the disadvantages of the deadline conditions used for this course are?
3. Do you hope the instructor to keep the same deadline condition for this course next semester? If not, how would you like the instructor to set the assignment deadline for you?

Frequent-Instructor-Set-Deadline Condition

Advantages

Under the frequent-instructor-set-deadline condition, there was a due date and penalty due date set for the assignments of each unit. Students were required to turn in the assignments of each unit no later than the corresponding due date to avoid penalty and were allowed to turn in assignments after the due date and before the penalty due date with scores being deducted, but no assignment was accepted after the penalty due date.

The most frequently mentioned advantage of this deadline condition was that it can urge students to complete assignments and prevent procrastination by imposing some pressure on students, so a good study progress was ensured and no heavy burden was caused at the end of the semester. Students expressed that this deadline condition prompted them to “practice their English listening and speaking regularly” and to “make reasonable time arrangements” to avoid stacking assignments. Two students mentioned that this advantage was especially true for those who liked to procrastinate and didn’t like to study. One student stated, “I didn’t like to study. The frequent deadlines urged me to spend some time on study and can help me to catch up with others. It was really beneficial to me.”

Another advantage stated by students was that the frequent deadlines can remind them of doing assignments and thus they can turn in assignments before deadlines most of the time.

Disadvantages

A majority of students experiencing the frequent deadline condition articulated that the schedule was “somewhat tight” and there were “too many deadlines.” Students expressed their concern that the tight schedule may affect the quality of assignment completion. One student stated, “Sometimes there wasn’t enough time, so I just did the assignments in a careless and neglectful manner.” Another student mentioned, “I muddled through the assignments only for the purpose of completing them with a tight schedule.”

The frequent instructor-set deadlines made students feel passive and controlled. In addition, students could not get scores when they had an emergency, which caused them to miss the deadline. Students pointed out that the punishment for missing the deadline was too harsh. Another disadvantage mentioned by several students was related to the date of the assignment deadline. As “there were many classes on Monday” and students usually “would have fun instead of doing assignments at weekends,” setting the deadline on Monday was not suitable.

In summary, the advantages and disadvantages of the frequent deadline condition mentioned by the students are listed below:

Advantages

1. Frequent deadlines can urge students to complete assignments, prevent procrastination and spread time on assignments.
2. Deadlines were not as forgettable as those in other deadline conditions.

Disadvantages

1. The deadlines were too frequent and the schedule was somewhat tight.
2. Students felt passive and controlled.

3. The strict deadlines made students lose scores if they had an emergency.
4. The punishment for missing the deadline was too harsh.
5. The deadlines were set on Mondays when there were a lot of classes.

When students were asked if they would like the instructor to keep the same deadline condition for this course next semester, all students expressed their expectation that they wanted the instructor to continue with this deadline condition. Some suggestions were also brought forward by students for the instructor to make some improvements with this deadline condition: (a) deal with the situation accordingly if students missed a deadline; (b) make the deadline on Friday instead of Monday; c) remind students of the approaching deadline.

Flexible-Instructor-Set-Deadline Condition

Advantages

The flexible-instructor-set-deadline condition allowed students to turn in the assignments from the first half of the course before a deadline in the middle of the term and the remaining half of the assignments before a deadline at the end of the term. One of the advantages of this deadline condition mentioned by students was that it provided sufficient time to complete assignments. A student stated, "With sufficient time, I didn't do the assignments in a perfunctory manner and can do the assignments with more patience, so assignments can be completed better."

Another advantage was the flexibility and freedom students had to manage their own time. The typical statements related to this advantage included, "Under this type of deadline

condition, we had more freedom. It provided us much space to arrange our own learning time. Time was more flexible and we can manage time by ourselves.” While providing students with much freedom to manage their own study time, this deadline condition had two strict assignment deadlines. Students felt the two strict assignment deadlines urged them to “complete assignments on time” and prevented them from “procrastinating too much.” Students enjoyed both having the freedom of managing their own time and being spurred by the two strict deadlines. One student stated, “Under this deadline condition, we didn’t feel the pressure from the instructor. The middle-term deadline prevented us from procrastinating.”

Moreover, this deadline condition could help cultivate students’ capability of time management. Students expressed that this deadline condition made them be more capable of managing time, enhanced self-directed learning ability, and helped them to form the habit of completing tasks within a given time. In addition, students expressed this deadline condition boosted their enthusiasm and self-initiative for learning. One student stated, “With this deadline condition, I felt more willing to complete assignments.” Another student mentioned, “It enabled us, especially those who didn’t like to study English, to complete assignments on our own initiative.”

Disadvantages

Under this deadline condition, there was only one deadline imposed for the assignments of every four units. Students pointed out that the interval was too long, and sometimes they would “forget the deadline” or “forget to do the assignments.” One student stated, “The interval was so long that sometimes I forgot to do the assignments. When I thought of the deadline, only

a few days were left and then I just paltered with the assignments.” Another relevant disadvantage mentioned by students was that there was “no regular reminder of the deadline” and “once the deadline was missed, there was no way to make it up.”

One disadvantage pointed out by students was that this deadline condition might result in more procrastination. One student stated, “With this deadline condition, it was easy to procrastinate, and I sometimes completed all the assignments at the last minute before the deadline.” Several students further stated that this deadline condition was not good for “procrastinators” or “lazy students” because they “would postpone doing assignments till the last minute before the deadline and would do the assignments in a careless manner.” The last disadvantage mentioned by students was that students’ problems cannot be solved timely.

In summary, the advantages and disadvantages of the flexible deadline condition mentioned by the students are listed below:

Advantages:

1. Students had sufficient time to complete assignments.
2. Time was flexible and students can manage their own time.
3. Students were prevented from procrastinating too much.
4. This deadline condition cultivated students’ capability to manage time and enhance students’ self-directed learning ability.
5. This deadline condition boosted students’ enthusiasm and self-initiative for learning.

Disadvantages:

1. The interval was so long that students sometimes forgot the deadline.
2. There was no regular reminder of the deadline and no opportunity to make up for the missed deadline.

3. This deadline condition may cause more procrastination.
4. Students' problems cannot be solved timely.

When students were asked if they would like the instructor to keep the same deadline condition for this course next semester, the majority of them expressed their expectation for the instructor to continue with this deadline condition. Only a few students expected the instructor to make some changes. Three students expressed their preference for self-imposed deadlines; six students preferred to have a deadline for the assignments of every unit; two students made a suggestion of submitting assignments every two to three units.

Self-Imposed-Deadline Condition

Advantages

The self-imposed-deadline condition allowed students to set assignment deadlines in terms of four external constraints. One advantage students identified with this deadline condition was that they could “manage their own time” and “set deadlines according to their own ability and schedule,” and thus students wouldn't feel “hasty” and wouldn't “complete the assignments cursorily.” One student stated, “I can choose deadlines catering to my own schedule, so it wouldn't happen that I didn't complete the assignments because of insufficient time.”

Students expressed their favor of the independence brought out by this deadline condition. Because the assignment due dates were selected by students themselves, they tended to complete assignments with a more positive attitude. Just as one student stated, “I set the

deadlines by myself, so I would surely keep them. I don't like to be forced to complete assignments by the instructor.”

In addition, this deadline condition could cultivate students’ “self-directed learning ability” and increased their “learning initiative.” One student stated, “Setting deadlines by myself made me complete assignments carefully on my own initiative.” Another student mentioned, “I set my own assignment deadlines and then followed them, which enhanced my self-regulated learning ability.”

Disadvantages

Under the self-imposed-deadline condition, some students realized that they didn’t “set the deadlines properly” and thus the assignments were not completed with good quality. One student stated, “I set very ambitious deadlines and planned to complete all the assignments before the middle of the term, however, I could not complete most of the assignments before the deadlines.” Another student mentioned, “I was very lazy and chose the two deadlines close to the end of the term. I didn’t start working on the assignments until the last moment, so I didn’t feel it was good for my study.”

Several students also pointed out that the deadlines were “easily forgotten.” One student mentioned that he always forgot the deadlines at the beginning. Another student stated that he could not remember the “irregular” deadlines set by himself. In addition, students’ study enthusiasm was somewhat affected by the fact that the deadlines were different from student to student and nobody reminded them of the upcoming deadline set by themselves.

In summary, the advantages and disadvantages of the self-imposed deadline condition mentioned by the students are listed below:

Advantages:

1. Students can set deadlines according to their own ability and schedule.
2. Students felt more independent.
3. Students' self-directed learning ability was cultivated and learning initiative was enhanced.

Disadvantages

1. Deadlines were not set properly by some students, which may affect the quality of assignment completion.
2. Students tended to forget the deadlines and their study enthusiasm diminished.

In spite of the disadvantages, all but four students expressed their expectation that the instructor would continue to use this deadline condition. The dissenting four preferred one deadline for every unit.

Summary

This chapter presents the research findings of this study: (a) the three treatment groups differed significantly in academic performance, but not in perceived learning and course satisfaction; (b) students of different procrastination levels differed significantly in perceived learning and course satisfaction, but not in academic performance; (c) no interaction effects were found between the deadline conditions and procrastination levels on any of the three dependent

variables; (d) the advantages and disadvantages expressed by students varied from deadline condition to deadline condition. These research findings will be discussed in the next chapter.

CHAPTER FIVE: DISCUSSION, RECOMMENDATION, AND CONCLUSION

This study was designed to investigate the effects of three deadline conditions (i.e., frequent-instructor-set-deadline condition, flexible-instructor-set-deadline condition, and self-imposed-deadline condition) on students of different academic procrastination levels in terms of their academic performance, perceived learning, and course satisfaction in an online English as a Foreign Language (EFL) course. In addition, students' attitudes toward the three deadline conditions were explored as well. In the previous chapter, research results of the four research questions were presented in detail. In this chapter, discussion of the research findings related to each research question, implications for practice, recommendations for future research, and a conclusion will be covered.

Research Question One

Is there a difference in academic performance between the procrastination groups (high, medium, and low), between the treatment groups (frequent-instructor-set-deadline condition, flexible-instructor-set-deadline condition, and self-imposed-deadline condition), and is there an interaction between procrastination and treatment group?

Academic Performance and Procrastination

Research results indicated that there was no significant difference in academic performance among students of different procrastination levels, although low procrastinators

(M=72.71) have slightly higher mean score than medium (M=72.64) and high procrastinators (M=72.45). One possible reason may be related to the measurement method of academic performance. In this study, academic performance was measured by a final listening and speaking exam. The results were consistent with some other studies, which also adopted the measurement of performance with one single exam or test (Elvers et al., 2003; Moon & Illingworth, 2005; Morales, 2007; Pychyl et al, 2000), however, many other studies (Akinsola et al., 2007; Fritzsche, 2003; Rothblum, 1986; Tuckman, 2002; Wesley, 1994), which used some measurements of the cumulative performance, such as GPA and course grades, revealed a significant inverse correlation between procrastination and academic performance.

This non-significant relationship between procrastination and academic performance can also be accounted for by the adaptive roles played by procrastination. Although most researchers (e.g., Haycock, et al., 1998; Tice & Baumeister, 1997) have described procrastination in a negative light, a few studies mentioned its adaptive characteristics, including cognitive efficiency and peak experience. Cognitive efficiency is defined as “maximizing learning in a minimal amount of time” (Schraw, Wadkins, & Olafson, 2007, p. 18). Vacha and McBride (1993) indicated that procrastinators, who were more likely to cram, outperformed non procrastinators by using more study strategies to achieve maximum efficiency. Participants in the study by Schraw et al. reported that procrastinators achieved cognitive efficiency in several ways, including “strategic planning, increased focus through concentrated effort, and reducing start-up time by working in one large block of time rather than numerous small blocks” (p. 18). In addition, procrastination can increase “flow” defined by Csikszentmihalyi (1990, as cited by Schraw et al, p. 18) as “the state of total involvement in an activity that consumes one’s complete attention.” Procrastinators reported higher levels of flow than non procrastinators in the study by

Brinthaupt and Shin (2001) and respondents in the study by Schraw et al indicated that procrastination can increase the possibility of achieving a deep state of flow. Researchers attributed the increased flow to the fact that procrastinators work under pressure and spend all their resources to achieve one goal. Peak experience is another important adaptive characteristic of procrastination. Lay, Edwards, Parker, and Endler (1989) reported that procrastinators experienced a greater sense of challenge and peak experience immediately prior to exams. In the study by Schraw et al.(2007), participants reported many strategies used to increase peak experience and all of them used one strategy that is “reaching an optimal level of pressure by delaying a task until it requires maximal effort and efficiency to be completed within the allotted time frame” (p. 18).

Academic Performance and Deadline Conditions

In the frequent deadline group, there was one deadline imposed on students for the assignments of each unit (eight deadlines in total); in the flexible deadline group, there was one deadline for the assignments of every four units (two deadlines in total); in the self-imposed deadline group, students' self-set deadlines ranged from 2 to 8 with 54% of the students selecting four deadlines or less. Judging from the number of deadlines with each group, the frequent deadline condition could help students distribute their learning time more evenly in comparison to the other two deadline conditions.

Comparing academic performance among the three treatment groups, this study found that the difference reached a significant level. The flexible deadline group (M=76.62) has the highest mean score followed by the frequent deadline group (M=71.81) and the self-imposed

deadline group (M=67.70) in order. The flexible deadline group achieved a significantly higher score than the self-imposed deadline group. The other groups had no statistically significant difference.

This result does not show the superiority of distributed practice over massed practice as evidenced in a lot of studies in motor skills and cognitive skills. One possible explanation is that the superiority of distributed practice may not apply to all types of learning, such as foreign language learning. Research on the effects of distributed and massed practice in foreign language learning literature is much less and the findings indicate that massed learning tends to yield better learning outcomes at the measure of general language proficiency (Serrano, 2011). To compare the benefits of distributed and massed practice, research studies in foreign language learning were usually carried out by examining the effects of the distribution of the equal instruction hours on students' learning. For example, Serrano and Munoz (2007) conducted a study to explore the effects of three types of EFL programs for the same number of instructional hours (110 hours), i.e., 4 hours of instruction per week in seven months (extensive), 8-10 hours per week in 3-4 months (semi-intensive), and 25 hours of instruction per week in five weeks. The results provide evidence that concentrating the hours of English instruction in shorter periods of time is more beneficial for students' learning, as measured by a competency test of reading, listening, writing, and speaking, than distributing them over many months, although the differences are not significantly different. Lapkin, Hart, and Harley (1998) compared massed and distributed instruction conditions and found that students made greater improvement in massed condition than distributed condition on reading and writing measures. Collins, Halter, Lightbown, and Spada (1999) reported better learning outcomes measured by a post-test composed of vocabulary recognition, listening comprehension, and story writing in massed

learning condition. These research findings do not show the advantage of distributed practice in EFL learning, which is not consistent with the results of many studies done in cognitive psychology.

Another explanation for this result may be related to the student assignment completion rate under each deadline condition, which is calculated based on student assignment records. The flexible deadline condition had the highest average assignment completion rate (91%), followed by the frequent deadline condition (86%), and the self-imposed deadline condition (83%). The higher completion rate may stand for more practice on listening and speaking students had, and thus students in the flexible deadline condition may have had the most practice. As mentioned in the literature review, both how much practice is conducted and how the practice time is allocated are important for skill automatization. This result indicates that the amount of practice may be more important than how the practice time is distributed for foreign language skill automatization.

In addition, there is no significant interaction effect between procrastination and deadline treatments on academic performance.

Research Question Two

Is there a difference in perceived learning between the procrastination groups, between the treatment groups, and is there an interaction between procrastination and treatment group?

Research results show that there is a significant difference in perceived learning among students of different procrastination levels. The lower the procrastination level, the higher the mean score of perceived learning. Low procrastinators ($M=19.16$) and medium procrastinators

(M=18.28) have significantly higher perceived learning than high procrastinators (M=15.42).

Low procrastinators do not differ significantly from medium procrastinators. This result implies that student procrastination may play an important role in students' perceptions of their own learning. Mccolgin (2000) reported that the perceived degree of student effort put forth in their course work was a good predictor of student perceived learning. In other words, students who spend more effort and time on their coursework will perceive they have acquired more learning from the coursework than those who dedicate less effort and time. Davis and Murrell (1993) also found a significant correlation between the degree of student effort and perceived gains in general education. In addition, in the theory of student involvement by Astin (1985), it was proposed that the more a student is involved in his learning process, the greater amounts of growth and learning will occur. As we know, procrastination may affect students' effort and time devoted to study. High procrastinators tend to wait to complete assignments until the last minute before deadlines, so they may put forth less effort and time into study. All these might partly explain that low and medium procrastinators have significantly higher perceived learning than high procrastinators as found in this study.

After comparing the perceived learning among the groups treated with different deadline conditions, this study found that the frequent deadline group (M=18.65) has higher perceived learning than the flexible deadline group (M=17.11) and the self-imposed deadline group (M=17.22), but the difference does not reach a significant level. Many studies employed dependent measures, such as academic performance, other than perceived learning, when examining the effects of different deadline conditions on student learning. One study by Lim and Morris (2005) explored the difference in students' perceived learning between the fixed (similar to the frequent deadline condition of this study) and the flexible delivery format (similar to the

flexible deadline condition of this study) in an online course and no significant difference was found, although students in the fixed delivery format had slightly higher perceived learning than those in the flexible delivery format. In addition, there is no significant interaction effect between procrastination and deadline treatments on perceived learning.

Contrary to our intuition, the findings in relation to perceived learning are not consistent with those regarding academic performance. It may be because that perceived learning and academic performance (actual learning) are different ideas and represent different ways of analyzing learning (Batista, 2005).

Research Question Three

Is there a difference in course satisfaction between the procrastination groups, between the treatment groups, and is there an interaction between procrastination and treatment group?

Research results show that there is a significant difference in course satisfaction among students of different procrastination levels. The lower the procrastination level, the higher the mean score of course satisfaction. Low procrastinators ($M=19.48$) and medium procrastinators ($M=19.18$) are significantly more satisfied with the course than high procrastinators ($M=17.10$). Medium procrastinators don't differ significantly from low procrastinators. This result implies that student procrastination may play an important role in students' course satisfaction. Elvers et al. (2003) also reported that students' procrastination was negatively related to their course satisfaction in an online class, however, the results in the study by Romano et al. (2005)

indicated that online students' course satisfaction was comparable across procrastination levels. Further research needs to be done on this topic in an online course.

After comparing course satisfaction among the groups treated with different deadline conditions, it is found that the frequent deadline group (M=19.12) has higher course satisfaction than the flexible deadline group (M=18.30) and the self-imposed deadline group (M=18.36), but the difference does not reach a significant level. This result is consistent with the findings in previous studies (Hobbs, 1981; Majchrzak, 2001; Morris et al., 1978; Reiser, 1984; Reiser & Sullivan, 1977), which reported that student course satisfaction was comparable between different deadline groups. In addition, there is no significant interaction effect between procrastination and deadline treatments on course satisfaction.

The results in relation to course satisfaction are very close to those regarding perceived learning, which reflects the statement by Fritzsche (1977) that "one's perception of learning can have a significant impact on his attitude toward the course, the instructor, and possibly the school" (p. 455).

Research Question Four

What are students' attitudes toward frequent-instructor-set-deadline, flexible-instructor-set-deadline, and self-imposed-deadline conditions?

Students' attitudes toward the deadline conditions are mainly embodied in their responses to questions about the advantages and disadvantages of the deadline condition they experienced in the semester when this study was conducted, and to the question asking if they hope that particular deadline condition to be used by the instructor in the next semester.

Frequent-Instructor-Set-Deadline Condition

The frequent deadline condition has a due date and a penalty due date for the assignments of each unit. Students were required to turn in the assignments of each unit before the corresponding due date to avoid penalty and were allowed to turn in assignments between the due date and the penalty due date with scores being deducted, but no assignment was accepted after the penalty due date. The advantages mentioned by students included: (a) Frequent deadlines can urge students to complete assignments, prevent procrastination and spread time evenly on assignments. As Zarick and Stonebraker (2009) pointed out, “smaller deadlines can make the completion of a task appear more attainable and limit procrastinators’ ability to build up a large block to deal with later (p. 214),” imposing frequent deadlines on students can prevent procrastination to some extent. Because procrastinators usually delay working on assignments until the deadline is round the corner, the more deadlines the more distributed their time spent on assignments may be; (b) Deadlines were not as forgettable as those in other deadline conditions. This may be because the interval between one deadline and the next one is equal and comparably short (two weeks apart) under the frequent deadline condition.

The disadvantages included: (a) The deadlines were too frequent and the schedule was somewhat tight; (b) Students felt passive and controlled; (c) The strict deadlines made students lose scores if they had an emergency; (d) The punishment for missing the deadline was too much; (e) It was not appropriate to set deadlines on Mondays when there were a lot of classes. In this study, the researcher set the deadline on Monday right after the weekends for the consideration that students may have sufficient time to work on their assignments, however, some students still complained that it was not a good time to submit assignments because they

had many classes on that day. This complaint might indicate that procrastinators are prone not to complete the assignments till the last minute before the deadline no matter how much free time they have before the deadline.

In spite of the disadvantages, all the students expressed their expectation that the instructor would continue to use this deadline condition, which implied that students were quite positive toward this deadline condition.

Flexible-Instructor-Set-Deadline Condition

Under the flexible deadline condition, two deadlines were imposed on students throughout the semester, one in the middle and one at the end of the semester. Students had eight weeks to complete the assignments of every four units. The advantages of the flexible deadline condition mentioned by students included: (a) Students had sufficient time to complete assignments and can manage their own time due to the flexible schedule. This advantage echoes the viewpoints expressed by the participants in the study by Lim and Morris (2005). In their study, the most important reasons for choosing flexible delivery format reported by participants were “learner’s control of time and learning processes” and “less stressful and rushed (p. 389);” (b) Students were prevented from procrastinating too much. This comment may be resulted from a comparison made by students between the flexible deadline condition and the deadline condition the instructor adopted in the previous semester. The instructor used to collect assignments once every four weeks (i.e. one deadline for assignments of every two units), but there was no punishment for late assignments. As a result, the deadlines were not binding to students. In comparison to the deadline condition used in the previous semester, the two strict

deadlines of the flexible deadline condition can to some extent prevent students from procrastinating; (c) This deadline condition cultivated students' capability to manage time and enhanced students' self-directed learning ability. Students mentioned this advantage maybe because they had much freedom to manage their own learning time under the flexible deadline condition; (d) This deadline condition boosted students' enthusiasm and self-initiative for learning.

The disadvantages included: (a) The interval was so long that students sometimes forgot the deadline; (b) There was no regular reminder of the deadline and no opportunity to make up for the missed deadline; (c) This deadline condition may cause more procrastination. In this flexible deadline condition, students have much freedom to manage their own time and pace their own study. Procrastination has long been recognized as a problem with self-paced courses (Roberts & Semb, 1990). Students' listening assignment submission records automatically kept in the course management system also indicated the procrastination problem, for quite a few (about 50%) students completed most of the listening assignments during the last one to two weeks before the deadline; (d) Students' problems cannot be solved in a timely manner. As there was only one deadline for the assignments of every four units, the instructor didn't provide feedback to students until she went over the assignments of all the four units. So, students' problems wouldn't be identified in time and thus solutions would be delayed.

It is quite obvious that flexible and frequent deadline conditions are complementary with each other. In spite of the disadvantages, the majority (about three fourths) of the students expressed their expectation that the instructor would continue to use this deadline condition, which indicated that most students were positive toward this deadline condition.

Self-Imposed-Deadline Condition

The self-imposed-deadline condition allowed students to set assignment deadlines at the beginning of the semester and then process through the course based on their self-made schedules. The advantages of this deadline condition mentioned by students included: (a) Students can set deadlines according to their own ability and schedule; (b) Students felt more independent. Students' sense of more independence with this deadline condition may be due to the fact that students can set their own assignment deadlines instead of following the instructor-set ones; (c) Students' self-directed learning ability was cultivated and learning initiative was enhanced. It may be because this deadline condition, like the flexible deadline condition, provided students much space to manage their own learning.

The disadvantages included: (a) Deadlines were not set properly by some students, which may affect the quality of assignment completion. This disadvantage is reflected in the student assignment records kept by the researcher. Some students made very aggressive schedules based on which they need to complete all the assignments by the middle of the semester or at least a month ahead of the end of the semester, but they turned out not to be able to follow the schedule within their learning ability and left many assignments uncompleted. In contrast, some other students made too lagging schedules, which allowed them to submit the majority of the assignments at the end of the semester, and they were likely to stack up their assignments toward the end of the semester; (b) Students tended to forget the deadlines. It may be because students' self-set schedules were usually irregular and varied from one student to another. Without regular reminder of the approaching deadlines, students were easily to forget the deadlines. Reiser (1984) observed an increased percentage of deadlines met by students because of posting the

deadline for passing each unit quiz in large print and displaying the names of those who kept the deadline.

In spite of the disadvantages, except for four students, all the other students expressed their expectation that the instructor would continue to use this deadline condition, which indicated that students were doing well with this deadline condition.

Implications for Practice

The research findings of this study indicated that every deadline condition had its own advantages and disadvantages. Decision makers could take the advantages and disadvantages identified in this study into consideration, when selecting a proper deadline condition for an online course. In addition, this study showed no interaction effect between deadline conditions and procrastination levels, but students mentioned that frequent deadline condition helped curb procrastination, and flexible deadline condition resulted in more procrastination. If possible, decision makers may assign low procrastinators with flexible deadline condition, and high procrastinators with frequent deadline condition.

Based on the research findings of this study especially students' attitudes toward the three deadline conditions, four implications were obtained for online instructors to improve deadline implementation. Firstly, no matter what kind of deadline condition is employed for the instruction, it is important to remind students of the approaching deadlines in one way or another. Students in every deadline condition of this study mentioned the necessity of regular reminder of the deadlines without which they sometimes could just miss the deadlines.

Secondly, the instructor should provide students with sufficient guidance to help them set suitable deadlines if the self-imposed deadline condition is used. The instructor needs to examine students' self-set deadlines right after they are turned in. If problematic deadlines, which are either too ambitious or too dilatory, are identified, the instructor could work with students to improve them. In a word, it is significant to devote efforts to optimizing students' self-set deadlines before they are finalized.

Thirdly, the instructor could take students' advice into consideration as for on which day the deadline should be set if choosing to use the instructor-set deadline condition. In any deadline condition, deadlines should be strictly followed to prevent procrastination if there is no special situation.

Fourthly, if the flexible deadline condition is used, the instructor still needs to provide timely assignment feedback to students, as timely feedback is important for successful knowledge and skill acquisition (Ahern, 2005). The instructor should not provide feedback all at once. But instead, timely feedback should be provided at small intervals (e.g. once a week) to students regarding the portion of assignments students have submitted.

Recommendations for Future Research

Based on the research findings and limitations of the study, some recommendations for future research are brought forward below:

1. This study was done with 173 participants enrolled in an online EFL course at Beijing University of Agriculture. Three classes with different majors were used for this study and were randomly assigned to the three deadline conditions. Ideally, participants could

be randomly assigned to each deadline condition group in future research to ensure each group is similar in demographic information and academic background. A larger sample size is also advised. In addition, future research could be conducted in other courses and with participants from other universities or high schools to increase the generalizability of research findings.

2. This study revealed a possible difference between actual and perceived learning. Future research could be done to focus on this difference relative to procrastination and different deadline conditions.
3. In the online course with which this study was conducted, the assignments accounted for only 20% of the course grade. Such a small proportion may have affected students' attitudes toward assignments. In other words, students may not have spent sufficient time on assignments and may not have tried their best to improve the assignment quality. And thus, the effects of deadline conditions on student learning and course attitude may have been influenced. This study could be replicated in an online course with assignments having a large impact on students' course grades.
4. In order to match students' survey results with their final exam score, the survey was not anonymously administered in this study and participants were required to disclose their names at the end of the survey, which excluded some participants who were reluctant to disclose their identity in the survey from data analysis. In future research, alternative ways should be sought to match students' survey responses with their final exam scores.
5. In this study, participants were classified into low, medium, and high procrastinators. No interaction effect was found between procrastination levels and deadline conditions. In

future research, researchers could remove the medium procrastinators, and investigate how different deadline conditions work for the low and high procrastinators.

6. This study investigated the interaction between different assignment deadline conditions and procrastination levels. Future research could examine the interaction between the type of assignments and the level of procrastination.
7. This study investigated students' attitudes toward the three deadline conditions solely via a survey. Researchers could adopt interviews in future research to get more in-depth views from students regarding different deadline conditions. Future research could also be done to investigate how students at different procrastination levels differ in their attitudes toward the different deadline conditions. In addition to getting students' perspectives, interviews with the instructors could also be conducted to know how these deadline conditions work for them.
8. Out of our expectation, this study didn't find a significant difference in academic performance among students of different procrastination levels. One possible reason may be that the academic performance was measured by one single exam, a final listening and speaking exam. A measurement of the academic performance with a cumulative method, such as course grade, could be used in future research and a comparison could be made between the results of one single exam measurement and cumulative performance measurement.
9. The three deadline conditions were not perfectly designed for this research and still had room for improvement. Future research could be done on the three deadline conditions after some modifications are made.

Conclusion

The main purpose of this study was to examine the effects of three deadline conditions on students of different procrastination levels in an online course. This study found that there were significant differences in perceived learning and course satisfaction among high, medium, and low procrastinators, but there was no significant difference in academic performance among students at different procrastination levels. Low and medium procrastinators had significantly higher perceived learning and were significantly more satisfied with the course than high procrastinators. Among the three deadline condition groups, there were no significant differences in perceived learning and course satisfaction, however, the difference in academic performance was significant. The flexible deadline group achieved the best academic performance followed by the frequent and the self-imposed deadline groups. There was no interaction effect between procrastination and deadline conditions on any of the dependent variables.

APPENDIX A: SURVEY

Part 1: Procrastination Tendency Measurement

The following sixteen statements describe all aspects of procrastination. Please read each statement carefully and choose one of the given four choices that fit you best. 1=that's not me for sure, 2=that's not my tendency, 3=that is my tendency, 4=that's me for sure

	1=that's not me for sure	2=that's not my tendency	3=that is my tendency	4=that's me for sure
1. I needlessly delay finishing jobs, even when they're important.	1	2	3	4
2. I postpone starting things I don't like to do.	1	2	3	4
3. When I have a deadline, I wait till the last minute.	1	2	3	4
4. I delay making tough decisions.	1	2	3	4
5. I keep putting off improving my work habits.	1	2	3	4
6. I manage to find an excuse for not doing something.	1	2	3	4
7. I put the necessary time into even boring tasks, like studying. *	1	2	3	4
8. I am an incurable time waster.	1	2	3	4
9. I am a time waster now but I can't seem to do anything about it.	1	2	3	4
10. When something's too tough to tackle, I believe in postponing it.	1	2	3	4
11. I promise myself I'll do something and then drag my feet.	1	2	3	4
12. Whenever I make a plan of action, I follow it. *	1	2	3	4
13. Even though I hate myself if I don't get started, it doesn't get me going.	1	2	3	4
14. I always finish important jobs with time to spare. *	1	2	3	4
15. I get stuck in neutral even though I know how important it is to get started.	1	2	3	4
16. Putting something off until tomorrow is not the way I do it. *	1	2	3	4

Part 2: Perceived Learning Measurement

Please indicate the degree to which you agree/disagree with the following statements about how much you have learned in this course. You are asked to respond on a seven-point Likert scale ranging from "strongly disagree" to "strongly agree" (1=strongly disagree; 2=disagree; 3=somewhat disagree 4=neither agree nor disagree; 5=somewhat agree; 6=agree; 7=strongly agree).

	1=Strongly Disagree	2=Disagree	3=Somewhat Disagree	4=Neither Agree nor Disagree	5=Somewhat Agree	6=Agree	7=Strongly Agree
17. My listening and speaking abilities are better now than before this class.	1	2	3	4	5	6	7
18. I feel more confident with my English listening and speaking abilities now than I did before this class.	1	2	3	4	5	6	7
19. I can communicate in English better now than I did before this class.	1	2	3	4	5	6	7
20. I can now get a better English listening and speaking grade in test.	1	2	3	4	5	6	7

Part 3: Course Satisfaction Measurement

Below you will see 4 statements regarding your satisfaction with the online course you have just taken. You are asked to respond on a seven-point Likert scale (1=strongly disagree; 2=disagree; 3= somewhat disagree 4=neither agree nor disagree; 5=somewhat agree; 6=agree; 7=strongly agree)

	1=Strongly Disagree	2=Disagree	3=Somewhat Disagree	4=Neither Agree nor Disagree	5=Somewhat Agree	6=Agree	7=Strongly Agree
21. This course met my expectations.	1	2	3	4	5	6	7
22. The quality of the course compared favorably to my other English courses.	1	2	3	4	5	6	7
23. I am very satisfied with this course of this semester.	1	2	3	4	5	6	7
24. I was disappointed with the way this course worked out.*	1	2	3	4	5	6	7

Part 4: Questions about deadline conditions

25. In the listening and speaking course of this semester, which of the following deadline condition did your instructor take?

- a. Frequent-instructor-set deadline (one deadline and penalty deadline for the assignments of each unit)
- b. Flexible-instructor-set deadline (one deadline for the assignments of every four units)
- c. Self-set deadline (set your own deadlines based on the requirements)

26. What do you think are the advantages of the deadline conditions used for this course?

27. What do you think are the disadvantages of the deadline conditions used for this course?

28. Do you hope the instructor to keep the same deadline condition for this course next semester? If not, how would you like the instructor to set the assignment deadline for you?

Part 5: Study Information

29. How do you usually get access to this online course? (Multiple choices are allowed.)

- a. Use home computer
- b. Use my own computer in the dorm
- c. Use the computer in the library
- d. Use the computer in the visual-audio classroom
- e. Others _____ (please specify)

30. How convenient is it for you to learn this online course?

- a. Very convenient
- b. Somewhat convenient
- c. Somewhat inconvenient
- d. Very inconvenient

31. How willing are you to spend time on this course?

- a. Very willing
- b. Somewhat willing
- c. Somewhat unwilling
- d. very unwilling

Part 6: Demographic Information

32. Gender

- a. Male
- b. Female

33. Age
- a. below 18 years old
 - b. 18~20 years old
 - c. over 20 years old

Please type in your name and student number. (Note: this is for the purpose of identifying participants to award them bonus scores.)

APPENDIX B: SURVEY (IN CHINESE)

第一部分:拖沓行为测量

以下16句话是对拖拉行为各方面的描述。请仔细阅读每一句话,在四个给定选项中选择其中最符合你的一项。1=很不符合我;2=我没有这种倾向;3=我有这种倾向;4=很符合我

	1=很不符合我	2=我没有这种倾向	3=我有这种倾向	4=很符合我
1. 即使是很重要的事情,我也拖拖拉拉不去完成。	1	2	3	4
2. 对于我不喜欢做的事情,我总是一拖再拖。	1	2	3	4
3. 如果一项任务有截止日期,我会等到最后一刻才去做。	1	2	3	4
4. 面对两难的境地,我总是迟迟做不了决定。	1	2	3	4
5. 我迟迟不改进学习习惯。	1	2	3	4
6. 我总是找借口为自己没有做某事而开脱。	1	2	3	4
7. 我会投入必要的时间在一些非常枯燥的事情上,比如学习。*	1	2	3	4
8. 我是一个不可救药的时间浪费者。	1	2	3	4
9. 我很浪费时间,却不知道如何改变这一点。	1	2	3	4
10. 面对困难的事情,我会推迟去做。	1	2	3	4
11. 我总是无故拖延自己许诺要做的事。	1	2	3	4
12. 每当自己制定了一个计划,我就会按照计划去做。*	1	2	3	4
13. 虽然恨自己迟迟不行动,但是这也没有激发我的任何动力。	1	2	3	4
14. 我总是提前完成重要的任务。*	1	2	3	4
15. 尽管我知道开始去做很重要,但是我也会迟迟不付诸行动。	1	2	3	4
16. 我从不把今天能完成的事推迟到明天去做。*	1	2	3	4

第二部分:认知学习测量

对于下列有关你在这学期的听说课中学到多少的描述,请选择你对它们同意/不同意的程度:1=非常不同意;2=不同意;3=比较不同意;4=既不同意也不反对;5=比较同意;6=同意;7=非常同意。

	1=非常不同意	2=不同意	3=比较不同意	4=既不同意也不反对	5=比较同意	6=同意	7=非常同意
17. 完成这学期的听说课后，我的听说能力有所提高。	1	2	3	4	5	6	7
18. 完成这学期的听说课后，我对自己的英语听说能力更有信心了。	1	2	3	4	5	6	7
19. 完成这学期的听说课后，我能更好地用英语交流。	1	2	3	4	5	6	7
20. 完成这学期的听说课后，我能够在英语考试中取得更好的听说成绩。	1	2	3	4	5	6	7

第三部分:课程满意程度测量

对于下列四个关于你对**这学期听说课**的满意程度的描述，请选择你对它们同意/不同意的程度：1=非常不同意；2=比较不同意；3=不同意；4=既不同意也不反对；5=比较同意；6=同意；7=非常同意。

	1=非常不同意	2=不同意	3=比较不同意	4=既不同意也不反对	5=比较同意	6=同意	7=非常同意
21. 这学期的听说课满足了我的需要。	1	2	3	4	5	6	7
22. 相比其它上过的英语课，这学期的听说课效果更好。	1	2	3	4	5	6	7
23. 我对这学期的听说课很满意。	1	2	3	4	5	6	7
24. 我对这学期听说课的授课方式很失望	1	2	3	4	5	6	7

第四部分：关于截止日期方式的问题

25. 在这学期的听说课上，任课老师采用的是哪一种截止日期设置方式？
- 频繁的截止日期（每单元的作业都有一个截止日期和惩罚日期）
 - 灵活的截止日期（每四个单元的作业有一个截止日期）
 - 按要求自行设置截止日期

26. 对这门课程所使用的截止日期方式，你认为它的优点是什么？
27. 对这门课程所使用的截止日期方式，你认为它的缺点是什么？
28. 你希望任课老师下学期继续使用这种截止日期方式吗？如果不，你希望老师怎样设置作业截止日期？

第五部分：听说课学习情况

29. 你通常在哪儿学习这门听说课？（可以多选）

- a. 使用家里的电脑
- b. 在宿舍使用自己的电脑
- c. 使用图书馆的电脑
- d. 使用视听教室的电脑
- e. 其它_____ (请说明)

30. 请选择你上网学习这门课程的方便程度

- a. 很方便
- b. 还算方便
- c. 不太方便
- d. 很不方便

31. 请选择你花费时间学习这门课程的愿意程度

- a. 很愿意
- b. 有点愿意
- c. 不太愿意
- d. 很不愿意

第六部分：个人信息

32. 性别

- a. 男
- b. 女

33. 年龄

- a. 小于 18 岁
- b. 18~20 岁
- c. 大于 20 岁

请输入你的学号和姓名（注：这是为了识别参与问卷调查的同学以给予加分。）

**APPENDIX C: SAMPLE FINAL EXAMINATION FOR NEW
HORIZONTAL ENGLISH LISTENING AND SPEAKING**

- B) Men's shaving is the most important way of beauty care just like mowing the lawns.
 - C) The beauty care of lawns is different from that of women.
 - D) The lawns are given beauty care by men.
10. A) When he starts to bleed too badly.
- B) When he ends his four minutes of beauty care.
 - C) When he has wiped most of the shaving cream out of his hair.
 - D) When he feels that he has done his shaving.

Passage Two

Questions 11 to 14 are based on the passage you have just heard.

- | | | |
|-----|--------------------|----------------------|
| 11. | A) 52 million. | B) 5 million. |
| | C) 3 million. | D) 1.6 million. |
| 12. | A) England. | B) Scotland. |
| | C) Wales. | D) Northern Ireland. |
| 13. | A) Cool and mild. | B) Mild and foggy. |
| | C) Cool and rainy. | D) Rainy and foggy. |
| 14. | A) January. | B) April. |
| | C) July. | D) December. |

Section C

Directions: You are going to hear a passage three times. When the passage is read for the first time, you should listen carefully for its general idea. Then listen again and fill in the blanks with what you have heard. When the passage is read for the third time, check what you have written. Then write your answer in the corresponding place on your Answer Sheet.

As the pace of life continues to increase, we are fast losing the art of relaxation. Once you are in the habit of (15)_____ through life, being on the go from morning till night, it is hard to slow down. But relaxation is (16) _____ for a healthy mind and body.

Stress is a natural part of everyday life and there is no way to (17) _____ it. In fact, it is not the bad thing it is often (18) _____ to be. A certain amount of stress is vital to provide motivation and give purpose to life. It is only when the stress gets out of control that it can lead to poor performance and ill health.

(19) _____
 _____. Some people are not afraid of stress, and such characters are obviously prime material for managerial responsibilities. Others lose heart at the first sight of unusual difficulties. When exposed to stress, in whatever form, we react both chemically and physically. In fact we make choice between "fight" or "flight" and in more primitive days the choice made the difference between life or death. The crises we meet today are unlikely to be so (20) _____, but however little the stress is, it involves the same response. It is when such a reaction lasts long, through continued (21) _____ to stress, that health becomes endangered. Such serious conditions as high blood pressure and heart disease have established links with stress. (22) _____

APPENDIX D: APPROVAL OF EXEMPT HUMAN RESEARCH



University of Central Florida Institutional Review Board
Office of Research & Commercialization
12201 Research Parkway, Suite 501
Orlando, Florida 32826-3246
Telephone: 407-823-2901 or 407-882-2276
www.research.ucf.edu/compliance/irb.html

Approval of Exempt Human Research

From: **UCF Institutional Review Board #1
FWA00000351, IRB00001138**

To: **Pin Wang**

Date: **February 25, 2010**

Dear Researcher:

On 2/25/2010, the IRB approved the following activity as human participant research that is exempt from regulation:

Type of Review: Exempt Determination
Project Title: EFFECTS OF DEADLINE CONDITIONS ON LEARNERS OF
DIFFERENT PROCRASTINATION TENDENCIES IN AN
ONLINE COURSE
Investigator: Pin Wang
IRB Number: SBE-10-06741
Funding Agency:
Grant Title:
Research ID: N/A

This determination applies only to the activities described in the IRB submission and does not apply should any changes be made. If changes are made and there are questions about whether these changes affect the exempt status of the human research, please contact the IRB. When you have completed your research, please submit a Study Closure request in iRIS so that IRB records will be accurate.

In the conduct of this research, you are responsible to follow the requirements of the Investigator Manual.

On behalf of Joseph Bielitzki, DVM, UCF IRB Chair, this letter is signed by:

Signature applied by Joanne Muratori on 02/25/2010 02:06:59 PM EST

A handwritten signature in black ink that reads 'Joanne Muratori'.

IRB Coordinator

APPENDIX E: RESEARCH PERMISSION LETTER

Beijing University of Agriculture

Research Permission Letter

I, Yan Xin, the instructor of the course titled as *The New Horizon College English Viewing, Listening & Speaking* at Beijing University of Agriculture, give permission to Pin Wang, Ph.D. Candidate at University of Central Florida, to conduct her dissertation research in my course.



Yan Xin
Instructor

Department of College English
Beijing University of Agriculture

Beinong Road #7, Longguan Town, Changping District, Beijing City, 102206

Tel: (86)-01-81747908

2/14/10

APPENDIX F: CONSENT FORM

Title of Project: Effects of Deadline Conditions on Learners of Different Procrastination Tendencies in An Online Course

Principal Investigator: Pin Wang

Faculty Supervisor: Dr. Glenda Gunter

Dear Students:

You are being invited to take part in a research study. I am a graduate student of College of Education at University of Central Florida and doing this research as part of my doctoral study. Whether you take part is up to you.

The purpose of this research is to investigate how three ways of setting deadlines work for students of different academic procrastination in terms of their perceived learning, academic performance, and course satisfaction in an online course. This study will last 16 weeks (March 1~ June 20) while you are taking the course "The New Horizon College English Viewing, Listening & Speaking" for the second semester. At week 1, you will be randomly assigned to any of the three deadline conditions and then follow the assigned deadline condition throughout the semester. From week 14 to 16, you will be invited to participate in an online survey, which will take about 15 minutes to complete.

You must be 18 years of age or older to participate in the research.

Study contact for questions about the study or to report a problem: If you have any questions about this research project, please contact Pin Wang at (407) 690-9775 or pinw@knights.ucf.edu. You can also contact my faculty supervisor Dr. Glenda Gunter at 407-823-1760 or ggunter@mail.ucf.edu.

IRB contact about your rights in the study or to report a complaint: *Research at the University of Central Florida involving human participants is carried out under the oversight of the Institutional Review Board (UCF IRB). This research has been reviewed and approved by the IRB. For information about the rights of people who take part in research, please contact: Institutional Review Board, University of Central Florida, Office of Research & Commercialization, 12201 Research Parkway, Suite 501, Orlando, FL 32826-3246 or by telephone at (407) 823-2901.*

I really appreciate your participation in this study.

APPENDIX G: CONSENT FORM (IN CHINESE)

亲爱的同学们:

你被邀请参加一项关于不同作业期限的设置方式在网络课程中的影响的研究。我是一名中佛罗里达大学教育学院的博士研究生，这项研究将被用于我的博士论文。

这项研究是探究三种作业期限设置方式在网络课程中对各种学术拖延行为程度的学生的效果。此项研究将放在第二个学期的“新视野大学英语视听说”课中进行，持续16周（从2010年3月1号到六月20号）。在第一周，你会被随机地分配到三种作业期限设置方式的任何一种中，然后在整个学期中都依照那种方式来完成课业。从第14周到第16周，你将被邀请参与一个网络问卷调查，大约需15分钟完成。

如果你选择不参加，你可以通知你的任课老师然后依照常规的作业期限，不会受到任何惩罚。必须年满18岁才能参加这项研究。

你的身份是绝对保密的。收集到的数据将被保存在研究员的有密码设置的电脑里，并且只有她本人能看到。数据分析后，所有数据将被永久性地删除。所有回答都将统一分析，任何个人的回答都不会公开。最终研究结果会在研究手稿中呈现。

此项研究对于参与者不存在任何可预见性的危险或者不适。参与者可以自由地收回你的同意，可以在任何时候停止参此项研究。参与者可以选择不回答问卷调查中任何你不希望回答的问题。参与并完成所有要求的项目，你将会在本课的最后成绩中得到两分作为奖励。

在中佛罗里达大学，所有以人为对象的研究都在机构审查委员会（UCF IRB）监督下进行。本项研究已经通过了该机构的审查。任何有关参与人员的权利问题可以写信至 Institutional Review Board, University of Central Florida, Office of Research & Commercialization, 12201 Research Parkway, Suite 501, Orlando, FL 32826-3246 或致电（001）407- 823-2901。

如果你对这项研究有任何问题，请联系王频（电话：（001）407-690-9775；电子邮件：pinw@knights.ucf.edu）。也可以联系我的指导老师Dr. Glenda Gunter（电话：（001）407-823-1760；电子邮件：ggunter@mail.ucf.edu）。

**APPENDIX H: LETTERS FOR STUDENTS UNDER DIFFERENT
DEADLINE CONDITIONS**

Frequent-instructor-set-deadline condition

Dear students:

You will be supplied with frequent-instructor-set-deadline condition for this course in this semester. We will process through the course at the pace of one unit every two weeks. Under this assignment deadline condition, you must submit the assignments of each unit by each respective due date to avoid penalty. If you submit assignments after the due date, but before the listed penalty due date, your score will be deducted by 10% of the late assignments. Absolutely no assignment will be accepted after its respective penalty due date. Please follow the course schedule below to pace your study throughout the course.

Course schedule from March 1~June 21, 2010

Unit	Assignments	Due Date	Penalty Due Date
1. Roll Over, Beethoven	Listening assignments: <ul style="list-style-type: none"> • Five tasks in Part 3 <i>Listening In</i> • Three tasks in Part 6 Further Listening Speaking assignments: <ul style="list-style-type: none"> • Two tasks (record & make a new dialog) in Part 5 <i>Let's Talk</i> • Two tasks (record and compare & listen and retell) in Part 6 <i>Further Speaking</i> 	Monday, March 15	Wednesday, March 17
2. What's On At That Theater?	Listening assignments Speaking assignments	Monday, March 29	Wednesday, March 31
3. Every Jack Has His Jill!	Listening assignments Speaking assignments	Monday, April 12	Wednesday, April 14
4. Be Aware Of Ads!	Listening assignments Speaking assignments	Monday, April 26	Wednesday, April 28
5. Does Your Best Friend Have Four Legs?	Listening assignments Speaking assignments	Monday, May 10	Wednesday, May 12
6. What's In Fashion?	Listening assignments Speaking assignments	Monday, May 24	Wednesday, May 26
7. Does Money Talk?	Listening assignments Speaking assignments	Monday, June 7	Wednesday, June 9
8. Crime Does Pay!	Listening assignments Speaking assignments	Monday, June 21	(No late assignments will be accepted for this unit.)

Flexible-instructor-set-deadline condition

Dear students:

You will be supplied with flexible-instructor-set-deadline condition for this course in this semester. Under this assignment deadline condition, you are required to submit the assignments of the first four units no later than April, 26 and those of the rest four units no later than June, 21. No scores will be earned for the late assignments. At the same time, you are suggested to submit the assignments of each unit by its recommended due date so that you can complete all the assignments in a timely manner. Please refer to the following course schedule for this course.

Course schedule from March 1~June 20, 2010

Unit	Assignments	Recommended Due Date	Due date
1. Roll Over, Beethoven	Listening assignments: <ul style="list-style-type: none"> • Five tasks in Part 3 <i>Listening In</i> • Three tasks in Part 6 Further Listening Speaking assignments: <ul style="list-style-type: none"> • Two tasks (record & make a new dialog) in Part 5 <i>Let's Talk</i> • Two tasks (record and compare & listen and retell) in Part 6 <i>Further Speaking</i> 	Monday, March 15	Monday, April 26
2. What's On At That Theater?	Listening assignments Speaking assignments	Monday, March 29	
3. Every Jack Has His Jill!	Listening assignments Speaking assignments	Monday, April 12	
4. Be Aware Of Ads!	Listening assignments Speaking assignments	Monday, April 26	
5. Does Your Best Friend Have Four Legs?	Listening assignments Speaking assignments	Monday, May 10	Monday, June 21
6. What's In Fashion?	Listening assignments Speaking assignments	Monday, May 24	
7. Does Money Talk?	Listening assignments Speaking assignments	Monday, June 7	
8. Crime Does Pay!	Listening assignments Speaking assignments	Monday, June 21	

Self-imposed-deadline condition

Dear students:

You will be supplied with a self-imposed-deadline condition for this course in this semester. Under this assignment deadline condition, you can set assignment due dates by yourself, but you have to obey the following four external constraints. First, you must select at least two due dates from the provided dates in the table below and place the unit number in the grid aligning with the due date you expect to submit the assignments of that unit. Second, you must email course instructor your self-set schedule prior to 03/05/2010. Third, the due dates are final and cannot be changed. Fourth, the due dates are binding, so no late assignments will be accepted and no scores will be earned for the late assignments.

Please write down the unit number(s) in the grid aligning with the due date when you expect to submit the assignments of that unit. For example, if you plan to complete assignments of unit 1 and 2 by March 29, you can write 1, 2 in the corresponding grid. Try to make small evenly-paced deadlines to curb procrastination and space your time on the assignments.

Unit	Due Date
	Monday, March 15
	Monday, March 29
	Monday, April 12
	Monday, April 26
	Monday, May 10
	Monday, May 24
	Monday, June 7
	Monday, June 21

**APPENDIX I: LETTERS FOR STUDENTS UNDER DIFFERENT
DEADLINE CONDITIONS (IN CHINESE)**

频繁的截止日期方式

亲爱的同学们：

本学期大学英语听说课的作业将采用**频繁的截止日期**方式。因为我们的课程进度为每两周一单元，所以也可以说是每两周一收。你必须在相应的截止日期前提交每个单元需完成的作业，以免受罚。每个截止日期后的第二天为惩罚性截止日期，如果错过了截止日期，但仍在惩罚性截止日期之前提交了作业，那么所提交作业就会被扣除 10%的分值。在惩罚性截止日期后一律不再收作业。请依照以下作业提交时间表来安排本门课程的学习。

作业提交日期表（2010年3月1号~6月21号）

单元	作业	截止日期	惩罚性截止日期
1. Roll Over, Beethoven	听力作业 <ul style="list-style-type: none"> • 第三部分 <i>Listening In</i> 中的五项任务 • 第六部分 <i>Further Listening</i> 中的三项任务 口语作业： <ul style="list-style-type: none"> • 第五部分 <i>Let's Talk</i> 中的两项任务(record & make a new dialog) • 第六部分 <i>Further Speaking</i> 中的两项任务(record and compare & listen and retell) 	3月15 (星期一)	3月17 (星期三)
2. What's On At That Theater?	听力作业 口语作业	3月29 (星期一)	3月31 (星期三)
3. Every Jack Has His Jill!	听力作业 口语作业	4月12 (星期一)	4月14 (星期三)
4. Be Aware Of Ads!	听力作业 口语作业	4月26 (星期一)	4月28 (星期三)
5. Does Your Best Friend Have Four Legs?	听力作业 口语作业	5月10 (星期一)	5月12 (星期三)
6. What's In Fashion?	听力作业 口语作业	5月24 (星期一)	5月26 (星期三)
7. Does Money Talk?	听力作业 口语作业	6月7 (星期一)	6月9 (星期三)
8. Crime Does Pay!	听力作业 口语作业	6月21 (星期一) (这个单元不接收迟交的作业)	

灵活的截止日期方式

亲爱的同学们：

本学期大学英语听说课的作业将采用**灵活的截至日期方式**。你必须在4月26号前提交前四个单元的作业，在6月21号前提交后四个单元的作业。如未能在相应的截至日期前提交，本次作业记为0分。另外，建议你在相应的建议性截止日期前提交每个单元的作业，这样你就可以及时地完成每个单元的作业。请依照以下作业提交时间表来安排本门课程的学习。

作业提交日期表（2010年3月1号~6月21号）

单元	作业	建议性截止日期	截止日期
1. Roll Over, Beethoven	听力作业 <ul style="list-style-type: none"> • 第三部分 <i>Listening In</i> 中的五项任务 • 第六部分 <i>Further Listening</i> 中的三项任务 口语作业： <ul style="list-style-type: none"> • 第五部分 <i>Let's Talk</i> 中的两项任务(record & make a new dialog) • 第六部分 <i>Further Speaking</i> 中的两项任务(record and compare & listen and retell) 	3月15 (星期一)	4月26 (星期一)
2. What's On At That Theater?	听力作业 口语作业	3月29 (星期一)	
3. Every Jack Has His Jill!	听力作业 口语作业	4月12 (星期一)	
4. Be Aware Of Ads!	听力作业 口语作业	4月26 (星期一)	
5. Does Your Best Friend Have Four Legs?	听力作业 口语作业	5月10 (星期一)	
6. What's In Fashion?	听力作业 口语作业	5月24 (星期一)	6月21 (星期一)
7. Does Money Talk?	听力作业 口语作业	6月7 (星期一)	
8. Crime Does Pay!	听力作业 口语作业	6月21 (星期一)	

自行设置截止日期方式

亲爱的同学们：

本学期大学英语听说课的作业将采用**自行设置截止日期方式**提交。即每位同学可以自行设置提交作业的次数和每次作业的截止日期。但你必须遵守以下四条。第一，你必须在以下表格中选择截止日期，且选择提交作业次数不少于两次（最少两次）第二，你必须在 2010 年 3 月 5 号前通过电子邮件或其他方式将你自行设置的作业提交表发给任课老师。第三，作业提交表一旦提交不允许改动，必须按照你自己的设定执行。第四，迟交的作业一律不予接收，如未能在自行设定的截至日期前提交，本次作业记为 0 分。


本学期所学课程共 8 个单元，请将单元号输入与你想提交作业的截止日期相对应的格子中。例如，如果你选择在 3 月 29 号前提交第一和第二单元的作业，那么就在相应的格子中输入 1，2。尽量多选几个提交作业的截至日期，这样可以使你均匀地分配学习时间。

作业提交日期表

单元	截止日期
	3 月 15 号（星期一）
	3 月 29 号（星期一）
	4 月 12 号（星期一）
	4 月 26 号（星期一）
	5 月 10 号（星期一）
	5 月 24 号（星期一）
	6 月 7 号（星期一）
	6 月 21 号（星期一）



**APPENDIX J: PERMISSION FROM THE INSTRUCTOR TO USE A
COURSE PICTURE**

RE: permission to use a picture

[Back to messages](#) |  

To see messages related to this one, [group messages by conversation](#).

□ 辛艳
To Pin Wang

2/18/11 
Reply 

Dear Mrs. Wang,

I am glad to hear from you. The traditional Chinese New Year celebration is over now. I really enjoyed it. It is my pleasure, if I could be of any help to you. As for the picture you mentioned in your letter, you may use it in your dissertation. If there is anything I could do, just let me know.

Yan Xin

From: pinw@knights.ucf.edu
To: belindaxin@hotmail.com
Subject: permission to use a picture
Date: Fri, 18 Feb 2011 07:36:23 -0500

Dear Mrs. Xin,

How are you doing? I have almost done with my dissertation with your enormous help. You once sent me some pictures to show the *the New Horizon College English Viewing, Listening & Speaking 2*. May I get your permission to use the one in the attachment, which displays the structure of unit one, in my dissertation? Please let me know. Thanks.

Pin Wang

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