1-1-2011

The Impact of Personalization-Based Tailored Instructional Communications on College Student Persistence

Nichole Gibbs
Walden University

Walden University

College of Social and Behavioral Sciences

This is to certify that the doctoral dissertation by

Nichole Gibbs

has been found to be complete and satisfactory in all respects,
and that any and all revisions required by
the review committee have been made.

Review Committee
Dr. Reginald Taylor, Committee Chairperson, Psychology Faculty
Dr. Marlon Sukal, Committee Member, Psychology Faculty
Dr. Linda Whinghter, University Reviewer, Psychology Faculty

Chief Academic Officer
Eric Riedel, Ph.D.

Walden University
2013

Abstract

The Impact of Personalization-Based Tailored Instructional Communications on

College Student Persistence

by

Nichole Gibbs

MA, City University of New York, 2000

BS, Howard University, 1996

Dissertation Submitted in Partial Fulfillment

of the Requirements for the Degree of

Doctor of Philosophy

Psychology

Walden University

May 2013

Abstract

The low graduation rate of degree-seeking students at public community colleges is an important crisis facing communities across the United States. College satisfaction and withdrawal cognitions in students have been identified as key factors in college persistence by researchers. However, a review of the literature revealed no study in which a college-persistence intervention based on the personalization principle theory or using tailored messages has been conducted. The purpose of this study was to test the effectiveness of a college-persistence intervention, based on the personalization principle theory and Mashburn's theory, for students at a community college. This study used between-groups experimental research design and employed a nonprobability convenience sample comprising 108 college students at a regionally accredited public community college in the United States. Random assignment to 1 of 3 groups, including 2 experimental groups and 1 no-message control group, was conducted. The 2 experimental groups were the personalization-based tailored instructional messages and generalized instructional messages groups. A one-way MANOVA indicated that there was no significant difference in the college satisfaction and withdrawal cognitions of students in the experimental and control groups. A chi-square test of independence also indicated that there was no significant association between intervention type (personalization-based tailored instructional message, generalized instructional message, and no-message control) and college persistence. This study provides educators with a basis for social change with the debut of a prototype intervention that may be replicated and extended in future research to help students earn a college degree.

The Impact of Personalization-Based Tailored Instructional Communications on

College Student Persistence

by

Nichole Gibbs

MA, City University of New York, 2000

BS, Howard University, 1996

Dissertation Submitted in Partial Fulfillment

of the Requirements for the Degree of

Doctor of Philosophy

Psychology

Walden University

May 2013

UMI Number: 3563325

UMI®

Dissertation Publishing

UMI 3563325

ProQuest®

Table of Contents

List of Tables

List of Figures

Chapter 1: Introduction to the Study

Introduction

Historically, the focus of the community college has been to increase the number of students accessing college (Center for Innovative Thought, 2008). However, in the last two decades, the focus has shifted towards increasing the number of students successfully completing college (Spradlin, Burroughs, Rutkowski, Lang, & Hardesty, 2010). Researchers at the Center for Innovative Thought (2008) called this a shift towards matching access with success. As a result of the converging of multiple factors, such as the economy, war, and the unemployment rate, the focus on community colleges completion rates has never been greater (Center for Innovative Thought, 2008). Successful college completion is primarily defined in two ways at the community college for matriculated degree-seeking students: (a) earning an associate's degree or (b) transferring to a 4-year college or university after completing college credits (Eagan & Jaeger, 2009).

The typical associate's degree requires the completion of 60 credits, but many students who access the community college for the stated purpose of earning degree never complete the college degree (Offenstein, Moore, & Shulock, 2010) or transfer to another institution (The Integrated Postsecondary Education Data System, 2011). While there are nearly 1,200 2-year community colleges with regional accreditation in the United States (Center for Innovative Thought, 2008), according to the Integrated Postsecondary Education Data System, the overall graduation rate for degree-seeking students at public community colleges is just 22% for students in a cohort for which the

most recent data are available (Knapp, Kelly-Reid, & Ginder, 2011; Schneider, 2010). Further, fewer than three of 10 students who enroll full time at the community college will graduate with a degree within 3 years (National Center for Higher Education Management Systems, 2009). Researchers have consistently reported that many students are not using strategies for college success, such as accumulating credits early to create degree-completion momentum and taking classes during the summer terms, although research has demonstrated that these strategies are associated with college persistence (Offenstein et al., 2010), and college persistence is required to achieve college success.

An important, but heretofore underutilized, connection exists between industrial/organizational (I/O) psychology and the achievement of the college completion agenda. With respect to understanding the connection of I/O psychology to college persistence, Robbins, Oh, Le, and Button (2009) noted that employee turnover in an organization, an important focus of the literature in I/O psychology, is the conceptual equivalent of dropout in the college environment, with dropout reflecting a failure to achieve college persistence. In fact, I/O psychologists frequently conduct research on training and retention in varied settings (Robbins et al., 2009). However, while there are many types of college-persistence interventions, effective college-persistence interventions leading to a boost in college completion rates have largely eluded colleges and universities (Spradlin et al., 2010). College-persistence interventions can be classified into five categories that are transition programs, mentoring programs, learning communities, faculty/student interaction programs, and advising programs (Patton, Morelon, Whitehead, & Hossler, 2006). In 2010, Spradlin et al. conducted a review of

Patton et al.'s meta-analysis of effective college-persistence programs, as well as the

inventory of colleges and universities demonstrating significant increases maintained by

Noel-Levitz, and discovered that none of the 2-year colleges had developed an effective

faculty-student interaction program for increasing college persistence. Research has

revealed that most frequently reported effective interventions at the 2-year college fall

into the mentoring/counseling category (Spradlin et al., 2010), although research

indicated that these kinds of intervention programs are only effective when used with

other approaches, leading researchers to caution against the "excessive reliance on this

approach" (Spradlin et al., 2010, p. 10). Two-year colleges tend to use the interventions

that are least likely to impact college persistence (e.g., counseling/mentoring programs),

and they are least likely to use interventions for which empirical research demonstrates

there is a greater likelihood for impacting college persistence, such as student-faculty

interaction interventions, transition interventions, and learning community interventions

(Spradlin et al., 2010). Further exacerbating the problem is that while 2-year community

colleges have attrition rates higher than 4-year colleges and universities, most research

has focused on 4-year colleges and universities (Spradlin et al., 2010).

Problem Statement

Methods designed to improve college persistence rates have been addressed in the

literature (Patton et al., 2006; Spradlin et al., 2010). However, a review of the peer-

reviewed literature revealed no study in which a college-persistence intervention based

on the personalization principle theory or using tailored messages has been conducted.

Also, a review of the literature did not identify an occurrence where the personalization

instructional method has been used to successfully increase college persistence, increase student college satisfaction, or decrease withdrawal cognitions in college students. Several key stakeholders stand to benefit from this research. At the organizational level, community colleges can benefit from research that may reveal a method that can potentially contribute to an increase in student college persistence rates. Other organizations that may benefit from this research are employers that need college-educated employees. In addition, enrolled and prospective college students may benefit from this research that aims to create an effective method for improving students' college persistence attitudes, knowledge of college success behaviors, and college persistence behaviors.

Purpose Statement

The purposes of this experimental study were twofold. The first purpose was to test the personalization principle theory that explains the effect of personalization-based tailored instructional messages (PBT instructional messages) on student college satisfaction and student withdrawal cognitions for students at a 2-year community college on the east coast of the United States. The independent variable was type of intervention (PBT instructional messages, generalized messages, or no-message control). Type of intervention was defined as a planned effort comprising reasoned action aimed towards improving a noted outcome for one or more individuals targeted by the effort. The first dependent variable, college satisfaction, was defined as the extent to which a student is experiencing overall satisfaction with his or her college experience. The second dependent variable, withdrawal cognitions, was defined as a single higher order factor

that includes thoughts about dropping out of college, thoughts reflecting the intention to search for alternatives to being in college, and thoughts that include an intention to dropout (Mashburn, 2000). The second purpose of this study was to test whether there is an association between type of intervention and college persistence. The second purpose focused on whether the type of intervention is associated with college persistence. Type of intervention was defined as a planned effort comprising reasoned action aimed towards improving a noted outcome for one or more individuals targeted by the effort. College persistence was defined as continued enrollment at an institution as a matriculated degree-seeking student after the initial semester of enrollment.

Research Questions and Hypotheses

Research Questions

1. Is there a statistically significant group (PBT instructional message intervention group, generalized message intervention group, and control group) mean difference on a linear combination of college satisfaction, as measured by the College Descriptive Index, and withdrawal cognitions, as measured by the Mashburn Cognitions Survey, for college students?

2. Is there an association between type of intervention (PBT instructional message group, generalized message group, and control group) and persistence, as measured by enrollment at an institution as a matriculated degree-seeking student after the initial semester of enrollment?

Hypotheses

1. Null Hypothesis (H_0): There will be no statistically significant group (PBT instructional message intervention group, generalized message intervention group, and control group) mean difference on a linear combination of college satisfaction, as measured by the College Descriptive Index, and withdrawal cognitions, as measured by the Mashburn Cognitions Survey, for students at a 2-year college.

Alternative Hypothesis (H_1): There will be a statistically significant group (PBT instructional message intervention group, generalized message intervention group, and control group) mean difference on a linear combination of college satisfaction, as measured by the College Descriptive Index, and withdrawal cognitions, as measured by the Mashburn Cognitions Survey, for students at a 2-year college.

Subhypothesis. Alternative Hypothesis (H_2): There will be a statistically significant group mean difference on satisfaction, as measured by the College Descriptive Index, for students at a two-year college, with the PBT instructional message intervention group scoring significantly higher on satisfaction than the control group.

Subhypothesis. Alternative Hypothesis (H_3): There will be a statistically significant group mean difference on satisfaction, as measured by the College Descriptive Index, for students at a two-year college, with the PBT instructional message intervention group scoring significantly higher on satisfaction than the generalized-message intervention group.

Subhypothesis. Alternative Hypothesis (H_4): There will be a statistically significant group mean difference on withdrawal cognitions, as measured by the

Mashburn Cognitions Survey, for students at a two-year college, with the PBT

instructional message intervention group scoring significantly lower on withdrawal

cognitions than the control group.

Subhypothesis. Alternative Hypothesis (H_5): There will be a statistically

significant group mean difference on withdrawal cognitions, as measured by the

Mashburn Cognitions Survey, for students at a two-year college, with the PBT

instructional message intervention group scoring significantly lower on withdrawal

cognitions than the generalized-message intervention group.

2. Null Hypothesis (H_0): There will be no significant association between type of

intervention (PBT instructional message intervention, generalized message intervention,

and control) and persistence, as measured by enrollment at an institution as a matriculated

degree-seeking student after the initial semester of enrollment, for students a 2-year

community college.

Alternative Hypothesis (H_1): There will be a significant association between type

of intervention (PBT instructional message intervention, generalized message

intervention, and control) and persistence, as measured by enrollment at an institution as

a matriculated degree-seeking student after the initial semester of enrollment, for students

a 2-year community college.

Theoretical Framework

Personalization Principle Theory

The personalization principle theory, developed by Moreno and Mayer (2004),

was used as a rationale for the content of the college-persistence intervention. This theory

was used to test the effectiveness of personalized speech in an innovative personalization instructional method on learning in college students (Moreno & Mayer, 2004). Key concepts of the personalization principle are the personalization principle hypothesis, formal speech, informal speech, personalization, personalization instructional method, personalization effect, meaningful learning outcome, active cognitive processing, feelings of presence, physical presence, and social presence.

As it applies to this study and its first purpose, I expected the independent variable, type of intervention (PBT instructional messages, generalized messages, control), to have an effect on the dependent variables, withdrawal cognitions and student college satisfaction, because more learning occurs when personalized informal speech is used rather than nonpersonalized formal speech (Moreno & Mayer, 2004). After the personalization instructional method was implemented, it was expected that feelings of presence would be elicited in students and that these feelings of presence would result in active cognitive processing and ultimately more learning on the part of students about why and how they can personally achieve college persistence. Once students gained a meaningful understanding of why and how to achieve college persistence, it was expected that their college satisfaction would increase and that their withdrawal cognitions would decrease.

As applied to this study and its second purpose, I expected type of intervention (PBT instructional messages, generalized messages, control) to be associated with college persistence, because once students gained a meaningful understanding of why and how to achieve college persistence as a result of the type of intervention, it was expected that

their college satisfaction would increase and that their withdrawal cognitions would decrease, resulting in college persistence.

Mashburn's Theory

Mashburn's (2000) theory is a psychological model of student failure to achieve college persistence, which Mashburn referred to as dropout. Mashburn's theory has been used to explain the failure to achieve college persistence (Mashburn, 2000), predict college persistence (Schmitt et al., 2007), and aid in the development of a college-persistence attitudes measure (Davidson, Beck, & Milligan, 2009). Mashburn's theory is an adaptation of an organizational theory of employee turnover. Employee turnover has been adapted as an organizational theory of college student dropout, also referred to as student failure to achieve college persistence. Mashburn's theory explains student failure to persist in college as a two-phased intrapsychological process resulting in student action to terminate college persistence. The theory asserts that overall student dissatisfaction with the college experience leads to withdrawal cognitions, and withdrawal cognitions lead to student dropout (Mashburn, 2000). The withdrawal cognitions in Mashburn's theory are conceptualized as mediating the relationship between student dissatisfaction and dropout behavior. Dropout behavior is student action taken to terminate college persistence.

<div align="center">

Definition of Key Terms

</div>

Active cognitive processing: Paying attention to relevant material, organizing it into coherent mental representations, and integrating it with appropriate existing knowledge (Moreno & Mayer, 2004).

College persistence: Continued enrollment at an institution as a matriculated degree-seeking student after the initial semester of enrollment.

College persistence attitudes: Student attitudes relating to college persistence as measured by the College Persistence Questionnaire (CPQ; Davidson, Beck, & Beck, 2009).

College persistence behaviors: Behaviors associated with college persistence.

College satisfaction: The extent to which a student is experiencing overall satisfaction with his or her college experience.

Cognitive load: The extent to which an experience is mentally taxing or difficult.

Formal speech: Speech that is proper in nature and characterized by the use of a monologue.

Generalized instructional messages: Instructional messages that have been designed at the group level, rather than the individual level, for a broad audience of individuals.

Immersion: "Designing an instructional experience to promote the feeling of physical presence" (Moreno & Mayer, 2004, p. 166).

Informal speech: Speech that is conversational in nature.

Instructional message: A message developed by a college instructor with its purpose being or relating to increasing student knowledge in one or more areas and its intended use being inclusion in a personalized or tailored communication.

Intervention: A planned effort comprising reasoned action aimed towards improving a noted outcome for one or more individuals targeted by the effort.

Meaningful learning outcome: Knowledge that is internally coherent and externally connected and that promotes problem-solving transfer.

Nonvoluntary dropout: Students who failed to enroll in one or more college courses in subsequent terms due to ineligibility resulting from a failure to meet academic standards (e.g., academic dismissal; Mashburn, 2000).

PB instructional messages: Personalization-principle based instructional messages that have been designed based on the personalization principle theory and administered in the context of a personalization instructional method.

PBT instructional messages: Personalization-principle based tailored instructional messages that have been designed using a two-step process. The first step in the design process is personalization. Personalization is done one time at the group level for all individuals of interest. The second step is tailoring that is done at the individual level for each individual of interest.

Personalization: The design of an instructional message to promote the feeling of social presence (Moreno & Mayer, 2004).

Personalization effect: The greater learning that occurs in people when words are spoken in a conversational style rather than formal style (Moreno & Mayer, 2004).

Personalization instructional method: A type of instructional method based on the personalization principle that has been used by psychologists and others to successfully improve learning in college students (Moreno & Mayer, 2004).

Personalization principle: A theoretical framework that states that instructional messages should be presented in conversational rather than formal style, because deeper

learning will occur when conversational-style language is used, instead of formal-style language (Moreno & Mayer, 2004).

Personalized messages: Messages that use a person's name in the context of a communication (Eakin, Brady, & Lusk, 2001) and meet the needs of individuals by way of targeting (Peltier, 1994).

Physical presence: A feeling of being in and interacting in a place (Moreno & Mayer, 2004).

Social presence: "[The] sense of being with and interacting with another social being," that is sometimes referred to as *copresence* (Moreno & Mayer, 2004, p. 171).

Standard messages: Messages that include information that represents the usual care an individual receives (Bull et al., as cited in Eakin, Brady, & Lusk, 2001).

Student dissatisfaction: The extent to which a student is experiencing overall satisfaction with his or her college experience.

Student satisfaction: The extent to which a student is experiencing overall satisfaction with his or her college experience.

Tailored messages: Messages developed as the result of tailored messaging and greater in complexity than standard, targeted, and personalized messages (Eakin et al. 2001).

Tailored messaging: A combination of information/change strategies intended to reach one specific person, based on characteristics unique to the person that are related to an outcome of interest and derived from an individual assessment (Kreuter, Strecher, & Glassman, as cited in Stellefson, Hanik, Chaney, & Chaney, 2008; Kreuter, Farrell,

Olevtich et al., as cited in Demark-Wahnefried, 2007; Scholes at al., 2003). The relevant characteristics of each individual are identified and this information is used to develop and communicate a potentially unique message to each member in an identified group (Stellefson et al., 2008).

Tailoring: "The creation and distribution of messages for individuals rather than populations" (Stellefson et al., 2008, p. 304). Tailoring is based on one or more attributes of a prospective individual that are believed to be related to the outcome of interest in the individual (Kreuter, Farrell, Olevtich et al., as cited in Demark-Wahnefried, 2007; Kreuter, Strecher, & Glassman, as cited in Stellefson et al., 2008; Scholes at al., 2003).

Targeted messages: Messages designed to appeal to a specific subgroup that is relatively homogeneous on some set of specified characteristics in a given population (Bull, Kreuter, & Scharff, as cited in Eakin, 2001; Devries & Brug, 1999; Stellefson et al., 2008) rather than focusing on each individual, targeted messages focuses on the characteristics and needs of the majority of the target population (Stellefson et al., 2008).

Targeted messaging: A single-intervention approach aimed towards population subgroups with specific homogeneous characteristics (Kreuter & Skinner, as cited in Stellefson et al., 2008).

Targeting: When subgroups are identified and the same message is developed and communicated to all members of the identified group (Stellefson et al., 2008).

Total institutional dropout: The combination of voluntary and involuntary student dropouts for matriculated students in a previous term, quarter, or semester.

Voluntary dropout: Matriculated students who fail to enroll in one or more college courses in one or more subsequent semesters.

Withdrawal cognitions: a single higher order factor that includes thoughts about dropping out of college, thoughts reflecting the intention to search for alternatives to being in college, and thoughts that include an intention to dropout (Mashburn, 2000).

Nature of the Study

This study was quantitative in nature and used a between groups experimental research design. A convenience sample, a nonprobability sampling design, was used. A brief survey was used to gather demographic data from study participants.

Assumptions

This study included the following assumptions:

1. The College Descriptive Index (CDI) is a psychological measure of college satisfaction and has sound psychometric properties. In terms of psychometric properties, it is imperative that psychological measures demonstrate reliability by yielding consistent results across research administrations. Equally important to psychometric soundness is the value of validity. An assessment tool must measure what it is intended to measure. The results of research indicate that the CDI has demonstrated validity and reliability and these characteristics make it a sound psychometric measure of college satisfaction (Reed, Lahey, & Downey, 1984; Reed, Lahey, Ferguson et al., 2003; see Instrumentation section in Chapter 3).

2. The Mashburn Cognitions Survey (MCS) is a psychological measure of college withdrawal cognitions and has sound psychometric properties. The results of research demonstrate that the MCS is a valid and reliable measure of withdrawal cognitions, indicating that the measure is a sound psychometric measure of withdrawal cognitions (Mashburn, 2000).

3. The psychological measures used were appropriate for the sample employed. It was assumed that the college students who comprised the sample in this research study would have the cognitive ability to understand and correctly complete the CDI, MCS, and demographic survey.

4. Participants answered questions honestly on the CDI, MCS, and demographic survey. To encourage honest reporting, ID numbers were used on each participant's response forms and research participants' names did not appear on any participant response form.

Limitations

There are several limitations. The first limitation is that a nonprobability sample was used. The use of a convenience sample comprising students at one community college can produce meaningful results, but the ability to generalize the results to the larger population of community college students in the United States is limited as a result of this sampling design. The second limitation is the reliance on self-reporting measures. The CDI, MCS, and demographic questionnaire required participants to self-report and this means that participants' responses might not be accurate, due to intentional dishonesty in self-reporting or lack of self-knowledge on the part of participants.

Ethical Considerations

Ethical Issues in the Research Problem

The results of this research study may be meaningful to many individuals, as knowledge of how to increase college persistence and college satisfaction is important to students, faculty, college administrators, community leaders, and other stakeholders. In addition, such individuals can be expected to be similarly interested in decreasing the withdrawal cognitions of college students. The completion of this research study did not marginalize research participants in any way.

Ethical Issues in the Purpose and Questions

Deception was not used at any phase of the research process for this study. Each phase of the research process was undergirded by the ethical principles of beneficence and nonmaleficence, fidelity and responsibility, integrity, justice, and respect for people's rights and dignity.

Issues in Data Analysis and Interpretation

After approval of the research proposal by Walden University's Institutional Review Board, data collection began. Research participants' data were safe guarded and kept under lock and key, with the key being available to me only. To further protect research participants, the confidentiality of participants' responses was achieved by using only an ID number on participant responses in my data files. A single document containing participants' names and ID number was kept under separate lock and key. In keeping with the value of integrity that undergirded each phase of this research endeavor, honest reporting of data analysis has occurred.

Ethical Issues in Writing and Disseminating the Research

In addition to the final research report being presented to the dissertation committee members, the results of the research study will also be made available to the research participants themselves, the community from which the research participants were drawn, and the public at large.

Significance of the Study

The findings of this study may benefit not only psychologists and educators committed to advancing the college completion agenda, but also, and more importantly, the lives of students and employers and, therefore, the community at large. Finding a way to successfully help students increase their college persistence attitudes may help to shape the behaviors associated with college success and ultimately college completion.

Educational attainment is positively correlated with earned income (Zimmer & Guzman, 2012), and this means that results of this research could help to improve the quality of lives of individuals, because having a college degree increases the employment opportunities and the ability of individuals to earn a higher income. In addition, educators tasked with the challenge of ensuring that the college endeavor is successfully completed by those who choose to matriculate to the community college may benefit from the results of this study by gaining knowledge of a replicable educational intervention designed to contribute to the college completion agenda.

The ultimate purpose of this study was to effect positive social change by advancing the college completion agenda. The results of this study provide a useful and unique contribution to psychologists, college administrators, educators, and others who

are interested in increasing the number of students successfully completing college. Another useful finding of this study is that it provides information about the college persistence, college satisfaction, and withdrawal cognitions of individuals from various racial and ethnic backgrounds, and this deepens the knowledge base in each of these areas. Finally, this study provides a prototype intervention that may be replicated and extended by others who have similarly purposed to improve the lives of others by helping students to successfully earn a college degree.

Summary

I/O psychology is poised as a unique discipline focusing on adaptive behaviors for the organization to provide solutions to challenges that community colleges face as institutions of higher learning. I/O psychologists frequently conduct research on training and retention in varied settings, with employee turnover being a typical subject of research (Robbins et al., 2009). The conceptual equivalent of employee turnover in the college environment is student failure to achieve college persistence, which is sometimes termed dropout (Robbins et al., 2009). College-persistence rates at community colleges are significantly lower than the goals set by college administrators and the expectations of the community at large. A dearth of knowledge exists on effective interventions for increasing the rates of degree completion and transfer rates for students at the community college. The personalization principle theory was used as the rationale for the creation of the content of the communications included in a college-persistence intervention.

The personalization principle theory provides a compelling framework for developing content for a college persistence intervention, because it explains how to

create messages that will result in deeper and more meaningful learning outcomes for students. Mashburn's theory is an adaptation of an organizational theory of employee turnover that has been adapted as an organizational theory of student failure to achieve college persistence (Mashburn, 2000). Mashburn's theory explains student failure to persist in college as a two-phased intrapsychological process starting with overall college dissatisfaction leading to withdrawal cognitions that result in student action taken to terminate college persistence. The purpose of this study was to test the effectiveness of a college-persistence intervention, based on the personalization principle theory and Mashburn's theory, for students at a community college.

The personalization principle theory explains how to develop messages that will result in deeper and more meaningful learning outcomes for students. Mashburn's (2000) theory explains the relationship between college satisfaction and student failure to achieve college persistence. Two research questions were posed by this study. The first question focused on the efficacy of college-persistence interventions for increasing student satisfaction and decreasing withdrawal cognitions. The second question addressed the association between types of college-persistence interventions and actual college persistence. This study is well explained in the upcoming chapters. Chapter 2 includes the literature review for the study. Chapter 3 includes a discussion of the methodology for this study. The results for the study appear in Chapter 4. The final chapter for the study, Chapter 5, includes a summary and interpretation of the findings for this study; implications for social change; recommendations for further research; and a conclusion.

Chapter 2: Literature Review

Organization of the Chapter

The purpose of this study was to examine the effect of a college-persistence intervention, using PBT instructional messages, on students' satisfaction, withdrawal cognitions, and persistence, in the context of the personalization principle theoretical framework and Mashburn's psychological model of college persistence. The goals of this study were to positively influence students' satisfaction, withdrawal cognitions, and college persistence using a college-persistence intervention grounded in the personalization principle theory and thus a personalization-based instructional method. To facilitate the achievement of this goal, each of the relevant constructs is discussed in its own major section, and the chapter is concluded with a brief summary of the literature discussed. The seven major sections in this chapter are (a) Personalization Principle Theory; (b) Personalized Messages; (c) Tailored Messages; (d) Personalization-based Instructional Messages; (e) Development of Personalized, Tailored, and PBT-Instructional Communications; (f) College Persistence Theories; and (g) Summary.

Description of the Literature Search

An Internet-based literature search was conducted using the Walden Thoreau Catalog across multiple sessions between December 2009 and May 2011. Multiple databases were accessed via the Thoreau Catalog, including Academic Search Premier, ERIC, Medline Mental Measurements Yearbook, ProQuest, ProQuest Digital Dissertations, PSYCArticles, and psycINFO. The terms and expressions used in the search include *college*, *college persistence*, *college retention*, *graduation rates*,

persistence attitudes, *persistence rates*, and *persistence theories*, as well as *messages*, *messaging*, *personalized*, *personalized messages*, *personalized messaging*, *tailored*, *tailored messages*, and *tailored messaging*.

In addition to the noted databases in the Thoreau Catalog, the research reports database of the U.S. Department of Education's National Center for Educational Statistics (NCES) was also searched during the same time period. The following terms and expressions were used to search the NCES database: *attrition*, *college*, *college persistence*, *graduation rates*, *persistence rates*, and *retention*. The scholarly literature resulting from the comprehensive literature search includes primarily peer-reviewed journal articles. Other types of scholarly literature yielded from the literature search include research reports, books, and dissertations. Scholarly sources not available electronically from the noted databases were obtained via the Walden University document delivery service or from the Library of Congress.

Personalization Principle Theory

Personalization principle theory is a theoretical framework that states that when instructional messages are presented in a conversational rather than formal style, deeper learning will occur (Moreno & Mayer, 2004). The theory suggests that as a result of a conversational style language being used, feelings of presence are elicited and these feelings facilitate deeper learning. The feelings of presence may be social or physical or both. The feelings of *social presence* refer to "the sense of being with and interacting with another social being," and are sometimes referred to as copresence (Moreno & Mayer, 2004, p. 171). The feelings of *physical presence* refer to the feeling of being in

and interacting in a place (Moreno & Mayer, 2004). The personalization principle theory asserts that the feelings of presence elicited from the instructional messages serve as intervening variables, and these feelings of presence result in deeper learning.

The deeper learning that occurs in people when words are spoken in a conversational style rather than formal style is known as the *personalization effect* (Moreno & Mayer, 2004). The personalization principle theory states that the personalization effect occurs as a result of using a personalization instructional method. A *personalization instructional method* is a type of instructional method based on the personalization principle that has been used by psychologists to successfully improve learning in college students (Moreno & Mayer, 2004). The personalization instructional method is an instructional method that has incorporated *personalization* (Moreno & Mayer, 2004). Personalization is the design of an instructional message to promote feelings of social presence (Moreno & Mayer, 2004). A personalization instructional method can also incorporate *immersion*. Immersion involves designing an instructional method to promote feelings of physical presence (Moreno & Mayer, 2004). According to personalization principle theory, the delivery medium is not what fosters the learning, but rather the personalization instructional method (Moreno & Mayer, 2004). There is no limit to the number of media that could be constructed for use with the personalization instructional method. To date, media used with the personalization principle theory have been limited to a handful of studies using multimedia games featuring personalization and immersion.

Definitions of Personalized Messages

Personalization principle theory has emerged in the last decade and is thus relatively new. Personalization principle theory focuses on describing, explaining, controlling, and predicting learning using the medium of personalization instructional methods. Personalization as a concept has been discussed in the health, communication, and marketing literatures for more than 2 decades. In these literatures, researchers discussed the use of personalized messages.

In the context of the health, communication, and marketing peer-reviewed literatures, personalized messages are typically defined as messages that use a person's name in the context of a communication (Eakin et al., 2001) and meet the needs of individuals by way of targeting (Peltier, 1994). The targeting occurs when subgroups are identified and the same message is developed and communicated to all members of the identified group (Stellefson et al., 2008). The targeted messages can be personalized by using the name of the individual, and in such an instance, the message is typically then referred to as a personalized message. That means that these personalized messages are essentially targeted messages that have been personalized using the person's name, and thus called personalized messages.

Distinctive differences exist between the personalized messages developed based on personalization principle theory and those based on other theoretical frameworks. The latter messages are designed to appeal to a specific subgroup that is relatively homogeneous on some set of specified characteristics in a given population (Bull, Kreuter, & Scharff, as cited in Eakin, 2001; Devries & Brug, 1999; Eakin et al. 2001;

Stellefson et al., 2008). Rather than focusing on each individual, targeted messages focus on the characteristics and needs of the majority of the target population (Stellefson et al., 2008). These messages are frequently used as part of a single-intervention approach that is known as target messaging. In target messaging, the single-intervention approach is aimed towards population subgroups with specific homogeneous characteristics (Kreuter & Skinner, as cited in Stellefson, 2008). In contrast to personalized messages grounded in other theoretical frameworks and used in the context of target messaging, the personalized messages in this study were developed based on the personalization principle theory and used in the context of a personalization instructional method.

To delineate between the different types of personalized messages and clarify the type of messages used in the study, two terms are introduced here and used from this point forward. First, *personalization-principle based instructional messages* (*PB instructional messages*) refer to personalized instructional messages designed based on the personalization principle theory and administered in the context of a personalization instructional method. Second, when these kinds of messages have also been tailored, they are referred to as *personalization-principle based tailored instructional messages (PBT instructional messages.* The study, as described in Chapter 3, used PBT instructional messages.

PBT instructional messages refer to messages that have been personalized based on the personalization principle theory and tailored to the individual. PBT instructional messages are defined as personalization-principle based tailored instructional messages that have been designed using a two-step process. The first step in the design process is

personalization, according to the personalization principle theory, and personalization is done one time at the group level for all individuals of interest. The second step is tailoring, and tailoring is done at the individual level for each individual of interest.

Studies on Personalized, Tailored, and Personalization-Based Instructional Messages

Studies on Personalized Messages

Overview. Personalized messages are messages that use a person's name in the context of a communication (Eakin et al., 2001) and meet the needs of individuals by way of targeting (Peltier, 1994). Researchers have suggested that personalized messages may help to fully illuminate the seriousness of challenges facing individuals. For example Visram, Crosland, and Cording (2009) suggested that using personalized messages can help study participants to "consider the seriousness of their situation" and find the "motivation to make changes to their lives" (p. 498). Weinstein et al. (1992) asserted that using personalized messages may help the individual to overcome the tendency to ignore the advice contained in a message discussing the individual being at risk, because individuals have a tendency to deny the personal applicability of advice when it is contained in an impersonal or nontailored letter. Herein lies the rationale for personalization being typically operationalized as the use of the target individual's name in the personalized message. However, personalized messages can also personalize on other variables, such as age, race, self-statement, etc.

For example, in one study, researchers (Bingham, Quiqley, & Murray, 2002) aimed to influence the behavior of individuals by using print-based personalized letters administered via mail. Specifically, college administrators aimed to significantly increase the monetary donations of alumni by using personalized appreciation letters. Researchers used five programs, two of which involved personalized communications and three used nonpersonalized communications. In this study personalization was operationalized as the use of the person's name in an appreciation letter. In the first personalized-communications group, individuals were mailed a personalized letter from a senior faculty member. In the second personalized-communications group, researchers received the personalized letter from a senior faculty member in addition to an alumni fund report. Researchers found that overall there was a positive significant difference in the percentage of individuals who donated in the first personalized communications group and all other groups (Bingham et al., 2002). In addition, the first personalized communications group elicited the largest increase in the size of alumni donations (Bingham et al., 2002).

While the researchers (Bingham et al., 2002) conducted a well-designed study, the results do not include the effect size of the independent variable, the personalization program. It is appropriate, and would have been helpful, for the researchers to report the effect size of the personalization program, as suggested by Morgan, Reichert, and Harrison (2002). However, the study makes a useful contribution to the literature. Further, the results of this study demonstrate the efficacy of personalization by way of first name in a program or intervention using letters. These results implied that

personalization via use of an individual's name would be likely to be positively impactful in the current study described in Chapter 3 that used letters as a medium for communicating with research participants.

In another study intended to positively influence the behavior of individuals, researchers (Weinstein et al., 1992) found significant differences between groups receiving the personalized communications, personalized communications plus a follow-up phone call, and nonpersonalized communications, but not in the areas expected. In this study, researchers aimed to increase participants' learning and compliance with a health-related behavioral directive (Weinstein et al., 1992). Like the Bingham et al. (2002) study, researchers sought to influence the behavior of individuals and used letters as a medium for communication with participants, along with additional components for some participant groups. Researchers used personalized letters accompanied by an information brochure and list of resources administered via mail. Personalization was operationalized in this study as the use of the participants name in the letter's salutation, incorporation of the participant's prior test results and corresponding suggested action items, the use of first-person pronouns, an informal style of writing, and a real signature. The extent of personalization for participant letters in this study is greater than that of the Bingham et al. (2002) study that only used the participant's name. The researchers found that there was no significant difference in the learning or compliance with the request to use a radon detection device for the personalized and nonpersonalized communications groups. However, researchers did find a statistically significant difference between the groups in terms of participant satisfaction (Weinstein et al., 1992). Participants in both personalized

messages groups reported significantly greater perceptions of clarity of information and significantly greater perceptions of trustworthiness of the information presented than their counterparts in the nonpersonalized message group.

While Weinstein et al.(1992) do adequately report the extent of significance, as *p* values, associated with each of the study's three dependent variables, compliance with advice, satisfaction with program, and accuracy of recall, the Weinstein et al. study shares the weakness of the Bingham et al. (2002) study. The researchers did not include the corresponding effect sizes in instances where significance was found. Established guidelines for the reporting of results suggest that a measure of effect size be included, so that readers may appreciate and assess the actual magnitude of the effect (American Psychological Association, 2010). However, the researchers do present sufficient information in the display of results and written results, so that readers with sufficient statistical knowledge could compute effect sizes.

One implication of the Weinstein et al. (1992) study is that the use of personalized messages may minimally involve three routes to increasing college persistence, with the first route involving influencing student satisfaction, the second route influencing knowledge, and the third route influencing attitudes. The greater satisfaction experienced by participants receiving the personalized intervention is of interest, because researchers have demonstrated that student satisfaction is linked to college persistence (Mashburn, 2001; Spady, 1971). The results of this study also imply that personalization via the use of an individual's name, as well as the use of first-person pronouns, an informal study of writing, and the inclusion of an actual signature, each of which was used in the study

described in Chapter 3, would be likely to be increase participants' perceptions of clarity and perceived trustworthiness of information in this dissertation study. It was particularly important for participants to have a clear understanding of the information presented in the intervention. This study is also useful in informing the development of the upcoming study, because the researchers suggested that personalization interventions are most effective with populations who are not well educated, with well-educated being defined as having earned a 4-year degree. In this dissertation study, none of the participants had earned a four-year degree and all were first-year college students.

While Bingham et al. (2002) and Weinstein et al. (1991) aimed to influence behavior, other researchers focused on influencing attitudes. Harvell and Lust (1995) were interested in influencing employee attitudes towards a university and used personalized messaging as the modality for the program. The researchers were interested in positively influencing employees' attitudes towards saving and examining whether differences would exist in the influence of personalized and neutral messages on attitudes as a result of a mailed print brochure (Harvell & Lust, 1995). Unlike the other noted studies that personalized letters using the participant's name and used letters as the medium for communication, Harvell and Lust used brochures as the medium of communication. This study also differs from the other noted studies, because readability tests were used to assess the reading grade-level of the participant communications. The brochures were personalized according to an individual's membership in a particular age group. Three age groups were used: 20-37 years, 36-51 years, and 52 years and over. The rationale was that individuals in these three categories were at the same career/life stage

that was believed to be related to the variable of interest, retirement savings. For each of the three personalized groups, the content addressed for each of the nine content areas was the same, but the arguments varied based on the information believed to be most relevant to each age group. The generalized brochure was not geared towards any particular age group.

Researchers found significant differences in the pretest posttest attitudes of participants for both the personalized message group and the generalized message group. Specifically, the attitudes towards savings and attitudes towards employee saving plans were positively influenced as a result of exposure to personalized messages, as well as neutral messages. There was no significant difference in the pretest posttest attitudes towards retirement preparation for either group. Also, there was no significant difference in the posttest attitudes of the treatment and control groups. The authors of the study suggested that the results indicate that the personalized messages were not personalized enough to create a differential impact in the personalized messages and generalized messages group (Harvell & Lust, 1995). Another explanation for the lack of differential impact on attitudes is that age was not an appropriate characteristic to use for personalization and the subsequent formation of experimental groups (Harvell & Lust).

One concern with the results of the study is that while the researcher's did assess the readability of the participant brochures used as the medium of communication, the researchers do not address what impact, if any, the difference in readability levels had on posttest attitudes of participants in the personalized and generalized groups. Because the personalized group received a brochure written at the 8th grade reading level and the

generalized group received a brochure written at the 10th grade reading level, it appears

such a discussion, particularly in light of the finding of no significant differences between

the posttest attitudes of the treatment and control groups is warranted. However, the study

makes a unique contribution to the literature and is useful for informing future research in

the area. For example, the use of the Flesch Reading Ease and Flesch Grade Level

readability measures is an appropriate feature of the design of a study that should be used

to assess the equivalency of the reading level for treatment and control groups, so that the

potential confounds of readability and reading-level are eliminated. The upcoming study

included this as a design element. In addition, the results of this study suggest that the

level of personalization used in the planned college-persistence intervention needs to be

sufficient enough to warrant a reasonable expectation of a differential impact on the

control and treatment groups. Specifically, the Harvell and Lust implies that the planned

study should necessarily use more than one attribute variable, such as name or age, as the

extent of personalization, in the design of the upcoming study

Tailored Communications

Overview. Researchers have used tailored communications in much the same

way as personalized communications, despite the difference in the type of

communications. In contrast to studies using personalized messages, studies using

tailored communications require the completion of a baseline interview with participants.

Typically, the baseline interview is conducted at time one, the implementation of the

tailored communication is conducted at time two, and a posttest survey or interview is

conducted at time three. Tailored messaging may be designed and appropriately used to

influence the attitudes, behavioral intentions, learning, and behavior in individuals. The rationale for the use of tailored messaging is that its customization will capture the attention of the target individual, meet the individual's information needs, and influence the individual's cognitive-behavioral responses (Stellefson et al., 2008). The goal of the intended college-persistence intervention is to positively influence student's college persistence attitudes and their corresponding behaviors. In this way, using tailored communications for college-success education, another type of high-stakes education, is well grounded in the context of the existing literature on the use and purposes of tailored communications.

Evidence suggests that using tailored messages to effect behavior change may be a better strategy than using nontailored messages, because, individuals tend to pay greater attention to tailored message than nontailored messages, recall greater messages more easily than nontailored messages, and consider tailored-messages more trustworthy than nontailored messages (Rimal & Adkins, as cited in Pilling & Brannon, 2007). This greater attention, recall, and consideration given to tailored communications is likely related to the finding that when information in a message is tailored to the target individual's personal factors, the message is more relevant to the individual (Murray-Johnson & Witte, as cited in Pilling & Brannon, 2007). In the next section, a review and discussion of the results of studies using tailored communications to influence attitudes and behaviors are presented. After the review, a section on how to develop tailored communications is offered.

Research studies using tailored communications. Research studies have demonstrated the efficacy of tailored communications in influencing attitudes, behavioral intentions, learning, and behavior in individuals. More frequently, tailored communications have been used as an intervention modality targeting behavior change in individuals. For example, a researcher found that a series of tailored print-based newsletters and workbooks were significantly more effective than nontailored newsletters and workbooks in increasing the dietary and exercise practices of individuals in a 10-month intervention (Demark-Wahnefried, 2007).

A baseline interview was conducted and these data from this baseline survey were used to tailor written materials sent at time one. At time one, a tailored workbook using text written at a fifth to seventh grade reading level, tailored record log, pedometer, theraband, fat gram counter booklet, dried fruit samples, butter substitute samples, and exercise module were sent. The word tailored is used because information beyond the name of the participant was used to tailor communications, although the researcher used the terms tailored and personalized interchangeably in the research report.

A series of tailored four-page newsletters were then sent 6 weeks apart. Interim surveys were conducted with participants to facilitate the use of iterative tailoring of the newsletters. The researcher concluded that the tailored communications intervention resulted in a significantly higher percentage of individuals achieving the targeted goal behaviors that included eating healthier foods and engaging in exercise in the tailored-communications intervention group than individuals in the control group. The results of this study imply that using a combination of a tailored letter and booklet is likely to be an

effective method of tailoring for the upcoming study. The results of this study also suggest that administration of the tailored communications via mail will be effective in increasing the target college persistence behavior in the upcoming study.

Similarly, researchers (Latimer et al., 2007) aiming to increase the physical activity of individuals using tailored messages found that the use of tailored messages led to significantly greater physical activity and positive feelings in individuals than did nontailored messages (Latimer et al., 2007). As typically conducted in tailored messaging interventions, researchers in this study conducted a baseline interview that was conducted via computer-based telephone interviewing. In contrast to the Denmark-Wahnefried (2007) study that used print-based newsletters and booklets along with other materials, the tailored-messaging intervention in this study included two components, an audiomessage delivered via telephone, as well as a printed physical activity guide administered via mail (Latimer et al., 2007).

The audiomessage was disseminated immediately following a baseline interview. The prerecorded audio message encouraged regular physical activity and participants were randomly assigned to the promotion-focused regulatory group or the prevention-focused regulatory group. Promotion-focused referred to being "motivated to use means of goal pursuit that ensure the presence of positive outcomes" (Latimer et al., 2007, p. 826), and prevention-focused referred to being "motivated to use means of goal pursuit that ensure the absence of negative outcomes." (Latimer et al., 2007, p. 826). The printed physical activity guide was tailored to the regulatory focus randomly assigned group for each individual and was sent one day after the participant's informed consent was

received. The postintervention interview was conducted two weeks later via telephone (Latimer et al., 2007).

Researchers found that for those individuals motivated by use goal pursuit to ensure positive outcomes, the promotion-focused individuals, receiving tailored messaging intervention that matched their regulatory focus significantly increased their physical activity. No significant difference was found in the physical activity of prevention-focused individuals who received prevention-focused tailored messages. The results of this study imply that an intervention conducted over a relatively short time span, as a little as two weeks in this case, can be effective in significantly influencing behavior when appropriately tailored communications are used in an intervention. In another study published by the Journal of the American Medical Association, researchers found that tailored print newsletters were most effective in getting individuals to comply with a physician's recommendation to get a mammogram (Voelker, 1994). Like the Denmark-Wahnefried (2007) and Latimer et al. (2007) studies, Voelker used print-based tailored letters administered via mail. In this study, Voelker found that 44% of individuals who received a tailored-letter completed the mammography screening, in contrast to 31% who received the standard nonpersonalized letter. For African American research participants, the effect was even greater, with 75% of African American participants receiving the tailored letter completing a mammogram, in contrast to 33% of their African American counterparts who received the standard nontailored letter. The effect was also larger in participants with low incomes relative to others, with 60% of participants with low incomes who received the tailored letter completing their

mammograms in contrast to only 38% of women who received the standard

nonpersonalized letter.

Note that the author of this study used the terms personalized and tailored

interchangeably in the research report. Careful review of the study revealed that a tailored

intervention was used, based on the aforementioned definitions of personalization and

tailoring. Voelker (1994) conducted a baseline survey to gauge participants' attitudes and

perceptions regarding mammograms. The baseline data collected was subsequently used

to create unique tailored communications for each research participant. In this study the

researcher also found that individuals read more of the tailored letters and had greater

recall of information presented in the tailored letters than individuals who received

nontailored letters (Voelker, 1994). The results of this study inform the development of

the upcoming study by revealing that tailored communications can be an effective

strategy for African Americans and individuals with low incomes. Individuals with both

backgrounds are likely to be included in the sample of participants in the planned college-

persistence intervention. The results of this study also suggest that an intervention using

tailored messaging may result in students learning and recalling more of the information

presented in tailored-communications than in nontailored communications.

Like Denmark-Wahnefried (2007), Latimer et al. (2007), and Voelker (1994),

Scholes et al. (2003) used tailored communications in an attempt to influence the

behavior of individuals and administered the tailored communications via mail. In a

randomized trial aimed at effecting change in individual behavior, researchers used

tailored communications as the modality for a safer-sex behavioral intervention. The

individuals randomly assigned to the tailored communications were labeled the intervention group, and those randomly assigned to usual care became the control group and received the usual care from their health care professionals. The baseline survey was conducted via computer-assisted telephone interviewing. Iterative tailoring was used as a result of an interim computer assisted telephone interview conducted three months after the baseline interview. The intervention program involved sending participants an intervention packet at time one, the start of the study, and a booster newsletter at time two, immediately after the three-month baseline interview.

At time one, individuals in the intervention group received a 12-page magazine-style booklet that the researchers called *Insights*, tailored to each individual based on the individual's responses to the baseline survey. The participants in the intervention group also received in the same mailing condoms, a condom carrying case, and instructions for using condoms. At time two, the intervention group received the booster-newsletter, tailored to the individual and based on the individual's responses to the interim survey. Researchers found that participants in the tailored-communications group were significantly more likely to have used a condom with any partner in the last 3-months, significantly more likely to have discussed condom use with a partner, and had significantly higher condom-use self-efficacy with a primary partner, than did individuals in the control group. This finding informs the upcoming study, because college persistence researchers have suggested that self-efficacy is one of the psychological processes that influences college persistence attitudes, which then influence college persistence behaviors (Bean & Eaton, 2001).

Another group of researchers (Sullivan & Transue, 2000) desired to increase the voting behavior of individuals and used tailored communications administered via mail as the mechanism for intervention. The study is described here as tailored, because data provided by each participant at time one was used to develop and communicate a unique message to each participant at time two. The study used a tailored-messaging design and included a "personalized-message" group and a "nonpersonalized message" group, which are essentially a tailored-message and nontailored message group respectively. As was the case in the other studies discussed, the participants in the Burgess, Haney, Snyder, Sullivan and Transue (2000) study were sent communications via mail. Unlike the other studies, this study did not use letters or brochures as the medium for communication, but instead used postcards. This study also differs from the prior studies, because instead of the researchers singularly developing a personalization scheme for each participant, the participants were required to create the specific personalization in a defined context, a voting pledge postcard. For the personalized message group, the messages were personalized as a function of each participant's own self-written sentence completion statement, such as I will vote because _____. Essentially, personalized reasons were used. This allowed each participant to provide a personal self-constructed reason for engaging in the desired behavior. The participants in the nonpersonalized message group received a general message which said "I will rock the system by exercising my right to vote on November 5, 1996" (Burgess et al., 1994).

The personalized voting pledge postcards were administered via mail (Burgess et al., 1994). Researchers found that participants who received personalized pledge

postcards were significantly more likely to vote on election day ($p < .030$), than those who received nonpersonalized pledge cards. In addition, self-reported data indicate the personalized messages were effective for both participants who filled in the personalized message, thus creating a personalized pledge-card ($p <. 030$), as well as those who received, but did not fill out the personalized pledge card ($p < .045$). The results of this study suggest that for the planned college-persistence intervention using personalized communications, the intervention may be effective even for participants who do not comply with one or more directives noted in the personalized communications.

One limitation of the study is an error of nonobservation as a result of participants' refusal to answer, which is addressed by the researchers, but not to the extent possible. Specifically, the researchers report that there was a low return rate, which was 32%. Researchers have suggested that individuals who typically refuse to complete surveys are older adults or poorly educated (Scheaffer, Mendenhall, & Ott, 2006). To minimize measurement error in studies using surveys that require participants to respond, research design experts have asserted that the use of an incentive is an appropriate tactic for encouraging responses (Scheaffer et al., 2006). Specifically, Scheaffer at al. (2006) asserted that prepaid monetary incentives, rather than promised monetary gifts or incentives, may be used to most effectively minimize nonresponse error and increase study participation rates. When combined with the design elements of nonrandom assignment and convenience sampling, it appears that the results should be interpreted with caution, because the study may have poor generalizability. However, the study makes a unique and useful contribution to the peer-reviewed literature by reporting the

study design feature that called for participants to self-construct the personalization of their participant communication. Further, the results of this study inform the upcoming college-persistence intervention by demonstrating that the use of prepaid monetary incentives will likely be needed to avoid dismally low participation rates and to capture a sufficient number of participant surveys.

In another study researchers (Eakin et al., 2001) aimed to prevent hearing loss in individuals exposed to loud noise and used tailored communications as the mechanism for prevention, which focused on behavioral intentions, motivation, and learning. In contrast to the previously discussed tailored-communication studies, which used mail administration of tailored-communications, Eakin et al. (2001) conducted a computer-based administration of tailored communications. Eakin et al. (2001) developed a 30-minute computer-based interactive tailored messaging program. Eakin et al. (2001) found that there was a significant difference in the motivation to comply with the target behaviors between individuals in the tailored-communications group and individuals in the nontailored communications group, as well as a significantly higher degree of learning for individuals in the tailored communications relative to individuals in the nontailored communications group. Participants in the tailored-communications group reported that they learned more and were more motivated to engage in the behaviors targeted by the researchers than the individuals in the nontailored communications group.

Because the computer-based program was interactive and used an algorithm, baseline-data and follow up data were collected immediately prior and following the tailored-communications intervention. The innovative design of the study design

eliminated the need for data collection at times one, two, and three, which is typically required in a tailored-communication intervention, because the data captured was immediately implemented in an intervention. In this way, the study demonstrates how the time one, time two and time three data collection periods typically used in a tailored-messaging intervention may be collapsed into one time period comprising the baseline interview, tailored-communication intervention implementation, and intervention evaluation. The results of this research study imply that a computer-based tailored communications intervention conducted at one-point in time can be effective in producing positive significant change in the behavioral intentions, intrinsic motivation, and learning of individuals. A limitation of the study is that follow up to assess whether behavioral intentions resulted in behavioral change was not conducted, but such an extension of this research design would be appropriate to use in the upcoming study.

Like Eakin et al. (2001), Pilling and Brannon (2007) examined the efficacy of an intervention for influencing the attitudes and behavioral intentions of individuals and used a computer-based administration for the implementation of the intervention. Pilling and Brannon used onsite Internet-based messaging communications and found that messages that were tailored to the individual based on self-schema or personalized feedback were more effective in influencing college students' attitudes than nontailored messages, which included generalized social norms messages or neutral control messages, for health education messages. Students who received tailored messages had more favorable attitudes towards the messages, found the messages to be more interesting, and assessed the messages as more likely to be effective with other students,

than students in the nontailored message groups. As required for tailored messaging studies, the tailored messages were tailored based on the individual's responses to a baseline measure, which was used to determine the individual's self-schema, for those randomly assigned to the self-schema tailored message group , or to gather personal information to be used for personalized feedback, for those randomly assigned to the personalized feedback tailored message group. Interestingly, both the self-schema and personalized-feedback tailored message groups were similarly effective and rated as equally favorable by research participants (Pilling & Brannon, 2007). Pilling and Brannon suggested that both tailored messages were most effective because they were framed more personally for the individual in contrast to the generalized social norms messages and neutral control messages, which were framed in general terms.

The results of this study inform the upcoming study, because they demonstrate that college students, the target population for the college-persistence intervention, have responded favorably to computer-based tailored interventions and believe that tailored messages will be more effective with their peers than nontailored messages (Pilling & Brannon, 2007). The results of this research also provide additional evidence of the potential efficacy of a computer-based tailored communications intervention. As was the case with the Eakin et al. (2001) study, a limitation of this study is that follow up to assess whether behavioral intentions resulted in behavioral change was not conducted. Again, extending the computer-based research design by including a follow-up data collection effort to assess participant behavior as it relates to stated behavioral intentions would be appropriate to use in the upcoming study.

Studies on PB Instructional Messages

   Overview. *PB Instructional Messages* are personalized instructional messages designed based on the personalization principle theory and administered in the context of a personalization instructional method. As noted earlier, *PBT Instructional Messages* are messages that have been personalized based on the personalization principle theory and tailored to the individual. According to personalization principle theory, personalization will elicit feelings of social presence and immersion will elicit feelings of physical presence. Moreno and Mayer (2004) suggested that personalization may induce social presence, which causes the learner to give greater attention to the academic content in a message more attention. In fact, the purpose of personalization is to construct a social presence (Reeves & Nass, 1996).

   Social presence is posited to serve as an intervening variable between personalization, the independent variable, and learning outcomes, the dependent variable. According to personalization principle theory, the result of personalization will be an increased sense of social presence and thus improved learning outcomes (Moreno & Mayer, 2004).   In 2004, the first study found in the peer-reviewed psychological literature to present personalization principle theory and provide definitions of its relevant constructs was published, although some of the relevant constructs have been discussed elsewhere. Indeed researchers have noted that definitions and clarification of social presence and physical presence constructs were needed (Brunken, Plass, & Leutner, 2003; Sadowski & Stanney, 2002).

Studies on PB instructional messages. In contrast to the discussed studies using personalized or tailored messages, in this study using PB instructional messages, the researchers conducted a study grounded in the personalization principle theory. Researchers (Moreno & Mayer, 2004) conducted a study that presented personalization principle theory and discussed the effect of PB instructional messages on learning in college students. The study had two primary purposes. The first purpose was to determine whether using PB instructional messages administered in the context of computer-based simulation games, would cause deeper learning in college students (Moreno & Mayer, 2004). The second purpose was to determine whether immersion would cause better retention or transfer of information. In this experiment, participants were randomly assigned to four treatment groups.

The groups were PB instructional messages via desktop delivery, PB instructional messages via head-mounted display, neutral instructional messages via desktop delivery, and neutral instructional messages via head-mounted display. The PB instructional messages were administered via a personalization instructional method, which was a multimedia game (Moreno & Mayer, 2004). The game was identical in content for all four groups, with the exception of personalization and immersion. For the two PB instructional messages groups, personalized I-you informal conversational language was used, and for the neutral instructional messages group nonpersonalized, third-person formal monologue-like language was used (Moreno & Mayer, 2004). High immersion was operationalized using head-mounted displays and participants in these groups were exposed to the game via head-mounted display, while the low-immersion

groups were exposed to the game via traditional desk-top computer displays (Moreno & Mayer, 2004). In similar fashion to the tailored-communications studies conducted by Pilling and Brannon (2007) and Eakin et al. (2001), the baseline survey, intervention, and posttest survey were conducted in a singular time period.

Moreno and Mayer (2004) found that college students exposed to PB instructional messages in low immersion and high immersion treatment groups had significantly greater deeper learning outcomes, as well as greater retention of instructional material, than the students exposed to the neutral instructional messages. There were no significant differences in the deeper learning outcomes or retention of instructional material for students exposed to neutral instructional messages in the high immersion and low immersion treatment groups (Moreno & Mayer, 2004). The results of this study suggest that a college-persistence intervention using instructional messages is likely to have better deeper learning outcomes and greater retention of instructional content for students in a PB instructional messages group than students in a neutral instructional messages group. The results also suggest that the use of high-immersion and low-immersion modalities may be similarly impactful on learning outcomes and knowledge retention for PB instructional messages used in a college-persistence intervention.

In another study, the same group of researchers (Moreno & Mayer, 2000) examined the effect of PB instructional messages on learning in college students with a multimedia-based personalized instructional method. The purpose of the study was to use PB instructional messages to attempt to enhance the learning outcomes of college students. In contrast to the prior study, which used a game as the medium for the tailored

communications, several media were used in this study. Five experiments were conducted using a face-to-face multimedia based instructional method. For experiments 1 and 2 experiment, which used animation, a voice-over audio containing personalized speech, speech using first and second person pronouns or nonpersonalized speech was used, in addition to comments directed at the participant. Speech was created in a neutral fashion by using only third-person pronouns. For experiments 3, 4, and 5, which used a discovery learning game, a narrated personalized-speech pedagogic agent provided explanations using the first and second person, while the neutral-speech pedagogic agent provided explanations using the third person. In the third experiment, the game used a narrated-voice (pedagogic agent) and interspersed questions. For the fourth experiment, the same discovery-learning game used in experiment 3 was used, was presented as on-screen text at the bottom of the computer screen. For the fifth experiment, the design of experiment three was replicated, but interspersed questions were removed.

The results of the study indicate that when communications used PB instructional messages, students were subsequently better able engage in problem solving involving the use of the presented instructional material in all instances and better able to remember greater quantities of important information in some instances, than students who received neutral communications (Moreno & Mayer, 2000). Specifically, for all five experiments, students exposed to PB instructional messages, whether via the medium of a multimedia animation or multimedia game, had significantly better deeper learning outcomes, than students exposed to neutral instructional messages (Moreno & Mayer, 2000). In experiments 3, 4, and 5, where a multimedia science game was used, students exposed to

PB instructional messages were more likely to recall significantly greater quantities of instructional material than students exposed to neutral instructional messages (Moreno & Mayer, 2000). In experiments one and two, when a multimedia animation was used, there were no significant differences in the recall of instructional material for students exposed to PB instructional messages and those exposed to neutral messages (Moreno & Mayer, 2000). The results of this study inform the upcoming study be demonstrating that PB instructional messages can be effectively used in the context of a tailored communications intervention. Further, these results suggest that using PB instructional messages in the context of a college-persistence intervention may be effective for increasing the recall of information by the participants and improving the ability of participants to problem solve as it relates to the content in the college-persistence intervention. Both studies conducted by Moreno and Mayer provide a sound empirical foundation for the decision to design the content of the college-persistence intervention grounded in personalization principle theory, because they demonstrate the efficacy of using tailored-communications content designed based on the personalization principle theory.

Development of Personalized, Tailored, and PBT-Instructional Communications

Development of Personalized Communications

As discussed earlier in the chapter, personalized communications are messages that use a person's name in the context of a communication (Eakin et al., 2001) and meet the needs of individuals by way of targeting (Peltier, 1994). Personalized communications are typically operationalized as communications using the name of the

communication recipient, although such communications can be personalized using other variables, such as age, pronoun use, etc. Personalized communications may be created in the form of an audio message, print-based message, Internet-based message, on-site computer-based message, or multimedia-based message (i.e. animation or game). Print-based messages are a popular option and frequently involve creating letters, newsletters, or booklets for research participants.

In terms of dissemination, personalized messages can be administered face-to-face, via computer, hand-held personal device, i.e. Blackberry, telephone, or mail. In addition, personalized communications may vary in terms of complexity and length. A personalized communication may include as few as one communication administered at one-point in time or as many as dozens of communications administered across several years. Generally, personalized communications do not require researchers to gather new information from the intended personalized communication recipients, include one to three communications, and are administered in a one-shot design or across several months.

Development of tailored communications. Tailored communications typically require more effort in terms of development than personalized communications. Specifically, to successfully create tailored communications requires a researcher to (a) have a means for collecting relevant information, such as characteristics and behavior, from the individuals with whom the researcher will communicate; (b) a database of the universe of information to be presented in the actual communication; (c) an algorithm or systematic approach for making selections of target-relevant appropriate communication

content; and 4) a method for delivery of the communication that is understandable to each target individual (Devries & Brug, 1999; Stretcher 1999). Researchers have also suggested that tailored messaging should address the individual needs and motivational attributes of individuals (Kreuter, Oswald, Bull, & Clark, 2000).

When tailored communications are developed, typically baseline surveys are conducted to gather the necessary information about each individual to use in the subsequent tailored communications with the individual. The baseline surveys can be administered face-to-face, or via Internet, mail, or telephone. Typically, baseline surveys are conducted via computer-assisted telephone interviewing with standardized surveys. If the tailored-communications intervention is conducted over a length of time, rather than with a one-shot design, an interim survey may be conducted, in order to facilitate the use of iterative tailoring, which allows a researcher to include more recent information in subsequent communications included in a tailored-communications protocol. The exception to the use of baseline surveys involves using interactive medium, such as computer-based software that gathers data on the personal characteristics of individuals and responds in real-time with tailored communications to the individual.

As is the case for personalized communications, tailored communications may be created in the form of an audio message, print-based message, Internet-based message, on-site computer-based message, or multimedia-based message (i.e. animation or game). Again, as was the case for personalized communications, print-based messages are a popular option and frequently involve creating tailored letters, tailored newsletters, or tailored booklets for research participants. The methods for dissemination for tailored

communications are also the same as those for personalized communications and include face-to-face, computer, hand-held personal device, i.e. Blackberry, telephone, and mail administration. Also, while tailored communications may vary in terms of complexity and length, many tailored communications involve at least two tailored communications administered over a period of time spanning several weeks or months.

The development and delivery of tailored messages has been streamlined as the result of newer technologies, such as computers (Stellefson et al., 2008). When there is great individual-level variation on a construct that influences behavior, it is possible to increase the effectiveness of communications by tailoring messages to individuals (Kreuter et al., 2000). Typically, persuasive messages that are tailored to the individual are more persuasive than nontailored messages (Murray-Johnson & Witte, as cited in Pilling & Brannon, 2007). When tailored communications are used in health education, the communications are selected from a vast message library and selected for a target individual on the basis of an algorithm that matches the target individual's behavior, as well as the psychosocial determinants of the individual's health behavior (Kreuter et al., 2000). The same may design, which includes the use of a message library, may be logically applied to the use of tailored communications with nonhealth related content, such as college success strategies and behaviors.

Development of PBT instructional communications. *PBT Instructional Messages* are personalization-principle based tailored instructional messages, which have been designed using personalization and tailoring principles in a two-step process. The goal in using PBT instructional communications is to elicit the personalization effect. The

personalization effect is the deeper learning that occurs in people when words are spoken in a conversational style rather than a formal style (Moreno & Mayer, 2004). The first step in the design process of a PBT Instructional Communication is personalization, according to the personalization principle theory. The second step in the design process of a PBT Instructional Communication is tailoring.

Personalization, created in concert with the personalization principle theory, is done at one time at the group level for all individuals of interest. Recall that the personalization instructional method is an instructional method, which has incorporated *personalization*, which is the design of an instructional message to promote feelings of social presence (Moreno & Mayer, 2004). Also recall that the *personalization principle theory* asserts that instructional messages should be presented in a conversational rather than formal style to elicit deeper learning in individuals as a result of the mediating variable termed feelings of presence, which me be social or physical (Moreno & Mayer, 2004). This means that personalization in the context of PBT-Instructional Communications involves using informal conversational language in order to elicit feelings of presence in the communication recipient.

The feelings of *social presence* refer to the sense of being with and interacting with another social being" (Moreno & Mayer, 2004, p. 171)), and are sometimes referred to as copresence (Moreno & Mayer, 2004). *Immersion* involves designing an instructional message to promote feelings of physical presence (Moreno & Mayer, 2004). According to personalization principle theory, the delivery medium is not what fosters the learning, but rather the personalization instructional method (Moreno & Mayer,

2004). This means that there is no limit to the number of media that could be constructed for use with the personalization instructional method. To date, media used with the personalization principle theory has been limited to a handful of studies using multimedia games featuring personalization and immersion.

The second step in the development of a PBT-instructional message is tailoring, which is done at the individual level for each individual of interest. The methods used for tailoring are discussed in the immediately prior section on development of tailored communications and are not repeated for the sake of brevity. However, as is the case for personalized communications and tailored communications, PBT instructional communications may be created in the form of an audio message, print-based message, Internet-based message, on-site computer-based message, or multimedia-based message (i.e. animation or game). Again, as was the case for personalized communications and tailored communications, the methods for dissemination for PBT-instructional messages include face-to-face, computer, hand-held personal device, i.e. Blackberry, telephone, and mail administration. Finally, PBT-instructional communications, like its predecessors, may vary in complexity, length, and duration of administration.

College Persistence Theories

College persistence is length of time for which a matriculated degree-seeking student continues to be enrolled in credit courses beyond the initial semester of enrollment. In the last 40 years, various theoretical explanations of college persistence have been offered. The nine major college persistence theories include (a) Spady's (1971) sociological model, (b) Tinto's student integration model, (c) Pascarella's model, (d)

Astin's model of student involvement, (e) Student attrition model (f) Structural model of

student persistence, (g) Transition theory, (h) Padilla's model, and (i) Mashburn's

adapted model. These theories are reviewed in order of their development and

presentation to the scholarly community. While many of these theories have been widely

discussed, few and in some instances no empirical studies on the theories have been

found in the peer-reviewed literature. Following this discussion, a brief summary of the

theories are be presented, followed by the presentation for the rationale of the selection of

the most appropriate theory for application in this study.

Explanation of Theories

       Spady's sociological model. One of the first major college persistence theories

focused on a theoretical model of causal variables leading to a student's decision to

dropout and was published in 1971 by Spady. Spady was interested in studying whether a

causal relationship between social integration and other sociological factors existed with

college persistence. Nearly half a century ago, in 1965, Spady collected data from 600+

male and female students at the University of Chicago. As a result of his analysis of this

data, Spady formed an empirical model to explain college dropouts. Spady's work

represents pioneering efforts in the field of college persistence and made substantive

long-term contributions to the field. Specifically, Spady suggested that full integration

into college life depends on social and academic integration. Evidence for the validity of

these assertions continues to mount, as these concepts are included newer models of

college persistence, which will be reviewed later in the chapter.

According to Spady's empirical model, which is grounded in the sociologist Emile Durkheim's social integration concept, there's an interrelationship between nine key variables (Spady, 1971). Spady postulated that there are two attribute variables, which are factors in college persistence: (a) family background and (b) academic potential; that two external variables are factors: (c) friendship support and (d) institutional commitment; and that five variables resulting from the interaction between the student and college are factors: (e) grade performance, (f) intellectual development, (g) normative congruence, (h) satisfaction, and i) social integration. Spady found that the relation among these variables to college persistence varied for men and women. Overall, for both men and women, Spady found that academic performance was the greatest factor in determining college persistence.

Beyond academic performance, Spady (1971) suggested that other important factors in the extent to which college students persist include "having opportunities for contacts with faculty members" (Spady,1971, p. 60), having an intellectual and cultural orientation, attitudes towards learning, and involvement with students engaged in extracurricular activities. The value of faculty-student interactions noted by Spady will also be echoed in other college persistence theories, such as Pascarella's theory. Another component of Spady's theory that is discussed in subsequent theories is a focus on the "early stages of the dropout process" (Spady, 1971, p. 60). Spady's research suggested that institutional commitment is generated relatively early in a student's college experience and during the first year. The primary contribution of Spady's early work was its assertion about the fundamental role of social integration to college persistence. In

addition to social integration, two factors included as variables in Spady's Model, student satisfaction and institutional commitment have been frequently adopted as key components in subsequent models of college persistence.

Student integration model. In 1975, Tinto published an interactional model of student departure. Tinto's model focuses on the variables that contribute to students departing from college (Tinto, 1975; 1988). The overarching theme of Tinto's model is the purported significance of the active role of both the student and the college playing out simultaneously and interactively. Tinto (1975) suggested that there is an interactive dynamic that exists between the student and the institution. In Tinto's interactional model, college persistence is viewed as a result from the interplay between the student and institution, both of whom possess characteristics and behaviors that may or may not mesh well together (Tinto, 1975).

According to Tinto's Student Integration Model, transitioning to college occurs in phases (Tinto, 1998). Tinto (1988) asserted that college students experience three linear phases: (a) separation, (b) transition, and (c) incorporation. In the first phase, separation, students separate from past associations and form new associations in the new college environment (Tinto, 1988). In the transition phase, students are transitioning by acquiring new knowledge, acting out new roles, and learning to fit into new groups (Tinto, 1988). During incorporation, the final phase, the student fully incorporates the new roles and knowledge into his or her identity, social norms, and behavior patterns (Tinto, 1988). Tinto noted that if a student is not able to successfully overcome the challenges associated with each of the noted stages, then the student may "depart" from college as a

result of difficulties with social or academic adjustment in social communities or academic communities (Tinto, 1988).

The separation phase occurs at the beginning of a student's college career. Tinto (1988) noted that in terms of college persistence, the first six months are the most important period of time for students, because student dropouts are most likely to occur during the first year of college. Recall that Spady emphasized the importance of the first year in terms of college persistence also. Tinto argues that the first six months are the most important for all college students. Surprisingly, and as Tinto suggested, perhaps ironically, students at nonresidential colleges may find persistence during the first stage, separation, easier because they are not residing on campus, but persistence in the later stages, transition and incorporation, more difficult (Tinto, 1988).

For example, during the second stage in Tinto's model, transition, students are expected to integrate into the college community by separating themselves from past associations and behaviors and taking on new behaviors appropriate to the particular college environment, as well as new associations (Tinto, 1988). However, the stress of such transitions is frequently too difficult, in the absence of help, to withstand, and many students dropout of college at this point (Tinto, 1988). Stress is a subjective experience and Tinto (1988) noted that coping skills, commitment, personality, and educational roles all play a role in the extent to which a student experiences stress, as well as how the student responds to perceived stressors.

In the third phase, incorporation, students are expected to establish competent membership in the college community primarily as the result of social interactions

between themselves and other students, as well as social interactions between themselves and faculty (Tinto, 1988). However, if the student fails to experience such interactions, this can lead to a lack of social integration, a lack of academic integration, or both, resulting in a sense of isolation. Tinto suggested that the experience of isolation may then lead the student to dropout from the college at which he or she is degree seeking or dropout permanently from higher education. Perhaps most challenging of all is that students may have little or no awareness of the "transition required in becoming integrated into the life of the college" (Tinto, 1988) and its catalytic relationship to degree completion. The major contributions of Tinto's work include the parallel focus on the role of both academic and social integration.

Pascarella's models. In 1980, Pascarella published a conceptual model for student persistence, which stresses the importance of students' relationships with faculty members. Pascarella asserted that the outside-of-class interaction between faculty and students can have a potentially unique and positive impact on college persistence, as well as other areas of student development. Pascarella's conceptualization stresses the importance of "individual faculty members as informal agents of socialization during the college student's experience" (Pascarella, 1980, p. 571).

Pascarella suggested that informal faculty contact with students is differentially impactful on students, depending on the student's year. Specifically, Pascarella asserted that when students have informal contact with faculty, these communications are most likely to have a significant positive impact on the college persistence of first-year college students only. Like Spady and Tinto, Pascarella argues that the first year experience of

students is very important in terms of college persistence. Pascarella noted that in addition to informal contact with faculty increasing freshman to sophomore college persistence, informal contact with faculty is also believed to increase students' academic achievement, satisfaction with college, educational goals, intellectual development, and personal development. Pascarella suggested that informal contact with faculty after the first year is unlikely to have a similarly significant positive impact on college persistence for sophomore to junior year persistence or junior to senior year persistence.

Pascarella (1980) suggested that the content of nonclassroom student-faculty contact is important, because not all types of informal contact are similarly impactful on student development and persistence. Communications that focus on academic interests, future career concerns, artistic interests, literary interests, and value issues are believed to be most positively impactful on student's college persistence, as well as their personal development and educational goals (Pascarella, 1980). Pascarella suggested that the qualitative aspect of the communications is important, because "it may well be that the quality and personal satisfaction derived from initial informal contacts determine, to a considerable extent, the subsequent amount of informal contact a student will seek with faculty." (Pascarella, 1980, p. 565).

Recently, Pascarella has produced a new conceptualization of college persistence, guided by Tinto's theory (Pascarella, Salisbury, & Blaich, 2011; Pascarella, Seifert, & Whitt, 2008). Pascarella et al. (2011) argue that the extent to which a student achieves academic and social integration, concepts used in most of the major theories of college persistence, such as Tinto's theory, largely determines whether or not the student will

persist in college from the first year to the second year. However, as recently as 2011, Pascarella asserted that faculty nonclassroom interactions have a positive effect on college persistence (Pascarella et al., 2011), while highlighting in his new conceptualization of college persistence, the role of faculty in-class instructional behaviors.

Essentially, Pascarella's New Model suggests that organized, clear faculty instructions causes increased student satisfaction, which then leads to first-year to second-year college persistence (Pascarella et al., 2011). In Pascarella's New Model, student satisfaction is a mediating variable between effective in-class instruction and first-year to second-year college persistence. Specifically, Pascarella et al. (2011) found that college satisfaction accounted for more than 75% of the impact of effective organized instruction on college persistence. While college grades were hypothesized to be a second mediating variable, the evidence from a large scale multiinstitutional study, which included 19 colleges and universities, including two community colleges, did not support this assertion (Pascarella et al., 2011). In addition to providing two models of college persistence, Pascarella has provided useful guiding principles for the development of content for faculty communications with students, when college persistence is the goal.

Astin's theory of student involvement. In 1984, Astin published his developmental theory of student involvement (Astin, 1984, 1993, 1999). The theory of student involvement builds upon earlier empirical research published by Astin in the 1970s. Astin (1999) noted that the theory of student involvement emerged in part to his

frustration with the idea of the student as the *"Black Box"*. Interestingly, in the upcoming Padilla model, Padilla uses the *Black Box* as the center piece for his theory of college persistence. Astin's theory of student involvement postulates that the extent to which a student's psychological and physiological efforts are given to academic experience determines the extent of the student's academic success, with greater levels of time and effort resulting in a larger number of academic successes (Astin, 1984; 1999). Astin noted that his model is relatively simple and does not require "dozens of boxes interconnected by two-headed arrows to explain the basic elements of the theory (Astin, 1999, p. 518).

In contrast to the upcoming Mashburn model which focuses on intrapsychological processes, Astin's theory of student involvement asserted that what matters is what the student actually does, not what the student thinks (Astin, 1999). Astin stresses the importance of student participation as effort and time on task with respect to the college experience. Astin suggested that the behaviors of the student are what is most important for student success, "not so much what the student thinks or feels", (Astin, 1999, p. 519). While Astin acknowledges that feelings and cognitions are contributors to student motivation and as such play some role in college success, he argues that the critical factor is the student's behaviors.

Astin's theory also includes five basic postulates. The first three focus on the student, while the others focus on educational programming aimed at students. The first postulate indicates that students use psychological and physical energy in varied ways ranging from specific to general (Astin, 1999). The second postulate indicates that the

degree of student involvement exists on a continuum, which can vary from student to student and for the same student from time one to time two or from task A to task B (Astin, 1999). The third postulate indicates that student involvement varies in terms of both quantity and quality (Astin, 1999).

The fourth and fifth postulates are what Astin terms educational postulates, because they focus on "…clues for designing more effective educational programs for students." (Astin, 1999, p. 519). The fourth postulate, and the first educational postulate, states that for any educational program, the quantity of student learning will be directly and proportionally related to the nature (i.e. quality and quantity) of the student's involvement (Astin, 1999). In the second educational postulate, the last of the five postulates, Astin asserted that for any educational program, program effectiveness will be the direct result of its ability to increase student involvement.

Astin concluded that no matter what program is used by a college, the mediating mechanism will be student involvement in the college experience. Astin also noted that it's important to recognize that educator's must compete with all of the other forces jockeying for a share of the student's finite time and energy. Astin also suggested that the student's time may be the most valuable resource of a college. It appears then, that according to Astin's theory, any intervention aimed at increasing student's college persistence should aim to expand the extent of the student's college experience by increasing the amount of psychological and physical energy that a student spends on college success behaviors.

Psychological model of college student retention. In 2000, Bean and Eaton published the Psychological Model of College Student Retention. The Psychological Model of Student Retention assumes that leaving college is a psychologically motivated decision and focuses on the psychological processes that explain why students leave college (Bean & Eaton, 2000). Bean and Eaton (2000) note in contrast to Spady and Tinto's theories, which offer sociological explanations for why students leave college, their model offers psychological explanations. However, like Tinto and Spady's theories, the model also includes academic integration and social integration as key factors. The model represents and integration and elaboration of four theories, which include attitude-behavior theory, coping behavioral theory, self-efficacy theory, and attribution theory, and is structurally based on the work of Fishbein and Ajzen's model adapted by Bentler and Speckart (Bean & Eaton, 2000).

The Psychological Model of College Student Retention updated Bean's earlier Conceptual Model of Nontraditional Undergraduate Student Attrition (Bean, 1990; Bean & Metzner, 1985). According to the Psychological Model of Student Retention, several psychological processes, including self-efficacy assessments, coping processes, and attributions of control, occur within the context of the college experience, and lead to either positive or negative student attitudes about institutional fit, as well as positive or negative student attitudes about institutional commitment. Like Spady and Tinto, Bean's Model asserts that institutional commitment is a key factor in college persistence. The Psychological Model of Student Retention further asserts that if the student has positive attitudes about institutional fit and commitment, these will lead to the intention to persist,

which will then lead to college-persistence behaviors. Prior versions of the model

focusing on student attrition noted that negative attitudes lead to intentions to leave

(Bean, 1990). However, the newer version of the Psychological Model focuses on student

retention.

The attitudes purported to directly and indirectly, via intent to persist, influence

college persistence behaviors are those attitudes about institutional fit and institutional

commitment (Bean & Eaton 2000). Bean and Eaton report that attitudes about

institutional fit refer to a student's attitude about whether he or she fits in the academic

and social environment of the college. Attitudes about institutional commitment are

explained as attitudes reflecting a student's emotional attachment and loyalty to a

particular institution (Bean, 1990).   The model asserts that student attitudes about

institutional fit and institutional commitment predict whether or not students will persist

in college (Bean, 1990; Bean & Eaton, 2000).

Bean (1990) argues that positive institutional fit and institutional commitment

attitudes must be nurtured in students, if students are to persist in college. Bean noted that

support from faculty can positively impact student attitudes toward a particular college

and the student's feeling about fitting in at a particular college. Like Pascarella, Bean

argues that informal contact with faculty members is beneficial to students, when it is

viewed positively by the students. Bean also cautions that while retention programs

should focus on affecting student attitudes, programs should not be conducted in a

"manipulative way" (Bean, 1990, p. 165). Bean suggested that it is important for

"students to feel that someone on the campus cares about them as a whole person, not just

a number or a source of tuition" (Bean, 1990, p. 162-163). Bean (1990) argues that the first priority of any college retention program should be affecting student attitudes.

Cabrera et al.'s merged model. In 1993, Cabrera, Nora, and Castenada developed a merged Structural Model of Persistence, which resulted from empirical tests of Tinto's Student Integration Model and Bean and Eaton's Student Attrition Model (Cabrera, Nora, & Castenada, 1993). Cabrera et al. note that while both models recognize college persistence as resulting from a complex set of interactions, and have considerable overlap, each has some unique contributions. Therefore, they tested the nonoverlapping propositions of both models and subsequently offered a new model grounded in the results of their empirical investigation. They argue that the Merged Model of college persistence provides a more comprehensive understanding of college persistence in terms individual, environmental, and institutional factors (Cabrera et al., 1993).

The major innovation of the Merged Model is that it includes Bean's assertion of the impactful role of environmental factors on student socialization, as well as the academic experiences of students. Specifically, the results of their investigation found that college persistence, defined as reenrollment of first-time first year students in the subsequent second year, was primarily accounted for in effect coefficients, in order of impact, by intent to persist (.485), student grade point average (.463), institutional commitment (.273), and encouragement from friends and family (.217) (Cabrera et al., 1993). The most impactful factor, intent to persist, was found to be largely the result of institutional commitment, encouragement from friends and family, and goal commitment (Cabrera et al.) Cabrera et al. maintain that the new Merged Model of persistence is an

improvement of both Tinto's Student Integration Model and Bean and Eaton's Student Attrition Model. The Merged Model of Student Persistence suggests that interventions aimed at increasing college persistence in students should attempt to influence student's intentions to persist.

Scholssberg's transition theory. Transition theory is a psychosocial theory of adult development, which has been frequently applied to college persistence (Evans, Forney, Guido, Patton, & Renn, 2010). The earliest assertions of the theory were first published in 1981 and borrowed heavily from the work of others (Evans et al., 2010). Researchers have suggested that Schlossberg's transition theory is important because it can be used to both explain college persistence and develop effective strategies for working with college students aiming for degree completion (Evans et al., 2010). When applied to college persistence, transition theory asserts that the college experience is a psychosocial process characterized by transitions that are successfully negotiation as a result of the building up of assets in the self, situation, support, and strategies as they relate to a particular transition (Evans et al., 2010).

There are three components of transition theory, which are the transitions, the process of transition, and the influential factors that affect transitions. Transitions are defined as events that alter one's adult life (Sargent & Schlossberg, 1988). Transitions can be anticipated, nonanticipated, or a nonevent (Evans et al., 2010). The process of transition occurs over time and has been conceptualized as three phases, which are moving in, moving through, and moving out (Evans et al., 2010). During the first stage, there is a preoccupation with the transition (Evans et al. 2010), which is resolved during

the moving through phase. During the moving through phase, the student acquires new behaviors. When the new behaviors are fully integrated, then the student is in the final phase, the moving out phase. The four influential factors affecting transitions are (a) self, (b) situation, (c) support, and (d) strategies (Evans et al., 2010; Sargent & Schlossberg, 1988). According to transition theory, these influential factors explain how students cope with the developmental and contextual challenges associated with the pursuit of a college degree.

For a college student, each of the four factors will bring assets or deficits to the student's particular transition. For the factor, the *self*, the idea is that each individual has psychological resources, personal characteristics, and demographic characteristics that will play a role in how well the student transitions (Evans et al., 2010). Some examples of psychological resources are optimism, self-efficacy, and spirituality (Evans et.al. 2010). Some examples of personal characteristics viewed as potentially influential in the transitions process are age, gender, and socioeconomic status (Evans et al., 2010).

For the second factor, the *situation*, transition theory suggests that when a student faces a challenge and examines the situation, the success of the transition will depend on the six major characteristics of the situation, which are the situation's trigger (what caused the situation), timing (is it good timing or bad timing), control (whether an internal or external locus of control is experienced with respect to the situation, role change (is there a new role, and if so is this new role a plus or minus), duration (is the duration of the situation temporary, permanent, or unknown), prior similar experience (are there any carryovers from my prior similar experiences, concurrent stress (are there

many stressors at this time), and assessment (how does the individual view the situation's causal agent or agents).

The third factor, *support*, addresses the extent to which a student has social support, which includes "intimate relationships, family units, networks of friends, and institutions and communities" (Evans et al., 2010, p. 217). The fourth factor, *strategies*, addresses how well a student modifies, transforms, or adapts to the transitions necessary in a new situation. Essentially, the goal is for the individual to develop a plan of action that will increase the individual's strengths and skills for coping with a particular transition (Sargent & Schlossberg, 1988). The student may draw on four coping modes, with the use of multiple coping methods being viewed as desirable. The four coping modes are "information seeking, direct action, inhibition of action, and intrapsychic behavior" (Evans et al., 2010, p. 217). Both Tinto (1988) and Schlossberg (Evans et al. 2010) argue that a student's ability to cope with transitions is critical to the student's college success. According to Schlossberg's transition theory, it appears that interventions aimed at increasing student college persistence can help students by equipping students with information that can be used to help students develop college success strategies.

Padilla's black box model. In 1999, Padilla published a new model of student retention based on qualitative research, now termed the General Student Success Model (Wirth & Padilla, 2008). In contrast to some of the previous models that focused on why nonpersistence emerges, rather than why persistence prevails, Padilla's model focuses exclusively on college-persisters rather than nonpersisters. Padilla's model

conceptualizes the college experience as a "Black Box". The *Black Box* is "…how students arriving at a particular campus are transformed over time into either successful or unsuccessful students in terms of degree attainment" (Padilla, 1999, p. 134). In contrast to Astin (1999) who views the input end of the black box as college programs and policies, Padilla views the input as the sum of the characteristics that the student possesses upon entering the college. While Astin (1999) noted that most academicians view the student as the actual *Black Box*, Padilla asserted that the *Black Box* is in fact the college campus experience, which is filled with barriers to degree attainment.

In Padilla's General Student Success Model, the salience of barriers to degree completion may vary with each student, but common across the experience of all students is the need to overcome a configuration of barriers to degree completion using knowledge (Padilla 1999; Wirth & Padilla, 2008). In the Padilla model, when the student doesn't have the requisite knowledge to overcome one or more barriers, and the student fails to overcome numerous barriers, the student will likely dropout of college. The knowledge discussed in Padilla's model includes heuristic and theoretical knowledge. Heuristic knowledge refers to knowledge gained from the college experience and theoretical knowledge refers to knowledge gained from books and formal study (Padilla, 1999; Wirth & Padilla, 2008). Padilla asserted that both kinds of knowledge are needed to successfully overcome barriers to degree completion.

Padilla's model suggests that students must have the knowledge necessary to effectively negotiate the challenges that they will face in a local, or specific, college environment. In other words, the students must become experts on how to succeed at

their local campus. It is suggested that while all students have some theoretical knowledge gained from formal learning and heuristic knowledge gained from experiences, the extent of that knowledge will ultimately determine the extent to which the student is able to successfully overcome the local configuration of barriers to degree completion facing the student (Padilla, 1999; Wirth & Padilla, 2008).

Padilla noted that interventions should focus on "…the set of actions that the institution might take to help students overcome the identified barriers (Padilla, 1999, p. 142). Padilla reports that part of the appeal of the *Black Box* conceptualization is that it beckons the investigator to "try out various ideas about what may be going on inside the black box." (Padilla, 1999, p. 134). Padilla also stresses the importance of developing a local model based on qualitative analysis (Padilla, 1999; Wirth & Padilla, 2008). The culmination of an extensive qualitative study by Wirth and Padilla was the generation of a local implementation model designed to serve as blueprint for a college persistence intervention for the particular community college examined in the study. While the researchers did not implement a college persistence intervention, the implementation model did identify the key to implementing the local model of student success identified for the particular community college. According to Padilla's Model, it appears that college persistence interventions should aim to increase the knowledge that students have about college success strategies and behaviors in order to help students successfully overcome presumed and known barriers at a particular college.

Mashburn's psychological model. In 2000, Mashburn presented the Mashburn Model, which explains student dropout behavior in the college environment. The model

is an adaptation of Hom, Caranikas-Walker, Prussia and Griffith's organizational employee turnover model, which explains why employees drop out or quit a particular job (Mashburn). The Mashburn Model suggests that student satisfaction plays a key role in determining whether a student will persist or drop out of college. Recall that student satisfaction also played a key role in Spady's Sociological Model, as well as Tinto's Student Attrition Model.

Student dissatisfaction is conceptualized as what happens when a student receives outcomes in the college environment that are different than the outcomes the student wants or expects to receive in the college environment (Mashburn, 2000). According to Mashburn, when a student experiences college dissatisfaction this causes the student to experience withdrawal cognitions, which then cause the student to drop out of college. Mashburn noted that college dropout can be voluntary or nonvoluntary. Voluntary dropouts occur when the student elects to not enroll, and nonvoluntary dropouts occur when the student is dismissed for academic reasons. In either case, the Mashburn model suggests that college dropout is the result of withdrawal cognitions.

The withdrawal cognitions in the Mashburn Model are proposed to be a mediator variable, with the relation between student satisfaction and student dropout being mediated by student withdrawal cognitions (Mashburn, 2000). It is theorized that when a student voluntarily drops out of college, it is because of withdrawal cognitions, which are explained as an intra-psychological process. Mashburn demonstrated empirically, with the use of a confirmatory factor analysis, that withdrawal cognitions are a single higher

order factor comprising three items, which are "thoughts of quitting, search intentions, and dropout intentions" (Mashburn, 2000, p. 186).

Mashburn noted that his model explains the "relations among attitudes, cognitions, and student dropout behavior" (Mashburn, 2000, p. 174). In this model, thoughts of quitting include any thoughts about quitting college; Search intentions include the intention to search for a new environment as an alternative to the current college environment; and intentions to dropout include the intention to leave the college environment (Mashburn, 2000). Because an attitude is comprised of thoughts, behavioral intentions, and feelings about an issue or object (Kosslyn & Rosenberg, 2006), it is the author's perception that withdrawal cognitions in Mashburn's model may be a part of a larger construct, which is college persistence attitudes.

Mashburn's Psychological Model includes the cognitive and behavioral intention component of attitudes, but does not include the affective component, as it does not address the student's feelings about dropping out of college. The author wonders if the affective component was included in the Mashburn model, whether the already good predictions for dropout behavior generated by the model might be improved. In any case, according to Mashburn's Adapted Model, it appears that college persistence interventions should aim to increase student's satisfaction with college for students who are either satisfied or dissatisfied already, and aim to diminish or eliminate withdrawal cognitions for students who are already dissatisfied with college.

Rationale for selection and application of the Mashburn psychological model.
Many of the theories reviewed have overlapping concepts, but for the purposes of this

study, one model of college-persistence will be used as a theoretical framework for the development of a college-persistence intervention. The Mashburn Psychological Model was selected because the model explains the causal relationship between college-persistence attitudes and behaviors. Specifically, the model indicates that when students are dissatisfied with college, this causes them to have withdrawal cognitions, which then affect their college persistence by causing college dropout.

In terms of student satisfaction, Mashburn (2000) also noted that student satisfaction is key. The Mashburn Psychological Model asserts that there is a direct relation between student satisfaction and withdrawal cognitions; and a subsequent direct relation between withdrawal cognitions and drop out behavior. The proposed intervention will be designed to increase faculty involvement, which according to these models will increase student satisfaction and ultimately increase college persistence behavior.

The rationale for the development of the intervention is further bolstered by support found in Pascarella's Model, which emphasizes the value of student-faculty interaction. Other researchers have also noted that part of institutional commitment needs to include faculty interaction with students (Wild & Ebbers, 2002). The Pascarella model demonstrated empirically that increased frequency of informal professor-student communications beyond the classroom are positively correlated with students attitudes about college (Pascarella, 1980) and students' college persistence (Pascarella, 2001). The college-persistence intervention will also designed to increase the quantity and quality of professor-student communications, based on the research of Pascarella, which has empirically demonstrated that the frequency and quality of informal professor-student

interactions is correlated with positive college persistence attitudes (Pascarella, 1980) and college-persistence behaviors (Pascarella, 1980, 2001).

In addition, Astin (1994) noted the importance of student-faculty interaction. As a result of finding that students with frequent interaction with faculty are more likely to be satisfied with college and that student-faculty interaction is "more strongly related to satisfaction with college than any other type of involvement or, indeed, any other student or institutional characteristic" (Astin, 1994, p. 525), Astin called for colleges to find ways to encourage greater faculty involvement with student, as well as greater student involvement with faculty.

Summary

The personalization principle theory has been identified as a compelling model for the development of content for a college-persistence intervention. The Mashburn Psychological Model of college persistence has been identified as a robust model of college persistence and will be used in tandem with the personalization principle theory to develop and test and a college-persistence intervention. PBT-instructional communications will be used as a mechanism to influence student's college satisfaction, withdrawal cognitions and college persistence. The PBT-instructional communications college-persistence intervention will be designed to incorporate key variables, which have been empirically linked to college-persistence.

As noted in this review of the literature, numerous correlational studies have been conducted that explore the theorized relationship between variables associated with college-persistence. However,   no experimental study using PBT-instructional messages

as a mechanism for a college-persistence intervention was found in the peer-reviewed literature. An important positive social change implication for this study is the potential to develop an effective replicable program that will increase the college completion rates for students. Many institutions of higher education, and in particular, community colleges need effective college-persistence interventions to increase the college persistence of students, particularly students transitioning from the first year to the second year of college studies.

Chapter 3: Methodology

Introduction

The purpose of this experimental study was to investigate the effects of types of college persistence interventions on students' satisfaction, withdrawal cognitions, and persistence for undergraduate students at a community college. The independent variables were defined as types of college persistence interventions. The study included three dependent variables. The dependent variables were defined as student satisfaction, as measured by scores on the CDI; withdrawal cognitions, as measured by scores on the MCS; and college persistence, as measured by continued enrollment at an institution as a matriculated degree-seeking student after the initial semester of enrollment.

In this chapter, the research methods used in this study are explicated. Following this introduction, the chapter begins by providing an overview of the research design and approach, which focuses on the rationale for the research design, the setting and sample, the procedures, and the instrumentation. Threats to validity are then examined, including threats to internal validity and threats to statistical conclusion validity. Next, the data collection processes data analyses are discussed. Also included is an explanation of the steps that were taken to ensure the protection of participants in the protection of participants section. The chapter concludes with a summary of the key points discussed in each of the noted major sections.

Research Design and Approach

The research design for this study is a quantitative in nature. Specifically, a randomized between-groups experimental research design was used, because a college-

persistence intervention was conducted. Qualitative and mixed-methods approaches were not appropriate for this study, because I aimed to test the efficacy of types of college persistence interventions, and only experimental research designs can reveal the extent to which a causal relationship exists between two variables (Sutter & Lindgren, 1989).

The rationale for the between-groups true experimental research design was to determine if (a) type of intervention causes an effect on a linear combination of student satisfaction and withdrawal cognitions, (b) type of intervention has an effect on student satisfaction, (c) type of intervention has an effect on withdrawal cognitions, and (d) type of intervention is associated with college persistence. The results of this study reveal whether significant differences exist in the postintervention linear combination of student satisfaction and withdrawal cognitions for participants in the PBT instructional messages group, general messages group, and no-message control group. In addition, the results of the study indicate whether a significant association between type of intervention (PBT instructional messages, general messages, or no-message control) and college persistence exists.

Setting and Sample

My population of interest for this study was degree-seeking students at 2-year community colleges. A nonprobability convenience sample was drawn from the population of students a community college in the United States. College staff facilitated access to participants. Participants were recruited via on-campus flyers at the selected community college for the research study. Students who were registered as degree seeking, enrolled at least half time (6 credits or more), and completing their first or

second semester in college were eligible for participation in the study. Participants were informed that their participation in the study was completely voluntary in a written statement before any data were collected. A minimum sample of 100 participants was sought, based on the results of two power analyses (see Sample Size section).

Intervention

Overview. As typical in traditional training intervention programs discussed in the I/O psychology literature that focus on knowledge or skills individuals need to complete training goals (Robbins et al., 2009), the interventions focused primarily on the knowledge and skills study participants need to complete the goal of college persistence. The treatment interventions included seven content areas, which have demonstrated efficacy in contributing to college persistence. The content areas were selected from the Robbins et al. (2009) metaanalysis of college persistence interventions. The seven content areas are geared towards improving (a) student bonding towards the college, (b) student management of college persistence attitudes, (c) student motivation for degree completion (d) student attainment of academic skills, (e) student usage of college resources, (f) student engagement with the social environment, and (g) student tapping into social support (see Appendix A).

Unique characteristics of interventions. Three interventions were developed for comparison, which include two treatment interventions and one control intervention. The three interventions include a PBT instructional communication intervention, a general message intervention, and a no-message control intervention. For the PBT instructional communication intervention, I completed the first step in the development of PBT

Instructional Communications, which is personalization according to the personalization principle theory. Specifically, the PBT instructional messages intervention (see Appendix B) used language written in a conversational style rather than a formal style. The tailoring used for the PBT instructional messages intervention appears in Appendix C. In contrast to the PBT instructional messages intervention, the general messages intervention (see Appendix D) used language written in a formal style rather than a conversational style. The no-message control intervention was designed to serve as a control comparison of the two treatment levels of college-persistence. Participants completed 20 minutes of self-directed interactive computer-based activity (see Appendix E).

The PBT instructional communications intervention was interactive, which means that participants' responses were used to tailor the intervention to the specific situations of the individual (see Appendix F). As mentioned in Chapter 2, the second step in the development of PBT instructional communications is tailoring. The PBT instructional messages were tailored based on the specific situations of the individuals, as reported by the individual. In this way, the interactive computer-based program captured participant data to produce tailored messages for the individual. In contrast, the general messages intervention was not tailored. The intervention was generalized with all participants receiving the same intervention, and a participant's responses were not used to tailor the intervention to the individual's specific situations.

Procedures

1. I conducted the explanation of the study, before any data collection occurred. I provided the appropriate college staff, which included the Director of

Institutional Research and the chair of the Campus Counseling and Advising

Department, with a summary of the proposed research (Appendix G). The

director and chair were encouraged to contact me to discuss any questions or

concerns.

2. Access to research participants was gained through college staff and primarily

the counseling and advising department. When participants were invited to

participate in the study, I emphasized that participation in the study was

completely voluntary. Participants were invited to participate via flyers

disseminated at on-campus college-approved locations.

3. Implementation of the intervention occurred in a reserved computer lab at the

college. Participants were given a date and time to meet me at the computer

lab during a 9-week period in the semester. When the participant arrived to

complete the intervention, I obtained the participant's consent to participate,

including the participant's review and signing of the informed consent

document (see Appendix H), as well as the eligibility screener (see Appendix

I).

4. I randomly assigned an eligible participant to Experimental Group 1 (PBT-

instructional message group), Experimental Group 2 (generalized-message

group), or the control group (no-message control group), after obtaining the

participant's consent to participate.

5. Administration of the intervention included the use of an intervention

protocol. I used a standard protocol to administer the intervention (Appendix

J). The computer-based intervention took approximately 30 minutes to

administer.

6. Completion of the CDI and MCS occurred upon conclusion of each

   participant's completion of the computer-based intervention. At the

   conclusion of the intervention, the computer-based program administered the

   CDI and the MCS, followed by the student demographic questionnaire (see

   Appendix K).

7. Data collection for college persistence, as measured by enrollment at an

   institution as a matriculated degree-seeking student after the initial semester of

   enrollment, was retrieved at the beginning of the subsequent semester. I

   retrieved each student's enrollment data from the college's online information

   system after the last day for adding a course in the subsequent semester was

   reached.

Instrumentation

College Descriptive Index. The College Descriptive Index (CDI) is a

psychometrically sound 133-item measure comprising eight scale dimensions that

measure student satisfaction (Reed et al., 1983). The eight scale dimensions measure

satisfaction with (a) teachers, (b) parents, (c) self, (d) other students, (e) courses, (f)

finances, (g) administrators, and (h) noncourse activities. A principal component analysis

was conducted and retained the noted eight factors (Reed, Lahey, & Downey, 1984).

The CDI may be administered individually, in groups, or via mailed survey and

yields a score for each of the eight scale dimensions, as well as an overall score (Reed et

al., 1983). High scores for the measure indicate satisfaction and low scores indicate

dissatisfaction (Reed et al., 1983). To indicate whether the statement comprising an item

for the measure describes the individual's experience, participants respond to each

statement by selecting a "Y" for yes, a "?" for cannot decide, and an "N" for no. Each of

the CDI's items is measured on a 3-point scale. The CDI's items, which use positive

adjectives, are scored such that 1, 2, and 3 points correspond respectively to

dissatisfaction, *undecided*, and *satisfaction*. The CDI's items, which use negative

adjectives, are reverse scored such that 1, 2, and 3 points correspond respectively to

satisfaction, *undecided*, and *dissatisfaction*.

Research suggests that the CDI is a reliable measure. Cronbach's alpha is the

preferred statistic for estimating the internal consistency reliability of a measure (Cohen

& Swerdlik, 2005). In terms of reliability, as demonstrated by the internal consistency of

items across two studies, the measures eight-scale dimensions have high Cronbach's

alphas that range in value from .80 to .91. The reported Cronbach alphas for the teachers,

administrators, self, courses, parents, other students, noncourse activities, and finances

scale dimensions across two studies were .79, .91, .77, .81, .81, .83, .80, and .80

respectively for study one; and .80, .91, .73, .83, .84, .84, .81, and .81 respectively for

study two (Reed et al., 1984). Cohen and Swerdlik asserted that the value of the alpha

coefficient for each of these scales is within the acceptable range of values. Specifically,

they note that any values "from about .65 through the .70s [are] . . . passing" (p. 141),

values above .80 but lower than .90 are good to very good, and values above .90 are

excellent. After the data are collected for this study, an internal consistency reliability check was conducted against the sample for this study.

Research (Reed et al., 1984) indicated that the CDI is a valid measure. A research report (Reed et al., 1984) indicated that the measure has demonstrated construct and criterion validity.   Specifically, the convergence and divergence of the scales was assessed and indicated that single-item criteria demonstrate the construct validity of the measure (Reed et al., 1984). Correlations between the eight scale dimensions and 13 criterion items from the Kansas State University Survey were conducted. Scales correlated moderately well with the relevant criteria, with more than 80 statistically significant two-tailed person correlations ($p < .01$) being found across the eight scale dimensions on the criterion items (Reed et al., 1984). Cohen and Swerdlik (2005) suggested that criterion-related validity is important, because it can be appropriately used to infer probable standing on the criterion. Correlations with Involvements provide evidence of the construct validity of the measure (Reed et al., 1984). Researchers determined that five scales, the teachers, coursework, parents, other students, and activities dimensions were comparable between the CDI and Involvement Scales following correlational analysis yielding seventeen statistically significant correlations ($p<.05$) across the eight scale dimensions for the nine Involvement Scale dimensions (Reed et al., 1984). Cohen and Swerdlik suggested that construct validity is important, because it is a unifying concept for evidence of validity.

Permission to use the CDI was sought and obtained from Dr. Jeffrey Reed, the primary author of the measure. I requested permission by contacting Dr. Reed at his

university-administered e-mail address. I provided Dr. Reed with a brief description of the research to be conducted with the measure and a commitment to provide him with results of the research collected with the measure. Proof of permission to use the instrument is provided in Appendix L.

Mashburn Cognitions Survey. The Mashburn Cognitions Survey is a six-item psychological measure that may be used to assess the extent to which a student is experiencing college withdrawal cognitions. The withdrawal cognitions construct includes thoughts about quitting college, search intentions regarding a new environment, and dropout intentions with respect to college (Mashburn, 2000). Students indicate the extent of their agreement or disagreement with each statement on a 5-point likert scale, with 1 representing *strongly disagree* and 5 representing *strongly agree* (Mashburn, 2000).

Research suggests that the MCS is a reliable measure. While research in the field of psychology typically uses alpha coefficients to assess reliability, structural equation modeling can be used to assess the reliability of a measure (Yang & Green, 2010). In fact, many researchers recommend using structural equation modeling to assess reliability (Yang & Green, 2010). Further, psychometric researchers note that structural path models are appropriately used as an application of classical test theory of reliability (Hancock, 1997). In terms of reliability, as demonstrated by structural equation modeling, standardized path model coefficients were computed yielding χ^2 (chi-square), incremental fit index (IFI), comparative fit index (CFI), goodness of fit index (GFI), adjusted goodness of fit index (AGFI), and root mean square error of approximation

(RMSEA) values, which are χ^2(23, N=185), p=.01, IFI=.98, GFI=.95, AGFI=.91, and RMSEA=.07. The chi-square value was greater than .01, which provides evidence of support of the model's fit (Mashburn, 2000). A statistically nonsignificant chi-square indicates an adequate model fit (Magno, 2009). The root mean square error of approximation value (RMSEA=.06) was greater than less than.10, which demonstrates an acceptable fit (Mashburn, 2000). Root mean square error approximation values less than .10 demonstrate an acceptable fit for data and the psychological construct model (Mashburn, 2000). Indices above .9 for IFI, CFI, GFI, and AGFI indicate an acceptable fit (Mashburn, 2000; Thompson, 1998). These data provide statistical evidence of the reliability of the MCS.

Confirmatory factor analyses were conducted, which demonstrate the construct validity of the withdrawal cognitions measure (Mashburn, 2000). Cohen and Swerdlik (2005) asserted that factor analysis can be appropriately used to demonstrate the construct validity of a measure. Specifically, indices of fit for the withdrawal cognitions construct included chi-square, root mean square error of approximation, incremental fit index, comparative fit index, goodness of fit index, and adjusted goodness of fit index (Mashburn, 2000). Thompson (1998) noted that multiple fit indices should be used with structural equations modeling to provide a constellation of information, because the fit indices evaluate different aspects of fit. The chi-square value $\chi2$ (6, N = 185) = 9.78, p =.13 was greater than .01, which provides evidence of support of the model's fit (Mashburn, 2000). A statistically nonsignificant chi-square indicates an adequate model fit (Magno, 2009). Also, chi-square values with an associated probability, which is

greater than .01 indicate that the data are not significantly different for a model and thus provide evidence of construct validity (Mashburn, 2000). The root mean square error of approximation value (RMSEA=.06) was greater than less than.10, which provides evidence of construct validity (Mashburn, 2000). Root mean square error approximation values less than .10 demonstrate an acceptable fit for data and the psychological construct model (Mashburn, 2000). Construct validity as evidenced by the fit of a model for the incremental fit index, comparative fit index, goodness of fit index, and adjusted goodness of fit index is measured on a scale from 0 to 1, where indices above .9 indicates an acceptable fit (Mashburn; Thompson, 1998). The index for the incremental fit index (IFI), comparative fit index (CFI), goodness of fit index (GFI), and adjusted goodness of fit index (AGFI) are IFI = 1.0, CFI = 1.0, GFI = .98, and AGFI=.94. These indices provide additional statistical evidence of the construct validity of the measure.

Permission to the use the MCS was sought and obtained from Dr. Andrew Mashburn, the author of the MCS. I requested permission by contacting Dr. Mashburn at his university-administered e-mail address. I provided Dr. Mashburn with a brief description of the research to be conducted with the measure and a commitment to provide him with results of the research collected with the measure. Proof of permission to use the instrument is provided in Appendix M.

Student demographic questionnaire. I designed a demographic survey prior to the commencement of the study. The demographic questionnaire contain items, which elicit information about participants' age, gender, ethnicity, number of college credits completed, number of years in college (See Appendix O). The demographic

questionnaire was presented to the IRB for review and approval, before any data was collected.

<center>**Threats to Statistical Conclusion Validity**</center>

Internal Validity

When an experiment is conducted, it is imperative that a reasonable person be able to conclude that the results of the experiment are due to the independent variable and not to other factors. Internal validity refers to the extent to which an experimental study's outcomes are exclusively due to intervention affects (Creswell, 2009). Creswell reports that the 10 threats to internal validity include: (a) history, (b) maturation, (c) regression, (d) selection, (e) mortality, (f) diffusion of treatment, (g) compensatory/resentful demoralization, (h) compensatory rivalry, (i) testing, and (j) instrumentation. Creswell (pp. 163-164) defined the threats to internal validity as the following:

1. History – When events other than the experimental treatment influence a study's outcome, as a result of the passage of time during an experiment.

2. Maturation – When the results of an experiment are influenced by the changing or maturing of participants that occurs at some point in the experiment.

3. Regression – Refers to the reality that the mean score is the set point towards which scores in a study tend to revert toward; and when a study's participants have extreme scores, these scores are likely to change in the direction of the mean at some point in the experiment.

4. Selection – When participants that have characteristics predisposing them to have assured outcomes have been chosen to participate in a study.

5. Mortality – Occurs when the participation of a research participant ends prematurely, prior to the planned end of the participant's involvement in a study.

6. Diffusion of Treatment – Refers to the potential influence on the posttreatment group scores resulting from communication between participants in the experimental and control group.

7. Compensatory/resentful Demoralization – Occurs when only the experimental group receives a treatment in a study, and resentment emerges on the part of participants in the control group, as a result of the disparity in benefits received by the experimental and control groups.

8. Compensatory Rivalry – Occurs when only the experimental group receives a treatment in the study, and participants in the control group experience feelings of devaluation because the study's treatment is not administered to participants in the control group.

9. Testing – When testing occurs at least twice in a study, a participant gains familiarity with a measure of a study's dependent variable, and the participant remembers his or her responses when the measure is administered again.

10. Instrumentation – When scores on the measure of a dependent variable are impacted in a pretest posttest study, because changes have occurred in the measure used.

To maximize the internal validity of this study, as suggested by Creswell, I designed this study to decrease the likelihood that the noted threats to validity would occur and to minimize the impact of any occurring threats. Because a true experimental design, posttest only control group design, that used random assignment was used, the regression, selection, testing, instrumentation threats were controlled for as a result of the design (Campbell & Stanley, 1963). Random assignment is a scientific procedure which results in the control and experimental groups being equal in terms of attribute variables (Campbell & Stanley, 1963; Cohen, 2005; Kirk, 1995). Specifically, the idiosyncratic characteristics of participants are approximately evenly distributed among groups, which results in the elimination of selective bias on the dependent variable. However, specific measures were taken to address the potential impact of history, maturation, mortality, diffusion of treatment, compensatory/resentful demoralization, and compensatory rivalry threats.

The history and maturation threats were minimized as a result of the research design for the first two dependent variables, student satisfaction and withdrawal cognitions, as these measures were administered immediately following the intervention. In addition, the history and maturation threats were addressed by minimizing the time, approximately ten to fourteen weeks, between the intervention and the measurement of the third dependent variable, college persistence, which decreased the likelihood that significant developmental growth in participants or other events, would occur and influence the study's outcome.

To minimize the threat of mortality, which could affect data collection for the third dependent variable, college persistence, I recruited a larger sample of participants in anticipation of participants who would drop out of the study prematurely. To address diffusion of treatment, I separated participants in the experimental group and control group from each other to the extent possible. Specifically, during the intervention, participants were placed in separate computer workstations. Because participants were selected from a 2-year commuter college, participants don't live on the same campus and unlikely to live in the same house or apartment, which also minimized the threat of diffusion of treatment.

To address the compensatory/resentful demoralization threat, the treatment and control groups were all offered the same compensation of a $10.00 gift card. Because the control and experimental groups both received the same compensation, equality between the groups, in terms of benefit, was achieved. Finally, to address the threat of compensatory rivalry, I completed measures to create equality between the groups by providing the control group with a similarly timed computer-based activity while other participants participated in the intervention. In this way, any feelings of being devalued for participants in the control group were minimized.

Statistical Conclusion Validity

In an experimental research study, there are several threats to statistical conclusion validity. The threats to statistical conclusion validity include the reliability of the instrument, data assumptions, and the sample size. These threats can result in the inflation of the rate of a type I error, which is the likelihood of rejecting the null

hypothesis, when it is in fact true. Each of these threats were addressed to minimize the noted potential threats and maximize the statistical conclusion validity.

Reliability of the CDI and MCS. I planned to conduct a postintervention reliability analysis to determine the extent of internal consistency of each of the dependent measures. Cronbach's alpha is the preferred statistic for estimating the internal consistency reliability of a measure (Cohen & Swerdlik, 2005). Cohen and Swerdlik (2005) note that any values "from about .65 through the .70s [are]…passing" (p. 141), values above .80 but lower than .90 are good to very good, and values above .90 are excellent.

Data Assumptions

The MANOVA and chi-square were the statistical tests used to answer this study's research questions. The MANOVA is a parametric test with three fundamental assumptions. The three assumptions of the MANOVA are independence of observations, multivariate normality for dependent variables, and homogeneity of dependent variable covariance matrices across all levels of the independent variable (Finch, 2005). In other words, the first assumption is that none of the participant's dependent measures scores have been influenced by or are in any way related to another participant's dependent measure scores (McLaughlin, 2009). If I had suspected a lack of independence of observations, an intraclass correlation coefficient would have been computed to determine whether this assumption has been met as suggested by research methodologists (McLaughlin, 2009).

The second MANOVA assumption of multivariate normality indicates that each

of the dependent variables must be normally distributed, as well as the linear combination

of the dependent variables (McLaughlin, 2009). The second MANOVA assumption was

checked using histograms. In addition the extent of skewness and kurtosis was computed.

The third MANOVA assumption of homogeneity of covariance matrices indicates that

for each level of the independent variable, variances of a dependent variable must be

equal (McLaughlin, 2009). To check for this assumption, I checked the matrices of the

covariances for equality across all levels of the independent variable by using the Box's

M test. Finally, within cell scatter plots were created to assess whether a linear

relationship and multicollinearity exist between the dependent variables, because a linear

relationship was expected, although multicollinearity is undesirable (McLaughlin, 2009).

The chi-square test of independence is a nonparametric test and uses nominal and

ordinal level data. The assumptions of the chi-square test of independence are that at

least two variables are examined yielding minimally a two-way contingency table and

that the expected frequency for each cell in a contingency table is at least five (Triola,

2011). One perspective on the chi-square test of independence is that the sample data

should be randomly selected, while another perspective is that there is no assumption that

should made about the use of random sampling, such as Heiman (2011) and Hinkle,

Wiersma and Jurs, (1994).

Researchers appear to agree that unlike parametric tests which have assumptions

about normality and homogeneity, nonparametric tests can be appropriately used when

such assumptions about the normality and homogeneity of variance are not met (Heiman,

2011; Hinkle, Wiersma, & Jurs, 1994). In addition, Heiman (2011) asserted that the use

of the chi-square test keeps the Type I error probability equal to the selected alpha level, which is desirable.

Sample Size

A study should have an appropriate sample size. Kirk (1995) noted that an appropriate sample size endows the researcher with a "fighting chance" (p. 63), to detect the existence of significant differences between groups on a dependent variable. This fighting chance refers to the overall power, which is the probability of rejecting a null hypothesis, when it is actually false (Kirk, 1995). The minimum acceptable level of power is typically considered to be a power of .80 (Kirk, 1995).

When an experiment has a power of .80, the experiment has been designed so that the probability of making a type II error, failing to reject the null hypothesis when it is false, is less than or equal to .20. While there are four factors that determine power: (a) level of significance of α, (b) sample size, (c) population standard deviation size, and (d) the magnitude of the difference between the experimental and group means (Kirk, 1995), because factor one is determined by convention and factors three and four are inappropriate to manipulate, sample size, factor 2, is the most appropriate factor to manipulate. If a sample is too small, then the power of the associated study will fall below the desired .80 minimum.

As researchers have suggested, a power analysis was conducted to ensure that a sufficient sample size would be achieved. To appropriately examine the first and second dependent variables, a power analysis was conducted using G*Power3 software to determine the sample size required to achieve power of .80, as recommended by Kirk

(1995), using an alpha of .05, and a medium effect size of .25 for the MANOVA. This first power analysis was conducted for the MANOVA with a power of .80, α=.05, and a medium effect size of .25. Pillai's trace effect size of .25 is considered a medium effect (Faul, Erdfelder, Lang, & Buchner, 2007). Similar studies reporting effect size using Cohen's d and $\bar{\rho}$ report obtaining an effect size in the medium range (see Table 1). Researchers have asserted that Pillai's trace, due to its robustness is the most appropriate statistic to calculate effect size when using a MANOVA (Finch, 2005).

Table 1

Effect Sizes of Related College Persistence Studies

Journal article title	ES
Freshmen In Transition: A Second Year Evaluation to Determine the Program's Impacts on Academic Achievement, Leadership Skills Development, Institutional Loyalty and Integration, and Retention (D'souza & Kelsey, 2003)	.33
Intervention Effects on College Performance and Retention as Mediated by Motivational, Emotional, and Social Control Factors: Integrated Meta-Analytic Path Analyses (self-management interventions; Robbins, Oh, Le, & Button, 2009)	.29
Keeping At-Risk Students in School: A Systematic Review of College Retention Programs (Valentine, Hirschy, Bremer, Novillo, Castellano & Banister, 2011)[1]	.29
The Effect of clarion transitions on student academic performance and retention (Shao, Hufnagel, & Karp, 2010)[1]	.44

Note. ES = effect size. 1 = studies conducted post metaanalysis.

The results of the power analysis indicate that minimally, a sample of 27 participants is needed to detect significant differences between the intervention groups on

the dependent variables. However, to appropriately examine the third dependent variable, college persistence, a second a priori power analysis was conducted with G*power analysis for the chi-square test. The power analysis (see Figure 1) revealed that with an alpha of .05 and a medium effect size of .29, based on the average effect size noted in Table 1, a sample size of 94 was needed to detect a significant association between type of intervention and college persistence with power of magnitude.80.

I attempted to minimize the threat of loss of statistical power as a result of loss of participant participation, by recruiting a sample of at least 94 and attempting to recruit a sample of 108.   Increasing the sample size was also conducted to minimize the threat of mortality. Mortality occurs when there the rate of withdrawal of participation differs between treatment groups (Suter & Lindgren, 1989). Power analyses for the MANOVA and chi-square statistical tests were conducted. The results of the power analysis requiring the largest sample of the two power analyses conducted demonstrates the relationship between power and total sample size used for the study (see Figure 1).
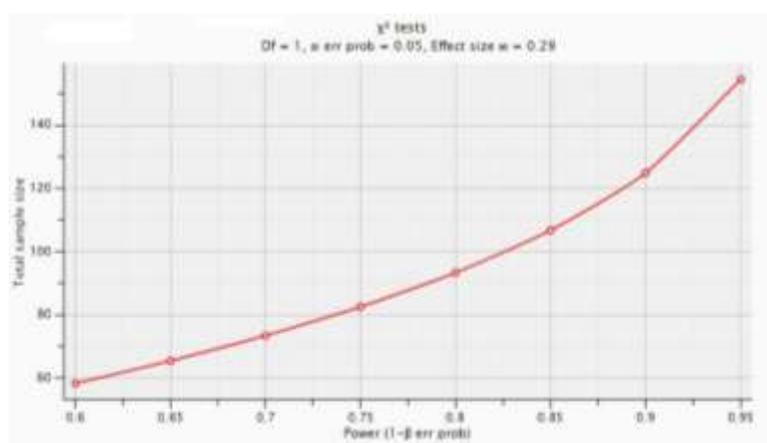

Figure 1. Relationship between power and sample size.

Data Collection

The goal of this research study was to determine whether certain types of college persistence interventions are effective for increasing student satisfaction or decreasing student withdrawal cognitions, and whether such interventions are associated with college persistence for matriculated students at a community college. The study's research questions include:

1. Is there a significant mean difference on a linear combination of satisfaction, as measured by the College Descriptive Index, and withdrawal cognitions, as measured by the Mashburn'Cognitions Survey, for college students at a 2-year college?

- Null Hypothesis (H_0): There will be no statistically significant group (PBT instructional message intervention group, generalized message intervention group, and control group) mean difference on a linear combination of satisfaction, as measured by the college descriptive index, and withdrawal cognitions, as measured by the Mashburn Cognitions Survey, for students at a two-year college.

- Alternative Hypothesis (H_1): There will be a statistically significant group (PBT instructional message intervention group, generalized message intervention group, and control group) mean difference on a linear combination of satisfaction, as measured by the College Descriptive Index, and withdrawal cognitions, as measured by the Mashburn Cognitions Survey, for students at a two-year college.

- Subhypothesis. Alternative Hypothesis (H_2): There will be a statistically significant group mean difference on satisfaction, as measured by the College Descriptive Index, for students at a two-year college, with the PBT instructional message intervention group scoring significantly higher on satisfaction than the control group.

- Subhypothesis. Alternative Hypothesis (H_3): There will be a statistically significant group mean difference on satisfaction, as measured by the College Descriptive Index, for students at a two-year college, with the PBT instructional message intervention group scoring significantly higher on satisfaction than the generalized-message intervention group.

- Subhypothesis. Alternative Hypothesis (H_4): There will be a statistically significant group mean difference on withdrawal cognitions, as measured by the Mashburn Cognitions Survey, for students at a two-year college, with the PBT instructional message intervention group scoring significantly lower on withdrawal cognitions than the control group.

- Subhypothesis. Alternative Hypothesis (H_5): There will be a statistically significant group mean difference on withdrawal cognitions, as measured by the Mashburn Cognitions Survey, for students at a two-year college, with the PBT instructional message intervention group scoring significantly lower on withdrawal cognitions than the generalized-message intervention group.

2. Is there a significant association between type of intervention (PBT instructional messages, generalized messages, and no-messages control) and persistence, as measured by enrollment at an institution as a matriculated degree-seeking student after the initial semester of enrollment, for students a 2-year community college.

- Null Hypothesis (H_0): There will be no significant association between type of intervention (PBT instructional messages, generalized messages, and no- control) and persistence, as measured by enrollment at an institution as a matriculated degree-seeking student after the initial semester of enrollment, for students a 2-year community college.

- Alternative Hypothesis (H_1): There will be a significant association between type of intervention (PBT instructional messages, generalized messages, and control) and persistence, as measured by enrollment at an institution as a matriculated degree-seeking student after the initial semester of enrollment, for students a 2-year community college.

The data collection process included the retrieval of college persistence data from the student information records maintained by the College, to determine if a student enrolled in one or more courses for the semester subsequent to the intervention. For students who were not enrolled in the subsequent semester at the College, a brief follow-up telephone call or letter was sent to ask the research participant whether the participant is currently attending another institution (transfer) or engaging in other activities (dropout).

The data collection process also used self-administered measures, which were collected immediately following the intervention. Advantages and disadvantages exist for using self-administered measures. The disadvantages include the potential difficulty for some participants to recall information, the potential for participants to fail to tell the truth, and the potential for a low response rate, and the potential for nonresponse errors (Scheaffer, Mendenhall, & Ott, 2006). However, the advantages include the savings cost and convenience (Scheaffer et al., 2006), as well as the relatively small investment of time on the part of the research participants.

Data Analysis

Inferential and descriptive statistics were performed with the data collected. In terms of inferential statistics, two inferential statistical tests were performed, a multivariable analysis of variance test (MANOVA) and chi-square test. Because the CDI and MCS are interval level scales, which yield numerical data, a 3x1 one-way between-groups multivariate analysis of variance statistical test with $\alpha=.05$ was used to answer this study's first research question. Follow up analysis from the MANOVA would allow me to answer the study's second and third research questions, in the event of significant result for the first research question. It was determined that the MANOVA is the appropriate statistical test, because it allowed me to appropriately assess whether significant differences between the control and experimental groups exist on multiple dependent variables. The MANOVA allowed me to determine if type of intervention caused an effect on student satisfaction and withdrawal cognitions, by revealing whether a significant difference existed in the PBT instructional message group, general messages

group, and no-message control group on a linear combination of student satisfaction and

withdrawal cognitions. The Bonferroni method includes an adjustment based on the

number of planned multiple comparisons to minimize type I errors (Kirk, 1995). For post

hoc analysis, the Bonferroni method, also known as Dunn's multiple comparison test, is

appropriately used to conduct planned multiple comparisons (Kirk, 1995). Based on the

previously stated a priori hypotheses, planned multiple comparisons should be conducted,

if the results of an overall F-test are significant at the p<.05 level. As indicated by Green

and Salkind (2011), at this point two one-way ANOVAs would be appropriate, because

there are two dependent variables. In this case, the Bonferroni method should be used to

determine whether there is any significant difference in the mean score of the three

participant groups for student satisfaction and to determine whether there is any

significant difference in the mean score of three participant groups for withdrawal

cognitions. To control for the expected increase in variability associated with subsequent

multiple comparisons following the results of one or both of the one-way ANOVAs, the

Bonferroni adjustment should be used a second time. There were planned comparisons

for differences between the PBT instructional communications group and control groups

only.

Because the college persistence is measured at the nominal level and yields

categorical data, a 3x2 chi-square test of independence with α=.05 was used to answer

this study's second research question. It was determined that the chi-square test of

independence is the appropriate statistical test, because it allowed me to appropriately

assess whether there is a significant association between type of intervention (PBT

instructional message, general message, and no-message control) and persistence. The chi-square test of independence allowed me to determine whether college persistence or nonpersistence/drop out depends on type of intervention PBT instructional message, general message, and no-message control. Because this chi square used three categories, in keeping with appropriate statistical procedures, no posttest comparisons should be conducted, no measure of effect size should be computed, and observed frequencies in each category were assumed to match what exists in the population (Heiman, 2011).

The descriptive statistics include number counts and percentage breakdowns for age, ethnicity, gender, and semesters enrolled at current college. Data regarding age, ethnicity, and extent of participation at other colleges for participants was captured from the demographic questionnaire. These data, as well as the data for the inferential statistics were computed using SPSS software. For any discrepant cases, such as cases with missing data or uninterpretable data, the data analysis plan called for these cases to be excluded from the calculations to ensure accurate results.

Protection of Participants

Appropriate measures were taken at each phase of the research process to ensure the protection of research participants. After approval of the Walden University Institutional Review Board, the study commenced. An informed consent form was provided to all study participants. The informed consent document was written in plain language and at an appropriate reading level. The document clearly stated the purpose of the study. In addition, the informed consent form asserted that participation in the study was strictly voluntary. The informed consent document noted that a study participant

could withdraw participation at any time, for any reason, and without penalty. In addition, the document also asserted that neither participation nor withdrawal of participation would affect a participants existing or future relationship with Walden University or the College.

Appropriate steps were taken to ensure the confidentiality of research participants' responses that included using only researcher-generated number codes in order that neither a participant's last name nor student ID number be used; storing printouts of data collected under lock and key; and using a password-protected system for computer-based access to participants' data. The data collection was conducted in such a manner as to exclude any of participants' personal identifiers. Researcher-generated number codes were created when I received a participant's completed response forms. These number codes do not appear on any printed document which would link them to the identity of a research participant. Data analyses were conducted several times to ensure their correctness. Research report generation and dissemination of results has been conducted in an ethical manner and appropriately characterized by honest reporting.

Summary

This research study was conducted to determine if one or more types of college persistence intervention positively impacted the satisfaction, withdrawal cognitions, and persistence of college students attending a community college. I elected to use a posttest only experimental research design. The rationale for the selection of the noted research is discussed at length earlier in the chapter.

The quantitative experimental research design used several measures, including the CDI, MCS, and a demographic questionnaire. A review of the literature discussing the psychometric properties of the CDI and MCS revealed that both measures are psychometrically sound. The CDI, MCS, and demographic questionnaire, were administered to a sample comprising 108 students. An *a priori* power analysis using G*Power3 software was performed to determine the study's sample size. A minimum of 94 participants was sought to achieve an alpha level of .05 and power of .80 for the study, but 108 participants were sought to decrease the threat of loss of power due to participant's noncompletion of study participation.

The protection of participants was carefully considered and the appropriate steps were planned to ensure the protection of the rights of participants, as well as the confidentiality of participant data. The noted steps are in full compliance with APA's (2010) *Ethical Principles of Psychologists and Code of Conduct*. Participants were recruited via on-campus posting of flyers. Data collection was conducted at the college campus.

The appropriate statistical tests were identified and performed post data collection. Each of the assumptions of the multiple analysis of variance statistical test and chi square test of independence have been reported and appropriately addressed. The threats to internal and statistical validity were outlined, as well as the actions taken to eliminate where possible or otherwise minimize these threats. In Chapter 4, the results of the study are presented.

Chapter 4: Results

Introduction

The goal of this research study was to test the effectiveness of a college-persistence intervention, based on the personalization principle theory and Mashburn's theory, for students at a community college. The independent variable was defined as type of intervention (PBT instructional messages, generalized instructional messages, or no-message control), which is defined as a planned effort comprising reasoned action aimed towards improving a noted outcome for one or more individuals targeted by the effort. The first dependent variable, college satisfaction, was operationalized as a score on the College Descriptive Index. The second dependent variable, withdrawal cognitions, was operationalized as a score on the Mashburn Cognitions Survey. In this chapter, there are nine major sections, which include (a) Introduction, (b) Research Questions and Hypotheses, (c) Data Collection, (d) Descriptive Statistics, (e) Statistical Conclusion Validity, (f) Reliability Analysis, (g) Inferential Statistics, (h) Generalizability of Results, and (i) Summary.

Research Questions and Hypotheses

1. Is there a significant mean difference on a linear combination of satisfaction, as measured by the College Descriptive Index, and withdrawal cognitions, as measured by the Mashburn Cognitions Survey, for college students at a 2-year college?

- Null Hypothesis (H_0): There will be no statistically significant group (PBT instructional message intervention group, generalized message intervention group, and control group) mean difference on a linear

combination of satisfaction, as measured by the college descriptive index, and withdrawal cognitions, as measured by the Mashburn Cognitions Survey, for students at a two-year college.

- Alternative Hypothesis (H_1): There will be a statistically significant group (PBT instructional message intervention group, generalized message intervention group, and control group) mean difference on a linear combination of satisfaction, as measured by the College Descriptive Index, and withdrawal cognitions, as measured by the Mashburn Cognitions Survey, for students at a two-year college.

- Subhypothesis. Alternative Hypothesis (H_2): There will be a statistically significant group mean difference on satisfaction, as measured by the College Descriptive Index, for students at a two-year college, with the PBT instructional message intervention group scoring significantly higher on satisfaction than the control group.

- Subhypothesis. Alternative Hypothesis (H_3): There will be a statistically significant group mean difference on satisfaction, as measured by the College Descriptive Index, for students at a two-year college, with the PBT instructional message intervention group scoring significantly higher on satisfaction than the generalized-message intervention group.

- Subhypothesis. Alternative Hypothesis (H_4): There will be a statistically significant group mean difference on withdrawal cognitions, as measured by the Mashburn Cognitions Survey, for students at a two-year college,

with the PBT instructional message intervention group scoring

significantly lower on withdrawal cognitions than the control group.

- Subhypothesis. Alternative Hypothesis (H_5): There will be a statistically

  significant group mean difference on withdrawal cognitions, as measured

  by the Mashburn Cognitions Survey, for students at a two-year college,

  with the PBT instructional message intervention group scoring

  significantly lower on withdrawal cognitions than the generalized-message

  intervention group.

2. Is there a significant association between type of intervention (PBT instructional

messages, generalized messages, and no-messages control) and persistence, as measured

by enrollment at an institution as a matriculated degree-seeking student after the initial

semester of enrollment, for students a 2-year community college.

- Null Hypothesis (H_0): There will be no significant association between

  type of intervention (PBT instructional messages, generalized messages,

  and no- control) and persistence, as measured by enrollment at an

  institution as a matriculated degree-seeking student after the initial

  semester of enrollment, for students a 2-year community college.

- Alternative Hypothesis (H_1): There will be a significant association

  between type of intervention (PBT instructional messages, generalized

  messages, and control) and persistence, as measured by enrollment at an

  institution as a matriculated degree-seeking student after the initial

  semester of enrollment, for students a 2-year community college.

Data Collection Reporting

Data were collected from August 2012 to January 2013. Participants were recruited via Walden University IRB-approved flyers posted at the partner site's college-approved bulletin boards and locations. Of the 291 participants who approached me for participation and completed the study screener, 37% of participants ($N = 108$) met the inclusion criteria and comprised the sample for this study. One hundred percent of participants who completed the study screener and met inclusion criteria for the study participated in the study. The study was conducted over a 9-week period during the second half of the semester, although a 6-week time period was intended. As planned, when an eligible participant arrived to participate in the study, the participant completed the online informed consent process. I randomly assigned each participant to experimental group one (PBT-instructional message group), experimental group two (generalized-message group), or the control group (no-message group). Immediately following the intervention, all participants were given compensation in the form of a $10.00 gift card. There were no adverse effects related to this intervention.

Descriptive Statistics

An ethnically diverse sample of 108 participants comprises the sample for this study. All participants were matriculated degree seeking students enrolled in at least 6 credit hours. The mean age for a participant was 21 years and 85% of participants were in the 18-to-24 age range. The sample obtained is a convenience sample and is not representative of the population of interest in terms of ethnicity, but is representative in terms of sex. The sex for college students in their first or second semester is 50.6% male

and 49.4% female in the population, and 52.8% male and 47.2% female in the sample.

The ethnicity percentage breakdown for college students in their first or second semester

in the population of interest is 12.5% African American, 33.0% Asian American, 14.5%

Latina/o American, 27.2% European American, and 12.4% multiracial American. In the

study sample, Asian Americans (10.2%), European Americans (7.4%), and multiracial

Americans (4.6%) are disproportionately underrepresented, while African Americans

(58.3%), Latina/o Americans (19.5%) are disproportionately over represented relative to

the population of interest. The demographic characteristics of the study participants are

presented in Table 2.

Table 2

Descriptive Data by Intervention Group

	College satisfaction				Withdrawal cognitions				
	Mean	*SD*	Min	Max	Mean	*SD*	Min	Max	*N*
PBT instructional messages group	2.43	.20	2.05	2.75	1.45	.70	1	3.50	36
Generalized messages group	2.48	.22	2.04	2.83	1.30	.63	1	3.67	36
No-message control group	2.47	.16	2.05	2.75	1.38	.62	1	3.50	36
Total									108

Table 3

Demographic Characteristics of Study Sample (N = 108)

Characteristic	*n*	%
Semester in college		
First semester	86	79.6%
Second semester	22	20.4%
Total	*N*=108	100.0%
Sex		
Male	57	52.8%
Female	51	47.2%
Total	*N*=108	100.0%
Age		
18-24	92	85.2%
25-34	10	9.3%
35-64	6	5.5%
65+	0	0.0%
Total	*N*=108	100.0%
Ethnicity		
African American	63	58.3%
Asian American	11	10.2%
European American	8	7.4%
Latina/o American	21	19.5%
Multiracial American	5	4.6%
Total	108	100.0%

Statistical Conclusion Validity

Evaluation of MANOVA Assumptions

To assess the statistical conclusion validity of the MANOVA, an evaluation of

the assumptions of the MANOVA was conducted. The three assumptions of the

MANOVA include homogeneity of dependent variable covariance matrices,

independence of observations, and multivariate normality.

Homogeneity of dependent variable covariance matrices. The covariance

matrices were checked for equality across all levels of the independent variable using the

Box's M test. The results of the Box's *M* test indicate that the covariance matrices of the

linear combination of the dependent variables are not significantly different,

$F (6, 274,776) = .82, p = .55$. The assumption of the homogeneity of dependent variable

covariance matrices has been met.

Independence of observations. Each participant was randomly assigned to one

of three groups in this study. The administration of the intervention occurred in a

computer lab that allowed each participant to complete the individual computer-based

intervention in an individual computer station apart from the other computer stations.

Another participant's dependent measures scores influenced none of the participant's

dependent measures' scores. The independence of observations assumption of the

MANOVA has been met.

Multivariate normality. Statistical experts note that the assumption of

multivariate normality should be tested by assessing the normality of each dependent

variable separately (Dimitrov & Rumrill, 2005). Histograms were generated to assess

whether each of the dependent variables used for this statistical test is normally

distributed for the PBT instructional messages intervention group (Figures 2, 3), the

generalized-message intervention group (Figures 4, 5), and the no-message control group

(Figures 6, 7). The results of the histogram as well as skewness and kurtosis levels
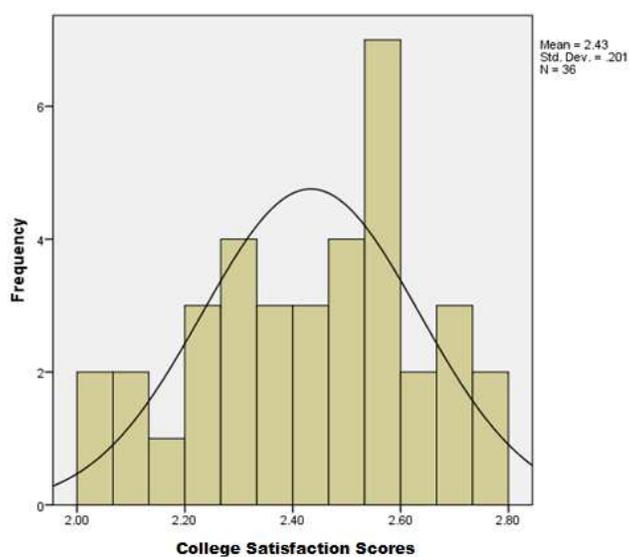

Figure 2. Histogram of PBT instructional message intervention group's college satisfaction scores.
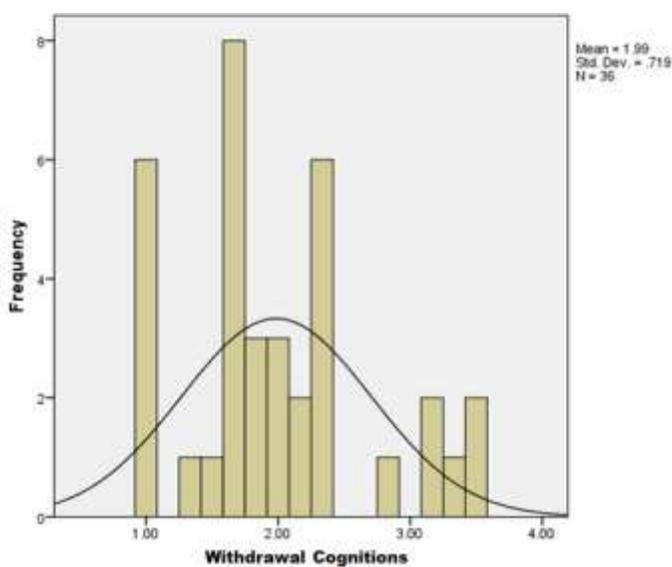

Figure 3. Histogram of PBT instructional message intervention group's withdrawal cognitions scores.

indicate that the multivariate normality assumption for the dependent variables has been

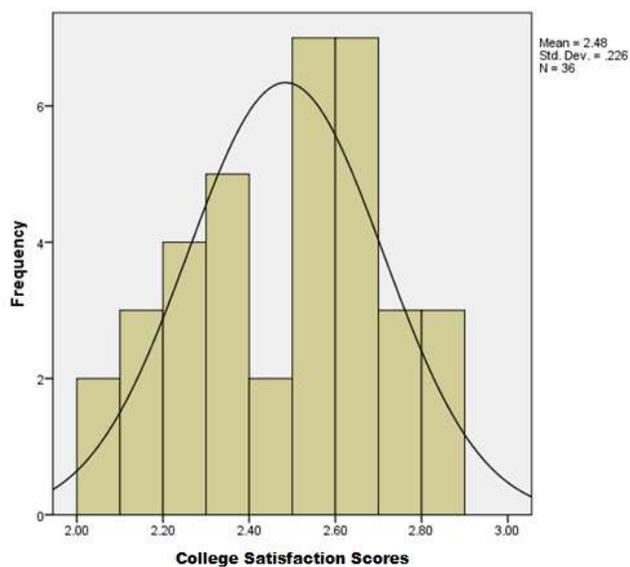met. However, statistical experts indicate that the MANOVA may be performed when the

Figure 4. Histogram of generalized-message intervention group's college satisfaction scores.
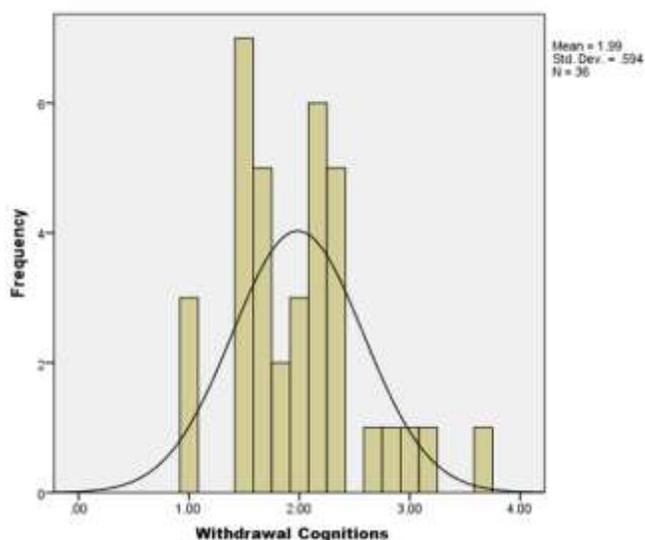

Figure 5. Histogram of generalized-message intervention group's withdrawal cognitions scores.

dependent variables distribution is not multivariate normal, because "the general

consensus is that the MANOVA is a robust procedure" (Weinfurt, 1995, p. 254) and is

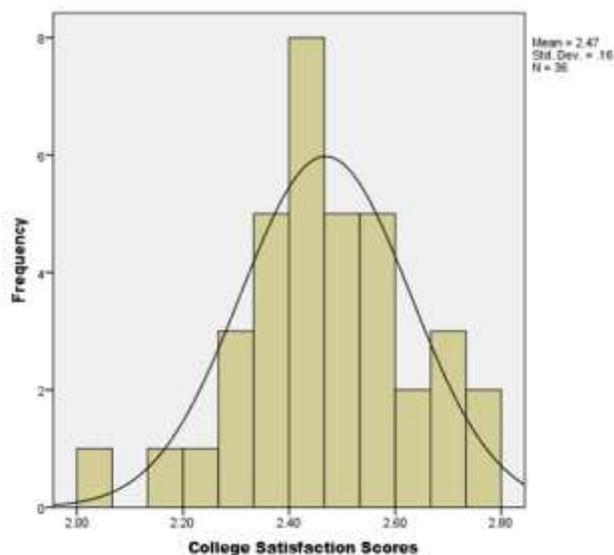minimally impactful on type I error rate (Dimitrov & Rumrill; Weinfurt).

Figure 6. Histogram of no-message control group's college satisfaction scores.
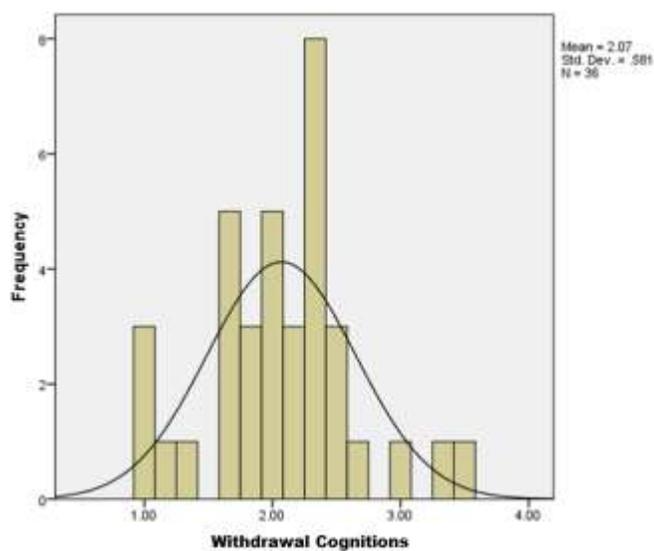

Figure 7. Histogram of no-message control group's withdrawal cognitions scores.

The distribution of the PBT instructional messages group's college satisfaction scores has a kurtosis of -.81 and a skewness of -.34, which is within the +/-2 range for nonsignificant skewness and kurtosis (Tagler, 2007). The group's withdrawal cognitions distribution is also within the normal range with a kurtosis of -.19 and skewness of .58. The distribution of the generalized-message intervention group's college satisfaction scores has a kurtosis of -.88 and a skewness of -.33, which is within the +/-2 range considered nonsignificant. The distribution of the group's withdrawal cognitions is also within the nonsignificant range with a kurtosis of .83 and a skewness of .69. The distribution of the no-message control group's college satisfaction scores is within the +/-2.0 range of nonsignificance with a kurtosis of .20 and a skewness of -.30. The distribution of the no-message control group's withdrawal cognitions has a kurtosis of .54 and a skewness of .18, which is also within the nonsignificant +/-2.0 range.

To determine whether outliers exist and were impactful on the results of the MANOVA statistical test, trimmed means that exclude the highest lowest five percent of scores, were computed for the PBT instructional messages group, the generalized messages group, and the no-message control group for both dependent variables.   There were relatively small and nonimpactful difference in trimmed means of the first dependent variable, college satisfaction and the second dependent variable, withdrawal cognitions.

The outliers excluded in the trimmed means for the college satisfaction scores of the PBT instructional messages group college satisfaction scores (actual mean = 2.43; trimmed mean = 2.43), generalized messages group (actual mean = 2.48; trimmed mean

= 2.48), and no-message control group (actual mean = 2.46; trimmed mean = 2.47) as well as for the withdrawal cognitions for the PBT instructional messages group (actual mean = 1.99; trimmed mean = 1.96), generalized messages group (actual mean = 1.99; trimmed mean, actual mean = 1.96), and no-message control group (actual mean = 2.07; trimmed mean, = 2.05) are relatively nonimpactful as the impact on the actual means of the dependent variables is minimal. For these compelling reasons, the outliers are not excluded from the data analyses.

Evaluation of Chi-Square Assumptions

To assess the statistical conclusion validity of the chi-square, an evaluation of the assumptions of the chi-square was conducted. The two assumptions of the chi-square are minimum number of variables and expected frequency of cells in contingency tables.

Minimum number of variables. The assumption that at least two variables are examined yielding minimally a two-way contingency table has been met. The variables that yield a two-way contingency table for the chi-square statistic in this study are type of intervention, the independent variable and college persistence, the dependent variable.

Expected frequency of cells in contingency tables. The assumption that the expected frequency for each cell in a contingency table is at least five has been made. The frequency in each cell of the chi-square statistical for this test is at least five.

Reliability Analysis

Reliability analyses were conducted to determine whether the measures of the dependent variables were reliable measures for the participants in this study. To determine the reliability of the CDI, the measure of the first dependent variable, college

satisfaction, a Cronbach's alpha coefficient was computed. The Cronbach's alpha

obtained for the CDI is .93, which indicates that the measure of college satisfaction has

excellent reliability. To determine the reliability of the MCS, the measure of the second

dependent variable, withdrawal cognitions, a Cronbach's alpha coefficient was computed.

The reliability analysis yielded a Cronbach's alpha of .59, which indicates that the

measure of withdrawal cognitions had poor reliability for this sample.

Inferential Statistics

The results of the MANOVA indicate that there was no statistically significant

group mean difference on a linear combination of satisfaction and withdrawal cognitions,

$F(4,210) = .46$, $p = .77$; Pillai's trace = .017, partial eta^2 = .009. The results indicate that

PBT instructional messages intervention did not significantly impact college withdrawal

cognitions or college satisfaction of participants.

Table 4

Multivariate Analysis of Variance for Withdrawal Cognitions and Satisfaction Measures

Source	Multivariate		
	F	p	η^2
College satisfaction	.63	.54	.01
Withdrawal cognitions	.49	.61	.01
C x W	.73	.57	.01

The 95% confidence intervals for the effect sizes for withdrawal cognitions were

1.74 – 2.23 for the PBT instructional messages group, 1.79 – 2.12 for the generalized

messages group, and 1.87 – 2.27 for the no-message control group. The 95% confidence

intervals for the effect sizes for college satisfaction were 2.368 – 2.499 for the PBT

instructional messages group, 2.419 – 2.550 for the generalized messages group, and

2.403 – 2.534 for the no-message control group. The effective size of .016 is fairly small

and accounted for less than 1% of dependent variables scores.

Table 5

Persistence by Intervention Group Cross Tabulation

Dependent variable			Intervention group			
			General messages group	No message control group	PBT messages group	Total
Persistence	Dropped out	Count	8	3	7	18
		Expected count	6	6	6	18
		Residual	2.0	-3.0	1.0	
	Persisted	Count	28	33	29	90
		Expected count	30	30	30	90
		Residual	-2.0	3.0	-1.0	
Total		Count	36	36	36	108
		Expected count	36	36	36	108

Because the results of an overall *F*-test were not statistically significant at the

$p < .05$ level, univariate main effects for the two dependent variables were not conducted.

Because the results of the overall *F*-test were not statistically significant, it may be

appropriately presumed that there is no statistically significant difference in the mean

score of the three participant groups for student satisfaction or withdrawal cognitions.

A chi-square test of independence indicated that there was no statistically significant association between intervention type and college persistence, χ^2 (2, $N=108$) = 2.80, p = .28, ϕ = .16. There was no statistically significant difference in the observed and expected college persistence of the students in the three intervention groups. Participants who completed the PBT instructional messages intervention were not more likely to persist in college from the Fall 2012 semester to the Spring 2013 semester than participants who completed the general messages intervention or no-message control intervention. Intervention type and college persistence were not found to be significantly related, χ^2 (2, $N=108$) = 2.80, p = .27, ϕ = .16. The effect size of .16 is relatively small.

Table 6

Prevalence of College Persistence in PBT Messages (n=36), General Messages (n=36), and No-Message Control (n=36) Groups

Persistence status	PBT messages group		General messages group		No message control group		$\chi^2(2)$	p
	n	%	*n*	%	*n*	%		
Persisted	29	74	28	78	33	92	.2.80	.28
Dropped out	8	26	7	22	3	8	.2.80	.28

Summary

The goal of this research study was to determine whether certain types of college persistence interventions are effective for increasing student satisfaction or decreasing student withdrawal cognitions, and whether such interventions are associated with college persistence for matriculated students at a community college. The interventions

were administered to 108 students. Evaluations of the assumptions of the inferential

statistical tests were conducted, prior to data analysis. Inferential data analyses were

conducted upon confirmation that assumptions had been met. The results of the

MANOVA revealed that there was no statistically significant mean difference on a linear

combination of satisfaction and withdrawal cognitions for the PBT instructional message

intervention group, generalized message intervention group, and no-message control

group, F (4,210) = .41; Pillai's trace = .017; p = .77, partial eta^2 = .009. The results of

the chi-square also reveal that there was no statistically significant relationship between

type of intervention and persistence, χ^2 (2, N=108) = 2.80, p =.27, ϕ = .16. Reliability

analyses of the college satisfaction and withdrawal cognitions measures were conducted.

The results of the reliability analysis for the CDI indicate that the CDI is a reliable

measure of satisfaction with an obtained Cronbach's alpha of .93. The results of the

reliability analysis for the MCS indicate that the MCS was not a reliable measure of

withdrawal cognitions for the participants in this study with an obtained alpha of .59. In

the next chapter, an interpretation of these findings is provided, as well as implications

for social change, recommendations for action, and recommendations for further study.

Chapter 5: Summary, Conclusion, and Recommendations

Introduction

In this study, I examined the effectiveness of a college-persistence intervention, based on the personalization principle theory and Mashburn's theory, for students at a community college. The purpose of this study was to test the effectiveness of a college-persistence intervention, based on the personalization principle theory and Mashburn's theory, for students at a community college. I expected to find that the independent variable, type of intervention (PBT instructional messages, generalized messages, no-message control) would have an effect on the dependent variables, withdrawal cognitions and student college satisfaction. I also expected to find that type of intervention (PBT instructional messages, generalized messages, no-message control) would be associated with college persistence. The quantitative research design used for this study was a true experiment. The sample used for this study included 108 degree-seeking students at a community college in the United States. In this chapter, the findings of this study are discussed. There are six major sections in this chapter, which include (a) Introduction, (b) Summary of the Findings, (c) Interpretation of the Findings, (d) Implications for Social Change, (e) Recommendations for Further Research, and (f) Conclusion.

Summary of the Findings

The results of the MANOVA show that there was no statistically significant mean difference on a linear combination of satisfaction and withdrawal cognitions for the PBT instructional message intervention group, generalized message intervention group, and no-message control group, $F(4,210) = .46$, $p = .77$, partial eta$^2 = .009$. The intervention

accounted for approximately 1% of the variance in the linear combination of the college satisfaction and withdrawal cognitions scores. The results also show that students who completed the personalization-based tailored instructional messages intervention were not more likely to persist to the next semester of college and the difference in the experimental and control groups was not statistically significant. There was no statistically significant relationship between type of intervention and persistence, χ^2 (2, N=108) = 2.80, p = .27, ϕ = .16.

Interpretation of the Findings

The results of this study are dissimilar from those of other studies (Eakin et al., 2001; Pilling & Brannon, 2007) that found computer-based tailored interventions to be more effective than nontailored computer-based interventions. The results of this study were also dissimilar from tailored print-based studies (Demark-Wahnefried, 2007; Scholes et al., 2003; Voelker, 1994) and a tailored audio plus print-based study (Latimer et al., 2007), which found tailored interventions to be more effective than nontailored interventions. Although the results of this study indicated that the experimental intervention was not significantly impactful on college persistence rates from a statistical perspective, these results are not congruent with the results of a systematic review of college retention programs (Valentine, Hirschy, Bremer, Novillo, Castellano & Banister, 2011), which found interventions focusing on college persistence to be significantly impactful. However, this study was the first study to test whether a personalization-based tailored instructional messages intervention would be positively impactful on college satisfaction and withdrawal cognitions.

There are limitations with respect to the generalizability of the results of this study. A convenience sample comprising students at one community college can produce meaningful results, but the ability to generalize the results to the larger population of community college students in the United States is limited as a result of this sampling design. Also, as noted earlier the study used self-report measures. The CDI, MCS, and demographic questionnaire, required research participants to self-report, which means that all participants' responses may not be accurate, due to intentional dishonesty in self-reporting or lack of self-knowledge on the part of participants.

Prior to computing the inferential statistics for this study, reliability analyses of the instruments used to measure the dependent variables, the CDI and MCS, was conducted. Reliability analyses were conducted to determine whether the measures of the dependent variables were reliable measures for the participants in this study. The Cronbach's alpha obtained for the CDI is .93, which indicates that the measure of college satisfaction has excellent reliability. However, the Cronbach's alpha obtained for the MCS is .59, which indicates that the measure of withdrawal cognitions has poor reliability for the research participants that comprised the sample in this study.

Although the MCS was not a reliable measure of withdrawal cognitions for the participants in this study, research indicated that the MCS was a reliable measure of withdrawal cognitions for individuals in other populations (Mashburn, 2000). The sample in this study was drawn from a population of first-year students attending a 2-year community college, while the sample in the aforementioned study was drawn from a population of first and second-year students attending a 4-year public university. While

the results of a MANOVA indicated that there was no statistically significant difference in a linear combination of the college satisfaction and withdrawal cognitions for participants in the experimental and control groups, the results of the MCS reliability analysis suggest that a more reliable measure of withdrawal cognitions for the population of interest for this study may have yielded dissimilar results.

As researchers have suggested, an a priori power analysis was also conducted to ensure that a sufficient sample size would be achieved to achieve power of .80, as recommended by Kirk (1995), using an alpha of .05, and a effect size of .25, based on the average effect size obtained in similar studies, for the MANOVA. However, the effect size obtained for this study was .009, which is much smaller than could have been reasonably anticipated. The statistical power achieved for this study was .16, but power of magnitude .80 was needed to maximize the likelihood of detecting significant differences between the intervention groups on the dependent variables at the alpha of .05 level. This suggests that a larger sample that increased the statistical power achieved may have yielded different results.

Implications for Social Change

The ultimate purpose of this study was to effect positive social change by advancing the college completion agenda. The results of this study provide a useful and unique contribution to psychologists, college administrators, educators, and others who are interested in increasing the number of students successfully completing college. Another useful finding of this study is that it provides information about the college persistence, college satisfaction, and withdrawal cognitions of individuals from various

racial and ethnic backgrounds, which deepens the knowledge base in each of these areas.

Perhaps most importantly, this study provides a prototype intervention, which may be

replicated and extended by others who have similarly purposed to improve the lives of

others by helping students to successfully earn a college degree. Educational attainment

is positively correlated with earned income, which means that results of this research can

be used to develop effective college persistence interventions that improve the quality of

lives of individuals, because having a college degree increases the employment

opportunities and the ability of individuals to earn a higher income.

Recommendations for Further Research

There are several important theoretical implications for the two foundational

theories used for this study. The personalization principle theory asserts that when

instructional messages are presented in a conversational rather than formal style, deeper

learning will occur (Moreno & Mayer, 2004). Stemming from the personalization

principle theory, this study used the personalization instructional method, which is an

instructional method that incorporates personalization, the design of an instructional

message to promote feelings of social presence (Moreno & Mayer, 2004). The results of

this study suggest that personalization alone may not be sufficient for facilitating deeper

learning.

A personalization instructional method can also incorporate immersion, which

involves designing an instructional method to promote feelings of physical presence

(Moreno & Mayer, 2004). This study did not focus on incorporating immersion to

promote feelings of physical presence. Future research using the personalization principle

theory as a rationale for the development of intervention content should include immersion in the context of a multiphase approach that includes a pilot study that examines the extent to which intervention content achieves personalization and immersion by eliciting feelings of social presence and physical presence respectively. To aid in this endeavor, it would be useful for new literature on personalization principle theory to explicate the social and physical presence constructs. As mentioned earlier, researchers have asserted that definitions and clarification of social presence and physical presence constructs are needed (Brunken, Plass, & Leutner, 2003; Sadowski & Stanney, 2002).

The Mashburn Psychological Model of college persistence was identified as a robust model of college persistence and was used in tandem with the personalization principle theory to develop and test and a college-persistence intervention. The results of this study do not provide empirical support of Mashburn's Psychological Model of College Dropout that explains the causal relationship between withdrawal cognitions, student satisfaction, and college persistence. However, these results should be interpreted with caution, because a postintervention reliability analysis revealed that the measure of withdrawal cognitions used was not reliable with this study's sample. As mentioned earlier, a more reliable measure of withdrawal cognitions for the population of interest for this study may have yielded dissimilar results. Future research should focus on the development of a psychometrically sound measure of college withdrawal cognitions for ethnically diverse students attending two-year colleges.

The limitations of this study should be used to inform future research. Those limitations include the low reliability of the dependent variable's measure and the use of a convenience sample. Frequently, measures with a small number of items have poor reliability, and a larger number of items may be ideal to increase reliability (Brown, 2001). The six-item measure of withdrawal cognitions used in this study has a relatively small numbers of items and had poor reliability in this study, which may explain the lack of significance in the results obtained, although other research (Mashburn, 2000) has shown that the MCS is reliable with other populations. A search of the peer-reviewed literature did not reveal any other existing measures on withdrawal cognitions, and it is suggested that future research should focus on the development of a withdrawal cognitions measure that has good reliability for first-year community college students. To obtain sound scientific results, future research on withdrawal cognitions should use an instrument that has good reliability for this particular population.

While this study focused on first or second semester college students, it may be useful to narrow the population of interest, such as first semester students, in future research to maximize the internal validity of the study. It may also be beneficial for future research to use a different sampling strategy. Sampling strategies that may be useful to use in future research include probability sampling designs, such as stratified random sampling and cluster sampling designs. While these probability sampling designs are more challenging to implement, the use of a probability sampling design will increase the external validity of the study.

This study used a print-based informed consent form and print-based intervention that were administered via computer. However, I observed that after reading an 860-word informed consent form, some of the research participants appeared to be tired of reading before the study began. It is unclear whether the content of the informed consent form or the number of words or perhaps the combination of both contributed to what appeared to be reading fatigue. If some of the participants were tired of reading, less focused on the words included in the intervention, and began with a diminished capacity to focus on the intervention, this may have negatively impacted the results of this study. It may be useful for future researchers to conduct the informed consent process using an audio or video-based strategy. Similarly, it may be useful for future interventions to include an audio or video-based component or to use a singularly audio or video-based intervention.

To effect social change, scholar-practitioners, and I/O psychologists in particular, should continue to explore, develop, and conduct research on college persistence interventions. I/O psychologists frequently conduct research on training and retention in varied settings, with employee turnover being a typical subject of research (Robbins et al., 2009), but more research is needed on student failure to achieve college persistence. The conceptual equivalent of employee turnover in the college environment is student failure to achieve college persistence, which is sometimes termed dropout (Robbins et al.). College-persistence rates at community colleges are significantly lower than the goals set by college administrators and the expectations of the community at large. A dearth of knowledge exists on effective interventions for increasing the rates of degree completion and transfer rates for students at the community college. I/O psychology is

poised as a unique discipline focusing on adaptive behaviors for the organization to provide solutions to challenges that community colleges face as institutions of higher learning.

Conclusion

This study provides a unique contribution to the literature on college persistence. This is the first study in the scholarly literature that used personalization-principle theory as theoretical framework for development of a computer-based college persistence intervention. Because the measures of the dependent variables in this study were self-administered, the results of this study should be interpreted with caution. In addition, because adequate power was not achieved to detect a significance difference resulting from the intervention administered, the results of this should not be viewed as an absolute indication that personalization-based instructional message interventions will not be positively impactful on the college satisfaction, withdrawal cognitions, or college persistence of first and second-semester degree seeking students at the community college. Further research investigating the effectiveness of personalization-based instructional messages interventions is needed. This study provided a prototype personalization-based instructional messages intervention, which may be replicated and extended by others, particularly psychologists, college administrators, and educators, who are committed to helping students to achieve college persistence and ultimately earn a college degree.

References

American Psychological Association. (2009). *Publication manual of the American Psychological Association* (6th ed.). Washington, DC: American Psychological Association.

American Psychological Association. (2010). American Psychological Association ethical principles of psychologists and code of conduct. Retrieved from http://www.apa.org/ethics/code2002.html

Astin, A. W. (1999). Student involvement: A developmental theory for higher education. *Journal of College Student Development*, *40*(5), 518-529.

Bean, J. P. (1990). Why students leave: Insights from research. In J. P. Bean & D. Hossler (Eds.), *The strategic management of college enrollments* (pp. 147-169). San Francisco, CA: Jossey-Bass.

Bean, J. P., & Eaton, S. B. (2000). A psychological model of student retention. In J. M. Braxton (Ed.), *Reworking the student departure puzzle* (pp. 48-61). Nashville, TN: Vanderbilt University Press.

Bean, J. P., & Metzner, B. S. (1985). A conceptual model of nontraditional undergraduate student attrition. *Review of Educational Research*, *55*(4), 485-540. doi:10.3102/00346543055004485

Bennett, G. G., & Glasgow, R. E. (2009). The delivery of public health interventions via the Internet: Actualizing their potential. *Annual Review of Public Health*, *30*, 273-292. doi:10.1146/annurev.publhealth.031308.100235

Bingham, F. G., Quigley, C. J., & Murray, K. B. (2002). An investigation of the influence acknowledgement programs have on alumni giving behavior: Implications for marketing strategy. *Journal of Marketing for Higher Education*, *12*(2), 1-14. doi:10.1300/J050v12n02_01

Brown, J. D. (2001). Can we use the Spearman-Brown prophecy formula to defend low reliability? *JALT Testing & Evaluation SIG Newsletter, 4*(3), 7-11.

Brunken, R., Plass, J. L., & Leutner, D. (2003). Direct measurement of cognitive load in multimedia learning. *Educational Psychologist, 38*(1), 53-61. doi:10.1207/S15326985EP3801_7

Burgess, D., Haney, B., Snyder, M., Sullivan, J. L., & Transue, J. E. (2000). Rocking the vote: Using personalized messages to motivate voting among young adults. *Public Opinion Quarterly*, *64*, 29-52. doi:10.1086/316758

Cabrera, A. F., Nora, A. & Castañeda, M. B. (1993) College persistence: The testing of an integrated model. *Journal of Higher Education, 64*(2), 123-139.

Campbell, D. T., & Stanley, J. C. (1963). *Experimental and quasi-experimental designs for research*. Boston, MA: Houghton Mifflin.

Carey, K. (2005, January). *One step from the finish line: Higher college graduation rates are within our reach* (Research Report). Retrieved from University of California at Santa Cruz website: http://planning.ucsc.edu/retention/Docs/ one_step_from_the_finish_line.pdf

Center for Innovative Thought at College Board. (2008, January). *Winning the skills race and strengthening America's middle class: An action agenda for community*

colleges (Research Report). http://professionals.collegeboard.com/profdownload /

winning_the_skills_race.pdf

Cohen, R. J., & Swerdlik, M. E. (2005). *Psychological testing and assessment: An introduction to tests and measurement* (6th ed.). New York, NY: McGraw Hill.

Creswell, J. W. (2009). *Research design: Qualitative, quantitative, and mixed methods approaches* (3rd ed.). Thousand Oaks, CA: Sage.

Davidson, W. B., Beck, H. P., & Beck, M. M. (2009). The College Persistence Questionnaire. *Journal of College Student Development, 50*(4), 373-390.

DeVries, H., & Brug, J. (1999). Computer-tailored interventions motivating people to adopt health promoting behaviors: Introduction to a new approach. *Patient Education and Counseling*, *36*, 99-105.

Demark-Wahnefried, W. (2007). Print-to-practice: Designing tailored print materials to improve cancer survivors' dietary and exercise practices in the fresh start trial. *Nutrition Today*, *42*(3), 131-138. doi:10.1097/01.NT.0000277790.03666.95

Dimitrov, D., & Rumrill, P. D. (2005). Speaking of research: Multivariate methods in rehabilitation. *Work: A Journal of Prevention, Assessment and Rehabilitation, 24(*2), 205-12.

D'souza, A. J., & Kelsey, K. (2003). Freshmen in transition: A second year evaluation to determine the program's impacts on academic achievement, leadership skills development, institutional loyalty and integration, and retention. *Journal of Southern Agricultural Education Research*, *53*(1), 224-236. Retrieved from www.jsaer.org/pdf/Vol53/53-03-224.pdf

Eagan, M. K. & Jaeger, A. J. (2009). Effects of exposure to part-time faculty on community college transfer. *Research on Higher Education, 50,*168-188. doi:10.1007/s11162-008-9113-8

Eakin, B. L., Brady, J. S., & Lusk, S. L. (2001). Creating a tailored, multimedia, computer-based intervention. *Computers in Nursing*, *19*(4), 152-160.

Evans, N. J., Forney, D. S., Guido, F. M., Patton, L. D., & Renn, K. A. (2010). Schlossberg's transition theory. In *Student development in college: Theory, research, and practice.* (2nd ed.) (pp. 212-226). San Francisco, CA: Jossey-Bass.

Faul, F., Erdfelder, E., Lang, A. G., & Buchner, A. (2007). G*Power3: A flexible statistical power analysis program for the social, behavioral, and biomedical sciences. *Behavior Research Methods*, *39*, 175-191. Retrieved from http://www.psycho.uni-duesseldorf.de/abteilungen/aap/gpower3/download-and-register

Finch, H. (2005). Comparison of the performance of nonparametric and parametric MANOVA test statistics when assumptions are violated. *Methodology*, *1*(1), 27-38. doi:10.1027/1614-1881.1.1.27

Fowler, F. J. (1993). *Survey research methods* (2nd ed.). Newbury Park, CA: Sage.

Green, S. B., & Salkind, N. J. (2011). Using SPSS for windows and macintosh: Analyzing and understanding data (6th ed.). Boston, MA: Prentice Hall.

Hadwin, A. F., Winne, P. H., & Nesbit, J. C. (2005). Roles for software technologies in advancing research and theory in educational psychology. *British Journal of Educational Psychology*, *75*(1), 1-24. doi:10.1348/000709904x19263

Hancock, G. R. (1997). Correlation/validity coefficients disattenuated for score

reliability: A structural equation modeling approach. *Educational and

Psychological Measurement, 57(*4), 598-606.

Harvell, E. L., & Lust, J. A. (1995). Personalized benefit communication: An application

to retirement savings plans. *Benefits Quarterly*, *Third Quarter*, 56-62.

Heiman, G. W. (2011). *Basic statistics for the behavioral sciences* (6th ed.). Belmont,

CA: Wadsworth Cengage Learning.

Hinkle, D. E., Wiersma, W., & Jurs, S. G. (1994). *Applied statistics for the behavioral

sciences* (3rd ed.). Boston, MA: Houghton Mifflin.

Kirk, R. E. (1995). *Experimental design: Procedures for the behavioral sciences* (3rd

ed.). Pacific Grove, CA: Brooks/Cole.

Knapp, L. G., Kelly-Reid, J. E., & Ginder, S. A. (2011, February). *Enrollment in

postsecondary institutions, fall 2009; graduation rates, 2003 & 2006 cohorts; and

financial statistics, fiscal year 2009* (Report NCES 2011-320). Retrieved from

National Center for Education Statistics website:

http://nces.ed.gov/pubs2011/2011230.pdf

Kreuter, M. W., Oswald, D. L., Bull, F. C., & Clark, E. M. (2000). Are tailored health

education materials always more effective than nontailored materials? *Health

Education Research*, *15*, 305-315.

Latimer, A. E., Rivers, S. E., Rench, T. A., Katulak, N. A., Hicks, A., Hodorowski, J. K.,

Higgins, E. T., & Salovey, P. (2007). A field experiment testing the utility of

regulatory fit messages for promoting physical activity. *Journal of Experimental Social Psychology*, *44*, 826-832. doi:10.1016/j.jesp.2007.07.013

Magno, C. (2009). Assessing grade school students' metacognition in solving mathematical problems. *The Assessment Handbook*, *9*, 11-20. Retrieved from http://pemea.club.officelive.com/Documents/V2_AH.pdf

Mashburn, A. J. (2000). A psychological process of student dropout. *Journal of College Student Retention*, *2*(3), 173-190. doi:10.2190/U2QB-52J9-GHGP-6LEE

McLaughlin, M. (2009). *MANOVA: Multivariate Analysis of Variance*. Retrieved from http://www-bcf.usc.edu/~mmclaugh/550x/PPTslides/WeekElevenSlides/ MANOVA.ppt

Mishra, P., & Hershey, K. A. (2004). Etiquette and the design of educational technology. *Communications of the ACM*, *47*(4), 45-49. doi:10.1145/975817.975843

Moreno, R., & Mayer, R. (2004). Personalized messages that promote science learning in virtual environments. *Journal of Educational Psychology*, *96*(1), 165-173. doi:10.1037/0022-0663.96.1.165

Moreno, R., & Mayer, R. E. (2000). Engaging students in active learning: The case for personalized multimedia messages. *Journal of Educational Psychology*, *92*(4), 724-733. doi:10.1037//0022-0663.92.4.724

Moreno, R., & Mayer, R. E. (2004). Personalized messages that promote science learning in virtual environments. *Journal of Educational Psychology*, *96*(1), 165-173. doi:10.1037/0022-0663.96.1.165

Morgan, S. E., Reichert, T., & Harrison, T. R. (2002). *From numbers to words: Reporting statistical results for the social sciences*. Boston, MA: Allyn and Bacon.

National Center for Higher Education Management Systems. (2009). *Graduation rates: Three-year graduation rates for associate students - 2008*. Retrieved from http://www.higheredinfo.org/dbrowser/index.php?measure=19:

Offenstein, J., Moore, C., & Shulock, N. (2010, April). *Advancing degrees: A framework for increasing college completion* (White Paper). Retrieved from http://www.hewlett.org/uploads/documents/Advancing_by_Degrees.pdf:

Online Educational Word Games. [Internet-Based Computer Software]. South Paris, ME: Douglas Twitchell. Retrieved from http://www.theproblemsite.com/word_games.asp

Padilla, R. V. (1999). College student retention: Focus on success. *Journal of College Student Retention*, *1*(2), 131-145. doi:10.2190/6W96-528B-N1KP-H17N

Pascarella, E. T. (1980, Winter). Student-faculty informal contact and college outcomes. *Review of Educational Research*, *50*(4), 545-595. doi:10.2307/1170295

Pascarella, E. T., & Salisbury, M. H., & Blaich, C. (2011). Exposure to effective instruction and college student persistence: A multi-institutional replication and extension. *Journal of College Student Development, 52*(1), 4-19.

Pascarella, E. T., & Terenzini, P. T. (1979). Student-faculty informal contact and college persistence: A further investigation. *The Journal of Educational Research, 72*, 214-218.

Pascarella, E. T., & Terenzini, P. T. (1983). Predicting voluntary freshman year

persistence/withdrawal behavior in a residential university: A path analytic

validation of Tinto's model. *Journal of Educational Psychology, 75*(2), 215-226.

doi:10.1037/0022-0663.75.2.215

Patton, L. D., Whitehead, D. M., & Hossler, D. (2006). Campus-based retention

initiatives: Does the emperor have clothes? In E. P. St. John & M. Wilkerson

(Eds.), *Reframing persistence research to improve academic success* (pp. 9-34).

San Francisco: Jossey-Bass.

Peltier, J. W., Kleimenhagen, A. K., & Naidu, G. M. (1994). Taking the direct route.

Journal of Health Care Marketing, *14*(3), 22-27.

Pilling, V. K., & Brannon, L. A. (2007). Assessing college students' attitudes toward

responsible drinking messages to identify promising binge drinking intervention

strategies. *Health Communication*, *22*(3), 265-276.

doi:10.1080/10410230701708121

Reed, J. G., Lahey, M. A., & Downey, R. G. (1984). Development of the college

descriptive index: A measure of student satisfaction. *Measurement and evaluation

in counseling and development*, *17*(2), 67-82.

Reed, J. G., Lahey, M. A., Ferguson, K. D., Downey, R. G., Kaiser, D. L., & Pringle, R.

L. (1983). *The college descriptive index: Development and Background

Information Technical Manual*. Retrieved from ERIC database. (ED236206)

Reeves, B., & Naas, C. (1996). *The media equation: How people treat computers, television, and new media like real people and places*. New York, NY: Cambridge University Press.

Robbins, S. B., Oh, I., Le, H., & Button, C. (2009). Intervention effects on college performance and retention as mediated by motivational, emotional, and social control factors: Integrated meta-analytic path analyses. *Journal of Applied Psychology*, *94*(5), 1163-1184. doi:10.1037/a0015738

Sadowski, W., & Stanney, K. M. (2002). Presence in virtual environments. In W. Sadowski & K. M. Stanney (Eds.), *Handbook of virtual environments* (pp. 791-806). Mahway, NJ: Erlbaum.

Sargent, A. G., & Schlossberg, N. K. (1988). Managing adult transitions. *Training & Development Journal*, *42*(12), 58-60.

Scheaffer, R. L., Mendenhall, W., & Ott, R. L. (2006). *Elementary survey sampling* (6th ed.). Belmont, CA: Thomson & Brooks/Cole.

Schmitt, N., Oswald, F. L., Kim, B. H., Imus, A., Drzakowski, S., Friede, A., & Shivpuri, S. (2007). The use of background and ability profiles to predict college student outcomes. *Journal of Applied Psychology, 92*, 165-180.

Schneider, M. (2010, May 2). How bad are our graduation rates? *The American: The Journal of the American Enterprise Institute*. http://www.american.com/archive/2010/april/how-bad-are-our-graduation-rates

Scholes, D., McBride, C. M., Grothaus, L., Civic, D., Ichikawa, L. E., Fish, L. J., & Yarnall, K. S. (2003). A tailored minimal self-help intervention to promote

condom use in young women: Results from a randomized trial. *AIDS*, *17*(10), 1547-1556. doi:10.1097/01.aids.0000076280.54156.51

Shao, X., Hufnagel, P., & Karp, R. (2009-2010). The effect of clarion transitions on student academic performance and retention. *Journal of College Student Retention*, *11*(4), 435-457. doi:10.2190/CS.11.4.a

Spady, W. G. (1971). Dropouts from higher education: Toward an empirical model. *Interchange*, *2*(3), 38-62. doi:10.1007/BF02214313

Spradlin, T. E., Burroughs, N. A., Rutkowski, D. J., Lang, J. R., & Hardesty, J. W. (2010). *College persistence and completion strategies: Opportunities for scaling up*. (Education Policy Brief No.8.4). Retrieved from ERIC website: http://www.eric.ed.gov/PDFS/ED512639.pdf

Stellefson, M. L., Hanik, B. W., Chaney, B. H., & Chaney, J. D. (2008). Challenges for tailored messaging in health education. *American Journal of Health Education*, *39*(5), 303-311.

Suter, N., & Lindgren, C. L. (1989). *Experimentation in psychology: A guided tour.* Boston, MA: Allyn & Bacon.

The Integrated Postsecondary Education Data System (IPEDS). (2011). http://nces.ed.gov/ipeds/datacenter/

Thompson, B. (1998, July 16). *ERIC* database [Monograph]. ERIC Serial No. ED420154). Retrieved from http://www.eric.ed.gov/PDFS/ED420154.pdf

Tinto, V. (1975, Winter). Dropout from higher education: A theoretical synthesis of recent research. *Review of Educational Research*, *45*(1), 89-125. doi:10.2307/1170024

Tinto, V. (1988). Stages of student departure. *Journal of Higher Education*, *59*(4), 439-455. doi:10.2307/1981920

Triola, M. F. (2011). *Essentials of statistics* (4th ed.). Boston, MA: Pearson.

Valentine, J. C., Hirschy, A. S., Bremer, C. D., Novillo, W., Castellano, M., & Banister, A. (2011, June). Keeping at-risk students in school: A systematic review of college retention programs. *Educational Evaluation and Policy Analysis*, *33*(2), 214-234. doi:10.3102/0162373711398126

Visram, S., Crosland, A., & Cording, H. (2009). Triggers for weight gain and loss among participants in a primary care-based intervention. *British Journal of Community Nursing*, *14*(11), 495-501.

Voelker, R. (1994). Personalized messages invite more mammography. *JAMA*, *271*(10), 733-735.

Weinfurt, K. P. (1995). Multivariate analysis of variance. In L. G. Grimm and P. R. Yaranold (Eds.), *Reading and Understanding Multivariate Statistics* (pp. 245-276). Washington, DC: American Psychological Association.

Weinstein, N. D., Roberts, N. E., & Pflugh, K. K. (1992). Evaluating personalized risk messages. *Evaluation Review*, *16*(3), 235-246. doi:10.1177/0193841X9201600302

Wirth, R. M., & Padilla, R. V. (2008). College student success: A qualitative modeling approach. *Community College Journal of Research and Practice*, *32*, 688-711. doi:10.1080/10668920701380942

Yang, Y., & Green, S. B. (2010). A note on structural equation modeling estimates of reliability. *Structural Equation Modeling, 17*(1), 66-81. doi:10.1080/10705510903438963

Zimmer, T. E., & Guzman, D. A. (2012). Education, income, and personal ambition: Following up on the tipping point. Retrieved from Indiana University, Indiana Workforce Intelligence System website: http://www.iwis.iupui.edu/documents/EducationIncomeAndPersonalAmbition WorkingPaper.pdf

Appendix A: Message Intervention Core Content Overview

Content Areas	Message Contents
Student Bonding Towards the College	- Enjoy your status as a "XYZ" College student; you are a part of the "XYZ" family; get in close with the "XYZ" family - Visit the "XYZ" college event calendar; spend some time with us - You are linked to "XYZ" college and you belong; we're attached - Stick with "XYZ" college, because we're going to stick with you
Student Management of College Persistence Attitudes	- Make up your mind to succeed at "XYZ" College - Decide to take advantage of your "XYZ" College opportunity - Recognize that you are the boss of your College success - No matter what, get back up, and keep going at "XYZ" College until you win; Winning is graduating or transferring; that's the goal - Say to yourself, "I will be a College graduate" regularly
Student Motivation for Degree Completion	- Your decisions decide your future; you've decided to earn your degree - I would rather you have a key and not need it, then need a key and not have it. There are some doors that won't open without the college key - See yourself at graduation and getting that golden key to many doors - See yourself using your degree as a key to open many exciting doors - Imagine that time is flying and you are flying towards graduation
Student Attainment of Academic Skills	- Gain expertise with course material by reading your textbook - Complete the assigned reading in small chunks each week - Make and post a calendar with assignment due dates noted - Read the syllabus in its entirety for each course once a week - Spend some time each week on the next graded item for a course - Maximize learning by participating regularly in each course
Student Usage of College Resources	- Get help with your career goals by seeing your career counselor - Discuss and plan your educational goals with an academic advisor - We want to help you get to the 4-year, see your transfer counselor - Come to the academic support center for help with writing assignments - Use our math tutors for one-on-one help with math course content - Visit career services to learn about available jobs and internships
Student Engagement with the Social Environment	- Recognize that college is a new phase; it is normal to lose some friends during this new phase; This makes room for you to gain new friends - Take the time to make friends at "XYZ" College - Introduce yourself to people in your classes and on campus - Make time to see encouraging faculty during office hours or after class
Student Tapping into Social Support	- Identify and connect with relatives that support your college success - Take time to call, email, or text those that care about your success - When school is tough, reach out to those that support you for comfort - If you feel stressed or overwhelmed, see one of our counselors for help

Appendix B: PBT Instructional Messages Intervention Overview

STEP 1: Personalization
STEP 2: Tailoring on Participants First Name
Training Goals: Acquisition of Knowledge and Skills Needed for College Persistence

Content Areas	Framing Type		Tailoring
Student Bonding Towards the College	☑ Personalization: **Informal Conversational Language** ☒ Generalized: **Formal Language**	➡	☑ Yes ☐ No
Student Management of College Persistence Attitudes	☑ Personalization: **Informal Conversational Language** ☒ Generalized: **Formal Language**	➡	☑ Yes ☐ No
Student Motivation for Degree Completion	☑ Personalization: **Informal Conversational Language** ☒ Generalized: **Formal Language**	➡	☑ Yes ☐ No
Student Attainment of Academic Skills	☑ Personalization: **Informal Conversational Language** ☒ Generalized: **Formal Language**	➡	☑ Yes ☐ No
Student Usage of College Resources	☑ Personalization: **Informal Conversational Language** ☒ Generalized: **Formal Language**	➡	☑ Yes ☐ No
Student Engagement with the Social Environment	☑ Personalization: **Informal Conversational Language** ☒ Generalized: **Formal Language**	➡	☑ Yes ☐ No
Student Tapping into Social Support	☑ Personalization: **Informal Conversational Language** ☒ Generalized: **Formal Language**	➡	☑ Yes ☐ No

Appendix C: Personalization-Based Tailored Intervention

Instructions to participants: On the upcoming screens, information and resources about _____ College will be seen. You are being asked to view the educational information shared. Be sure to take your time and read at a comfortable pace. At the end of the presentation of information resources, you will be asked some questions and given an opportunity to share your views.

Prev   Next

Tailoring on Participant's First Name

You may want to know "How can I graduate?" or "How do I succeed at College?" Here it is: Make up your mind to succeed at _____ College. Decide to take advantage of your _____ College opportunity. Recognize that you are the boss of your College Success. No matter what, get back up, and keep going at _____ College until you win; Winning is graduating or transferring; that's the goal.

Say to yourself, "StudentName will be a College graduate" regularly. Have a good attitude about it!

Tailoring on Participant's First Name

You may want to know "How can I graduate?" or "How do I succeed at College?" Here it is: Make up your mind to succeed at _____ College. Decide to take advantage of your _____ College opportunity. Recognize that you are the boss of your College Success. No matter what, get back up, and keep going at _____ College until you win; Winning is graduating or transferring; that's the goal.

Say to yourself, "StudentName will be a College graduate" regularly. Have a good attitude about it!

Tailoring on Participant's First Name

Gain expertise with course material by reading your textbook. Complete the assigned reading in small chunks each week. Make and post a calendar with assignment due dates noted. Spend some time each week on the next graded item for a course. Spend some time each week on the next graded item for a course.

Maximize learning by studying and preparing for each course.

If you need help with study skills StudentName, and you are on the _____ Campus, you should go to the **Student Success Center**. They are ready to serve you!

Tailoring on Participant's First Name

Your decisions decide your future; you've decided to earn your degree. I would rather you have a key and not need it, then need a key and not have it. There are some doors that won't open without the college key. You are flying towards graduation. See yourself using your degree as a key to open many exciting doors!

See yourself at graduation and getting StudentName's golden key to many doors.

Tailoring on Participant's First Name

No matter what your age is, recognize that college is a new phase; it is normal to lose some friends during this new phase; This makes room for you to gain new friends. Introduce yourself to people in your classes and on campus. Make time to see encouraging faculty during office hours or after class.

Take time to make friends at _____ College StudentName. A great way to meet new people and make new friends is to get involved with leadership opportunities, volunteer opportunities, or an exciting student club!

Tailoring on Participant's First Name

Tailoring on Participant's First Name

Enjoy your status as a _____ College student; you are a part of the _____ College family; get in close with the _____ College family. Visit the _____ college event calendar; spend some time with us. You are linked to _____ College and you belong.

Stick with _____ College, because we're going to stick with you StudentName!

Tailoring on Campus: Campus 1
Content Area: Student Usage of College Resources

Use our math tutors for one-on-one help with math course content. At the
_____ campus, you can get free personal academic assistance.

HERE ARE 4 KEY PLACES YOU CAN GET PERSONAL HELP

- Have you ever struggled with math? One-on-one tutoring is available at the *Mathematics Learning Center* for students taking math courses. You can simply walk in to see a math tutor right away or you can make an appointment for planned regular tutoring.

- Sometimes students taking English or reading courses need help. Also, students may have a paper or other written assignment that is challenging. Drop-in or by appointment one-on-one tutoring for grammar, reading, speech, writing, and even languages is available for you at the *Reading, Writing, Language Center*.

- Also, you can get help with test-taking skills, organizing course tasks, and time management at the *Learning Skills Support Services Office*.

- If you need help with a science course, the *Sciences Learning Center* is a supplementary educational center that will help you. At the Sciences Learning Center there are instructional assistants, videotapes, study group sessions, and more. To get help, you just walk in.

If you don't know where to go to get the academic help you need, the Learning Skills Support Services Office will figure it out and give you a referral to the appropriate place!

Prev   Next

Tailoring on Campus: Campus 2
Content Area: Student Usage of College Resources

Use our math tutors for one-on-one help with math course content. At the
_____ campus, you can get free personal academic assistance.

HERE ARE 4 KEY PLACES YOU CAN GET PERSONAL HELP

- Have you ever struggled with math? One-on-one tutoring is available at the *Math and Accounting Learning Center* for students taking math, accounting, physics, or engineering courses. You can simply walk in to see a math tutor right away or you can make an appointment for planned regular tutoring.

- Sometimes students taking English or reading courses need help. Also, students may have a paper or other written assignment that is challenging. Drop-in or by appointment one-on-one tutoring by faculty or advanced students for grammar, reading, and writing, and even citations is available for you at the *Writing Center*.

- Also, you can get help with career/life planning, job searches, college transfer, and tutoring at the *Student Success Center*.

- If you need help with a science course, the *Science Learning Center* is a supplementary educational center that will help you. At the Science Learning Center there are science tutors, videos, study guides, and more. To get help, you just walk in.

If you don't know where to go to get the academic help you need, the Student Success Center will figure it out and give you a referral to the appropriate place!

Prev   Next

Tailoring on Campus: Campus 3
Content Area: Student Usage of College Resources

Use our math tutors for one-on-one help with math course content. At the _____ campus, you can get free personal academic assistance.

HERE ARE 2 KEY PLACES YOU CAN GET PERSONAL HELP

- Have you ever struggled with math? One-on-one tutoring is available at the **Math/Science Center** for students taking math courses. You can simply walk in to see a math tutor right away or you can make an appointment for planned short-term tutoring.

- Sometimes students taking English or reading courses need help. Also, students may have a paper or other written assignment that is challenging. One-on-one tutoring for grammar, reading, writing, and even languages is available for you at the **Writing, Reading, & Language Center**.

- If you need help with a science course, the **Math/Science Center** is a supplementary educational center that will help you. At the Math/Science Center there are science tutors, current science textbooks, review sessions, and more. To get help, you just walk in and make an appointment.

If you don't know where to go to get the academic help you need, the Student Services Office will figure it out!

Prev   Next

Tailoring on Campus: Campus 1
Content Area: Student Attainment of Academic Skills

Maximize learning by studying and preparing for each course.

If you need help with study skills, and you are on the _____ Campus, you should go to the *Learning Skills Support Services Office*. They are ready to serve you!

Prev   Next

Tailoring on Campus: Campus 2
Content Area: Student Attainment of Academic Skills

Tailoring on Campus: Campus 3
Content Area: Student Attainment of Academic Skills

Tailoring on Campus: Campus 1
Content Area: Student Engagement with the Social Environment

Take time to make friends at _____ College 🏫 🏫 . A great way to meet new people and make new friends is to get involved with leadership opportunities, volunteer opportunities, or an exciting student club!

There are many student leadership opportunities you can get involved with at the _____ campus. For example:

- _____ Newspaper
- ____ Peers Initiative
- Phi Theta Kappa
- Project Lead
- _____Student Senate

You are also invited to participate in _____ College alternative breaks, blood drives, and volunteer fairs. For example, with the alternative break, you can go on week and weekend-long trips that will help you learn about social issues through direct service, issue education, and reflection.

If you go on an alternative break, you will get top explore how you can make a difference in your local and broader communities in the issues that matter to you. Applications for our next trip are available this Fall!

At the _____ Campus, you can also pick from more than 20 clubs! For example, you could join the African student association, Bethel campus fellowship, future entrepeneurs, gaming club, Latino student union, martial arts club, or swimming club.

Here's the complete list of clubs:

COOL!

African Student Association	Ambassaddors for Christ	Anime Club	Association of Muslim Studies	Bethel Campus Fellowship
Biology Club	Dagorhir Medieval Club	Economics Club	Ethiopian Student Association	Future Entrepeneurs
Gaming Club	Latino Student Union	Martial Arts Club	Music Society	Math Club
Philosophy Club	Rotaract Club	Swimming Club	Science Adventure Club	The Media Network
The ____ Writing Club	United Nations onCampus	Womens Studies Clubs		

Tailoring on Campus: Campus 2
Content Area: Student Engagement with the Social Environment

Take time to make friends at _____ College 🙌 🙌 . A great way to meet new people and make new friends is to get involved with leadership opportunities, volunteer opportunities, or an exciting student club!

There are many student leadership opportunities you can get involved with at the _____ campus. For example:

- County Council Participation
- First-Year Experience Ambassadors
- _____ Student Senate
- Leadership Ascent Program
- New Student Orientation Leader

You are also invited to participate in _____ College alternative breaks, blood drives, and volunteer fairs. For example, with the alternative break, you can go on week and weekend-long trips that will help you learn about social issues through direct service, issue education, and reflection.

If you go on an alternative break, you will get top explore how you can make a difference in your local and broader communities in the issues that matter to you. Applications for our next trip are available this Fall!

At the _____ Campus, you can also pick from more than 90 clubs! For example, you could join the Caribbean club, fashion club, gaming club, latin dance club, medical careers club, poetry club, or weight lifting club.

Here's the complete list of clubs:

Activities Board	Adventure Club	African Club	Anime Society	Autism Speaks
Basketball Club	BioTech Club	Business Club	Cafe Ole	Campus Ministry
Caribbean Club	Chess Club	Cricket Club	Debate Club	Engineering Club
Environmental Club	Fashion Club	Flag Football Club	Gaming Club	Gay/Straight Alliance
____ Newspaper	Gryphon Literary Magazine	History Club	Horticulture Club	International Club
Lacrosse Club	Latin Dance Club	Latino Student Union	Math Club	Martial Arts Club
Medical Careers Club	Multicultural Book Club	Muslim Student Association	Networking Club	Photography Club/td>
Physics Club	Poetry Club	Science Club	Service Learning Club	Ski Club
Soccer Club	South Asian Club	Student Senate	Swim Club	Tennis Club
Ultimate Frisbee Club	Veteran's Club	Volleyball Club	Weight Lifting Club	Women's Studies Club

Prev . Next

Tailoring on Campus: Campus 3
Content Area: Student Engagement with the Social Environment

Take time to make friends at _____ College ☺ ☺ . A great way to meet new people and make new friends is to get involved with leadership opportunities, volunteer opportunities, or an exciting student club!

There are many student leadership opportunities you can get involved with at the _____ campus. For example:

- Club Leader Training - Budget
- Club Leader Training - Community Service
- Club Leader Training - Event Planning
- Club Leader Training - Meeting Management
- ____ LEADS
- _____ Student Senate
- _____ Newspaper

You are also invited to participate in _____ College alternative breaks, blood drives, and volunteer fairs. For example, with the alternative break, you can go on week and weekend-long trips that will help you learn about social issues through direct service, issue education, and reflection.

If you go on an alternative break, you will get top explore how you can make a difference in your local and broader communities in the issues that matter to you. Applications for our next trip are available this Fall!

At the _____ Campus, you can also pick from more than 50 clubs! For example, you could join the Caribbean club, fashion club, gaming club, latin dance club, medical careers club, poetry club, or weight lifting club.

Here's the complete list of clubs:

COOL!

Active Minds	Aerospace Club	African Student Union	Agape Campus Christian Fellowship	Ambassadors for Christ
Anthropology Club	Asian Girl's Hip-Pop Dance Club	Association of Indonesian Culture	Astronomy Club	Bboy Club
Biology Club	Black Box Players	Book Club	Chess Club	Dancers for Life
Early Childhood Education Club	Engineering Club	Engineers Without Borders	Fashion Club	Filipino American Association
Film Production Club	French Club	FYE Student Ambassador Club	Geography Club	Geology Club
History Club	Immigrants Rights Organization	Interior Design Club	International Studies Club	Jesus Christ Assembly
Korean Drum Club	Latino Student Union	Live Action Role Playing	Math Club	_____ Bicycle Club/to>
_____ College Knights Cricket Club	_____ College Rugby Club	_____ College Stands Up to Cancer	Music Production Club	Muslim Student Association
Nutrition and Food Club	Peace and Justice Society	Persian Club	People's Alliance	Philosophy Club
Pre-Law Club	Psychology Club	Red Jacket	Robotics Club	Stepping Stone Club
Student Architects Club	Student Construction Association	Study Abroad Club	Terracycle	Veteran & Active Duty Military Students Club
Women in Engineering Science & Technology	Women's Studies Club	Young Mentors of	Zomtaku D	ZUMBA Club

Tailoring on Level of Financial Concern: Not at All Concerned
Content Area: Student Management of College Persistence Attitudes

Tailoring on Level of Financial Concern: Somewhat Concerned
Content Area: Student Management of College Persistence Attitudes

Have a good attitude about it!

Be   enthusiastic about doing what you need to do to get your financial aid, since it will help you to stay enrolled so you can graduate.

Prev   Next

Tailoring on Level of Financial Concern: Very Concerned
Content Area: Student Management of College Persistence Attitudes

Say to yourself, "I will be a College graduate" regularly and decide to take charge of applying for financial aid.

Have a good attitude about it!

Be   enthusiastic about doing what you need to do to get your financial aid, since it will help you to stay enrolled so you can graduate.

Apply for these five kinds of financial aid:

- paid internships
- grants (free money)
- loans
- scholarships
- work study

Focus your good attitude and good efforts on successfully applying for financial aid!

Prev   Next

Tailoring on Level of Financial Concern: Not at All Concerned
Content Area: Student Tapping Into Social Support

At the _____ Campus, there are two kinds of counselors, counselors that give academic advising and conduct personal counseling and financial aid counselors that conduct financial aid counseling. The financial aid process can be complex, and it makes sense to get counsel on what to do and when to do it!

If you feel *stressed or overwhelmed or if you feel lost in the financial aid process and simply need some guidance, see one of your financial aid counselors for help.

Prev   Next

Tailoring on Level of Financial Concern: Somewhat Concerned
Content Area: Student Tapping Into Social Support

If you feel stressed or overwhelmed or if you feel lost in the financial aid process and simply need some guidance, see one of your financial aid counselors for help. Ask for a counselor by name.

Here are the names of your financial aid counselors on the _____ Campus. Ask to speak to a financial aid counselor by name. Get to know at least one financial aid counselor. Here are their names:

- _____ , Financial Aid Counselor
- _____ , Financial Aid Counselor
- _____ , Financial Aid Counselor
- _____ Financial Aid Counselor
- _____ , Financial Aid Counselor

Prev   Next

Tailoring on Level of Financial Concern: Very Concerned
Content Area: Student Tapping Into Social Support

If you feel stressed or overwhelmed or if you feel lost in the financial aid process and simply need some guidance, see one of your financial aid counselors for help. Ask for a counselor by name.

Here are the names of your financial aid counselors on the _____Campus. Ask to speak to a financial aid counselor by name. Get to know at least one financial aid counselor. Here are their names:

- _____ , Financial Aid Counselor
- _____ , Financial Aid Counselor
- _____ , Financial Aid Counselor
- _____ Financial Aid Counselor
- _____, Financial Aid Counselor

To minimize stress, when you meet with your financial aid counselor, find out when the off-peak financial aid counseling period is for the _____campus. If you see your counselor during the off-peak times it will be easier for you to see your counselor, and you may have more time to meet with your financial aid counselor.

Plan your financial aid for the Fall 2013 semester with one of these counselors right now, instead of going to the financial aid office in the first few weeks before that semester. Get good financial aid counseling by following these smart support guidelines.

Prev   Next

Appendix D: Generalized Messages Intervention

STEP 1: Generalization
STEP 2: None
Training Goals: Acquisition of Knowledge and Skills Needed for College Persistence

Content Areas	Framing Type		Tailoring
Student Bonding Towards the College	☒ Personalization: **Informal Conversational Language** ☑ Generalized: **Formal Language**	➡	☐Yes ☑ No
Student Management of College Persistence Attitudes	☒ Personalization: **Informal Conversational Language** ☑ Generalized: **Formal Language**	➡	☐ Yes ☑ No
Student Motivation for Degree Completion	☒ Personalization: **Informal Conversational Language** ☑ Generalized: **Formal Language**	➡	☐Yes ☑ No
Student Attainment of Academic Skills	☒ Personalization: **Informal Conversational Language** ☑Generalized: **Formal Language**	➡	☐ Yes ☑ No
Student Usage of College Resources	☒ Personalization: **Informal Conversational Language** ☑ Generalized: **Formal Language**	➡	☐ Yes ☑ No
Student Engagement with the Social Environment	☒ Personalization: **Informal Conversational Language** ☑ Generalized: **Formal Language**	➡	☐ Yes ☑ No
Student Tapping into Social Support	☒ Personalization: **Informal Conversational Language** ☑Generalized: **Formal Language**	➡	☐ Yes ☑ No

MESSAGES INTERVENTION CONTENT (GENERALIZED MESSAGES GROUP)

Instructions to participants: On the upcoming screens, information and resources about _____College will be seen. You are being asked to view the educational information shared. Be sure to take your time and read at a comfortable pace. At the end of the presentation of information resources, you will be asked some questions and given an opportunity to share your views.

Prev   Next

Students sometimes want to know "How can I graduate?" or "How do I succeed at College?" The way that a student can achieve this goal is to make up his or her mind to succeed at _____ College. You should make the decision to take advantage of the opportunities at _____ College and take charge of your College Success. When challenges come, you should meet those challenges and keep going until you graduate or transfer.


Be sure to speak positively about your future college graduation.

Prev   Next

You should get help with your career goals by seeing a career counselor. You are supposed to talk to an academic advisor about educational planning. See a transfer counselor to get help with transferring to a 4-year College or University. You may go to the academic support center to obtain help with writing assignments. Go to career services to gain knowledge about jobs and internships.
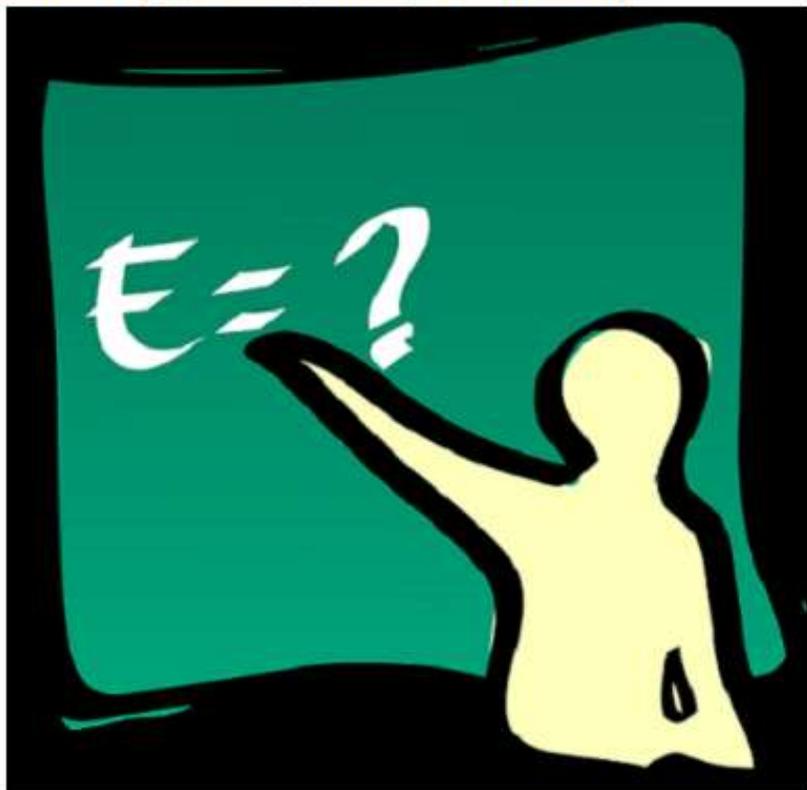
See a math tutor for personal help with math coursework challenges.

Prev   Next

Be sure to read your textbook for each course. Reading of textbook content should be completed in small chunks. Developing and posting and assignment calendar is also recommended. Be sure to look ahead to see the next week's graded item by reading your complete course syllabus in its entirety each week.

Make outline of history paper

Work on English paper

Finish math quiz

Do sociology reading

Study For sociology midterm

Work On math Homework problems

Finish Reading Ch 4 for History

Engage in regular course participation to get the most from each course.

Prev   Next

It's important to understand that decisions decide futures. Your decision to earn a degree is good, because it is better for a person to have a key and not need it, then for a person to need a key and not have it. There are some existing doors that will not open without a college key. You are making progress towards your degree. Use your degree to open exciting doors.

Visualize what graduation will be like when you get your key, your degree, to many doors.

Prev   Next

It's important to appreciate that College is a new phase at any age. it is normal to lose friends in this transition; Expect to make new friends during this transition. When on campus and in class, take the initiative to engage in introductions with others. Also, spend time with helpful professors during office hours or after class.

It's important to invest time in making friends at _____ College.

Prev   Next

Recognize the relatives that are invested in your college success. Use a variety of mechanisms, e.g. telephone, email, or text-messaging to contact individuals that are invested in your success.

When stressed or overwhelmed, reach out to one of the College counselors for help.

Prev   Next

Take pleasure in your status as a _____ College student; each student is a part of the _____ College family; Draw closer to the College. Look at the _____ College event calendar; then come to some of the events. Each student is an important link in the College.

Stay connected to _____ College; because we want to stay connected to our students.

Prev   Next

Appendix E: No-Message Control Intervention

Instructions to participants: On the next screen, a list of online educational word games and their descriptions will appear. You are being asked to select and play one or more of these educational games for 20 minutes. You may play one game for the entire period or play multiple games, such as play one game for a few minutes, and then another, and then another, etc. At the end of this period, you will be asked to answer a few short questions.

Picture Word Game
A hidden picture is revealed piece by piece as you guess the hidden word in this reverse hangman game.

Proof It!
A fun grammar/proofreading game developed in partnership with Portland Proof.

Hangman
This Hangman game uses a dictionary of nearly 17 thousand words. There are a lot of familiar words, but many unusual ones, which makes the game more challenging.

Four Word Scramble
Use the clue word to help you unscramble the letters in four related words.

Word Grid Puzzle
This is similar to a crossword puzzle, except that instead of giving you clues, you are given the words. Your job is to figure out where each word goes!

Telephone Game
Given the computer's clue word and a list of numbers which represent telephone keys, figure out the secret word.

One of These Things
Given a list of words, some common, some very obscure and archaic, and one not a word at all, can you guess which word is not to be found in the dictionary?

Scrambled Word Game
Find the hidden word scrambled in a five-by-five grid of letters, by selecting one letter from each row and column.

My Secret Word
You have 7 guesses to figure out the secret word. Pick letters from the alphabet and find out if they are the right letters, in the right place.

Blackberry Game
Given the computer's clue word and a list of numbers and symbols which represent BlackBerry keys, figure out the secret word.

Related Word Search
This game is sort of like a word search, sort of like a crossword puzzle...it's a new kind of puzzle designed just for this site!

Cheater Hangman
A strange sort of hangman game in which the computer cheats. Can you figure out how?

Spell It! (Junior)
Professor Puzzler helps young children to become better spellers by showing them pictures of common objects and guiding them through spelling the words.

Printable Worksheets
Use our word lists, or create your own word lists and print worksheets of jumbles and word searches.

Appendix F: Tailoring Design

Explanation of Tailoring Design: participant responses are used to tailor the intervention to the specific characteristics and situations of the individual.

Student Characteristics		Tailored Content Areas
First Name	→ → → → → → → →	• Student Bonding Towards the College • Student Management of College Persistence Attitudes • Student Motivation for Degree Completion • Student Attainment of Academic Skills • Student Usage of College Resources • Student Engagement with the Social Environment • Student Tapping into Social Support
Primary Campus Affiliation	→ → →	• Student Usage of College Resources • Student Attainment of Academic Skills • Student Engagement with the Social Environment
Level of Financial Concern	→ → →	• Student Management of College Persistence Attitudes • Student Usage of College Resources • Student Tapping into Social Support

Appendix G: Summary of Proposed Research

Dear Director of Institutional Research & Chair of Counseling Advising,

As you know, I am excited about the opportunity to conduct a college persistence intervention research study at _____. Although we have already discussed the proposed study at length, I am writing to provide you with a summary. My intention is to provide a summary that may be used to help your staff understand the purposes and intent of the study.

Summary

Purpose of the Study

The purpose of this study is to assess the efficacy of a PBT instructional messages intervention and generalized messages intervention for increasing student satisfaction, decreasing student withdrawal cognitions, and increasing college persistence with first-year college students. The researcher is hopeful that the result of conducting this study will be the identification of an effective college persistence intervention.

Description of the Study

The research study utilizes a true experimental research design. Participants will be invited to participate in the study via flyers disseminated at the campus counseling and advising center. When participants are invited to participate in the study, the researcher or college staff will emphasize that participation in the study is completely voluntary.

Implementation of the intervention will occur in the 25-station computer lab of the _____. A total sample size of 108 participants will be sought. The researcher will begin by administering an eligibility screener to prospective participants. Eligible participants will be given a date and time to meet the researcher at the department during a 6-week period in the semester.

When the eligible participant arrives to participate in the study, the participant will complete the online informed consent process. The researcher will then randomly assign the participant to experimental group one (PBT-instructional message group), experimental group two (generalized-message group), or the control group (no-message group). After completion of the study, all participants will all be offered as compensation, the choice of two refreshments, a beverage and snack.

The measures of student satisfaction and withdrawal cognitions will be scored by the researcher after all of the interventions have been completed. The researcher will also obtain the participants' college registration data for the subsequent semester from the appropriate college staff.

Appendix H: Informed Consent Form
Study of College Student Experiences

The purpose of this study is to provide students with an opportunity to participate in an online activity and to learn about the college experiences of students. This study is being conducted by Nichole Gibbs, a researcher and doctoral student at Walden University. Here are the details about participation in the study:

*Participation involves completing one online activity.
*The online activity takes approximately 20 to 30 minutes to complete.
*Participation involves completing online questionnaires.
*The online questionnaires take approximately 10 to 15 minutes to complete.
 *The total expected time for participation in this study is less than 45 minutes.

You are being asked to participate in this study because you meet all this study's inclusion criteria:

- Being a matriculated degree seeking student
- Being in the first or second semester of studies at the college
- Being registered in the current semester for at least half-time
- Being 18 years of age or older

Some individuals are not eligible to participate in this study, because they meet this study's exclusion criteria:

- Being a nondegree-seeking student
- Being in the third or greater semester of taking courses at the college
- Having attended another College before being enrolled at the current College
- Being registered for fewer than 6 credits in the current semester
- Being a minor

There are no known potential or actual conflicts of interest. This is a COMPLETELY CONFIDENTIAL study. The online activity for this study is Internet based and uses standard SSL encryption to ensure secure keeping of your responses. Your responses to all questions in this study are confidential, which means that only the researcher will have access to your individual responses.

At the end of the study, your responses will be group together along with the responses of other participants for review by the researcher. The researcher will also look at the college enrollment data for you and other participants later in the academic year. Only grouped responses, without your name or any of your identifying information, will be disseminated.

Your participation in this study is voluntary. If for any reason, you are not comfortable participating in this study, you may click "disagree" at the bottom of this screen page and discontinue your participation right now, for any reason, with no negative consequences.

Also, at any point in the study, you may discontinue your participation for any reason, with no negative consequences. Please note that if you choose to discontinue your participation, your relationship with the College, faculty, and staff will not be affected.

If you have any questions or concerns about this study, please contact the researcher or the Walden University Research Participation Advocate using the contact information provided at the end of this form.

It is unlikely that you will experience any distress during or after this study due to study participation. However, if you experience any distress, please contact the researcher or the Walden University Research Participation Advocate. The contact information is provided at the end of this form.

Walden University's approval number for this study is **10-11-12-0018306** and it expires on **October 10, 2013.**

As compensation for participation in this study, you will receive a $10.00 gift card at the conclusion of this study. As part of this study, the researcher will access your college record, specifically your college course selections, for this academic year, including the fall and spring semesters. Your individual information will be grouped with data from other research participants to learn about student decisions about college course selection.

Please read the following statement. Then, if you understand and agree to the terms outlined in this consent form, select "I agree" below to indicate that you understand agree to the terms outlined or if you do not want to participate in the study, select "I disagree".

"I have read the information above describing this study. I agree to participate in this study and understand that my responses will be kept confidential. As described above, I authorize the College to release my college course selections for the 2012-2013 academic year. I understand that my participation is completely voluntary and that I may discontinue my study participation at any time with no negative consequences. I know that I can receive a summary of the research findings. I understand that if I have any questions or concerns, I can discuss them with the researcher or the Walden University Research Participant Advocate."

☐ I Agree   ☐ I Disagree

Please provide your first name, last name, middle initial, and student ID number as it appears in your college record.

First Name_____ Last Name_____ Middle Initial___
Student ID Number_____
Thank you for your participation in this study! If you would like to have a summary of the study's findings, please follow the optional prompts at the end of the questionnaire sequence and the researcher will send you a summary of the study results when the study is completed.

Researcher: Nichole Gibbs Thomas, Nichole.Gibbs@WaldenU.edu
Walden's Research Participant Advocate: 800-925-3368, extension #XXXX

<div align="center">

-THE RESEARCHER WILL GIVE YOU
A PRINTED COPY OF THIS FORM FOR YOUR RECORDS -

</div>

_____   _____
Signature   Date

Appendix I: Eligibility Screener

Instructions: Please answer each of the following questions. If you need assistance, please let the researcher know. After you complete this screener, the researcher will verify your information in the college information system.

1. Is this your first or second semester taking courses at _____ College?
    a. Yes
    b. No. Go to item #7.

2. Have you ever been enrolled as a student at another college other than _____ College?
    a. Yes
    b. No. Go to item #7.

3. Which of the following age categories do you all within today?
    a. Under 18. Go to item #7.
    b. 18 or older

4. Which of the following describes your official student status at _____ College?
    a. I am registered as a CERTIFICATE seeking student. Go to item #7.
    b. I am registered as a DEGREE seeking student.
    c. I am registered as a CERTIFICATE and DEGREE seeking student.
    d. I am registered as a NONMATRICULATED student. Go to item #5.

5. How many credit hours are you registered to complete this semester?
    a. 1 Go to item #7.
    b. 2 Go to item #7.
    c. 3 Go to item #7.
    d. 4 Go to item #7.
    e. 5 Go to item #7.
    f. 6 Go to item #7.
    g. 7 Go to item #7.
    h. 8 Go to item #7.
    i. 9 Go to item #7.
    j. 10 Go to item #7.
    k. 11 Go to item #7.
    l. 12 or more

6. Place a check here ____. Thank you for completing this screener. You are eligible for participation in this study. Please see the researcher to set up a time and date for your participation.

7. Place a check here ____. You do not fit the criteria for inclusion in this particular study. However, your interest is appreciated. Also, thank you for completing this screener.

Appendix J: Standard Protocol for Interventions

RESEARCHER'S NOTE*: THE RESEARCHER WILL READ VERBATIM THE
FOLLOWING INSTRUCTIONS TO EACH STUDY PARTICIPANT.

I'm going to read a short introduction to you, as I do for each research participant. Today,
you will have the opportunity to complete a short confidential online activity about
college experiences that will take about 20 minutes to complete. You might think of it as
a confidential self-help guide for college students. In about two minutes, I will take you
to a computer-station, so you can begin.

Before we begin, if you need to use the restroom, please do so now, so you will not be
interrupted once you get started.*

A couple of notes:

(1) All of your information will be completely confidential. At the end of the study, your
responses will be grouped with other participants for review. None of your personally
identifying information will be attached to the grouped data analysis.

(2) It is important that you give honest answers. Please be sure to answer each question
openly and honestly.

(3) When it comes to right and wrong, a right answer is an honest answer.

(4) Be sure to answer each question.

(5) It's important to give your full attention to the online activity. Be sure to refrain from
cell phone use, including texting. Also, if you need to the use the Internet or computer for
other reasons, please do so after completing the study.

(6) Thank you for your participation in the study, and here's a word guide that you have
the option to use in part C of the online activity. At that point, you can use it to refer to
explanations for any of the words in the activity.

Do you have any questions?

Okay, let's go over to a computer and get you seated, so you can get started.

*A PARTICIPANT MAY USE THE RESTROOM IF REQUESTED.

Appendix K: College Descriptive Index

In this questionnaire you will be asked about your college experiences. On the following pages you will see lists of adjectives which may, or may not, <u>accurately describe your college experiences and your feelings about those experiences</u>. The words are grouped in eight areas, concerning your Teachers, Parents, Self, Other Students, Courses, Finances, the College Administrators, and NonCourse Activities (extra-curricular activities). You should identify which of the adjectives accurately describes <u>your</u> situation in each area. Please answer each item.

Think of your Teachers (Professors). How well does each of the following adjectives describe <u>most</u> of your Teachers this semester? [Select]:

Y for "Yes" if the word does describe your Teachers
N for "No" if it does NOT describe your Teachers
? if you cannot decide

TEACHERS (Professors)

Y ? N Understanding

Y ? N Inconsiderate

Y ? N Competent

Y ? N Articulate

Y ? N Helpful

Y ? N Available

Y ? N Offensive

Y ? N Humorous

Y ? N Conceited

Y ? N Knowledgeable

Y ? N Impractical

Y ? N Flexible

Y ? N Biased

Y ? N Insensitive

Y ? N Enthusiastic

Y ? N Tactless

Y ? N Opinionated

Y ? N Dull

Y ? N Patient

Y ? N Nitpicking

Think of your Parents (or Guardians).   What are they like most of the time? How well does each of the following words describe your Parents' attitudes and relationship toward you and your college experience, in general? [Select]:

Y for "Yes" if the word does describe your Parents
N for "No" if it does NOT describe your Parents
? if you cannot decide

PARENTS (or Guardian)

Y ? N Intolerant

Y ? N Thoughtful

Y ? N Closed-minded

Y ? N Unrealistic

Y ? N Affectionate

Y ? N Trusting

Y ? N Nosey

Y ? N Stubborn

Y ? N Concerned

Y ? N Supportive

Y ? N Fault-finding

Y ? N Understanding

Y ? N Dependable

Y ? N Sensible

Y ? N Impatient

Think about Your Self. How do you feel <u>most</u> of the time this semester? [Select]:

Y for "Yes" if the word does describe Your Self
N for "No" if it does NOT describe Your Self
? if you cannot decide

YOUR SELF

Y ? N Moody

Y ? N Relaxed

Y ? N Foolish

Y ? N Confident

Y ? N Aloof

Y ? N Lazy

Y ? N Frustrated

Y ? N Eager

Y ? N Honest

Y ? N Optimistic

Y ? N Obstinate

Y ? N Helpful

Y ? N Timid

Y ? N Successful

Y ? N Sarcastic

Y ? N Organized

Y ? N Careless

Think of the Other Students you know and see regularly this semester. How well does each word describe most of those Students? [Select]:

Y for "Yes" if the word does describe Other Students
N for "No" if it does NOT describe Other Students
? if you cannot decide

OTHER STUDENTS

Y ? N Honest

Y ? N Sympathetic

Y ? N Apathetic

Y ? N Indifferent

Y ? N Lazy

Y ? N Responsible

Y ? N Tolerant

Y ? N Obnoxious

Y ? N Hard-to-meet

Y ? N Friendly

Y ? N Stimulating

Y ? N Inconsiderate

Y ? N Open-minded

Y ? N Complaining

Y ? N Ambitious

Y ? N Imaginative

Y ? N Confident

Y ? N Unreliable

Y ? N Prejudiced

Y ? N Arrogant

Y ? N Studious

Think of your Courses <u>this semester</u>. What are they like <u>most</u> of the time? [Select]:

Y for "Yes" if the word does describe your Courses
N for "No" if it does NOT describe your Courses
? if you cannot decide

COURSES

Y ? N Creative

Y ? N Irrelevant

Y ? N Routine

Y ? N Interesting

Y ? N Disappointing

Y ? N Enjoyable

Y ? N Repetitive

Y ? N Disorganized

Y ? N Worthwhile

Y ? N Frustrating

Y ? N Boring

Y ? N Exciting

Y ? N Satisfying

Y ? N Unpleasant

Y ? N Challenging

Y ? N Informative

Think of your Financial Situation this semester. How well does each of the following words describe your finances? [Select]:

Y for "Yes" if the word does describe your Finances
N for "No" if it does NOT describe your Finances
? if you cannot decide

FINANCES

Y ? N Broke

Y ? N Inadequate

Y ? N Well off

Y ? N Secure

Y ? N Indebted

Y ? N Tight

Y ? N Satisfactory

Think of your College Administrators with whom you have had contact (e.g., Deans, Department Heads, Registrar…). How well does each of the following describe them? [Select]:

Y for "Yes" if the word does describe Administrators
N for "No" if it does NOT describe Administrators
? if you cannot decide

COLLEGE ADMINISTRATORS

Y ? N Intelligent

Y ? N Admirable

Y ? N Intolerant

Y ? N Credible

Y ? N Ambitious

Y ? N Arrogant

Y ? N Impractical

Y ? N Deceptive

Y ? N Respected

Y ? N Unhelpful

Y ? N Impartial (fair)

Y ? N Competent

Y ? N Honest

Y ? N Inconsistent

Y ? N Inflexible

Y ? N Common-sensical

Y ? N Conscientious

Y ? N Concerned

Y ? N Understanding

Y ? N Stubborn

Y ? N Disorganized

Think of the NonCourse (extracurricular) Activities in which you have participated. How well does each word describe those activities? [Select]:

Y for "Yes" if the word does describe your activities
N for "No" if it does NOT describe your activities
? if you cannot decide

NONCOURSE ACTIVITIES

Y ? N Limited

Y ? N Important

Y ? N Tiring

Y ? N Creative

Y ? N Repetitive

Y ? N Disorganized

Y ? N Fun

Y ? N Stimulating

Y ? N Relaxing

Y ? N Disappointing

Y ? N Exciting

Y ? N Worthless

Y ? N Easily-accessible

Y ? N Relevant

Y ? N The Pits

Y ? N Enjoyable

Appendix L: Permission to Use College Descriptive Index

Subject: RE: I/O Psychology Research - Permission to Use CDI
Date: Mon, Aug 01, 2011 09:06 AM CDT
From: "Reed, Jeffrey" <JReed@marianuniversity.edu>
To: Nichole Gibbs <nichole.gibbs@waldenu.edu>
CC: "Ronald Downey (downey@k-state.edu)" <downey@k-state.edu>

Nichole,

Permission Granted.
It would be interesting to learn the results of your research.
Please let me know if you have any questions.

Jeff

Jeffrey G. Reed, PhD
Dean and Professor, School of Business
Marian University
45 S. National Ave., Fond du Lac, WI 54935 USA
1-800-2-MARIAN x 8759
(920)923-8759 (office)
FAX. (920)926-2102
jreed@marianuniversity.edu
http://ww.marianuniversity.edu/jreed/

From: Nichole Gibbs [mailto:nichole.gibbs@waldenu.edu]
Sent: Monday, August 01, 2011 8:14 AM
To: Reed, Jeffrey
Subject: I/O Psychology Research - Permission to Use CDI

Dear Dr. Reed,

I hope this finds you well. I am writing to request permission to use the College Descriptive Index described in your study, Development of the College Descriptive Index: A Measure of Student Satisfaction, published in the *Measureme: and Evaluation in Counseling and Development* Journal.

I am a doctoral student in Industrial/Organizational psychology at Walden University, and am interested in using the measure for my dissertation study on college persistence. The purpose of my dissertation study is to assess the efficacy of a college-persistence intervention for increasing student satisfaction, decreasing student withdrawal cognitions, an increasing college persistence with first-year college students. I am hopeful that the result of conducting this study w the identification of an effective college persistence intervention.

I am excited about the possibility of being able to use the measure and would provide you with the results of the resear collected with the measure. Thank you for your consideration, and I look forward to hearing from you.

Kind Regards,
Nichole

Nichole Gibbs Thomas, M.A.
Nichole.Gibbs@Waldenu.edu

Appendix M: Mashburn Cognitions Survey

Mashburn Cognitions Survey

Please indicate the number that most accurately reflects your position on each of the following statements.

1. Dropping out of _____ is constantly on my mind

| Strongly Disagree 1 | 2 | 3 | 4 | Strongly Agree 5 |

2. How often do you think about dropping out of _____?

| Never 1 | 2 | 3 | 4 | Constantly 5 |

3. I intend to seek information about my alternatives to finishing my degree at _____ (e.g. Transferring to a different school or getting a job.)

| Strongly Disagree 1 | 2 | 3 | 4 | Strongly Agree 5 |

4. What are the chances that you will search for an alternative (ex. A different school to attend or a job) to finishing your degree at _____?

| Very Unlikely 1 | 2 | 3 | 4 | Very Likely 5 |

5. I intend to dropout of _____

| Strongly Disagree 1 | 2 | 3 | 4 | Strongly Agree 5 |

6. What are the chances that you will drop out of _____?

| Very Unlikely 1 | 2 | 3 | 4 | Very Likely 5 |

Appendix N: Permission to Use Mashburn Cognition Survey

Reply | Reply All | Forward | X Delete | Move ▼ | Add to ▼ | 🖸 | 🖨 | ☒

Subject: **RE: I/O Psychology Research - Request for Permission to Use Measure**

Date: Mon, Aug 01, 2011 10:25 AM CDT

From: "Mashburn, Andrew (ajm9s)" <ajm9s@virginia.edu>

To: Nichole Gibbs <nichole.gibbs@waldenu.edu>

you're welcome. yes, you have my permission.
Andy

Andy Mashburn, PhD
Senior Research Scientist
Center for Advanced Study of Teaching and Learning
University of Virginia
amashburn@virginia.edu
434.243.5379

From: Nichole Gibbs [nichole.gibbs@waldenu.edu]
Sent: Monday, August 01, 2011 9:02 AM
To: Mashburn, Andrew (ajm9s)
Subject: I/O Psychology Research - Request for Permission to Use Measure

Dear Dr. Mashburn,

I hope this finds you well. I am writing to request permission to use your 6-item measure of student withdrawal cognitions described in your study, A Psychological Process of College Student Dropout, published in the *Journal of College Student Retention*. I am a doctoral student in Industrial/Organizational psychology at Walden University, and am interested in using the measure for my dissertation study on college persistence.

The purpose of my dissertation study is to assess the efficacy of a college-persistence intervention for increasing student satisfaction, decreasing student withdrawal cognitions, and increasing college persistence with first-year college students. I am hopeful that the result of conducting this study will be the identification of an effective college persistence intervention.

I am excited about the possibility of being able to use the measure and would provide you with a copy of the results of the research collected with the measure. Thank you for your consideration, and I look forward to hearing from you.

Kind Regards,
Nichole

Nichole Gibbs Thomas, M.A.
Nichole.Gibbs@Waldenu.edu

Appendix O: Demographic Questionnaire

Please tell us a little more about yourself.

1. Are you

   a. Male
   b. Female

2. Is this semester your first semester ever at _____ College?

   a. Yes
   b. No

      If No:
      2B. When was your first semester of College?
      [option choices Fall 1960 to Fall 2011]

3. Have you ever attended another college other than _____ College?

   a. Yes
   b. No

      If Yes:
      3B. How many college credits did you complete at _____ College?

4. Please select the number that reflects your age today.
   [option choices 1 to 90]

5. Of the following terms, which of the following best describes you?

   a. African-American
   b. Asian-American
   c. European-American
   d. Latino/a-American
   e. Multiracial-American
   f. Native American

Curriculum Vitae

NICHOLE GIBBS THOMAS
DOCTORAL STUDENT – SCHOOL OF PSYCHOLOGY
WALDEN UNIVERSITY

COLLEGE TEACHING EXPERIENCE

The Chicago School of Professional Psychology, ARP Instructor, Full-time
Fall 2012 – present
- Teach multiple graduate courses in the applied research project course sequence
- Teach graduate courses online using the e-college platform and GoToMeeting
- Serve as a member of applied research project defense committees each term
- Contribute to course content, e.g. rubric development

Southern New Hampshire University, Adjunct Faculty, Manchester, NH, Part-time
Fall 2011 – Spring 2013
- Taught research methods for psychology and social sciences
- Taught online courses using the Blackboard platform
- Completed instructional design for several online courses in Blackboard
- Developed course syllabi, lecture notes, and course assignments

Northern Virginia Community College, Assistant Professor, Woodbridge, VA, Full-time
Fall 2010 – Fall 2012
- Served as the primary campus professor for research methods and statistics
- Taught other psychology courses, e.g. cross-cultural psychology
- Developed course syllabi, lecture notes, quizzes and tests
- Served as faculty advisor for 200+ social science and psychology majors

Chesapeake College, Instructor of Psychology, Wye Mills, MD, Full-time
Fall 2008 – Spring 2010
- Taught introduction to psychology, mental health, and group dynamics
- Taught face-to-face, hybrid, synchronous and asynchronous online courses
- Developed course syllabi, lecture notes, and course assignments
- Served on college committees and contributed to special college projects

EDUCATION
- Bachelor of Science in Psychology, 1996, Howard University
- Masters of Arts in Psychology, 2000, City University of New York