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Explaining critical thinking skills, leadership skills, and openness to diversity in fraternity members: A quantitative analysis

by

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ABSTRACT

Each year thousands of college students make the choice to join a men's collegiate social fraternity. This study sought to understand how a student's demographic characteristics, academic characteristics, participation in fraternity activities, and chapter characteristics explain growth, learning, and development along three areas: critical thinking skills, leadership, and openness to diversity. To assess fraternity members' development of critical thinking skills, leadership skills, and openness to diversity, data were collected from members of Delta Tau Delta international fraternity using the University Learning Outcomes Assessment (UniLOA) during the spring of 2011, resulting in a sample size of 1,238 students.

Through multiple regression analysis, I discovered that critical thinking scores were explained by the length of membership in the fraternity, attending a Road Connection presentation, GPA, belonging to a chapter rather than a colony, and the average GPA of the respondent's chapter/colony. Leadership and membership scores were explained by attending a Road Connection presentation, attending a Delta Tau Delta sponsored leadership event, belonging to a chapter on conduct probation, GPA, belonging to a chapter rather than a colony, the average GPA of the respondent's chapter/colony, and the size of the respondent's chapter/colony. Finally, diversity scores were explained by the length of membership in the fraternity, the average GPA of the respondent's chapter/colony, and whether or not his chapter was on conduct probation. The results build upon existing literature regarding the effect of fraternity membership on college student development by exploring what factors explain growth, learning, and development within fraternity members and reveal the need for additional research.

CHAPTER 1. INTRODUCTION

Since their formation, fraternities in the United States have often been sources of controversy and debate in higher education. Proponents of these collegiate social organizations have long argued that fraternity membership has a largely positive influence on undergraduate students. Specifically, they argue that fraternities directly contribute to the educational missions of their colleges and universities by fostering positive student development through leadership, philanthropy, and community engagement (North American Interfraternity Conference, 2010a). Supporters of fraternity life also argue their value by pointing to statistics that highlight the number of fraternity members who go on to hold prestigious positions in business, government, and other leadership organizations. However, fraternities are not immune to criticism.

Some detractors argue that fraternities work against the mission of higher education by promoting social activities before academic pursuits, while also hindering students' positive growth and development (Maisel, 1990; Pascarella, Edison, & Whitt, 1996). Other critics point to issues of alcohol abuse and sexual assault that appear to be prevalent in fraternity communities throughout the nation (Cashin, Presley, & Meilman, 1998; O'Toole, 1994). Overall, opponents of fraternities contend that these organizations result in more negative consequences for students than benefits.

Despite this ongoing debate, each year thousands of college students in the United States make the choice to join a collegiate social fraternity. Many of these students choose to join one of the 75 different national and international fraternities that belong to the North American Interfraternity Conference (NIC), the largest national trade association representing the largest single group of fraternities. According to the NIC, as of the 2009-2010 school year, member fraternities had approximately 350,000 undergraduate members located on over 800 college and

university campuses in the United States and Canada (North American Interfraternity Conference, 2010b). With hundreds of thousands of students participating in fraternity life each year, educational researchers and college and university professionals have been striving to better understand the effects of fraternity and sorority membership on college students.

In just the past five years, one research study has created controversy in the fraternity debate.   In 2009, two faculty researchers from the Center for Measuring College Behaviors and Academics (CMCBA) at Indiana State University released findings from a national study conducted using their newly created University Learning Outcomes Assessment (UniLOA). According to the CMCBA, the UniLOA assessment tool was designed to measure student learning, growth, and development along seven domains—critical thinking, self-awareness, communication, diversity, citizenship, leadership and membership, and relationships (Indiana State University, n.d., para. 1). To date, the UniLOA instrument has been administered to over 120,000 students nationwide (Frederick & Barratt, 2010).

The findings from the CMCBA 2009-2010 national report suggested that fraternity membership may have a positive effect on student growth and development and specifically indicated statistically significant differences between fraternity members and non-members in each measured domain of student development (Frederick & Barratt, 2010).   In light of these results, professional staff members of many fraternities and sororities have sought partnerships with the CMCBA. These partnerships allow the UniLOA instrument, with supplemental questions, to be administered to a fraternity's entire membership. Fraternity staffs then used the results to better inform membership development and targeted intervention programs, as well as to help enhance their understanding of where their members are developmentally.

In 2010, the professional staff of Delta Tau Delta fraternity contracted with the CMCBA to have the UniLOA administered to their approximately 7,000 undergraduate members located in 130 chapters in the United States and Canada. The information gathered through the UniLOA would then be used to review the international organization's existing membership development programs as well as identify individual chapters that were in need of additional outreach by staff. To make better sense of the data collected through the UniLOA, analysis beyond descriptive statistics is needed in order to maximize the use of this assessment.

This introductory chapter provides definitions of relevant terms, followed by a history of fraternities in American higher education and background information about Delta Tau Delta fraternity and its partnership with the CMCBA. The data analyzed for this study were collected exclusively from members of Delta Tau Delta fraternity through their participation in the UniLOA in the spring of 2011. The problem and purpose of this study is also presented, along with the research question. Lastly, the significance of the study is offered, as well as an overview of this thesis.

Definition of Terms

To facilitate a better understanding of this study, definitions of commonly used terms are provided:

Active Member: A fully initiated member in good standing of a college fraternity.

Alumni Member: A fully initiated member of a fraternity who successfully graduates from college.

Associate Member: A member of the fraternity who has yet to be formally initiated into the organization. Most fraternities require associate members to complete a period of education before being initiated and provided full membership rights.

Chapter: A chapter refers to a local branch of a national or international fraternity found on college campuses in the United States and Canada.

Charter: A charter is an official document provided to a colony upon successfully meeting the requirements set in order to become a chapter. Requirements are set by the international/national organization.

Colony: A newly formed affiliate group of a national/international fraternity that has yet to receive a charter.

Greek-letter Fraternity: A common yet somewhat antiquated label applied to men's and women's fraternities due to their Greek letter names. This title can be applied to professional and social fraternities, though it is predominantly used to describe social fraternities.

Headquarters: Sometimes referred to as a Grand Chapter or Arch Chapter, headquarters are offices staffed by a mix of alumni volunteers and full time professionals who are responsible for governing and assisting in the operations of the local chapters of the fraternity.

Initiation: A formal and often secretive ceremony whereby associate members are officially welcomed as active members of a local chapter.

International Fraternity: A fraternity with local branches or chapters at colleges and universities in the United States and another country, most commonly Canada.

Professional Fraternity: A fraternity whose primary purpose is the promotion of interests specific to a particular profession. These organizations are often coeducational.

Secretive Fraternity: A fraternity where parts of the organization's operations are concealed from nonmembers.

Social Fraternity: A fraternity whose primary purpose is chiefly social in nature rather than the

advancement of a specific profession.

A Brief History of College Fraternities

Collegiate fraternities have a long history in American higher education. On December

5, 1776, a group of five men at the College of William and Mary in Williamsburg, Virginia met

to develop a student society that would be dedicated to the pursuit of intellectual development

and strong liberal education (Current, 1990). That night in the Apollo Room of the Old Raleigh

Tavern, America's first Greek-letter fraternity—Phi Beta Kappa—was established. Phi Beta

Kappa can be credited with establishing many of the characteristics and traditions of the modern

day fraternity, e.g., secret handshakes, Greek and Latin mottos, fraternity badges, and elaborate

and secretive initiation ceremonies (Current, 1990). Phi Beta Kappa, similar to the many college

literary societies already present in American higher education, existed for the purpose of

supplementing the curriculum and fostering educational enlightenment (Current, 1990).

Soon after Phi Beta Kappa's creation, the fraternity grew into the academic honor society

with membership invitations extended to students by the faculty of their respective institution

based largely on the student's grades and field of study (Current, 1990). Though originally the

organization permitted only white men to join, African-Americans and women were eventually

invited to join in 1874 and 1875, respectively (Current, 1990). In 1819, the first professional

fraternity, the Kappa Lambda Society of Aesculapius, formed at the University of Kentucky.

Professional fraternities were formed to strengthen the relationship between men of a particular

academic discipline or profession. The Kappa Lambda Society was created exclusively for men

pursuing medical doctorates. Today, there are approximately 100 different professional

fraternities that serve members pursuing futures in the military, legal, business, agriculture, and

many other fields. While Phi Beta Kappa enjoys the recognition of being considered the first

American collegiate fraternity, the organization differs considerably from the social fraternities

first seen in the early to middle nineteenth century and today.

According to Syrett (2009), the men's social fraternity, as seen today, is rooted in the

founding of the Kappa Alpha Society at Union College on November 25, 1825 in Schenectady,

New York. According to a Kappa Alpha Society historian, "The atmosphere of Phi Beta Kappa,

strictly academic, stimulated in in the imagination the dream of new and more intimate

relationships…The yearning of the unsatisfied was for fellowship of kindred souls" (Rudolph,

1990, p.146). The men of Kappa Alpha Society, creating a template that would later be emulated

by future social fraternities, strived to fill the social void many students felt as a result of leaving

their family and home community to study in college (Rudolph, 1990).

For the undergraduates who started the Kappa Alpha Society and other fraternities of the

1820s and 1830s, fraternity membership existed to, in part, facilitate intellectual pursuits, but

largely to foster a sense social belonging through the building of camaraderie and brotherhood

among undergraduates (Syrett, 2009). One unique way this goal was accomplished was through

the creation of different chapters of the same fraternity on different campuses. While some

fraternities today exist on only one campus or just in one state, most are considered national and

even international fraternities with multiple chapters throughout the United States and Canada.

This national scope helped to foster greater ties among undergraduates inter-institutionally.

Fraternity membership also provided its students with an escape from the often

monotonous existence that was the life of a college student during the early and mid-nineteenth

century (Rudolph, 1990). Though college men often used various outlets for escaping the

dreariness of their student lives, fraternities during this period helped to institutionalize these

outlets, particularly drinking, smoking, gambling, singing, and womanizing (Rudolph, 1990).

Historians often debate to what degree fraternities focused on the ideals of the literary society,

but most agree the fraternities were formed and became increasing popular with undergraduates

because of their extensive social focus (Rudolph, 1990; Syrett, 2009). Despite fraternities'

increasing popularity with undergraduates, many college presidents and faculty did not share the

same enthusiasm (Rudolph, 1990).

Early fraternity history is marked by various college leaders who attempted to ban or

strictly regulate the existence of college fraternities on their campuses. Many faculties and some

students inherently distrusted the idea of fraternities due to their secrecy, while others questioned

how students could swear oaths to fraternities while also remaining pious Christians (Syrett,

2009). These sentiments, shared largely by the public, fostered both the anti-secrecy movement

of the 1820s and the anti-Masonic movement of the 1830s that would directly challenge the

continued existence and further expansion of college fraternities.

For much of the time prior to the Civil War, college faculties attempted to curtail the

fraternal movement by outright banning their existence and dismissing students who joined

(Syrett, 2009). To their frustration, many fraternities responded by operating in total secrecy to

avoid detection. While some fraternities chose to operate underground, other students directly

challenged their campus faculty by asserting their First Amendment right to free association

(Syrett, 2009). When banning was either ineffective or overruled by a board of trustees, the

faculty would appeal to students' parents. Institutions such as Princeton pled with parents to

prohibit their sons from joining fraternities to no avail (Syrett, 2009). Though the efforts of

college leaders to restrict fraternities would continue to the end of the nineteenth century, by the

beginning of the postbellum years, most faculties would come to accept, though not necessarily

approve of, the fact that fraternities had become a part of the extracurricular life of undergraduate students (Syrett, 2009).

While new fraternities, and now female-serving groups called sororities, were being established prior to the Civil War, fraternity expansion grew substantially in the years following the war (Syrett, 2009). By the end of the 1870s, college fraternities could be increasingly found on campuses, often centrally located in a fraternity-owned chapter house, throughout the South, Midwest, and Northeast (Syrett, 2009). In fact, up until this point in history, fraternities had not yet become the residential organizations they are largely today. Chi Psi fraternity at the University of Michigan in 1845, is often credited as the first fraternity to operate a chapter house for its members' residence (Chi Psi, n.d.). Despite their growing presence in American higher education, fraternity membership was not always available to all students.

Racism and Jim Crow Laws of the era often prohibited African Americans and other minorities from joining established fraternities or attending predominantly white institutions. While some fraternity organizations such as Tau Kappa Epsilon, founded in 1899, were established without bylaws restricting membership along racial, ethnic, or religious lines, African-American men had very few opportunities to join existing fraternities (Syrett, 2009). In 1906, seven African American men at Cornel University were, "determined to bind themselves together to ensure that each would survive in the racially hostile environment" (Alpha Phi Alpha, 2008, para 1.). In coming together, these seven men created Alpha Phi Alpha International Fraternity, Incorporated, the first African-American serving fraternity. While Alpha Phi Alpha would enjoy being the first minority serving fraternity, more minority serving fraternities would follow in later years.

As fraternity membership grew, so did the call for individual campus chapters to develop stronger bonds with brother chapters at other campuses as well as to encourage new chapters to form. In fact, fraternities, unlike their literary society predecessors, were unique in that they actively sought to establish strong alignment with chapters at other schools (Syrett, 2009). As a result of this movement, soon fraternities began working to establish strong national identities and commonality across colleges and universities. Fraternities began electing alumni members to serve as national officers of their respective fraternity. These officers would work to coordinate expansion efforts and preside over national meetings.

By the early twentieth century, the idea of national fraternities had gained momentum, with chapters located now throughout the entire United States (Syrett, 2009). In 1909, the National Interfraternity Conference was formed by 26 national fraternities as an advocacy group for its member organizations. Though individual governance rested with the respective fraternities, the National Interfraternity Conference served as a national forum for fraternity members to discuss mutually beneficial policies and to promote advocacy (North American Interfraternity Conference, 2010b). Serving in similar purpose to the National Interfraternity Conference, the National Pan-Hellenic Council was formed in 1930 to represent five African American fraternities and sororities. By the 1920s and 1930s, national fraternities began establishing permanent headquarters (Syrett, 2009).

These headquarters were staffed with full-time professionals who began to take over the role of coordinating the fraternity's expansion and operations, previously held by alumni volunteers. Through the creation of national headquarters and professional staffs, fraternities began to host not only national meetings for their member chapters, but also various membership development and educational training programs for their undergraduates. Headquarters staffs

also became responsible for hosting alumni events and publishing newsletters. Though fraternity membership and expansion efforts slowed greatly during the Great Depression and World War II, by the end of the 1940s college fraternities and their national organizations continued to increase both in number and in size across the country (Syrett, 2009).

The 1950s and 1960s saw not only increases in the fraternity membership, but also in the role of the national headquarters and its staff. During this period, national headquarters began establishing scholarship funds, housing funds, outreach programs, and leadership training academies for their members. Now more than ever, national fraternities were dedicating funds—collected through membership dues—to hire larger full-time paid staffs. As fraternity membership continued to grow, so did the responsibility of national headquarters and their staffs. Today, most national and international fraternities have well established fraternity headquarters, with full-time professional staff, including an array of traveling field officers responsible for advising chapters, meeting with interest groups, and consulting with college staff within their assigned region of the country/continent. The 1960s also marked a time of expansion for the National Pan-Hellenic Council organizations. In 1963, the National Pan-Hellenic Council grew to its present day membership of nine fraternities and sororities with the inclusion of Iota Phi Theta (National Pan-Hellenic Council, 2010).

The period between 1970 and the mid-1990s marked for college fraternities a time of historic growth and expansion. During this time, national fraternities were even beginning to establish chapters outside of the United States, primarily in Canada. This growth north prompted the National Interfraternity Conference to be reestablished as the North American Interfraternity Conference in an effort to more accurately reflect its now international membership. Though more chapters were created and more men joined fraternities at this time than at any other,

national fraternities were also coming under increased scrutiny by college leaders and the public at large (Syrett, 2009).

In 1978, the film *Animal House* was released and epitomized a growing perception of what college fraternities had become. The film, written in part by a Dartmouth graduate and former fraternity member, portrayed the fraternity system as being plagued by alcohol abuse, academic dishonesty, sexual deviance, socioeconomic discrimination, and hazing (Syrett, 2009). While many of the film's scenes were dramatized for entertainment purposes, *Animal House* correctly identified many of the past and continuing problems within college fraternities. By the late 1980s, various national and international fraternities were being increasingly called upon to address concerns regarding the conduct of their members. Many headquarters began implementing new rules establishing stiffer punishments for hazing, as well as increasing the amount of involvement headquarters' professional staff had in the operations of individual chapters. By the end of the 1990s fraternity membership began to dip, as questions continued about the purpose of fraternities in higher education.

Since 2000, college fraternity membership has been growing steadily, yet not at the rates once seen (Syrett, 2009). Today, there are approximately 150 different men's social fraternities that can be found on four-year campuses in virtually all parts of the United States and Canada. The average size of international and national fraternities vary, but currently Sigma Chi has the largest undergraduate membership with 15,000 students and Tau Kappa Epsilon has the most active chapters with chapters located on 291 different college and university campuses (Sigma Chi, 2011; Tau Kappa Epsilon, 2011). While many fraternity members reside in either privately or college/university owned chapter houses, not all fraternity chapters have facilities. Some

chapters partner with colleges or universities to reserve residence hall floors for chapter members, while others operate completely outside a chapter residence.

Despite the number of fraternities, today's college students enjoy many opportunities outside of social fraternities for extracurricular involvement and social engagement—sports clubs, special interest clubs, and academic and professional fraternities. In light of continued questions regarding the future and purpose of fraternities, proponents and opponents have called for increased examination of the relevance of fraternities in today's higher education landscape. This so called "fraternal relevance movement" has become a driving force for increased research and evaluation work on college fraternity membership. The movement has also instigated various new campaigns, by fraternity proponents, geared at promoting supposed benefits of fraternity membership to potential new members (North American Interfraternity Conference, 2010a).

Fraternities in American higher education have had a long and varied history. This section was presented in order to provide the reader important background and contextual information driving contemporary educational research focused on fraternity membership. In the next section, I will present some background information about Delta Tau Delta fraternity, the organization that was the subject of this thesis research.

Delta Tau Delta

Delta Tau Delta is an international fraternity and member of the North American Interfraternity Conference with over 130 active chapters and colonies located throughout the United States and Canada (Delta Tau Delta, 2012a). Founded in 1858 at Bethany College in what is today West Virginia, Delta Tau Delta is a secret Greek-letter men's fraternity with approximately 7,000 undergraduate members (Delta Tau Delta, 2012a). Membership in a Delta

Tau Delta chapter is open to men of all academic majors and from all walks of life. According to

the international organization, "Delta Tau Delta fulfills many purposes from honing its members'

leadership skills, helping them grow personally and providing a nurturing environment to enjoy

their collegiate experience" (Delta Tau Delta, 2012b, para.1).

      The international fraternity has headquarters located in Fishers, Indiana and is governed

by a president and board of governors called the Arch Chapter (Delta Tau Delta, 2012c). One of

the main responsibilities of the Arch Chapter is to preside over the biennial convention: Karnea.

At Karnea, the legislative body of the fraternity, consisting of delegates from all member

chapters, gathers to discuss the business of the fraternity and vote on proposed policies through

legislation (Delta Tau Delta, 2012c). While at Karnea, participants may also participate in a

number of educational sessions for undergraduate and alumni members. While the Arch Chapter

officially leads the fraternity, Delta Tau Delta maintains a full-time professional staff of

approximately 30 individuals to oversee the day-to-day operations and needs of the fraternity

(Delta Tau Delta, 2012c).

      The professional staff is managed by an executive vice president and is responsible for

assisting chapters in a number of important areas—business affairs, leadership development,

alumni relations, recruitment, expansion, communications, and risk management (Delta Tau

Delta, 2012c). Among many of the services the professional staff provide, one of their main

missions is to coordinate and provide educational programming for all member chapters. The

fraternity's two flagship educational programs are their annual leadership academy and their

member development program, *The Road*.

      Since 1992, Delta Tau Delta has offered its members the opportunity to apply to and

attend one of two different leadership academies: the Bethany Academy and the Sailing

Academy. Both programs are organized and facilitated by the fraternity's professional staff and uses a curriculum intended to help members reflect on their character, values, fraternity membership, and leadership skills in order to grow as individuals and as members (Delta Tau Delta, 2012d). *The Road* is a membership education and personal development program created out of a number of strategic initiatives of the fraternity and was first implemented in 2008 (Delta Tau Delta, 2008).

Each chapter participating in *The Road* program designates one individual to serve as a Road Chairman (Delta Tau Delta, 2008). After the chairman has received training from headquarters staff, he is responsible for leading a chapter retreat aimed at educating his fellow members about the program. The curriculum of *The Road* program focuses on five areas of life skills intended to complement a student's academic curriculum: career development, personal leadership, financial security, health and wellness, and life skills (Delta Tau Delta, 2008). At this initial retreat, members are asked to develop a document that details what they are interested in learning relating to each of these five areas. The Road Chairman then works to encourage members to participate in headquarters-sponsored educational events, NIC-sponsored events, and relevant sessions and activities on campus, while also organizing guest speakers for the chapter and scheduling times for headquarters staff to visit and lead Road Connection presentations (Delta Tau Delta, 2008). Road Connection presentations consist of 20 field-staff facilitated educational sessions that cover each of the five life skill areas addressed in *The Road.*

Driven by a desire to evaluate the effectiveness of *The Road* program as well as guide future creation of membership education programs, Delta Tau Delta reached out to the CMCBA at Indiana State University to have the UniLOA administered to their members in the spring of 2011.

Statement of the Problem

Since 2009, multiple national and international fraternities have collaborated with the CMCBA in order to assess the development and growth of their members through the UniLOA, but have stopped short of fully and critically analyzing the data collected from their assessments. These collaborations allow the individual fraternity to have the UniLOA instrument distributed to its membership along with additional questions the fraternity staff feel will help better inform the assessment. At the conclusion of the study, the fraternity staff are presented with a report of the results of the UniLOA survey and supplemental questions. Analysis of the data beyond basic descriptive statistics is the responsibility of the fraternity staff members. In order to maximize the utility of the UniLOA, fraternity professionals need to use more advanced quantitative techniques to help explain the contributing factors of why their students score the way they do in each of the seven domains measured by UniLOA.

Purpose of the Study

The purpose of this study was to use inferential statistics to assess the outcomes of fraternity membership on college students. Using standard multiple linear regression, I explored data collected from members of Delta Tau Delta fraternity in order to determine to what degree tested factors explained students' critical thinking, leadership and membership, and diversity domain scores. I chose these three domains as they represent three areas of student development that often receive significant attention from researchers studying fraternities.

Research Question

This study sought to understand what factors explain a student's critical thinking, leadership and membership, and diversity domain scores. The following umbrella research question guided this study:

1. How do individual level factors—ethnicity, age, major, year in school, GPA, participation in Delta Tau Delta education programs, length of Delta Tau Delta membership, and living location—as well as organization level factors—institutional type, chapter or colony status, chapter/colony size, chapter/colony's average GPA, presence of a Road Chairman, and disciplinary status—explain a student's critical thinking, leadership and membership, and diversity domain scores?

Significance of the Study

The results of this study are particularly useful to the professional staff of Delta Tau Delta, as they serve to better inform their existing membership development programs. This study also benefits the larger community of organizations using the UniLOA instrument by detailing one way to approach analyzing UniLOA data that goes beyond simply descriptive analysis. Finally, the study contributes to the active discussion regarding the role of fraternities in higher education today, by seeking to better understand what factors, including programmatic interventions, can be identified as explaining student growth and development among fraternity members.

Overview of the Thesis

This thesis consists of five chapters. This chapter provided the introduction and a brief history of college fraternities. A review of relevant literature relating to the effects of fraternity membership on the development of college men is presented in Chapter 2. In Chapter 3, the research design and method used in this study, including a detailed description of the UniLOA instrument and the dataset, are presented. Chapter 4 includes the results from this study. Chapter 5 provides a discussion of the study's results along with recommendations for future research.

CHAPTER 2. LITERATURE REVIEW

This chapter provides an overview of the literature related to fraternity membership and its effect on members' critical thinking, leadership development, and openness to diversity. This chapter is divided into three sections: critical thinking, leadership, and diversity. Section one describes existing research focused on the impact of fraternity membership on a student's critical thinking and cognitive development. The next section highlights research on the role of fraternity involvement on leadership development. Section three presents the literature centered on fraternity members' openness to diversity.

Critical Thinking

One of the principal goals of higher education is to help develop in students the ability to think critically. Critical thinking is, "one, a set of skills to process and generate information and beliefs, and two, the habit, based on intellectual commitment, of using those skills to guide behavior" (Scriven & Paul, 1996, as cited in Randall & Grady, 1998). Researchers have long acknowledged the role of undergraduate experiences in the development of critical thinking skills. Pascarella and Terenzini (1991) noted that, "college appears to enhance one's ability to weigh evidence, to determine the validity of data-based generalizations or conclusions, and to distinguish between strong and weak argument" (p.156). While colleges and universities try to equip their students with these skills through the curriculum, students also gain these skills from outside-the-classroom interactions (Whitt & others, 1997, as cited in Randall & Grady, 1998).

Student involvement with extra and co-curricular activities has been shown to promote positive outcomes such as increased social integration and retention (Astin, 1984). These activities also provide students with the opportunity to apply their critical thinking skills along with the content they have been taught in class, to real life situations outside the classroom

(Gellin, 2003; Terenzini, Pascarella, & Blimling, 1996). In particular, Pascarella et al. (1996), suggested that extracurricular activities, such as involvement with student clubs and organizations, present students with real opportunities to further develop their critical thinking skills.

Fraternity Affiliation and Critical Thinking

The effect of fraternity membership on critical thinking and other cognitive areas has received increased attention in the past 30 years. Pike and Askew (1990) used a longitudinal research design to study the cognitive growth of fraternity and sorority members at one institution. Using the College Outcomes Measures Project Objective Test (COMPOT), a standardized assessment of intellectual skills—communication, reasoning, and problem solving—they found that fraternity and sorority members scored significantly lower than their non-affiliated peers on the assessment (Pike & Askew, 1990).

Building off the work of Pike and Askew (1990), Pascarella et al. (1996) examined the effects of fraternity and sorority membership on cognitive development in a student's first year of college. The researchers measured the cognitive skills of students at 18 colleges and universities by using the Collegiate Assessment of Academic Proficiency; a standardized measure of critical thinking, reading comprehension, and mathematics. The study found that joining a fraternity in the first year of college had a statistically significant and negative impact on all three cognitive outcomes for men (Pascarella et al., 1996). Interestingly, Pascarella et al. (1996) found that while fraternity membership had a strong negative influence on all measured cognitive outcomes for white men, fraternity membership had a modest positive influence for men of color.

Pike (2000) sought to examine the influence of fraternity and sorority membership on students' college experiences and cognitive development. Using latent-variable modeling techniques such as path analysis and structural equation modeling, Pike (2000) found that fraternity and sorority membership "had a significant indirect impact on the dimension of cognitive development associated with general learned abilities" (p.135). The study's findings can best be interpreted to indicate that membership in a fraternity does not necessarily yield a negative effect on a student's cognitive development (Pike, 2000). While Pike (2000) explicitly stated that the results were not an endorsement of fraternities and sororities in higher education, the negative effects of fraternity membership as discovered in other literature was not found in this study.

Pascarella, Flowers, and Whitt (2001), acknowledging widely found evidence that fraternity membership in the first-year has negative effects on cognitive development, expanded the body of research by looking beyond just the first year implications of fraternity membership. Applying the same research design as found in Pascarella et al. (1996), the researchers found that while fraternity affiliation continued to negatively affect cognitive growth—including critical thinking skill development—in students during their second and third years, the magnitude of the effect of fraternity membership lessened significantly each year after a student's first year of college. The study also found that joining a fraternity during the second or third year of college resulted in "only trivial" positive or negative impacts on students' cognitive development during college (Pascarella, Flowers, & Whitt, 2001, p. 296). These findings suggest that the major negative consequences of fraternity membership occur primarily when men join a fraternity during their first year of college. Pascarella, Flowers, and Whitt (2001), differing from Pascarella et al. (1996), found no differences in the magnitude of the negative effects of

fraternity membership on cognitive development across different ethnicities or other background characteristics (e.g., ability, socioeconomic status, academic motivation).

Almost 15 years after Pascarella et al. (1996), Martin, Hevel, Asel, and Pascarella (2011) reexamined the effect of fraternity and sorority affiliation during a student's first year of college and found, unlike previous studies, that fraternity and sorority membership did not negatively impact critical thinking. Martin, et al. (2011) stated that unlike the 1996 study, "the present study controlled for students' exposure to good practices in undergraduate education. This more complete model may have accounted for factors that affected students' critical thinking skills but that were inappropriately attributed to fraternity/sorority membership in the earlier study" (p. 556). Though the study found no negative effects on a variety of cognitive and developmental outcomes as a result of fraternity membership, the study found no significant positive effects as a result of membership either. Martin, et al. (2011) suggested that the results be interpreted cautiously:

> Some proponents of fraternities and sororities may be tempted to interpret these findings as purely positive by rationalizing that a lack of unique effects of fraternity and sorority membership on educational outcomes is, at the very least not a negative effect; however, most fraternities and sororities purport to share in a pursuance of excellence in scholarship, high moral character, and deep friendships. Therefore it seems reasonable that educators might expect a significant and positive unique impact of membership in such organizations on educational outcomes. (p. 557)

Overall, a review of the literature suggests that fraternity membership, at best, has no effect on students' development of critical thinking skills. However, multiple studies have been

published that have found significant negative effects of fraternity membership on critical thinking and cognitive development, particularly for first-year students.

Leadership

Leadership can be an ambiguous concept that eludes one simple and succinct definition. Burns (1978) noted, "Leadership is one of the most observed and least understood phenomena on earth" (as cited in Adams & Keim, 2000, p. 260). As a result, researchers have developed a variety of models and explanations of leadership.

For many studies, leadership is viewed as an act to be accomplished; that is, leadership occurs when individuals act in good and positive ways on behalf of a group (Harms, Woods, Roberts, Bureau, & Green, 2006). According to Harms et al. (2006), leadership can be defined according to three paradigms: objective, subjective, and positive approaches to leadership. Objective leadership involves individuals who hold formally established positions of power within in an organization (e.g., president, secretary, and treasurer; Harms et al, 2006). Subjective leadership occurs outside of formally established leadership roles, particularly through an individual's use of soft power (i.e., the power to influence others regardless of formal positions; Harms, et al., 2006). Finally, the positive approach to leadership is focused around individual level attributes that lend a person to being an effective leader (e.g., personal charisma, consideration of others, and effective communication skills; Harms et al., 2006).

Komives, Owen, Longerbeam, Mainella, and Osteen (2005), however, contended that quite often past definitions of leadership equate to nothing more than good management; "Leadership theories that rely on traits, behaviors, and situations to explain leadership worked well in an industrial era when the predominant goals of leadership were production and efficiency…however society has shifted to a knowledge-based, networked world" (p. 593).

Rather, postindustrial and college student leadership development, the authors claim, should focus around the principles of "collaboration, ethical action, moral purposes and leaders who will transform followers into leaders themselves" (Komives et al., 2005, p. 593). This kind of leadership is best described in the relational model. The relational model defines leadership as "a relational process of people together attempting to accomplish change or make a difference to benefit the common good" (Komives, Lucas, & McMahon, 1998, as cited in Komives et al., 2005, p. 594). This inclusive and empowering approach to leadership is widely supported as one of the best approaches for leadership development for college students (Komives et al., 2005).

Historically, one of the greatest purposes of higher education has been to educate students to become future leaders within society (Astin, 1993). While some colleges and universities offer formal classes on leadership, many facilitate leadership development by allowing students to participate in extracurricular activities. Research has indicated that leadership experiences, including holding officer positions, positions of responsibility within an organization, and possessing active membership status within an organization contributes positively to student growth and development in a variety of areas, including leadership development (Astin, 1985).

Fraternity Affiliation and Leadership

Leadership is "an essential component of the culture and stated purpose of fraternities and sororities" (Harms, et al., 2006, p. 81). Fraternities throughout North America promote the recruitment and development of strong leaders as one their greatest purposes. Many fraternities, including Delta Tau Delta, sponsor specific educational programs geared at leadership development for their members (Delta Tau Delta, 2012). Proponents of fraternities often speak to their role in leadership development when discussing fraternities' value in contemporary higher education. Harms et al. (2006) stated, "Leadership development has been long touted as

a primary impetus for the fraternal movement as well as a reason for maintaining these organizations at institutions of higher education" (p. 83). While fraternity membership provides students with the ability to assume a variety of executive officer and chairman positions within the chapter, virtually no research exists examining the outcomes of serving in a leadership position within a fraternity (Harms et al., 2006).

Diversity

Our world is becoming increasingly more interconnected and our societies more diverse. The demographic trends in the United States alone suggest that by 2045, White individuals will no longer be the majority of the population (U.S. Census Bureau, 2011). Now more than ever, colleges and universities have more students of varying ethnicities, races, (dis)abilities, sexual orientations, and socioeconomic backgrounds. As a result, it is important that researchers as well as our college and university communities expand our understanding of diversity as something that extends beyond just race and ethnicity (Pascarella, 2006).With an increasingly diverse society, higher education has a significant role to play in the preparation of students to operate effectively in diverse settings in a more globalized world (Pike, Kuh, & Gonyea, 2007).

Educational researchers have longed focused their investigations on the impact college has on students, in particular on students attitudes, behaviors, and values (Astin, 1993; Pascarella & Terenzini, 1991). Unlike the K-12 educational experience, going to college can often offer a student his or her first chance at regular engagement with people of different races, ethnicities, socioeconomic statuses, etc. Examining diversity, Pascarella and Terenzini (1991) suggested that during college, students "become less authoritarian, dogmatic, and ethnocentric" and show greater levels of "social, racial, ethnic, and political tolerance" (p.175). Bowman, Brandeberger, Hill, and Lapsley (2011) employed a longitudinal study to investigate whether participation in

racial and cultural diversity activities during college has an effect on personal well-being as students move into adulthood. The researchers concluded that participation in university-structured racial or cultural diversity activities, such as an ethnic studies class or a diversity workshop, resulted in significant effects in predicting an individual's personal growth, well-being, consciousness of racism, and engagement in volunteer work 13 years after graduation (Bowman, Brandenberger, Hill, & Lapsley, 2011).

While much of the literature has focused on the developmental benefits for students who interact and engage with people who are different from themselves, other research studies have sought to understand what specific experiences within college promote changes in attitudes, behaviors, and values. In particular, what experiences during college make a student more or less open to diversity?

Fraternity Affiliation and Openness to Diversity

All fraternities exist to essentially promote principles of friendship, scholarship, leadership, rectitude, and service (Boschini & Thompson, 1998). However, one of the greatest criticisms of fraternities in higher education is the tendency of these organizations to recruit and retain almost exclusively members who are similar in race, ethnicity, social class, and sexual identity (Boschini & Thompson, 1998; Pascarella, Nora, Hagedorn, & Terenzini, 1996; Syrett, 2009). These practices often shield students from the educational and developmental benefits of interacting with diverse peoples. Currently a limited body of literature exists that explores the effects of fraternity membership on a student's openness to diversity.

Pascarella et al. (1996) found that among first-year students, fraternity membership had a significant negative impact on openness to diversity, with the largest negative impact being on white (versus non-white) students. Discussing these findings, Pascarella et al. (1996) stated,

"Any negative effects on [fraternity and sorority] membership may be greatest for those students (both men and women) who will be most directly challenged by a society becoming more racially and culturally diverse" (p.188). While the authors acknowledged that their data did not directly speak to the underlying causes of the negative influences of fraternity membership on openness to diversity, they hypothesized that effects are a result of "homogeneous and insulating environments that minimize the opportunities that white students have to interact with people of diverse backgrounds and philosophies" (Pascarella et al., 1996, p.190).

In light of these findings, fraternities have been called upon to more actively concentrate and promote diversity as a key mission (Boschini & Thompson, 1998; Perkins, Zimmerman, & Janosik, 2011). It has been suggested that fraternal organizations do this by actively promoting diversity initiatives and programs within their organizations (Boschini & Thompson, 1998). Perkins, Zimmerman, and Janosik (2011) specifically stated, "Considering the increasingly diverse environment in which fraternal organizations operate, it is essential that fraternity/sorority members take the initiative to reform practices that make underrepresented groups feel unwelcome or alienated" (p. 68).

Summary

There is no doubt that college can have a significant impact on a student's growth and development. Colleges and universities were established not only to educate students in specific fields, but also to help them develop the critical thinking and strong cognitive skills needed in order to become leaders within society. Though fraternities tend to emphasize their value in aiding in the development of students in the areas of critical thinking, leadership, and diversity, much of the published research indicates that membership in these organizations may do more harm than good. What is clear is that the existing body of literature lacks studies focused on

evaluating the outcomes of specific fraternity programs geared at fostering greater student

development.

CHAPTER 3. METHODS

In this chapter, I present methods of this study in seven sections. The first section presents the methodological approach I took in conducting this study. The next section describes the study's population and sample. Section three covers how the data were collected and how I, the researcher, gained access to the datasets. In section four, I address the survey instrument including information regarding its validity and reliability. The next section explains the variables used in the analysis. Section six presents the method. Finally, section seven presents the limitations of the study. The research question that guided this study was:

1. How do individual level factors—ethnicity, age, major, year in school, GPA, participation in Delta Tau Delta education programs, length of Delta Tau Delta membership, and living location—as well as organization level factors—institutional type, chapter or colony status, chapter/colony size, chapter/colony's average GPA, presence of a Road Chairman, and disciplinary status—explain a student's critical thinking, leadership and membership, and diversity domain scores?

Methodological Approach

This quantitative study was conducted incorporating an objectivist epistemology and a post-positivist critical realist approach. Epistemology is often defined as the study of knowledge or, how we know what we know (Trochim, 2006). Approaching research from an objectivist perspective requires the researcher to acknowledge the existence of an external and objective reality, in which knowledge and meaning is discovered through observation, rather than being constructed (Trochim, 2006). A post-positivist critical realist approach, like that of a positivist, maintains the existence of an external reality that can be observed. However, unlike the positivist, post-positivist critical realism recognizes that human observation is fallible, has errors,

and that all theory is amendable (Trochim, 2006). The greatest focus of post-positivism is that while an external reality exists, no individual can "ever see the world perfectly as it is" (Trochim, 2006, para. 5).

Population and Sample

The target population for this study consists of male college students who are members of the Delta Tau Delta international fraternity. At the time of the UniLOA survey distribution, Delta Tau Delta had a total undergraduate population of approximately 7,000 students. Individual chapters are located at over 130 different colleges and universities in the United States and Canada. The sample for this study consisted of 1,238 students who completed the UniLOA survey in the spring of 2011.

Data Access and Collection

For this study, the data were provided by the professional staff of Delta Tau Delta international fraternity. Permission to use the data for this study was obtained from the professional staff on November 15, 2011. Data representing individual students were collected through the e-mail distribution of the UniLOA survey to all active members during the spring of 2011. The survey yielded 1,489 total respondents. Students who did not fully complete the survey were eliminated from this study, resulting in a sample of 1,238 students from 118 different chapters. Chapter related data were provided by the professional staff at the request of the researcher.

Survey Instrument

The UniLOA survey was administered by the CMCBA staff at Indiana State University and distributed to all active members of Delta Tau Delta. Respondents received an e-email inviting them to participate as well issuing them an identifying token. These identifying tokens

were used in order to determine when a qualified student completed the survey, but could not be used to personally identify individual respondents. The UniLOA survey distributed to members of Delta Tau Delta consisted of 106 total questions, with 70 core questions used to assess and compute domain scores, 15 demographic questions, 20 questions specific to Delta Tau Delta experiences, and one question asking the students to select what college or university they attend. The 20 questions specific to Delta Tau Delta experiences were composed by the fraternity's professional staff.

Again, the UniLOA attempts to measure student learning, growth, and development along seven domains—critical thinking, self-awareness, communication, diversity, citizenship, leadership and membership, and relationships. Each domain is measured based on a student's response to 10 questions—70 questions total. Each question consists of a statement describing a behavior and an example of the behavior. Respondents are then asked to describe how often they exhibit this behavior by responding to the questions' 10-point Likert scale—A (1) = Never; J (10) = Always. Domains scores are computed by adding the Likert scale score of each domain's 10 questions. As a result, domain scores can range from a minimum of 10 to a maximum of 100.

Psychometrics, Reliability, and Validity

The UniLOA items were composed based on outcomes considered of interest to both academic and student affairs professionals (Frederick & Barratt, 2009a). The CMCBA constructed the UniLOA domains first by conducting a widespread review of the college student and human development literature to identify the functional areas considered to be critical to growth, learning, and development of college students (Frederick & Barratt, 2009b). After reviewing the literature, the CMCBA conducted formal studies designed to learn what higher

education constituents felt was important for holistic student growth, learning, and development (Frederick & Barratt, 2009b).

Electronic-based surveys, focus group meetings, and structured interviews were conducted with higher education professionals, students, parents, employers, and other constituent groups to answer the question, "What should a student possess in terms of skills, attributes, and qualities by the time they graduate?" (Frederick & Barratt, 2009b). The data collected during these studies were analyzed using cluster analysis techniques in order to identify the common themes of the data (Frederick & Barratt, 2009b). The analysis yielded the seven domains: critical thinking, self-awareness, communication, diversity, citizenship, leadership and membership, and relationships. Appendix A presents the operational definitions for each domain explored in this study, as defined by the UniLOA authors (Frederick & Barratt, 2009c). These definitions were then used to develop the initial set of individual items, or questions for the UniLOA:

> Individual items on the UniLOA are carefully worded to present the underlying behavior through a cognitive trigger and a behavioral example provided as a stem. Use of a behavioral example assists test takers in better understanding behavior positively correlated with the cognitive root. (Frederick & Barratt, 2009b, p. 2)

The initial development of the UniLOA's items yielded 150 questions. After item reduction studies were conducted, 80 questions were eliminated based on factors such as: very low standard deviation, single modal response sets at either end of the distribution, bimodal response patterns, and/or redundancy (Frederick & Barratt, 2009b). Each dropped question resulted in minimal impact on the internal reliability for each of the seven domains, as measured by Cronbach's standardized alpha. The remaining 70 questions resulted in 10 individual items

per each of the seven domains. See Appendix B for the individual items associated with the

critical thinking, diversity, and leadership and membership domains. Supplementing the 70

questions, demographic questions were added to the UniLOA based on previous research

regarding the effect of student characteristics such as gender, ethnicity and age, and behaviors

such as working, studying, and volunteering on student growth, learning, and development

(Frederick & Barratt, 2009b).

The internal reliability of the UniLOA was tested using Cronbach's alpha. Cronbach's

alpha, a common measure of internal reliability in psychometric surveys, is a measure of how

closely related a set of items are as a group. Cronbach's alpha is used as evidence of how well a

group of items measure a latent construct. In most social science research situations, a

Cronbach's alpha or reliability coefficient of .70 or higher is considered acceptable. Cronbach's

alphas for the ten domains can be found in Table 3.1. As Table 3.1 indicates, all seven domains

possess reliability coefficients above.70, suggesting that the individual questions are a reliable

latent measurement of each of their respective domains.

Table 3.1. Cronbach's Alphas for UniLOA Domains

Scale (Domain)	Standardized Cronbach's Alpha Internal Reliability Estimate
Critical Thinking	.87
Self Awareness	.80
Communications	.80
Diversity	.80
Citizenship	.85
Leadership and Membership	.84
Relationships	.80

The CMCBA suggests that the UniLOA also possesses a high level of external reliability,

or the UniLOA's consistency in results over time. The UniLOA has been administered to

thousands of students across the country, from a variety of institutional and organizational affiliations. The CMCBA identified three patterns as evidence of external reliability: (1) Lowest and highest scoring items are typically the same from any sample or demographic variable; (2) Lowest and highest scoring domains are typically the same from any sample or demographic variable; and (3)Findings for various demographic variables are highly consistent with current research in the social sciences.

Construct validity is concerned with whether or not an instrument accurately measures what it attempts to measure. With regards to the UniLOA, do the individual items of the psychometric survey accurately represent and measure their respective domains (see Appendix B)? The UniLOA authors claim that the strongest arguments for the validity of the UniLOA survey come from predictive, discriminant, and criterion related-validity, tested through a series of correlational tests between the survey's demographic items and domain scores (Frederick & Barratt, 2009b). These demographic questions were added to the survey based on researched factors that the literature suggests have varying levels of impact on student growth, learning, and development (Frederick & Barratt, 2009b).

The instrument's validity was tested by examining correlations between participants' responses to the demographic questions and their domain scores. Critical thinking scores were found to be most strongly associated with GPA ($r = 0.128$), hours per week of study ($r = 0.144$), academic hours completed ($r = 0.128$), gender ($r = 0.199$), and having an academic scholarship ($r = 0.119$; Frederick & Barratt, 2009b). Critical thinking scores were also found to be unrelated to average hours per night of sleep ($r = 0.009$), number of organizational offices held ($r = 0.008$), and hours per week spent watching TV or on-line entertainment ($r = 0.058$; Frederick & Barratt,

2009b). These test results suggest that the UniLOA academic achievement items and critical thinking domain scores, two concepts that should be linked, are related.

Leadership and membership scores were most highly correlated with GPA (r = 0.156), number of organizational memberships (r = 0.153), hours per week of study (r = 0.146), number of credit hours completed (r = 0.115), and average hours per week spent volunteering (r = 0.106; Frederick & Barratt, 2009b). Leadership and membership scores were least associated with major (r = 0.032), hours per night of sleep (r = 0.023), and hours per week of paid work (r = 0.037). These tests results appear to indicate that the UniLOA academic achievement and volunteer items are linked to a student's leadership and membership domain scores.

Diversity scores were found to be correlated with hours per week of study(r = 0.112), GPA (r = 0.102), average hours per week spent volunteering (r = 0.107), and number of organizational memberships (r = 0.094; Frederick & Barratt, 2009b). Diversity scores were least correlated with the number of organizational offices held (r = 0.016), military service (r = 0.024), and gender (r = 0.44; Frederick & Barratt, 2009b). These results suggest that volunteer activity and organization memberships, in addition to academic performance are notably related with diversity domain scores.

The authors note that while the correlations between participants' answers to the demographic items and domain scores are low, the pattern of those correlations demonstrates that the critical thinking, leadership and membership, and diversity domains tap into an underlying construct of academic performance, and that the relationships with other individual behaviors is typically minimal (Frederick & Barratt, 2009b). These findings also suggest that that consistent association between academic behaviors and measures of academic success and the UniLOA domains, provides support for validity in that these domains are associated with measures of

academic success (Frederick & Barratt, 2009b). Finally, the relationship between domain scores and participation in campus organizations provides validity evidence that the UniLOA is sensitive to non-academic activities as well as academic activities (Frederick & Barratt, 2009b).

Variables

The dependent variables were the critical thinking, diversity, and leadership and membership domain scores of each respondent. The independent variables (see Table 3.2) consisted of demographic characteristics, academic characteristics, participation in fraternity activities, and chapter/colony characteristics. Chapter/colony characteristics variables were disaggregated to the individual respondent. Table 3.2 presents all independent variables as they were measured by the UniLOA survey and recoded for analysis in this study.

First, the variable *Ethnicity* was recoded into a dichotomous variable (0= Non-Minority, 1= Minority) due to low representation of some of the specific categories. Recoding the variable allows the analysis to gauge the effect of being a minority in a historically white fraternity.

The variables *AppliedPure* and *HardSoft* were created by applying the Biglan Taxonomy of Academic Disciplines to the original 13 major categories recorded by the UniLOA survey (Biglan, 1973).

The *LeadershipEvent* variable captures whether or not a student has ever attended a Delta Tau Delta sponsored Division Conference, Leadership Academy, President and Advisory Retreat, or Karnea. Each of the four events listed are programs the professional fraternity staff host for their members in order to help students improve their leadership skills.

The variable *RCP* captures whether or not a student has participated in a Road Connection presentation. These presentations are a major part of Delta Tau Delta's membership development program, *The Road*, and cover a variety of topics including health and wellness,

financial security, life skills, leadership development, and career development. Professional staff

members lead all Road Connection presentations.

The variable *RoadChair* identifies whether or not the students' chapter/colony has a Road

Chairman. A Road Chairman is an undergraduate chapter officer who works with the

fraternity's professional staff to coordinate activities and presentations that make up *The Road*

membership development program.

Finally, the variable *MRG* measures whether or not the student is a member of a

chapter/colony who has been placed on probation during the 2010-2011 school year. All chapters

of Delta Tau Delta are expected to comply with the organization's member responsibility

guidelines (MRG), which delineate the general behavioral expectations of the international

organization for all members.

Statistical Analysis

Stata, version 11.2, was used to conduct the statistical analysis for this study. Standard

multiple regression was selected as the primary method of analysis for this study. The multiple

regression equation can be expressed in the following form:

$$Y^1 = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \dots \beta_k X_k.$$

 In this equation, Y^1 is the predicted value of the dependent variable, β_0 is the Y-intercept, Xs

represent the various independent variables, and β_{1-k} represents coefficients assigned to each

independent variable during regression.

The key purpose of standard multiple regression analysis is to help explain the

relationship between a continuous dependent variable and several continuous or dichotomous

independent variables (Tabachnick & Fidell, 2007). A separate multiple regression analysis was

run for each of this study's three dependent variables. Interaction terms were generated in order

to explore the impact of the variable measuring the private or public control of the university or college on the other independent variables, and the overall predictive ability of the regression model. This stated purpose of standard multiple regression analysis aligns with the umbrella research question posed in Chapter 1.

Limitations

As with any research, this study has a set of limitations. First, the study used a secondary analysis of an existing dataset. As a result, important background characteristics of the student respondents such as their socioeconomic status, parents' education level, high school GPA, ACT scores, and others could not be included as they were not originally in the dataset.

Second, this study uses data collected from only one international collegiate fraternity. While the data were collected from students at a variety of colleges and universities throughout the country, this study would have been enriched with the inclusion of data from other national and international fraternities.

Third, the analysis was conducted using only standard multiple regression analysis. Though the analysis controlled for between-institution variance by including the control variable *PrivatePublic*, the analysis did not take into account within-institution variance, or in other words, the fact that students nested within an institution tend to be more similar than students across institutions. As a result, the probability of committing Type I errors is increased.

Finally, while the UniLOA instrument shows initial signs of being a valid and reliable tool, the instrument is still relatively new and has not yet achieved the same level of scrutiny as other national instruments such as the National Survey of Student Engagement and the Collegiate Learning Assessment (Collegiate Learning Assessment, 2008; National Survey of Student Engagement, 2011) . It is also important to acknowledge that the UniLOA is a self-

report instrument, and as a result a certain level of attribution error is to be expected in the

responses.

Table 3.2. Independent Variables

Variable	Coding/Scale	Recoding for Analysis
Age	Continuous	

Ethnicity	1= European-American
	2= African-American
	3= Hispanic-American
	4= Asian and Pacific Island-
	  American
	5= Native-American
	6= International Student
	7= Other
		0= Non-Minority (European-American)
		1= Minority (African-American,
		  Hispanic-American, Asian and Pacific
		  Island-American, Native-American,
		  International Student, and Other)

GPA	1= 0.00-0.50 2= 0.51-1.00 3= 1.01-1.50 4= 1.51-2.00 5= 2.01-2.50 6= 2.51-3.00 7= 3.01-3.50 8= 3.51-4.00	

Year	1= 0-15 academic hours
	2= 16-30 academic hours
	3= 31-45 academic hours
	4= 46-60 academic hours
	5= 61-75 academic hours
	6= 76-90 academic hours
	7= 91-105 academic hours
	8= 106 or more academic hours
		1= Freshman (0-15 and 16-30 academic
		  hours)
		2= Sophomore (31-45 and 46-60
		  academic hours)
		3= Junior (61-75 and 76-90 academic
		  hours)
		4= Senior (91-105 and 106 or more
		  academic hours)

InHouse	1= I live on campus 2= I live off campus 3= I live in Fraternity housing	0= I do not live in Fraternity Housing 1= I live in Fraternity Housing

AppliedPure	1= Arts
	2= Business
	3= Education
	4= Engineering
	5= General Studies
	6= Health
	7= Humanities
	8= Pre-Law
	9= Pre-Medical or Pre-Dental
		0= Pure (Arts, General Studies,
		  Humanities, Science, and Social
		  Science)
		1= Applied (Business, Education,
		  Engineering, Health, Pre-Law, Pre-
		  Medical or Pre-Dental, Recreation,
		  Sports, and Leisure, and Technology)

Table 3.2. (Continued)

Variable	Coding/Scale	Recoding for Analysis
	10= Recreation, Sports, and Leisure 11= Science 12= Social Science 13= Technology	
HardSoft	1= Arts 2= Business 3= Education 4= Engineering 5= General Studies 6= Health 7= Humanities 8= Pre-Law 9= Pre-Medical or Pre-Dental 10= Recreation, Sports, and Leisure 11= Science 12= Social Science 13= Technology	0= Soft (Arts, Business, Education, General Studies, Health, Humanities, Pre-Law, Recreation, Sports, and Leisure, and Social Sciences) 1= Hard (Engineering, Pre-Medical or Pre-Dental, Science, and Technology)
Semesters	Continuous	
LeadershipEvent	1= Have Attended a Leadership Training Event 2= Have Never Attended a Leadership Training Event	0= Have never attended a leadership training event 1= Have attended a leadership training event
RCP	1= Have Attended a Road Connection Presentation 2= Have Never Attended a Road Connection Presentation	0= Have never attended a Road Connection presentation 1= Have attended a Road Connection presentation
PrivatePublic	1= Private College/University 2= Public College/University	0= Public College/University 1= Private College/University
ChapterColony	1= Chapter 2= Colony	0= Colony 1= Chapter

Table 3.2. (Continued)

Variable	Coding/Scale	Recoding for Analysis
ChapterSize	Continuous	
ChapterGPA	Continuous	
MRG	1= Chapter had an MRG Violation 2011 2= Chapter did not receive an MRG Violation in 2011	0= No MRG Violation in 2011 1= MRG Violation in 2011
RoadChair	1= Chapter has a Road Chairman 2= Chapter does not have a Road Chairman	0= Chapter does not have a Road Chairman 1= Chapter has a Road Chairman

CHAPTER 4. RESULTS

The purpose of this study was to use inferential statistics to assess the outcomes of fraternity membership, specifically critical thinking, leadership, and openness to diversity, on college fraternity members. In this chapter, I present the results of the study in four sections. The first section presents findings from a series of interaction tests conducted for each dependent variable. The remaining three sections present the findings of the standard multiple regression analyses for each of the three studied domains: critical thinking, leadership and membership, and diversity.

Interaction Testing

I began the analysis of the dependent variables by first testing for a potential interaction between the categorical variable *PrivatePublic* and the other independent variables on each dependent variable. In multiple regression analysis, interactions are those instances when the effect of one variable depends on the value of another variable (Keith, 2006). First, I created fifteen cross-product terms by multiplying the variable *PrivatePublic* with each of the independent variables. I then conducted two separate regression analyses for each dependent variable using the original 16 independent variables as block one and the 15 cross-products as block two.

First, *Critical Thinking* was regressed on all 16 independent variables and had an $R^2=$ .0413. The next analysis regressed *Critical Thinking* on the 16 independent variables and the newly generated 15 cross-product terms. This analysis yielded an $R^2= .0643$. To determine if an interaction was present, the change in R^2 was tested for statistical significance. The addition of the interaction terms resulted in a statistically significant change in R^2 ($\Delta R^2= .023$, $F[15,1206]= 1.98$, $p=.0142$). From this test, it is understood that the independent variables have differential

effects on critical thinking depending on the type of institution—public or private—the student attends.

The same procedure was conducted for the *Leadership and Membership* dependent variable. The first multiple regression analysis yielded an $R^2 = 0.0469$. The second multiple regression analysis, with the 15 cross-product terms added, resulted in an $R^2 = 0.0672$. The change in R^2 proved to be statistically significant ($\Delta R^2 = .0204$, $F[15,1206] = 1.76$, $p = .0361$). From this test, it is understood that the independent variables have differential effects on leadership and membership depending on the type of institution—public or private—the student attends.

The final dependent variable, *Diversity*, was also examined. The first multiple regression analysis yielded an $R^2 = .0296$. The second multiple regression analysis, with the 15 cross-product terms added, resulted in an $R^2 = .0461$. The change in R^2, however, proved to be insignificant ($\Delta R^2 = .0166$, $F[15, 1206] = 1.40$, $p = .1409$).

The results of the interaction tests indicated that for the *Critical Thinking* and *Leadership and Membership* dependent variables, separate regression analysis would need to be conducted for public college/university students and private college/university students in order to fully answer the research question. Because the interaction terms did not lead to a significant increase in the R^2 for the *Diversity* multiple regression model, one analysis could be conducted using the entire sample.

Critical Thinking

The dependent variable *Critical Thinking* was regressed on the independent variables *Age*, *Ethnicity*, *GPA, Year*, *InHouse*, *AppliedPure*, *HardSoft*, *Semesters*, *LeadershipEvent*, *RCP*, *ChapterColony*, *ChapterSize*, *ChapterGPA*, *MRG*, and *RoadChair*. Results of the regression

analysis for both private college/university students and public college/university students can be found in Table 4.1.

Private College/University Students

For private college/university students three variables proved to be statistically significant: *GPA* (B= 2.6340, p< .01), *ChapterColony* (B= -11.8287, p< .05), and *ChapterGPA* (B= -6.1730, p< .05). The standardized regression coefficients or β terms, indicate that of these three statistically significant variables, *GPA* (β= .2145) has the single greatest effect on explaining the dependent variable, followed by *ChapterGPA* (β=-.1227), and lastly *ChapterColony* (β= -.1115). This model explained 9.89% of the total variance in the dependent variable and was statistically significant (R^2= .0989, F[15, 469]= 3.43, p= .0000).

Public College/University Students

For public college/university students two variables proved to be statistically significant: *Semesters* (B= -.6003, p< .05) and *RCP* (B= 2.0393), p< .05). The standardized regression coefficients indicate that *Semesters* (β= -.1115) has a greater effect on explaining the dependent variable than *RCP* (β= .0816). This model accounted for 3.5% of the total variance in the dependent variable and was statistically significant (R^2=.035, F[15, 737]= 1.78, p=.0335).

<div align="center">

Leadership and Membership

</div>

The dependent variable *Leadership and Membership* was regressed on the independent variables *Age*, *Ethnicity*, *GPA, Year*, *InHouse*, *AppliedPure*, *HardSoft*, *Semesters*, *LeadershipEvent*, *RCP*, *ChapterColony*, *ChapterSize*, *ChapterGPA*, *MRG*, and *RoadChair*. Results of the regression analysis for both private college/university students and public college/university students can be found in Table 4.2.

Private College/University Students

For private college/university students four variables proved to be statistically significant: *GPA* (B= 2.1590, p< .001), *ChapterColony* (B= -13.6706, p< .01), *ChapterSize* (B= .0742, p< .0742) and *ChapterGPA* (B=-7.7393, p< .01). The standardized regression coefficients indicate that of these four variables, *GPA* (β=.1752) has the greatest effect on explaining the dependent variable, followed by *ChapterGPA* (β= -.1596), *ChapterSize* (β= .1331), and *ChapterColony* (β= -.1284). This model explained 9.73% of the total variance in the dependent variable and was statistically significant (R^2= .0973, F[15, 469]= 3.37, p=.000).

Public College/University Students

For public college/university students three variables proved to be statistically significant: *LeadershipEvent* (B= 2.4558, p< .05), *RCP* (B= 2.802, p< .001) and *MRG* (B= -3.8515, p< .01). The standardized regression coefficients indicate that *RCP* (β= .1117) has the greatest effect on explaining the dependent variable, followed by *LeadershipEvent* (β= .0982), and finally *MRG* (β= -.0979). This model was statistically significant and accounted for 4.96% of the total variance in the dependent variable (R^2=.0496, F[15, 737]=1.78, p=.001).

Diversity

The dependent variable *Diversity* was regressed on the independent variables *Age*, *Ethnicity*, *GPA, Year*, *InHouse*, *AppliedPure*, *HardSoft*, *Semesters*, *LeadershipEvent*, *RCP*, *PrivatePublic*, *ChapterColony*, *ChapterSize*, *ChapterGPA*, *MRG*, and *RoadChair*. Results of the multiple regression analysis can be found in Table 4.3. Three variables were found to be statistically significant: *Semesters* (B= -.5934, p< .05), *ChapterGPA* (B= -5.0233, p< .05), and *MRG* (B= -4.2011, p< .001). The standardized regression coefficients indicate that *Semesters* (β= -.0914) has the greatest effect on explaining the dependent variable, followed by *MRG* (β= -

.0820), and *ChapterGPA* (β = -.0812). This model was statistically significant and accounted for

2.96% of the total variance in the dependent variable (R^2= .0296, F[16, 1221]= 2.32, p= .0022).

Table 4.1. Critical Thinking Multiple Regression Models

Variable	Private Institution Students B	SE B	n= 485 R²= .0989 β	Public Institution Students B	SE B	n= 753 R²= .035 β
Age	-.1212	.4363	-.0158	.13332	.1799	.0305
Ethnicity	-.0525	1.2677	-.0018	-2.0369	1.0704	-.0701
GPA	2.6340	.5749	.2145**	.1089	.4667	.0090
Year	.7639	.6611	.0711	.8672	.5741	.0793
InHouse	-1.5947	1.2493	-.0627	.8245	1.0219	.0320
AppliedPure	-1.7100	1.1193	-.0715	-.7712	1.0368	-.0277
HardSoft	-.2412	1.1080	-.0100	.2048	.9564	.0080
Semesters	.4500	.3752	.0806	-.6003	.2906	-.1115*
LeadershipEvent	-.8106	1.2651	-.0338	1.9532	1.0464	.0783
RCP	2.0809	1.2407	.0876	2.0393	1.0141	.0816*
ChapterColony	-11.8287	4.8503	-.1115*	-1.2788	2.4987	-.0193
ChapterSize	.0271	.0290	.0488	-.0111	.0127	-.0397
ChapterGPA	-6.1730	2.4447	-.1277*	.1446	2.8366	.0023
MRG	-2.4577	2.5635	-.0445	-2.3053	1.4892	-.0588
RoadChair	-.5472	1.2521	-.0216	.6215	.9875	.0234
Constant	89.5222	11.9114		73.5685	9.3251	

Notes: *p < .05, ** p < .01

Table 4.2. Leadership and Membership Multiple Regression Models

Variable	Private Institution Students		n= 485 R²= .0973	Public Institution Students		n= 753 R²= .0496
	B	*SE B*	β	B	SE B	β
Age	-.0233	.4382	-.0030	.1518	.1792	.0347
Ethnicity	.5392	1.2732	.0189	-1.4795	1.0659	-.0507
GPA	2.1590	.5774	.1752***	.4878	.4648	.0401
Year	1.2165	.6640	.1129	.2457	.5717	.0224
Inhouse	-.5873	1.2547	-.0230	.2292	1.0176	.0089
AppliedPure	-.0255	1.1242	-.0011	1.0128	1.0324	.0363
HardSoft	.2567	1.1128	.0106	-.7107	.9523	-.0277
Semesters	-.2979	.3768	-.0532	-.4349	.2894	-.0805
LeadershipEvent	.7975	1.2706	.0331	2.4558	1.0420	.0982*
RCP	2.3744	1.2460	.0996	2.8020	1.0100	.1117***
ChapterColony	-13.6706	4.8713	-.1284**	-.3510	2.4881	-.0053
ChapterSize	.0742	.0291	.1331*	-.0163	.0126	-.0582
ChapterGPA	-7.7393	2.4553	-.1596**	.0932	2.8245	.0015
MRG	-1.4350	2.5746	-.0259	-3.8515	1.4828	-.0979**
RoadChair	-.7820	1.2575	-.0308	.7035	.9833	.0264
Constant	91.8260	11.9631		69.0454	9.2855	

Notes: *p < .05, **p < .01, ***p < .001

Table 4.3. Diversity Multiple Regression Model

Variable	B	SE B	β
Age	.1847	.1946	.0308
Ethnicity	1.8088	.9784	.0527
GPA	-.3085	.4320	-.0214
Year	-.5730	.5155	-.0445
InHouse	.5944	.9258	.0195
AppliedPure	-1.3454	.9017	-.0436
HardSoft	-.3599	.8609	-.0121
Semesters	-.5934	.2713	-.0914*
LeadershipEvent	.7829	.9614	.0268
RCP	.8759	.9264	.0300
PrivatePublic	1.7911	1.0447	.0607
ChapterColony	-1.5786	2.6019	-.0177
ChapterSize	.0046	.0129	.0125
ChapterGPA	-5.0223	2.1945	-.0812*
MRG	-4.2011	1.5141	-.0820***
RoadChair	-.0683	.8971	-.0022
Constant	88.3089	7.8001	

Notes: $R^2 = .0296$
    $*p < .05, ***p < .001$

CHAPTER 5. DISCUSSION AND CONCLUSION

In this study I sought to build upon the existing scholarly literature focused on the effects of fraternity membership on college students. In particular, I sought to understand how specific demographic and academic characteristics, as well as fraternity experiences explain student growth and development in the areas of critical thinking, leadership, and openness to diversity. To answer this question, data gathered from members of Delta Tau Delta international fraternity were gathered through the use of the UniLOA survey. The data were then analyzed using multiple regression analysis to understand to what degree the variables accounted for in this study explain a student's critical thinking, leadership and membership, and diversity domain scores. In the next sections, I will present my interpretation of the results from Chapter 4, along with the implications of the study, suggestions for future research, and the conclusion of this study.

Critical Thinking Results

For fraternity members attending a private college or university, their GPA, whether or not they belong to a chapter or a colony, and their chapter or colony's average GPA all were found to be significant in explaining their critical thinking scores. A student's GPA was found to have the greatest effect on critical thinking scores in the regression model, indicating a positive relationship between GPA and critical thinking. Based on the scholarly literature, this result was to be expected. Since GPA is a common measurement of student academic success and learning, it was not surprising to find a significant positive relationship between GPA and critical thinking. The analysis also determined that membership in a chapter, versus a colony, resulted in a negative effect on critical thinking scores. However, only six private college/university students reported being members of colonies compared to 479 chapter members. With only six

respondents, the variability observed among this group is limited, and thus limits the strength of

generalizations made from this subsample to the population. Lastly, for private

college/university students, their chapter's average GPA was also found to have a negative effect

on their critical thinking scores. This was surprising as it would stand to reason that chapters

with a higher average GPA would possess students with greater critical thinking skills. This

finding can possibly be explained by recognizing the limitations of GPA as a measurement of

critical thinking. While GPA is a measure of student success in the classroom, it does not

necessarily indicate the possession of critical thinking skills.

Unlike their private college/university counterparts, critical thinking skills of fraternity

members attending a public college or university were only significantly explained by the length

of their fraternity membership and whether or not they had ever attended a Road Connection

presentation. The length of the students' membership in the fraternity, as measured in semesters,

indicates that the longer a student is a member of the fraternity the more his critical thinking

skills are negatively affected.   For public college/university students, this variable proved to

have the most effect on their critical thinking scores. The literature regarding length of fraternity

membership and the development of critical thinking skills is mixed. While fraternity

membership has often been shown to negatively affect critical thinking skill development in first

year students, the effect of fraternity membership into a student's second, third, and fourth year

has been shown to be minimal, if not a complete non-factor (Pascarella et al., 1996; Pike, 2000;

Martin et al., 2011). Participation in at least one Road Connection presentation was found to

have a positive effect on critical thinking. This finding provides initial evidence that the Road

Connection curriculum is helping students develop their critical thinking skills.

While both multiple regression models were statistically significant they explained only 9.89% and 3.5%, respectively, of the total variance in the critical thinking variable. These relatively low R^2 values suggest that there are factors, other than the ones accounted for in the model, that explain a student's critical thinking score. As discussed in the limitations section of Chapter 3, important background characteristics such as socioeconomic status, parent's education level, high school GPA, and ACT/SAT scores could have strengthened the model and explained a greater percentage of the total variance.

Leadership and Membership Results

For fraternity members attending a private college or university, their GPA, whether they belonged to a chapter or a colony, the total number of members in their chapter or colony, and their chapter or colony's average GPA , all were found to be significant in explaining their leadership scores. Again, a student's GPA was shown to be the most impactful predictor of a student's leadership scores, indicating a positive relationship between GPA achievement and leadership. The analysis also indicated that membership in a chapter, rather than a colony negatively impacted student's leadership score. Again this finding can likely be considered inconclusive due to the low number of colony members from private colleges/universities who completed the UniLOA survey. Chapter size was found to have a positive effect on leadership scores, indicating that students who belong to larger chapters are likely to have higher leadership scores. Finally, increases in average GPA of a chapter or colony was found to result in lower leadership scores.

For fraternity members attending a public college or university, attending a Delta Tau Delta leadership event, a Road Connection presentation, and belonging to a chapter on probation all had significantly explained their leadership scores. Among these three variables, attending a

Road Connection Presentation had the greatest effect on explaining a student's leadership score, indicating a positive relationship. Since one of the stated purposes of the Road Connection presentations is to help students develop their leadership skills, this finding was not surprising and provides initial evidence of the program's success. Attendance at a Delta Tau Delta leadership event also was shown to positively impact a student's leadership score. Again, this finding suggests that attending events like Karnea or leadership academy do positively effect a student's leadership development. Finally, students' leadership scores were shown to be negatively impacted by belonging to a chapter placed on probation due to a violation of the organization's member responsibility guidelines. This finding suggests that a lack of leadership or lesser leadership skills could be found to be a contributing factor for why a chapter or colony is placed on probation.

While both regression models were statistically significant they explained only 9.73% and 4.96%, respectively, of the total variance in the leadership and membership variable. Again , these relatively low R^2 values suggest that there are factors, other than those accounted for in the model, that explain a student's leadership and membership score.

Diversity Results

The length of fraternity membership, chapter or colony's average GPA, and whether or not the chapter was on probation were all found to be significant in explaining the students' diversity scores. How long a student has been a member of the fraternity was found to have the greatest effect on diversity scores in the regression model, indicating a negative relationship between a the number of semesters a student has been a member of Delta Tau Delta and their openness to diversity. The scholarly literature suggests that the homogeneity of the membership often found in fraternities insulates the students and limits their exposure to interactions with

people of diverse backgrounds (Pascarella et al., 1996). The average GPA of the chapter or colony was also found to have a negative effect on diversity scores, indicating that the higher a student's chapter GPA, the lower his diversity score.. Finally, students' diversity scores were shown to be negatively impacted by belonging to a chapter or colony placed on probation due to a violation of the organization's member responsibility guidelines.

Like the previous models, the diversity regression model was statistically significant, but had the lowest overall R^2 value. This model accounted for only 2.96% of the total variance in the diversity variable. This low of an R^2 value suggests that much of what explains a student's diversity score is still left unaccounted for by this model.

Implications

The findings form this study suggest a number of implications for fraternity and campus student affairs professionals.

First, student affairs professionals on college campuses and within fraternity organizations must work to critically examine fraternity practices that are negatively impacting members' abilities to respectfully and meaningfully engage with people different from themselves. With an increasingly diverse United States, student affairs professionals will need to work to ensure fraternity members are being provided the opportunities to explore and respect human differences. This can be accomplished in part, by reviewing recruitment practices, chapter operations, and organizational governing documents/practices to help make fraternities more inclusive. Additionally, fraternity student affairs professionals should consider evaluating their existing educational programming to determine how best to include principles of diversity, power, and privilege into the curriculum.

Next, students' leadership scores were explained by different factors based on the affiliation of the students' college or university. This discovery suggests that the needs of private college students may be different than those of public college students. In order to best serve their students, fraternity student affairs professionals must become knowledgeable regarding the unique characteristics and needs of students across different types of higher education institutions. This study also discovered a positive relationship between leadership scores and participation in fraternity educational and leadership programming. Programs such as leadership academies and regional, national, and international conferences should be a continued area of programmatic focus by fraternity staffs.

As with leadership scores, this study also found that critical thinking scores were explained by different factors for private institution students and public institution students. Again, fraternity student affairs professionals will need to recognize the unique differences and needs among students attending different types of colleges or universities, in order to best serve them. Findings regarding critical thinking suggest a number of important applications to practice. First, fraternity chapters must be encouraged to strengthen their focus on building solid academic cultures. A strong focus on academics within individual chapters will help students meet their academic goals, as well as create a positive environment for development in other key areas (e.g., leadership, openness to diversity, communication, etc.). Next, membership development programs, such as *The Road*, should continue to be a priority of fraternity professionals, as these programs appear to have positive effects on the development of critical thinking.

Today, fraternities are being actively challenged by students, parents, and college leaders to explain and provide evidence to how fraternity membership complements and enhances the

educational missions of colleges and universities. The development of critical thinking skills, leadership, and openness and sensitivity to diversity are three areas of college student development that fraternities have longed claimed to help facilitate. Student affairs professionals can use these results to help target key interventions for fraternity members and actively address the educational role of fraternities in higher education.

Future Research

While each regression analysis yielded a significant model with two to four significant explanatory variables, the amount of variability the models accounted for—as reflected in the R^2 values—clearly indicates the existence of significant explanatory factors not accounted for in this study. Future research should be conducted that incorporates factors known to be significant in predicting student growth and development (e.g., socioeconomic status, parents' education level, ACT/SAT scores, and others). These important background characteristics have all been found to be significant in explaining other education outcomes, such as retention and graduation.

Future research should also seek to gather data from students from a variety of international, national, and local fraternities, as differences in fraternity programming could be found to account for some of the variability in student growth, learning, and development. Because individual fraternity chapters can vary greatly based on social and cultural differences among members, special attention should be placed on investigating regional differences among fraternity chapters on student growth, learning, and development. Beyond just fraternities, the research should be expanded to include sororities, in order to investigate differences in organizational culture and sex on developmental outcomes.

Finally, in addition to exploring the effects of sorority membership, future studies should seek to explain the outcomes of membership in multicultural fraternities and sororities on student

growth, learning, and development. While these organizations exist to meet many of the same aims of their historically white counterparts, these organizations do have a unique focus on exploring and fostering racial and ethnic identity development of their members. This unique attribute of multicultural fraternities and sororities could result in different effects on the development of college students.

Conclusion

This study sought to answer the following research question:

1. How do individual level factors—ethnicity, age, major, year in school, GPA, participation in Delta Tau Delta education programs, length of Delta Tau Delta membership, and living location—as well as organization level factors—institutional type, chapter or colony status, chapter/colony size, chapter/colony's average GPA, presence of a Road Chairman, and disciplinary status—explain a student's critical thinking, leadership and membership, and diversity domain scores?

Utilizing standard multiple regression analysis, this study found that a student's GPA, belonging to a chapter rather than a colony, and their chapter/colony's average GPA all significantly explained a private college/university student's critical thinking score, while length of fraternity membership and participation in a Road Connection presentation were significant for public college/university students. Multiple regression analysis also indicated that for students attending a private college or university a student's GPA, belonging to a chapter rather than a colony, chapter size, and chapter average GPA all significantly explain leadership and membership scores, while participating in a Road Connection presentation, leadership event, and belonging to a chapter on probation were significant for public college/university students. Finally, the length of membership in the fraternity, chapter average GPA, and belonging to a

chapter on probation significantly explained diversity scores among students at both public and

private institutions.

APPENDIX A. DOMAIN OPERATIONAL DEFINITIONS

Domain	Operational Definition
Critical Thinking	The UniLOA's authors consider critical thinking to be an active process where students use skills of evaluating, analyzing, assessing, interpreting, questioning and restating a problem or challenge. Effective problem-solving is bolstered by the individual's skill in applying critical thinking skills to their academic lives and their lived experience. A skilled critical thinker should be able to examine and understand the fundamental qualities of problems, collect and analyze critical data, draw appropriate interpretations and conclusions, examine broad-based problem-solving options and effectively communicate and implement appropriate solutions.
Diversity	Diversity is an area of interest within higher education as it reflects an individual's understanding and appreciation of "differences." Those differences include such things as the recognition of values held by different people, cultures, ethnicities, politics, religion, gender, age, sexual orientation and a host of others. The understanding and appreciation of difference is necessary to establish and maintain pluralism in a way that will be complementary to such phenomena as social responsibility, cohesion and advancement of social structures, the bolstering of individual and group identity, and equality and respect. But diversity goes beyond mere acceptance of difference, which in many cases may be only tolerance. Indeed, moving beyond simple tolerance to understanding allows individual members of a social group the capacity to appreciate the positive contribution different people can make to the collective good of that social group, whether limited to small groups of individuals or on a global scale
Leadership and Membership	An understanding of the various types of relationships students do and will experience is necessary as they identify with groups, whether those groups are formal or informal. Within groups, individuals should recognize how they can contribute and be active in their participation, whether that participation is the holding of a recognized office with prescribed duties, or a member that contributes to the common good through active participation that supports growth and development of the collective body.

APPENDIX B. UNILOA DOMAIN ITEMS

Domain	Item
Critical Thinking	I rely on multiple kinds of information when I form an opinion. For example I look for a variety of facts and informed opinions before forming my own conclusion.
	I can see what a problem is like from a different perspective. For example I anticipate different possible solutions and outcomes based on different perspectives.
	I can analyze complicated problems by identifying the component parts and issues. For example I can plan an event or activity that takes into account resources, social and cultural differences, scheduling, and advertising.
	I can tell when something is a belief, when something comes from science, and when something is logical. For example in class discussions, political debates, personal differences, and areas of conflict, I listen for these different perspectives.
	I evaluate the credibility of sources and information. For example when I am using the Internet, or reading popular media, I know how to tell credible sources from questionable sources.
	I identify valid and invalid arguments and can spot fallacies of deductive and inductive arguments. For example I see when someone has a problem with the logic and structure of their argument, or is confusing cause and effect, or is missing key pieces that are needed.
	I identify the basic assumptions behind opinions and arguments. For example I can specify my assumptions and values that lead to my points of view or other people's assumptions and values.
	I understand basic statistics that I read or see in the media. For example when I see or read statistics I know what they mean and how they are being used to represent information appropriately or inappropriately.
	I am good at describing things in class. For example I answer the teacher's questions when we are reviewing material.
	I know when someone is using misleading language. For example I can tell when a TV advertisement has used some 'weasel words' to try to confuse or mislead me.

Domain	Item
Diversity	I have personal relationships with several people who are ethnically different from me. For example I have several African-American or European-American friends.
	In a class or among my friends I will advocate for diversity and social justice. For example I make sure that everyone is treated the same way.
	I take the time to see things from a different gender, ethnic, or social class perspective. For example in class assignments I will use a perspective different from my own to help strengthen the paper.
	I can tell anyone what diversity is. For example I have a 'standard answer' when someone asks me about diversity.
	I talk with other people who are different than me about our differences. For example I will talk with someone who is ethnically different from me to try to understand the world from their point of view.
	I act on the values of diversity and social justice. For example I work with an organization or with my church to help others.
	I go beyond simple diversity to act and think more complexly. For example I work hard to include many types of differences such as gender, ethnicity, social class, morals, and personality when I form opinions or work with other people in class or hang out with my friends.
	I value differences between people as part of the overall human experience. For example I know that we are not a melting pot where people who are different can come to be seen as 'all the same'. I know that people are different and that these differences are important.
	I see myself as a member in multiple communities. For example I see myself as a member of a club, an organization, a social group, a family or origin, a local community, a state, a nation, etc. all at the same time.
	I behave in such a way to offset my inherent gender, ethnic, and social class bias. For example I work hard to see things from other gender, ethnic, or social class points of view.
Leadership and Membership	I know when and where skills and talents can most benefit the larger group. For example I look for and actively participate in groups or work teams based on my skills and abilities.

Domain	Item

I am a role model for others. For example I am aware of how others see me and I act in ways that provide a positive example for others to follow.

I have polished communication skills for influencing others. For example I have learned effective ways to influence others and have observed situations where others have changed their minds based on my influences.

I use good skills in confronting others. For example I share my observations of another person in a constructive and non-threatening way to influence changes in their behavior.

I know how to effectively run an organization, group, or club. For example I use my skills of influencing others to help conduct the business of organizations I belong to.

I engage in constructive dialog rather than arguments. For example when I confront others I focus on minimizing a negative emotional response from people I'm confronting.

I can describe the common factors in both leadership and membership. For example I can use this knowledge in a way that makes me effective as either a leader or a member.

I balance my needs and the group's needs so that neither is neglected. For example sometimes I will give up what I want or need so that the group will succeed.

I take risks to accomplish a goal or to get the job done. For example I don't fear failure in such a way that I won't act and I will try new ways of doing things.

I actively seek leadership opportunities in areas that are important to me or in which I have expertise. For example I seek to be a leader in the groups I belong to.

REFERENCES

Adams, T. C., & Keim, M. C. (2000). Leadership practices and effectiveness among Greek student leaders. *College Student Journal*, *34*, 259-270.

Alpha Phi Alpha. (2008). *An Alpha legacy: The founding jewels*. Retrieved from http://www.alpha-phi-alpha.com/Page.php?id=138.

Astin, A. W. (1984). Student involvement: A developmental theory for higher education. *Journal of College Student Personnel*, *25*, 297-308.

Astin, A. W. (1985). *Achieving educational excellence*. San Francisco, CA: Jossey-Bass.

Astin, A. W. (1993). *What matters in college: Four critical years revisited*. San Francisco, CA: Jossey-Bass.

Biglan, A. E. (1973). The characteristics of subject matter in different academic areas. *Journal of Applied Psychology*, *57*, 195-203.

Boschini, V., & Thompson, C. (1998). The future of the Greek experience: Greeks and diversity. *New Directions for Student Services*, *81*, 19-27.

Bowman, N. A., Brandenberger, J. W., Hill, P. L., & Lapsley, D. K. (2011). The long-term effects of college diversity experiences: Well-being and social concerns 13 years after graduation. *The Journal of College Student Development*, *52*, 729-739.

Cashin, J. R., Presley, C. A., & Meilman, P. W. (1998). Alcohol use in the Greek system: Follow the leader? *Journal of Studies on Alcohol, 59*, 63-70.

Chi Psi Fraternity. (n.d.). *About chi psi*. Retrieved from http://www.chipsi.org/?page=AboutChiPsi.

Collegiate Learning Assessment. (2008). *Frequently asked technical questions: 2007-2008*. New York, NY: Council for Aid to education.

Current, R. N. (1990). *Phi Beta Kappa in American life: The first two hundred years*. N.C.;
Oxford University Press.

Delta Tau Delta. (2008).*The road: Resource guide* [Brochure]. Retrieved from
http://www.delts.org/road/RoadBrochure/index.html.

Delta Tau Delta. (2012a). *About us.* Retrieved from http://www.delts.org/main/about.html.

Delta Tau Delta. (2012b). *Chapter life*. Retrieved from http://www.delts.org/main/chapter.html.

Delta Tau Delta. (2012c). *Constitution and bylaws of Delta Tau Delta fraternity.* Retrieved from
http://www.delts.org/media/Constitution%20and%20Bylaws-Current.pdf

Delta Tau Delta. (2012d). *Leadership*. Retrieved from
http://www.delts.org/main/leadership.html.

Frederick, M., & Barratt, W. (2009a).*UniLOA reliability*. Terre Haute, IN: Center for Measuring
College Behaviors and Academics. Retrieved from
http://www.measuringbehaviors.com/reliability.pdf.

Frederick, M., & Barratt, W. (2009b).*University learning outcomes assessment validity*. Terre
Haute, IN: Center for Measruing College Behaviors and Academics. Retrieved from
http://www.measuringbehaviors.com/Validity.pdf.

Frederick, M., & Barratt, W. (2009c). *Fast facts*: Terre Haute, IN: Center for Measuring College
Behaviors and Academics. Retrieved from
http://www.measuringbehaviors.com/FastFacts.pdf.

Frederick, M., & Barratt, W. (2010). *University Learning Outcomes Assessment (UniLOA):
National report of means, 2009-2010*. Terre Haute, IN: Center for Measuring College
Behaviors and Academics. Retrieved from
http://www.measuringbehaviors.com/NationalNormPublicRelease2010.pdf.

Gellin, A. (2003). The effect of undergraduate student involvement on critical thinking: A meta-analysis of the literature 1991-2000. *The Journal of College Student Development*, *44*, 746-762.

Harms, P. D., Woods, D., Roberts, B., Bureau, D., & Green, A. M. (2006). Perceptions of leadership in undergraduate fraternal organizations. *The Oracle*, *2*, 81-94.

Indiana State University. (n.d.) About UniLOA. Retrieved from http://www.measuringbehaviors.com/UniLOA_About.html.

Keith, T. Z. (2006). *Multiple regression and beyond*. Boston, MA; Pearson Education.

Komives, S. R., Owen, J. E., Longerbeam, S. D., & Mainella, F. C. (2005). Developing a leadership identity: A grounded theory. *The Journal of College Student Development*, *46*, 593-611.

Maisel, J. P. (1990). Social fraternities and sororities are not conducive to the educational process. *NASPA Journal*, 28, 8-12

Martin, G. L., Hevel, M. S., Asel, A. M., & Pascarella, E. T. (2011) New evidence on the effects of fraternity and sorority affiliation during the first year of college. *The Journal of College Student Development*, *52*, 543-559.

National Pan-Hellenic Council. (2010). *Mission*. Retrieved from http://www.nphchq.org/mission.htm.

National Survey of Student Engagement. (2011). *Fostering student engagement campuswide—annual results 2011*. Bloomington, IN: Indiana University Center for Postsecondary Research.

North American Interfraternity Conference. (2010a). *The case for fraternity rights*. Retrieved from http://nicindy.org/fraternityrights/category/facts/.

North American Interfraternity Conference. (2010b). *About NIC*. Retrieved from

    http://www.nicindy.org/about/.

O'Toole, L. (1994). Subculture of rape revisited. In L. O'Toole & J. Schiffman (Eds.), *Gender*

    violence: Interdisciplinary perspectives (pp. 214-221). New York, NY: New York

    University Press.

Pascarella, E. T. (2006). How college affects students: Ten directions for future research. *The*

    Journal of College Student Development, *47*, 508-520.

Pascarella, E. T., Edison, M., Nora, A., Hagedorn, L. S., & Terenzini, P. T. (1996). Influences on

    students' openness to diversity and challenge in the first year of college. *The Journal of*

    Higher Education, *67*, 174-195.

Pascarella, E. T., Edison, M. I., & Whitt, E. J. (1996). Cognitive effects of Greek affiliation

    during the first year of college. *NASPA Journal*, *33*, 242-259.

Pascarella, E. T., Flowers, L., & Witt, E. J. (2001). Cognitive effects of Greek affiliation in

    college: Additional evidence. *NASPA Journal*, *36*, 280-301.

Pascarella, E. T. & Terenzini, P. T.(1991). *How college affects students: Findings and insights*

    from twenty years of research. San Francisco, CA: Jossey-Bass.

Perkins, A. B., & Zimmerman, J. D., Janosik, S. M. (2011). Changing trends in the

    undergraduate fraternity/sorority experience: An evaluative and analytical literature

    review. *The Oracle*, *6*, 57-73.

Pike, G. R. (2000). The influence of fraternity or sorority membership on students' college

    experiences and cognitive development. *Research in Higher Education*, *41*, 117-139.

Pike, G. R., & Askew, J. (1990). The impact of fraternity or sorority membership on academic

    involvement and learning outcomes. *NASPA Journal*, *28*, 13-19.

Pike, G. R., Kuh, G. D., & Gonyea, R. M. (2007). Evaluating the rationale for affirmative action in college admissions: Direct and indirect relationships between campus diversity and gains in understanding divers groups. *The Journal of College Student Development*, *48*, 166-182.

Randall, K., & Grady, D. (1998). The Greek experience and critical-thinking skills. *New Directions for Student Services*, *81*, 29-37.

Rudolph, F. (1990). *The American college and university:A history*. Athens, GA: University of Georgia Press.

Sigma Chi. (2011). *Sigma Chi today*. Retrieved from http://www.sigmachi.org/sigmachitoday.html.

Syrett, N. (2009). *The company he keeps a history of white college fraternities*. Chapel Hill, NC: University of North Carolina Press.

Tabachnick, B., & Fidell, L. S. (2007). *Using multivariate statistics*. Boston, MA: Pearson/Allyn 0& Bacon.

Tau Kappa Epsilon. (2011) *About Tau Kappa Epsilon.* Retrieved from http://www.tke.org/about/quick_facts.

Terenzini, P. T., Pascarella, E. T., & Blimling, G. S. (1996). Students' out-of-class experiences and their influence on learning and cognitive development: A literature review. *Journal of College Student Development*, *37*, 149-162.

Trochim, W.M. (2006). *The research methods knowledge base* (2 nd ed.). URL: http://www.socialresearchmethods.net/kb/.

U. S. Census Bureau. (2011). *Overview of race and Hispanic origin: 2010*. Washington, DC: U.S. Government Printing Office. Retrieved from

http://www.census.gov/prod/cen2010/briefs/c2010br-02.pdf.

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