EXPLORING THE IMPACT OF UNDERGRADUATE INTRAMURAL SPORTS ON UNDERGRADUATE STUDENTS’ PERCEIVED SENSE OF COMMUNITY: A MULTIPLE REGRESSION ANALYSIS

by

Nathan Paul Penland

Liberty University

A Dissertation Presented in Partial Fulfillment of the Requirements for the Degree Doctor of Education

Liberty University

2017
EXPLORING THE IMPACT OF UNDERGRADUATE INTRAMURAL SPORTS ON UNDERGRADUATE STUDENTS’ PERCEIVED SENSE OF COMMUNITY: A MULTIPLE REGRESSION ANALYSIS

by

Nathan Paul Penland

A Dissertation Proposal Presented in Partial Fulfillment
Of the Requirements for the Degree
Doctor of Education

Liberty University
2017

APPROVED BY:

Jeffrey S. Savage, Ed.D., Committee Chair

Alan Wimberley, Ed.D., Committee Member

Chris Shirley, Ph.D., Committee Member
ABSTRACT

Research has shown benefits to the student experience for college students when they participate in intramural sports on university campuses. These benefits include improved physical and social health as well as academic performance. This non-experimental, predictive correlational study sought to understand if a relationship exists between the predictive variables of length and frequency in intramural sports and sense of community as the criterion outcome with undergraduate students on private liberal arts campuses. Participants were undergraduate students from two institutions of similar size, and sense of community was measured by Chavis, Lee, and Acosta’s (2008) Sense of Community Index 2 (SCI-2) scale. 221 participants were measured for this study. Multiple regression was used to explore the research question and hypothesis. Overall, the results show the model was statistically significant, though individual predictors, by themselves, did not significantly predict perceived sense of community within undergraduate students. Recommendations for further research include expanding this study to different types of undergraduate institution, exploring if a greater relationship of sense of community and underclassmen is consistent among multiple campuses and involvement opportunities, and studying perceived sense of community within eSports opportunities on college campuses.

Keywords: Sense of Community, Intramural Sports, Undergraduate, Higher Education
Copyright Page
Dedication

To my children; Katelyn, Karaline, and Noble. I hope this is a representation that you can accomplish anything!! Daddy loves each of you so much!!

Also, to my parents Chuck and Joyce Penland. I pray this is a testimony of your constant encouragement of learning and education.
Acknowledgments

Pursuing higher education is a calling. I am thankful to the Lord has led me to pursue knowledge. I pray this degree will provide opportunities to impact lives for the Kingdom.

I am thankful for my committee beginning with my chair Dr. Jeffrey Savage. I appreciate the continuous feedback, encouragement and creativity as this work continued it is fruition. Dr. Alan Wimberley has served as one of my champions throughout my doctoral journey and I am thankful for his encouragement. Dr. Chris Shirley has been an educator and friend throughout my Master’s and Doctoral degrees and one of the first to encourage me towards this degree. I thank each of you for your assistance and backing throughout this journey.

I want to thank my employer Southwest Baptist University, specifically Dr. Pat Taylor and Dr. Rob Harris. Your support and patience as I have worked diligently to complete this task in invaluable. I am fortunate to call each of you mentors and friends. Also, thank you to my students who have humored me through the countless conversations about my findings and journey. I hope this is an encouragement to each of you to never stop learning.

Lastly, I want to thank my beautiful wife, Kristina. You have been my rock as my emotions shifted back and forth through the successes and setbacks of this process. This could not have been accomplished without your affirming spirit. I cannot wait to see what else we accomplish is this life together!! I love you. Thank you!
Table of Contents

<table>
<thead>
<tr>
<th>Section</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>ABSTRACT</td>
<td>2</td>
</tr>
<tr>
<td>Copyright Page</td>
<td>3</td>
</tr>
<tr>
<td>Dedication</td>
<td>4</td>
</tr>
<tr>
<td>Acknowledgments</td>
<td>5</td>
</tr>
<tr>
<td>Table of Contents</td>
<td>6</td>
</tr>
<tr>
<td>List of Tables</td>
<td>9</td>
</tr>
<tr>
<td>List of Figures</td>
<td>10</td>
</tr>
<tr>
<td>List of Abbreviations</td>
<td>11</td>
</tr>
<tr>
<td>CHAPTER ONE: INTRODUCTION</td>
<td>12</td>
</tr>
<tr>
<td>Background</td>
<td>12</td>
</tr>
<tr>
<td>Problem Statement</td>
<td>17</td>
</tr>
<tr>
<td>Purpose Statement</td>
<td>19</td>
</tr>
<tr>
<td>Significance of Study</td>
<td>20</td>
</tr>
<tr>
<td>Research Question</td>
<td>21</td>
</tr>
<tr>
<td>Definitions</td>
<td>22</td>
</tr>
<tr>
<td>CHAPTER TWO: LITERATURE REVIEW</td>
<td>23</td>
</tr>
<tr>
<td>Introduction</td>
<td>23</td>
</tr>
<tr>
<td>Theoretical Framework</td>
<td>23</td>
</tr>
<tr>
<td>Definition of Community</td>
<td>23</td>
</tr>
<tr>
<td>Early Research on Sense of Community</td>
<td>24</td>
</tr>
<tr>
<td>Sense of Community Theory</td>
<td>25</td>
</tr>
</tbody>
</table>
Results ................................................................................................................................. 74
Data Screening ...................................................................................................................... 74
Assumption Testing/Diagnostics .......................................................................................... 74
Hypothesis ............................................................................................................................ 77
Summary ............................................................................................................................... 80

CHAPTER FIVE: DISCUSSIONS, CONCLUSIONS, AND RECOMMENDATIONS ............ 82
Overview ............................................................................................................................... 82
Discussion ............................................................................................................................. 82
Conclusion ............................................................................................................................. 85
Implications .......................................................................................................................... 87
Delimitations and Limitations .............................................................................................. 89
Recommendations for Further Research .............................................................................. 90

REFERENCES ..................................................................................................................... 94

APPENDICES ..................................................................................................................... 110
APPENDIX A ....................................................................................................................... 110
APPENDIX B ....................................................................................................................... 111
APPENDIX C ....................................................................................................................... 113
APPENDIX D ....................................................................................................................... 115
APPENDIX E ....................................................................................................................... 116
APPENDIX F ....................................................................................................................... 117
List of Tables

Table 4.1: Respondents by Race/Ethnicity ...............................................................71
Table 4.2: Length of Participation of Participants .......................................................72
Table 4.3: Frequency of Participation of Participants ...............................................73
Table 4.4: Model Summary of Multiple Regression ...................................................78
Table 4.5: ANOVA Table .........................................................................................79
Table 4.6: Predictors of Sense of Community ...........................................................80
List of Figures

Figure 4.1: Scatterplot of Perceived Sense of Community Sum of Scores .................................75

Figure 4.2: Frequency Distribution of Residuals for Sense of Community Sum of Scores ..........76

Figure 4.3: Normal Probability Plot of Regression for Sense of Community Sum of Scores.......77
List of Abbreviations

Sense of Community (SOC)

Sense of Community Index – 2 (SCI-2)
CHAPTER ONE: INTRODUCTION

Background

Connection to an institution is essential to student success. Before students attend a college or university, the goal is to help establish that connection. Efforts include using social media, sending out apparel, placing phone calls or texts, and planning pre-college events to bring potential students on to campus (Hugo, 2012; McCoy, 2012). The attempt of connection continues as students come to campus through programs such as new student orientation and club fairs. Additionally, campus housing attempts to create engagement by replicating the feeling of home (Case, 2011; Tinto, 2012). These efforts help students persist within the campus community through academic and social involvement (Astin, 1997; Cheng, 2004; Gail, Thomas, & Hanson, 2014; Tinto, 2012).

Historically, sports have played a major influence in developing a sense of community for students at higher education institutions. In the mid-1800s, students began participating in athletic activities within the context of their own university (A History of Intercollegiate, 2015; Beyer & Hannah, 2000; Washington & Ventresca, 2008). With growing interest, competition was organized between colleges with the first being a rowing competition between Yale and Harvard in 1852 (A History of Intercollegiate, 2015). In light of activity’s rapid growth, administrators became concerned about its effect on academics; even so students continued to plan competitions while increasing alumni support, branding, and student applications (A History of Intercollegiate, 2015). In an effort to maintain safety of athletes as well as maintain governance, athletic associations were formed with the help of Theodore Roosevelt in the early 1900s (A History of Intercollegiate, 2015; Beyer & Hannah, 2000). With the foundation of the National Collegiate Athletic Association (NCAA), colleges and universities began to expand
sport offerings for students while using athletics to enhance notoriety for their institution (*A History of Intercollegiate*, 2015). From sitting in the student section at winter basketball games to football games on Saturday afternoons in the fall, universities have utilized these events to provide engagement for students and local community members to each other and the institution (Bozeman, Friesner, & Chase, 2015; Tinto, 2012). Building relationships through teams and competition, sports also maintain the capability to help develop community among students in a university setting (Warner & Dixon, 2013). Fanfare and connectivity is often associated with varsity athletics on campus, yet there is little research to determine the effects of a sports setting on sense of community (Warner, Dixon & Chalip, 2012; Warner & Dixon, 2013).

The concept of community on college campuses has experienced a shift within the past 50 years (Cheng, 2004; O’Keeffe, 2013; Palmer, Boniek, Turner, & Lovell, 2014). Early universities were only available to the privileged student, which mostly consisted of white 18-22 year-old males. Community on campus in this context was the social and academic integration of students on campus (Astin, 1997; Cheng, 2004; Tinto, 2012). Williams and Ferrari (2015) define sense of community as inclusion in the multiple aspects of campus as well as experiencing warm, affirming, and supportive interactions with others on campus. Community for students has expanded with technological advances that allows students to develop and maintain relationships online. Students connect with friends and family through social media but also through other online avenues such as gaming or eSports (Granic, Lobel, & Engels, 2014; Palmer et al., 2014). Students acquire important social skills such as cooperation, support, and assistance through participation in gaming with friends, essentially creating an online community (Granic et al., 2014). With these opportunities, personal connection with others has become increasingly difficult within the college setting (Palmer et al., 2014). While desiring to maintain
their online connections, students still crave a sense of belonging on their campus (Cheng, 2004; O’Keeffe, 2013).

The liberal arts have played an important role in American higher education. Wintrol (2014) states the concept of the liberal arts was established in ancient Rome, training individuals to be effective citizens. A concept adopted in medieval times to train individuals for further education in law and theology contrasted the mechanical arts which trained individuals for economic reasons, most often to become weavers, blacksmiths, farmers, hunters, soldiers, or doctors (Baker, Baldwin, & Makker, 2012; Roche, 2013; Wintrol, 2014). Historically, a liberal arts education meant curriculum grounded in the arts and sciences, small class sizes, residential campuses, and little emphasis on vocational training (Baker et. al, 2012, Roche, 2013; Wintrol, 2014). Though some still major in the liberal arts, most students’ education merely includes courses within the liberal arts, such as composition, mathematics, history, literature, and philosophy (Roche, 2013).

Relationships with peers and faculty outside of the classroom help create a sense of community on campus (Astin, 1997; O’Keeffe, 2013; Tinto, 2012). In the early 1900s, institutions expected students to invest their time and energy into their academic rigors; therefore, very little, if any, extra-curricular opportunities were offered (May, 2010). As students began to self-expand their opportunities through sports and clubs, institutions increased their social offerings to meet student desires. In 1984, Astin developed the student involvement theory asserting that involvement in both classroom and extra-curricular activities aids in students’ academic and social success. Webber, Krylow, and Qin (2013) claim perceived commitment is essential to student success and happens more frequently when students engage in extra-curricular and social activities with other students and faculty. O’Keeffe (2013) states
students who experience high quality relationships with employees and peers are more likely to persist toward completion.

Campus recreation or intramural sports are, arguably, classified as the first organized type of physical activity on college campuses in America (Milton, Roth, & Fisher, 2011). Records of competition within sports on campus date back to the 18\textsuperscript{th} and 19\textsuperscript{th} centuries (Milton et al., 2011). At first, athletic competitions were student-generated; however, students could not manage the programs effectively, so in the early 1900s, university leaders began to take control over intramural programs (Milton, 2008). Recreational or intramural sports on college campuses became more popular through the early 20\textsuperscript{th} century, causing programs and facilities to expand (Milton, 2008). Throughout the 1960s and 1970s, intramural programs moved from the physical education or athletics department to the department of student development (Milton et al., 2011). Popularity increased so dramatically from the 1970s-1990s that colleges in America spent millions of dollars on recreational facilities (Huesman, Brown, Lee, Kellogg, & Radcliffe, 2009).

Recreation facilities continue to serve a significant role within the university setting providing students opportunities for involvement through fitness classes, intramural sports offerings, and personal training, among others (Castle, Robert Alman, & Kostelnik, 2015; Danbert, Pivarnik, McNeil, & Washington, 2014; Forrester, 2015). Students involved in these types of extra-curricular activities make friends, orient to campus, and create relationships with faculty more quickly (Webber et al., 2013). Even with administrative efforts to foster community through involvement on campus, student attrition rates are still approximately 40% within United States institutions for students beginning college in 2008 (O’Keefe, 2013; NCES, 2016).
Numerous studies have sought to determine the influence of involvement on students’ campus experiences. A few examples include studies about the correlation between social engagement and persistence by Hu (2010) and Morrow and Ackermann’s (2012) research to determine how sense of belonging and motivation influenced retention between students’ first and second years of college. A healthy community for students has long been the goal of administrators on college campuses, and sports help create community (Warner & Dixon, 2013). Phipps, Cooper, Shores, Williams, and Mize (2015) state though intramural sports are mostly physical activities, not all outcomes are physical. Administrators on university campuses know connecting students to each other and faculty will help in their transition and persistence (O’Keeffe, 2013; Kane, Chalcraft, & Volpe, 2014).

Student involvement is the amount of time and energy a student devotes to their full academic experience (Astin, 1984). This includes both academic and social experiences such as participating in social activities and connecting with faculty and students within and outside the classroom setting (Astin, 1999b). Student involvement has shown a benefit in student retention, particularly when students are able to interact with faculty and peers outside of the classroom (Tinto, 2007, 2012).

Through efforts of involvement, administrators on university campuses attempt to create a sense of community among their students (McGowan & Partridge, 2014, Warner et al., 2013). In 1986, McMillan and Chavis developed a definition and theory of sense of community to include four elements. First is membership, or the feeling of belonging. Membership to group implies boundaries are present, meaning though some belong, others do not belong. These boundaries often provide emotional safety and identification with the group (Bachrach & Zautra, 1985; McMillan & Chavis, 1986). Second is influence, or the sense of mattering to a group.
Individuals within a group desire to possess influence on group decisions while also conforming to the group’s influence for the sake of the cohesiveness of the group. McMillan and Chavis (1986) claim these two forces operate concurrently and are often present within healthy groups. The third element is the integration and fulfillment of needs, or the knowledge that one’s needs will be met by the members of group (Harris, 2006; McMillan & Chavis, 1986). For a group to maintain a sense of togetherness, reinforcements must be present. Examples of reinforcements within groups include member status and group success. Lastly, the final element is shared emotional connection, or the belief that members share and will share history, common places, and comparable experiences (McMillan & Chavis, 1986; Phipps et al., 2015; Uysal, 2016). This may include personal investment and quality of interaction with other members of the group or a spiritual bond created through interactions. Traditionally sense of community referred to geographical location such as neighborhoods or cities but is now also measured within relationship quality no matter the geographical area (Chavis & McMillan, 1986; Phipps et al., 2015; Warner & Dixon, 2013). Chavis and McMillan’s (1986) sense of community theory will be the theoretical framework for this study.

**Problem Statement**

Institutions across the United States aim to foster a sense of community among the students upon their campuses. Most attempts occur through fostering safe emotional and physical environments in student housing, planning activities for students to interact socially, or offering involvement opportunities for interest groups such as clubs or organizations (Sickler & Roskos, 2013). Even with these efforts, attrition rates among institutions continue to be an issue (NCES, 2016). Williams and Ferrari (2015) studied first generation students and sense of community among first generation students who are U.S. citizens compared to non-first-
generation students. Though first-generation students perceived less support from the institution, their perceived sense of community was not significantly different from non-first-generation students. These researchers call for a study to determine length of involvement within specific clubs and their correlation with sense of community (Williams & Ferrari, 2015). Elkins et al. (2011) examined perceived sense of community among university students to gain a greater understanding of how involvement in campus recreation contributed to sense of community on campus. They found higher levels of involvement within recreational activities on one campus contributed to students’ perceived sense of community. Similarly, Phipps et al. (2015) studied sense of community within intramural sports participants correlated with retention at a large public institution. Phipps et al. (2015) determined students who participated in intramural sports longer possessed a greater perceived sense of community. Moreover, Miller (2011) studied the impact of recreational facilities on social belonging and found frequent facility use contributed to social belonging in the facility and institution.

A liberal arts university arguably provides more benefits than other universities. Astin (1999a) claims student satisfaction at liberal arts institutions is higher than those at other institutions and students feel the institution is student-oriented. This provides greater satisfaction with the faculty, quality of teaching, and general education program. Students are able to learn more when active within the learning process, generating their own questions, and formulating their own answers (Astin, 1993; Kuh, 2008; Roche, 2013). Further, liberal arts universities enhance students’ chances of succeeding in graduate studies more than other types of institutions (Astin, 1999a).

Although Warner and Dixon (2013) studied varsity and club sports, the study of intramural sports’ effect on undergraduate students’ sense of community was not fully
investigated until the work of Phipps et al. (2015) using the SCI-2 (Chavis, Lee, & Acosta, 2008). Moreover, Elkins, Forrester, and Noël-Elkins (2011) studied perceived sense of community within intramural sports using Cheng’s (2004) campus community scale. Sense of community is defined as members experiencing a sense of belonging to a particular community while perceiving members’ value to each other within the community, in addition to possessing the belief that individuals’ needs will be met within the group (McMillan & Chavis, 1986). All this research, along with the practical, anecdotal concerns of college and university leadership highlights the need for research examining this study’s research problem. The problem is that little work has been done to show if intramural sports increase community.

**Purpose Statement**

The purpose of this quantitative correlational study is to determine the relationship between participation in intramural sports and a student’s sense of community. The research study employed a non-experimental, correlational design that examined the relationship between predictor variables (length of participation in intramural sports, frequency of participation in intramural sports, gender, class status, housing status, and ethnicity) and the criterion, outcome variable (sense of community) within undergraduate students on two private liberal arts campuses. A multiple regression design was chosen due to its fit with the purpose and the questions guiding the current inquiry: the desire to study the relationship between multiple variables: a criterion (sense of community) and multiple predictors (length and frequency of participation, gender, class status, housing status, and ethnicity). Field (2013), Gall et al. (2015) and Warner (2013) suggest using multiple regression when conducting a study with multiple predictor variables and a single criterion.
Sense of community theory includes four elements: membership, influence, integration of fulfillment of needs, and shared emotional connection (McMillan, 2006; McMillan & Chavis, 1986; Peterson, Hughey, & Speer, 2006). Length of participation is the number of semesters a student has participated in intramural sports throughout their college career, while frequency of participation is the number of intramural sports a student participates in any given semester (Phipps et al., 2015). Gender was defined as male or female. Ethnicity was measured as Caucasian, African American, Hispanic, Asian/Pacific Islander, and Other. Class status was defined as first year, second year, third year, and fourth year. Housing status was defined as residential or commuter.

The population consisted of 221 traditional undergraduate students, both residential and commuter, at two private liberal arts universities located in the Midwest United States. This study sought to determine if participating in intramural sports as an undergraduate student influences the sense of community.

**Significance of Study**

The concept of community has changed in recent years. Palmer et al. (2014) claim electronics have shifted the idea of connecting with others to online. Rather than students forming relationships solely in campus activities, they are connecting through social media outlets (Palmer et al., 2014). Even with this change in the medium for developing community, university officials are still searching for avenues to create a sense of community on campus. Researchers measured sense of community within multiple aspects of campus, to include those studies focused on determining how students develop a sense of community within the classroom (Chen & Chiou, 2014; Pichon, 2016). Specifically, Case (2011) studied students’ sense of community within club and organization participation. Researchers also explored sense of
community’s relationship to athletic opportunities upon college campuses (Warner & Dixon, 2013; Phipps et al., 2015).

Though researchers have studied sense of community on college campuses in relationship to sports, this current study sought to expand the literature by conducting research among students from multiple private liberal arts institutions. With attrition rates between 30% and 50% at U.S. institutions, administrators must understand the motivations for students who persist at their institutions (NCES, 2016; O’Keeffe, 2013). Involvement in extra-curricular activities provides numerous benefits such as making friends, adjusting to campus, and creating relationships (Webber et al., 2013). Some studies have suggested these benefits result in higher academic achievement and lower attrition rates (Brock, Carr, & Todd, 2015; Kampf & Teske, 2013). This study further determined the impact or benefit for students, beyond physical health, of participating in intramural sports on college campuses as one way to increase the social and academic integration that has led to higher student satisfaction, achievement, and retention (Astin, 1997; Seidman, 2012; Tinto, 1994; Tinto, 2012). This study will be beneficial for higher education student development professionals and recreation facilities managers who desire to connect students to each other and the institution. Additionally, this study will use social media connected with intramural sports to solicit participants.

**Research Question**

**RQ1:** Is there a significant predictive relationship between the criterion variable (sense of community) and the linear combination of predictor variables (undergraduate students’ length and frequency in participation in intramural sports, gender, class status, ethnicity, and housing status), as measured by Chavis’ (2008) Sense of Community Scale (SCI-2)?
Definitions


2. *Involvement*- The amount of time a student invests into their full academic experience or (Astin, 1999b). Academic and social engagement with other people are critical within the first year to set the foundation for the rest of the collegiate experience (Tinto, 2012).

3. *Length of Participation* - The number of semesters a student has participated within intramural sports throughout their college career (Phipps et al., 2015)

4. *Frequency of Participation* - The number of intramural sports a student participates in any given semester (Phipps et al., 2015).
CHAPTER TWO: LITERATURE REVIEW

Introduction

The literature review will focus on theoretical frameworks for the study as well as the empirical foundations for the theories (or lack thereof) and other research related to the current problem. In addition, the historical background of recreational facilities and their role on university campuses will be reviewed with particular emphasis on student involvement, recreational facilities, and sense of community within higher education.

Theoretical Framework

The general theories on student involvement in higher education highlight the importance of academic and social integration within the formal community of college life (Astin, 1984, 1999b; Tinto, 2007, 2012). Because of this and in an effort to extend the research in support of both theories, the theory used to guide the present study will address a specific aspect to student involvement in college: Sense of community.

Definition of Community

Community psychology surfaced in the 1960s due to individually oriented psychology not meeting social needs (Heller, 1989). At the time, the key motivation for the study in community psychology was the desire for increased equity in the American life and many believed psychology could aid in reaching this goal (Heller, 1989). Historically, two definitions of community are recognized. First, community is a region, such as a neighborhood, town, or city, and secondly, it is the relational community or the human interactions and social bonds that draw people together (Hunter & Riger, 1986, McMillan & Chavis, 1986). Heller (1989) added a third trait to community: community as a political power due to the belief of social change originating from organized assemblies. Heller (1989) also contended individuals can belong to
multiple communities as one time, such as work and home, as long as one individual is sharing experiences with others.

In 1974, Sarason addressed the concept of community psychology. Sarason (1974) claims sense of community to be an available, supportive social system of relationships one can rely upon which as result would not experience a prolonged sense of loneliness resulting in hiding one’s anxiety. Experiencing community is not solely knowing other individuals, rather feeling as if one is a part of their network which provides close relationships and overarching values (Sarason, 1974). The geo-political entity of community offers little opportunities for relationships (Sarason, 1974). Though individuals contribute through paying taxes, working, and voting, a lack of further contribution to their immediate surroundings often results in feeling unneeded (Sarason, 1974). Regardless of cultural obstacles, Sarason (1974) calls for individuals to be social activists in order to begin shifting a culture from individualistic to a focus on the community.

**Early Research on Sense of Community**

Early research on sense of community studied community members’ perceptions of their neighborhood (Bachrach & Zautra, 1985; Doolittle & MacDonald, 1978; Riger LeBailly, & Gordon, 1981). Doolittle and MacDonald (1978) researched communication and sense of community in a suburban neighborhood and found extensive and effective internal and external communication is necessary to the establishment and continuation of sense of community. The researchers found a supportive climate, family life cycle, safety, informal interaction, neighborly integration, and localism to be six factors playing a significant factor in establishing a sense of community (Doolittle & MacDonald, 1978). Riger, Lebailly, and Gordon (1981) found “bondedness” and “rootedness” to be the greatest indicators for community involvement.
Whereas the more bonded individuals perceived themselves to their community, the more rooted and less afraid of crime they would become. However, Riger et al. (1981) found socially interacting with neighbors and the use of neighborhood facilities did not have significance in perceived safety.

Though originally studied within communities, sense of community has been studied in numerous settings such as in the workplace (Klien & D’Aunno, 1986; Park, Shin, & Han, 2005), associations (Hahm, Breiter, Severt, Wang, & Fjelstul, 2016), and religious organizations (Stroope, 2011). Sense of community has also been researched on university campuses through numerous facets. Though made popular by Boyer (1990), sense of community is directly related to the research on retention and involvement by Tinto (1993, 2012) and Astin (1984, 1999b).

**Sense of Community Theory**

McMillan and Chavis (1986) developed a definition and theory of sense of community to include four elements. First is *membership* or the feeling of belonging. Second is *influence* or the sense of mattering to a group. McMillan and Chavis (1986) state the third element is the *integration and fulfillment of needs*, or that one’s needs will be met by the members of group. Lastly, *shared emotional connection* is the belief that members share and will share history, common places, and comparable experiences (McMillan & Chavis, 1986). In 1996, McMillan extends his thoughts on the sense of community theory and renames three of four of his elements within the theory. *Membership*, rephrased as *spirit*, or the spirit of belonging together. *Influence*, relabeled *trust*, meaning the authority structure of group can be trusted. *Integration of fulfillment and needs*, or now *trade*, is the mutual benefit shared among the group, and *shared emotional connection* are shared experiences known as *art* (McMillan, 1996).
McMillan and Chavis (1986) claim membership forces some to belong and some to be excluded or isolated. Membership often creates boundaries, both positive and negative, which help to protect personal space while also guarding emotional safety and security to protect group intimacy (McMillan & Chavis, 1986). Membership within communities takes investment from each member that in turn helps to develop an emotional connection with other members as well as the group as a whole (McMillan & Chavis, 1986). Often groups or communities will use a symbol for members, helping to create a sense of community among members (McMillan & Chavis, 1986). In the most recent version of sense of community theory, McMillan (1996) replaces spirit for membership. Though boundaries are still an important aspect, McMillan (1996) notes friendship or connection with others to contribute more to the spirit of sense of community.

McMillan and Chavis (1986) claim influence to be a bidirectional concept, meaning that for a member to connect to a group, some level of influence must be present over the group’s actions. Often, emotional connection directly relates to the cohesiveness and conformity of individuals within the group. Validation of the needs of the group and individual are often circular (McMillan & Chavis, 1986). Within a group experiencing community, influence is cyclical between the group and its members (McMillan & Chavis, 1986). Trust has substituted the term of influence in McMillan’s (1996) most recent update, though the concepts supporting the element remain consistent.

The third component within McMillan and Chavis’ (1986) theory is integration and fulfillment of needs, otherwise known as reinforcement. People look for opportunities to fulfill their personal needs, so if a group is found in which others possess the same priorities and goals, then the belief is the needs will be more likely met than if attempted alone (McMillan & Chavis,

McMillan and Chavis (1986) claim shared emotional connection comes from individuals either sharing or identifying with a shared history embodied within seven different elements. Included is contact hypothesis, or the amount of time a group spends together, the quality of their interaction, closure of events, participating in similar events, personal investment, the effect of honor and humiliation within the group, as well as the spiritual bond or connectedness felt within its members (McMillan & Chavis, 1986). In 1996, McMillan referred to this element as art, claiming the experiences members have as individuals and as a group help to create the community’s story or art.

Ernest Boyer spent his life investing into Christian higher education in an effort to strengthen its presence within American culture (Moser, 2014). His early career he spent serving at Upland College emphasizing students’ responsibility to the greater community and passing on the virtues of civic engagement and social responsibility (Moser, 2014) This passion continued through his later positions as President of Messiah College and President of The Carnegie Foundation for the Advancement of Teaching (Moser, 2014). In one presentation to The Carnegie Foundation for the Advancement of Teaching, Boyer (1990) presents six aspects of community universities exemplify. First, Boyer (1990) states the university is a purposeful community where academic life is the hub, and faculty and students come together to enhance teaching and learning. Next, the university is a just community, meaning each individual is given respect, and equal opportunities are provided for every student (Boyer, 1990). Third, the university is an open community, a place where individuals can respectfully express their opinions to those around them (Boyer, 1990). Fourth, Boyer (1990) claims the university is a
disciplined community where individuals should uphold their obligations for the common good. Fifth, Boyer (1990) claims the university is to be a caring community, a place which is sensitive to the well-being of each member and where serving others is a common occurrence. Lastly, the university should be a celebrative community, promoting its heritage and traditions among students, faculty, and alumni.

Sense of community typically refers to a geographical location, though it can also embody itself within a relational quality regardless of physical location (Phipps, 2012; Warner & Dixon, 2013). Regardless of the setting, participants within a community search for membership, influence, integration and fulfillment of needs, and shared emotional connection (McMillan & Chavis, 1986).

Students who experience high quality relationships with employees as well as their peers are more likely to persist towards completion (O’Keefe, 2013). Sense of community on campus often comes through activities, peer relationships, and relationships with faculty outside of the classroom (O’Keefe, 2013). Case (2011) notes students who participate in clubs and organizations typically possess a larger sense of community than those with lower levels of participation. Ultimately, students desire to feel valued within the learning community both inside and outside of the classroom (O’Keefe, 2013). McMillan and Chavis (1986) claim community is a feeling of belonging and mattering to a group and understanding needs are met through commitment to each other. Subsequently, studies measuring sense of community will be reviewed further within this literature review.
Empirical Evidence

Student Involvement in Higher Education

Students who are involved in extra-curricular activities make friends, orient to campus, and create relationships with faculty more quickly (Webber et al., 2013). Numerous researchers have studied the influence of involvement on students’ campus experience.

Historically, students have participated in self-governance within the university setting. May (2010) claims this rose out of a need for extracurricular outlets, separation from academic rigors, discontentment with institutional rules and disciplinary procedures, and the desire for student voice on campus. Undergraduate students during the 1700s and 1800s were dissatisfied with lack of power and governance over their own lives (May, 2010). With few liberties, faculty and college administration determined most every aspect of their lives (May, 2010). Desiring an avenue to express themselves, fill time, and feel empowered, students began to create organizations to communicate their frustrations with the institution (May, 2010). In the 1700s, these organizations were literary societies initially starting on the campuses of Harvard and Yale. These organizations allowed students to create standards for themselves and in turn created a sense of greater autonomy (May, 2010). By late 1700s to early 1800s, students were still discontent, desiring more input into university decisions (May, 2010). This discontentment bred student-led honor systems allowing students to influence institutional judiciary and discipline processes (May, 2010). These honor systems allowed students to create standards of behavior while holding students accountable to these codes. Honor systems’ success lasted through the 1800s, increasing students’ governance on university campuses (May, 2010). In the 1900s, as universities were becoming more complex, honor systems began to resemble student council where students were divided into class rank and a student was chosen as a representative for each
class to the administration (May, 2010). Currently, student representation is often organized through student associations or student government associations where students are elected to serve their peers as a liaison to administration on behalf of the student body (May, 2010).

Since Astin (1984) established the student involvement theory, many researchers have studied the premise of the benefits of involvement for college students. These benefits reach inside the classroom through academics and class attendance as well as outside the classroom through social relationships and physical well-being (Case, 2011; Kahn, 2014). Webber, Krylow, and Qin (2013) state students who are involved in extra-curricular activities make friends, orient to campus, and create relationships with faculty more quickly. Case (2011) considered the differences of effects on involvement in clubs and organizations between genders. Supporting Astin’s (1984) student involvement theory, she found involvement played a significant role in students’ transition and persistence for both men and women (Case, 2011). Case (2011) also found involvement in campus clubs and organizations contributed to students’ perceived sense of community.

A feeling of disconnectedness can be present among university students for a variety of reasons (O’Keefe, 2013). O’Keefe (2013) explored causes and potential solutions of attrition and found a safe environment, student-faculty relationships, and support services offerings all contributed to students’ persistence on university campuses. Though students desire these connections, O’Keefe (2013) claims conversations are often difficult to initiate with faculty or staff due to created anxiety. Students are also hesitant to be open with employees due to the requirements on employees to report sensitive items within the conversation (O’Keefe, 2013). Another contributing factor to students not feeling a part of the institution may be the students’
responsibility. O’Keeffe (2013) claims students have an obligation to step into their role as a college student.

Students who live on campus are more likely to integrate into campus and, therefore, experience a greater sense of community than commuter students (Alfano & Eduljee, 2013). The authors researched commuter and residential university students to compare levels of involvement and academic performance. No significant relationship was found between number of hours worked and grade point average (GPA) between residential and commuter students (Alfano & Eduljee, 2013). Almost twice as many residential students, 73%, felt they were a part of the college community compared to 43% of commuter students. Both cohorts agreed they desired to participate in more school-sponsored activities (Alfano & Eduljee, 2013).

School-sponsored activities come in a variety of arenas. Evans, Hartman, and Anderson (2013) studied the effect of for-credit recreational or leisure activities on student engagement. These types of experiences include physical education or recreational courses, but also courses which enhance hobbies such as woodworking, archery, or photography (Evans et al., 2013). Six different leisure activity courses were studied, and researchers found students who participated experienced a greater sense of community or belonging within the institution (Evans et al., 2013). The authors divided sense of community into three subthemes: relationship building, school pride/connection, and campus resource knowledge (Evans et al., 2013). Students who participated in these courses reported developing friendships through having fun while learning in an environment that breaks down social barriers (Evans et al., 2013). Students also reported feeling a greater connection with the institution, claiming they value the institution investing into students’ learning opportunities beyond academic requirements for their majors. Other students felt more pride with their institution (Evans et al., 2013). Lastly, students experienced a greater
knowledge of campus services and offerings such as the health center, intramural sports, and other leisure education courses through their participation (Evans, et al., 2013). Evans et al. claim leisure education courses provide opportunities to insert recreational opportunities into their class schedules while also creating connections with other classmates and their institution.

University students’ persistence links to more than outside influences (Morrow & Ackerman, 2012). Internal motivation proved to be a significant aspect to student persistence between students’ first and second years at an institution (Morrow & Ackerman, 2012). Morrow and Ackerman’s study aimed to assess the significance of sense of belonging and motivation when predicting the intent to persist and students’ retention from their first to second year of college. However, sense of belonging does play a role in student persistence; personal motivation can lead to greater success among college students (Morrow & Ackerman, 2012).

Not all involvement within the university setting is positive. Lorant, Nicaise, Soto, and d’Hoore (2013) claim students will often organize parties or other recreational activities that may or may not involve alcohol. Many times, early in the academic year, older students will plan activities for freshmen students which may include a form of hazing (Lorant et al., 2013). Lorant et al. (2013) claim the higher exposure of students to collegiate environments the more frequent and abusive their drinking habits. Drinking habits were more frequent in students living in on-campus non-dormitory housing than those commuting, and drinking became more frequent with each year a student attended the university (Lorant et al., 2013). In addition, students with a greater number of roommates tended to engage in alcohol more frequently with the only exception being those students who live in university dormitories (Lorant et al., 2013). Alcohol use could also be correlated with community with students whose friends drank were more likely to partake in alcohol themselves (Lorant et al., 2013).
Each of these studies confirms research by Astin (1984; 1997) and Tinto (1993, 2007, 2012) on involvement and retention. Outside of class experiences with peers and employees contribute to students’ perceptions of community, belonging, and academics (Astin, 1997; Tinto, 2012). An anomaly would be the contribution of alcohol to involvement. Students may perceive connection with their peers but do not progress as well academically or in connectivity to the university (Astin, 1984, 1997; Lorant et al., 2013).

**Recreation Facilities and Offerings within Higher Education**

Recreation facilities on university campuses provide an array of benefits from recruitment of new students to creating a healthy environment for students both physically and socially (Forrester, 2015; Huesman et al., 2009; Kampf & Teske, 2013). Below is a review of empirical research regarding the benefits and drawbacks of recreation facilities on the university campus.

Milton et al. (2011) claim campus recreation or intramural sports as the first organized type of physical activity or student involvement on college campuses in America with records of sport competition dating back to the 18th and 19th centuries. The earliest record was of a foot race at Pennsylvania University while the first organized intramural sport occurred as a baseball game between the freshmen and sophomore classes in 1857 at Princeton University (Milton et al., 2011). The first recorded intercollegiate football game occurred in 1869 between Princeton and Rutgers (Milton, 2008). Early on, students established athletic competitions, though students lacked the capability to manage the programs effectively. University leaders began to manage sports programming by the early 1900s (Milton, 2008; Milton et al., 2011). In 1904, The President of Cornell University, recognizing the need for structure, organized gymnastics instruction for non-varsity athletes to practice alongside the varsity athletes (Milton, 2008).
1913, the University of Michigan and The Ohio State University became two of the first to appoint a faculty member to oversee intramural programs (Milton, 2008). By 1916, numerous schools around the country began to offer intramural programming, and by 1919, the University of Michigan opened the first indoor facility dedicated to intramural sports (Milton, 2008).

Milton (2008) reports the 1930s brought expansion to intramural programming through new facilities on campuses as well as the creation of the Federal Emergency Relief administration providing financial aid to students working in intramural programming. Professional organizations such as the American Physical Education Association in 1930, the College Physical Education Association in 1933, and the American Association for Health, Physical Education and Recreation in 1938 provided national validity of recreational sports (Milton, 2008). By 1950, the National Intramural Association was formed and held its first meeting at Dillard University in New Orleans, LA (Milton, 2008).

Through the 20th century recreational or intramural sports, mirroring varsity competition, became more popular, prompting universities to expand their programs and facilities (Milton, 2008). With increasing popularity, intramural programs moved from the departments of physical education or athletics to the department of student development in the 1960s and 1970s (Milton et al., 2011). Title IX of the Education Amendment act of 1972 was significant as recreational sports were early to implement to women through competitive intramural sport and also through aerobic conditioning activities (Milton, 2008). Through the 1970s-1990s, programming increased so dramatically that colleges in America began investing millions of dollars on recreational facilities (Huesman et al., 2009). Since 1990, universities have begun to include intramural sports as a part of student fees helping to build recreational facilities along with
operational budgets (Milton, 2008). Numerous studies have measured the value of recreational facilities as well as their offerings among college students.

Recreational facilities contribute to students’ transition and integration into a university (Henchy, 2013). Henchy (2013) compared undergraduate and graduate students at a major southeastern university on the perceived benefits from participating in offerings within a campus recreation facility, specifically to survey the impact of campus recreation on recruitment and retention as well as other benefits, such as health or social, from student participation (Henchy, 2013). Henchy (2013) concluded recreational facilities were influential to students when deciding to attend an institution, with 36% of undergraduate and 24% of graduate students stating the facility was at least a moderate factor when making their decision. Henchy (2013) stated over 90% of students who took her survey reported health benefits of recreational facilities, claiming emotional enjoyment and physical health benefits. The results also indicated 88% of undergraduate students who participated in recreation activities claimed these offerings helped to make the university feel more like home (Henchy, 2013). While 40% of undergraduate students perceived their opportunity to develop friendships improved due to their participation within recreational offerings, 39% of undergraduate students felt their sense of belonging strongly or moderately improved (Henchy, 2013). Overall, Henchy (2013) found recreational facilities to influence admittance and persistence within an institution.

Benefits of student participation within the recreation facility reach beyond social and academic (Kampf & Teske, 2013). Forrester (2015) reports similar results from the 2013 National Association of Personnel Administrators (NASPA) Assessment and Knowledge Consortium. This study reports from 38 different institutions across the United States in which students participated in the Recreation and Wellness Benchmark instrument. The purpose of the
study was to determine the impact of recreational facilities on student well-being as well as student retention (Forrester, 2015). Over 85% of students reported their involvement in campus recreation activities produced positive contributions to their college experience while many claimed these experiences helped to form social relationships beyond the activity (Forrester, 2015). Similarly, Kampf and Teske (2013) studied first year retention rates in students who participated in club sports, used the campus recreation facility frequently, and worked at the campus recreation facility. Kampf and Teske (2013) grounded their study in Tinto’s (2007) theory of integration. Participation in club sports helped in student retention but did not necessarily show any difference in academic performance compared to non-participants, while student employment correlated with student retention and academic performance (Kampf & Teske, 2013). Kampf and Teske (2013) also found a modest correlation between recreational facility usage and retention.

Students who use campus recreation facilities have the potential to experience the most community within all experiences of college (Huesman et al., 2009). These facilities provide a social atmosphere through common interests, which increases the likelihood of social encounters (Huesman et al., 2009). Huesman et al. (2009) set out to determine if frequency of use within campus recreational facilities influenced students’ persistence and graduation. They found usage in these facilities has a positive outcome on academic success, retention, and graduation while controlling for academic, financial, and social factors (Huesman et al., 2009). Moreover, Miller (2011) studied the effect of a recreation center on a students’ belonging to an institution. Some factors explored included connecting with other students and employees who also use the facilities, and Miller (2011) found the recreational facility to be a place of bonding for current students as well as a major factor for students choosing this institution. Overall, students’
experiences within the recreational facility helped to create a bond with the university (Miller, 2011).

Beyond social relationships, academic achievement relates to students’ use of recreation facilities (Danbert et al., 2014). The authors studied the correlation between use of a recreational facility and academic success. Danbert et al. (2014) surveyed freshmen at a Midwestern university, comparing those who had purchased and had not purchased a membership to the institution’s recreational facility. They hypothesized those who purchase the membership as well as took advantage of its benefits were more likely to have a higher GPA and retention rate than those who had not purchased a membership. Danbert et al. found this to be consistent their results. The difference in GPA between members and non-members resulted in .13 which may seem insignificant but could be the difference of scholarship or graduate school acceptance (Danbert et al., 2014). Also, two-year student retention was 3.5% higher from those who participated in recreational facilities (Danbert et al., 2014).

Similarly, Brock et al. (2015) studied whether participation in campus recreation activities aided in academic performance and health behaviors from one semester to the next among freshmen students. The authors chose to measure freshmen due to being recently integrated into the institution as well as being more impressionable than older students (Brock et al., 2015). The results of the study indicated students with high use of the recreational facility experienced higher GPA and lower in-fat intake opposed to students with moderate or low use of the facility (Brock et al., 2015). Although previous studies have shown recreational facilities to possess a positive impact on students’ GPA and health factors, this study did not show changes with the freshmen participants (Brock et al., 2015).
Community satisfaction does not solely depend on student participation (Fine, Clark, & Scheuer, 2016). The authors claim administrators and staff have a responsibility to establish and uphold the community of the recreation facility. Community satisfaction is pertinent to the success of the facility and factors such as cleanliness, staffing, and parking could contribute to customer loyalty (Fine et al., 2016). The goal of the study was to determine the community satisfaction with the recreational facility among students, faculty, and staff at an institution (Fine et al., 2016). The results of the study revealed the characteristics of the facility often were more significant than the characteristics of the community members (Fine et al., 2016). This study shows the importance of the facility and the factors which could contribute to members’ sense of community.

Electronic technology has begun to shift the operations of recreation facilities (Achen, 2015). Personal trainers and staff members have begun to use social media to establish connections and further their relationships with students who use the facility (Achen, 2015). Achen (2015) conducted a pilot study at a large, four-year Midwestern institution to determine the influence of social media on campus recreation participation among undergraduate students. Achen’s (2015) claims effective marketing strategies can promote student learning and experiences. With 18-29 year-olds being the largest group of social media users, this is a low cost option to establish connections with students while also making them aware of offerings within the facility (Achen, 2015; Duggan & Smith, 2014). Achen found students did not regularly interact with social media accounts organized by the recreational facility, which could have been due to a weak marketing plan or students lacking the desire to interact with student services. Achen encouraged student personnel to consider the impact social media could have on connecting and establishing relationships with students.
Participating in intramural sports provides benefits beyond physical health (Cooper, Schuett, & Phillips, 2012). Knowing physical exercise brings numerous physical health benefits, the researchers surrounded their study on self-determination theory and physical activity motivation to evaluate intramural sports participants’ intrinsic motivation for participating (Cooper et al., 2012). They found students participated in intramural sports for the internal products of challenge, personal improvement, fun, and enjoyment as well as competence, self-appearance, and being physical fitness (Cooper et al., 2012). In 2013, Sturts and Ross (2013) studied participation in intramural sports aided in social outcomes. Sturts and Ross found intramural sports provided social outcomes for students to aid in their development, satisfaction, and creation of social networks. Benefits were particularly evident among females, on-campus students, and first year students (Sturts & Ross, 2013).

Women view and respond to competition much different from men (Warner & Dixon, 2015). For example, physiologically, testosterone levels among men increased significantly and were related to the outcome, while women’s testosterone levels barely increased (Hamilton, Anders, Cox, & Watson, 2009). Psychological and sociological differences are evident as well. Males display a greater competitive and assertive nature when involved in athletics (Rickel, Park, & Morales, 2012; Warner & Dixon, 2015). Warner and Dixon (2015) claim women are often team oriented, and if a breakdown occurs within the team, they are more likely to leave the sport than their male counterparts. Artinger, Clapham, Hunt, Meigs, Milord, Sampson, and Forrester (2006) found females experienced a greater commitment to their peers, willingness to learn about different cultures, community involvement, and ability to work with a team, along with social benefits.
Commuter students tend to experience more difficulty in engaging into the university, while living on campus provides numerous social and developmental benefits for students (Burlison et al., 2015; Kranzow, Hinkle, & Foote, 2015). This is not due to apathy; rather, students living off-campus are, often, non-traditional and are more likely to experience life circumstances which require more of their time, such as family responsibilities and non-academic time commitments (Burlison et al., 2015). Though commuter students are often less involved, their engagement academically is no less than residential students (Burlison et al., 2015).

Building upon the prior research within recreational sports and their physical benefits toward participants, Artinger et al. (2006) desired to determine the social effects of participating in intramural sports between genders, class status, and residential and commuter students. Artinger et al. (2006) found students living on campus as well as first year students benefitted most of the social outcomes of intramural sports. These benefits include an improvement in sense of belonging, commitment to peers, ability to work within a team, and time management (Artinger et al., 2006). Recreational facilities are contributors to student persistence within institutions while, participation in intramural sports is another element in which students can gain a sense of belonging (Artinger et al., 2006).

Students do not solely participate in intramural sports for competition (Webb & Forrester, 2015). The authors study sought to determine the positive and negative affective outcomes of intramural sports. The study, conducted at a Canadian institution, found students who participated in intramural sports experienced more positive than negative effects. Interestingly, males and females reported similar effects, neither positive nor negative, from participation. A participant winning or losing also provided no significant effect on outcomes (Webb & Forrester,
Webb and Forrester (2015) concluded students participate in these activities for enjoyment more than competition. This finding is consistent with research by Baghurst, Tapps, and Judy (2014) as well as a study done by Lower, Turner, and Petersen (2013), both emphasizing the benefits of participating in intramural sports.

An intramural sport provides students the opportunity to increase their ability to interact with a diverse group (Artinger et al., 2006; Sturts & Ross, 2013). Artinger et al. found students who live on campus and participated in a greater number of intramural sports indicated a greater ability to work with or tolerate the diversity of a group. Sturts and Ross found white participants to experience greater outcomes of self-confidence, community involvement, time management, and social bonding than non-white participants.

Scholars have also studied intramural sport participation and its relationship to leadership development (Dugan, Turman, & Torrez, 2015). Multiple studies have determined the social and physical benefits of intramural sports as they are estimated to be the most attended co-curricular activity within higher education (Dugan et al., 2015). Dugan’s et al. study sought to determine the effect of intramural sports on leadership development, specifically leadership efficacy and capacity. They found peer mentoring relationships as well as establishing position roles for students helps to provide opportunities for learning leadership among students participating in intramural sports (Dugan et al., 2015).

**Sense of Community within Higher Education**

Administrators within higher education have long considered sense of community to be an important aspect to their campuses (Boyer; 1990; Levine & Cureton, 1998). This section will explore the history of sense of community on the university campus and also present empirical research of how different aspects of the university campus affect students’ sense of community.
Intellect and academics formed sense of community within early higher education (Levine & Cureton, 1998). This has shifted through the years due to the changing to student demographics beginning with Tinto’s (2012) student retention theory in 1975. Tinto asserts that students who experience relationships with peers and faculty outside of the classroom are more likely to experience a sense of belonging which contributed to personal growth and academic success (Spann, 1990). Pascarella and Terenzini (1980) studied Tinto’s theories and found student-faculty interactions and peer relationships contributes to student persistence. Whereas in early higher education academics were the focus of students’ lives, current students focus on an array of additional activities such as holding a job, participating in campus life, and being socially active, considering these as or more important than their academic endeavors (Levine & Cureton, 1998).

Boyer (1990) expands the idea of sense of community within higher education with six aspects he believes to be crucial. Boyer’s (1990) foundation for community within the university is consistent with early higher education claiming the university is a purposeful community where academic life is the hub and faculty and students come together to enhance teaching and learning. Though he views the classroom as important, Boyer (1990) states faculty should view themselves as teachers both inside and outside of the classroom and understand that building community cannot solely be student affairs professionals’ responsibility. Secondly, the university is a just community (Boyer, 1990). Prejudices should be questioned and challenged to create an environment for all students to experience a safe place and receive an education (Boyer, 1990). Third, the university is an open community, a place where individuals learn to communicate effectively and with civility (Boyer, 1990). Students must learn to think against the culture and respect each other with their language (Boyer, 1990). Mirroring sense of
community theory, Boyer (1990) claims individuals within the university should uphold their obligations for the common good in a disciplined community. Students must learn to balance responsibility and freedom under consistent regulations provided by the university (Boyer, 1990). Fifth, Boyer (1990) claims the university is to be a caring community, a place which is sensitive to the well-being of each member and where serving others is a common occurrence. Individuals have an innate need for social bonding, and although students desire independence, they still desire structure (Boyer, 1990). Lastly, the university should be a celebrative community that promotes its heritage and traditions among students, faculty, and alumni. Students must become aware they are a part of a much bigger community and be taught how to respect the history of their institution (Boyer, 1990).

Gaining a sense of community on a university campus has shifted from academics to student experience through activities, peer relationships, and relationships with faculty outside of the classroom (O’Keefe, 2013). In the early 20th century, institutions expected students to expend their time and energy into their academic endeavors leaving little necessity for extra-curricular offerings (May, 2010). As students began to self-expand their opportunities through sports and clubs, institutions began to increase their social offerings to meet student desires.

Involvement opportunities continue to be mutually beneficial to institutions and students upon university campuses. Webber et al. (2013) claim perceived commitment is essential to student success at institutions and happens more frequently when students engage in extra-curricular and social activities with other students and faculty. O’Keeffe (2013) states students who experience high quality relationships with employees as well as their peers are more likely to persist towards completion. Below will highlight numerous studies in regard to perceived sense of community among students on college campuses.
Though the concept of establishing community is not new on college campuses, the mediums of which to achieve it have changed (Cheng, 2004). Cheng (2004) claims attending college formerly was a privilege, though it now seems a means to an end for later life goals. In his study, Cheng (2004) sought to define student perception of sense of community on university campuses. He found less than one third of students agreed they had experienced community on campus (Cheng, 2004). Students perceiving themselves as a valuable aspect of the community were the most significant element to establishing a sense of community (Cheng, 2004). Limiting opportunities for loneliness as well as connecting students socially through relationships and planned social events helps students to connect with their peers and the institution (Cheng, 2004).

Participating in recreational sports is one avenue for students to experience sense of community (Warner et al., 2012). The authors conducted a quantitative study of 21 participants from seventeen different universities to determine what contributes to sense of community between varsity athletics and club sports. The factors which contributed to developing a sense of community were leadership and competition. Leadership was determined to provide ownership, responsibility, accountability, and a sense of community while competition developed mutual respect for their opponents helping to create the feeling of connection (Warner et al., 2012). Sense of community also surfaced through common interests or the pursuit of a common goal, shared values, and shared disappointment (Warner et al., 2012).

Similarly, Phipps et al. (2015) studied how sense of community created within participation in intramural sports contributed to retention. The study focused on students at a large public institution, measured their amount of participation within intramural sports, and correlated it with their perceived sense of community on campus (Phipps et al., 2015). Students
who participated in intramural sports longer perceived to have a greater sense of community. Further, Phipps et al. (2015) determined the longer one participated in intramural sports, the greater the sense of membership and sense of connection towards the institution.

First generation U.S. citizen students often experience more difficulties compared to non-first generation students and citizens (Williams & Ferrari, 2015). Each of these student populations face challenges as they enter onto a university campus. Immigrants often face the challenge of becoming more proficient in the English language and the belief of not belonging to their new culture (Williams & Ferrari, 2015). First generation students often perceive less support from family and the institution as they pursue their degree. Negative or little positive interactions increases the likelihood of these students leaving an institution (Williams & Ferrari, 2015). Williams and Ferrari (2015) found little difference in sense of community scores by using Hagborg’s (1994) Sense of School Belongingness Scale among the different groups, despite expectations otherwise. Emphasis on diversity upon the campus most likely contributed to these results. Williams and Ferrari (2015) call for higher education institutions to study community psychology and accommodating students who may be more likely to feel less of a sense of belonging.

Electronic technology has changed the landscape of college campuses (Palmer et al., 2014). Online education has allowed students to experience education from remote locations and the internet expanded research opportunities (Palmer et al., 2014). Though technology has helped to advance education, it has created social challenges for students within higher education (Palmer et al., 2014). Cellular devices have enabled to students to remain constantly connected to friends and family causing many issues socially. Text-messaging and social media promotes surface level relationships, often creating a misconception of connecting with others while
failing to establish significant social connections (Palmer et al., 2014). Palmer et al. (2014) conducted a qualitative study interviewing thirty-five students from different types of higher education institutions. The authors’ goal was to explore what method students used to communicate with pre-university relationships and relationships formed during their time in higher education (Palmer et al., 2014). Palmer et al. (2014) found undergraduate students used social media to keep up with ‘far away friends’ as well as interact with friends in close proximity. Texting was the preferred choice of communication among these undergraduates with some students sending close to 300 text messages per day, while email served as communication in relation to university business with faculty or other administration (Palmer et al., 2014). Palmer et al. (2014) found texting and email to be students’ perceived most frequent connections with students and faculty within their institutions.

Steeves (2015) claims the university not only has an obligation to train the future academically but also to develop engaged citizens. Including students in university governance can aid in their development as well as assist in practicing an academic democracy by placing value on the participation of students (Steeves, 2015). Steeves’ (2015) objective was to observe the nature of organizational culture, organizational citizenship behavior, and students’ roles on their campuses. Steeves (2015) states students view citizenship within an institution through two different lenses. First, a student believes in the mission of the institution and attempts to contribute in promoting the university to be successful. Second, a student expects to benefit from the rights of being a student and ultimately seen as a partner within the university structure (Steeves, 2015). Steeves (2015) asserts promoting citizenship among students with institutional governance and decision-making benefits the student as well as the institution. Students see their
participation in a working environment, aiding in their development, while institutions remain engaged and connected to their student constituents (Steeves, 2015).

Likewise, Soria, Troisi, and Stebleton (2012) researched the impact of participating in community service among undergraduate students. Participating in service projects provides benefits to personal and academic development as well as teaching students the importance of civic engagement (Soria et al., 2012). Soria et al. set out to determine the effects of these activities on integration and retention, specifically to determine the relationship between community engagement and sense of belonging within the university. The authors found participating in community service greatly increases students’ sense of belonging as well as positively affects integration into the campus community (Soria et al., 2012).

Historically, institutions affiliated within The Council for Christian Colleges & Universities (CCCU) have been predominantly white (Ash & Schreiner, 2016). Even with a commitment to diversify, institutions within the CCCU still lack diversity while possessing a retention rate 15% less for students of diversity compared to their Caucasian classmates (Ash & Schreiner, 2016). Students of color at CCCU institutions, like the two within this study, often face a more difficult time developing community (Ash & Schreiner, 2016). Ash and Schreiner’s (2016) study set out to find predictors of success for students of color within CCCU institutions. Ash and Schreiner (2016) found students of color were more likely to persist towards graduation if they felt the institution was a good fit, experienced student success, and sensed their welfare was of the institution’s concern.
Related Literature

Astin’s Student Involvement Theory

Astin’s (1984, 1999b) student involvement theory claims the time and energy students invest into their academic experience, both in and out of the classroom, will aid in their academic success. This includes student organizations, social activities, and connections made with employees and other students (Astin, 1984).

Astin’s (1984, 1999b) student involvement theory places the greatest emphasis on student time, believing this is the university’s greatest resource since students’ time and energy are limited and necessary to experience growth. The student involvement theory is rooted in a study by Astin (1984) regarding college dropouts. This study determined certain environmental factors, such as living in a residence hall, participating in on-campus activities, and being employed on-campus contributed to students’ persistence at an institution (Astin, 1984). Another factor influencing dropout rates was determined to be fit. Fit can be described as students with religious background are more likely to persist at religious institutions, and students from small towns are more likely to persist at universities located in small towns (Astin, 1984).

Five claims are asserted in Astin’s (1984, 1999b) theory of student involvement. First, students must invest physically or psychologically into an activity. Second, involvement exists along a continuum, meaning students apply different levels of involvement into different or multiple elements. Third, involvement can be measured both quantitatively, such as the amount of time spent or number of activities in which one participates, and qualitatively, which is measured in comprehension or perceived experience. Fourth, the amount a student experiences development is relational to the quality and quantity of the involvement. Lastly, the
effectiveness of an educational practice directly relates to the amount of student involvement it produces (Astin, 1984, 1999b).

Astin (1984, 1999b) claims the student involvement theory relies on three traditional pedagogical theories: content theory, resource theory, and individualized pedagogy. This is due to the assumption educators and administrators often continue status quo in regards to policy and regulations and in turn fail to connect these elements to any educational theory (Astin, 1984). Astin (1984, 1999b) believes the student involvement theory can connect educational theories to student development outcomes.

Numerous studies have relied on student involvement theory for a framework. Vaterlaus, Beckert, Fauth, and Teemant (2013) explored clicker technology’s effect on student involvement within the classroom. Guiffrida (2004) studied the retention of minority students as club and organization leaders at predominantly white institutions. Morrow and Ackermann (2012) observed the effect of motivation and sense of belonging on student persistence from first to second year of college. Involvement in college activities was compared between non-traditional and traditional students by Graham and Shawna (2000) to determine if clubs and organizations had any influence on college experience. Alfano and Eduljee (2013) compared employment, levels of involvement, and academic performance in a study between commuter and residential students.

Many university professors rely on the subject matter or content theory. This pedagogy relies significantly on the knowledge of the educator to provide relevant courses in a liberal arts education setting (Astin, 1984, 1999b). Within this approach, professors with the greatest knowledge possess the greatest amount of prestige (Astin, 1984, 1999b). A significant drawback
to this theory is the students’ passive role in learning as their sole responsibility is to gain 
knowledge passed from their instructor (Astin, 1984, 1999b).

Students experience greater success when given the proper resources (Astin, 1984, 1999b). The resource theory, described as providing resources such as financial aid, 
laboratories, recreational facilities, prestigious faculty, and high achieving students, each 
contribute to learning (Astin, 1984, 1999b). When bringing these elements together, a student 
experiences a better environment for learning and development (Astin, 1984, 1999b). Two main 
concerns within this pedagogy are the limitations of certain resources, such as high achieving 
students and faculty or monies, and administrators will focus on the gathering resources while 
neglecting the implementation of those resources (Astin, 1984, 1999b).

The individualized pedagogy places emphasis on the student rather than on subjects or 
resources as no single approach or resource can reach each student (Astin, 1984, 1999b). This 
approach emphasizes student needs in curriculum through electives but also educational and 
social needs through advising, counseling, and student services such as residence life and student 
activities (Astin, 1984, 1999b).

Small liberal arts institutions provide greater benefit to students than their counterparts as 
these colleges are not solely preparing students for a job but rather to be critical thinkers and 
active citizens (Astin, 1999a). Private liberal arts institutions’ attributes increase students’ 
chances of completing a bachelor’s degree as well as their perceived satisfaction with their 
education and student experience (Astin, 1999a). Students educated within liberal arts colleges 
are also more likely to seek graduate degrees (Baker, et al., 2012; Roche, 2013; Wintrol, 2014).

Liberal arts education is most prominent within small liberal arts colleges. These 
institutions offer a broad general curriculum along with majors in the arts and sciences (Roche,
Many of these institutions offer an encouraging environment with qualities such as small class sizes, numerous extracurricular activities, residential focus, and strong student/faculty relationships (Astin, 1999a; Roche, 2013). These institutional attributes not only impact student success but also student satisfaction in the areas of faculty interaction, quality of instruction, general education requirements, and the perception that the institution is student-focused (Astin, 1999a)

Regardless of these benefits, study within the liberal arts has declined. In the early 20th century around 70% of undergraduates in the U.S. majored in the liberal arts compared to 40% today (Roche, 2013). Roche (2013) claims this is due to the prominence of research universities as well as liberal arts colleges becoming more hybrid, offering studies within the liberal arts, but also training students in vocational fields.

**Tinto’s Interactionalist Student Retention Theory**

Building from Astin’s (1984, 1999b) theory of student involvement, Tinto (2007, 2012) continued his research of his interactionalist student retention theory by exploring the influence of community within the classroom. Tinto states the concept of retention has shifted within the past 40 years, whereas up until the 1970s the belief was students failed to persist based upon their own ability, motivation, or attributes. Failure was the fault of the students rather than the institution. During this transition of thought in regard to student retention, institutions and researchers, such as Astin (1984), began to shift their focus to student involvement, particularly within students’ first year experience and their transition into the institution (Tinto, 2007). Researchers and practitioners began to posit different factors, other than academics, contributed to students’ experiences. These included attending a two-year or four-year institution, being residential or non-residential students, and participating in opportunities for involvement (Tinto,
2007). Other factors which could affect student attrition include sociological, psychological, and economics. With changes in thinking in regards to student retention, involvement still plays a significant role in the student experience while attending an institution (Tinto, 2007).

Student success in college is not solely dependent on the student but also the university (Tinto, 2012). If students persisting and graduating is a priority, a university must look inward on its own actions of creating an environment to help reach these goals (Tinto, 2012). Tinto argues four elements converge within the research contributing to greater student retention: expectations, support, assessment and feedback, and involvement.

The expectations of what is essential to be successful in college shape student retention (Tinto, 2012). In order for students to experience success, they must know how to succeed. Therefore, good advice is imperative to students (Tinto, 2012). Advice often comes from academic advisers, older students in mentoring relationships, faculty members within the classroom, or through programs such as new student orientation (Tinto, 2012). These relationships often help students to become aware of the level of expectations they are to obtain (Tinto, 2012).

High expectations yield high results, low expectations often bring failure (Tinto, 2012). Setting clear expectations for students influences the expectations of the entire student body. Shaping student expectations provides clear requirements for student behavior and degree completion and helps to establish self-expectations within students (Tinto, 2012). Tinto claims faculty members often expect too little of their students or do not provide adequate feedback or assessment; therefore, students look to other sources, such as their peers, for guidance.

Although important to have high expectations for students, students must also feel supported while pursuing their education. Support, including academic, social, and financial, is
essential to many students’ collegiate success (Tinto, 2012). Tinto argues high expectations and support complement one another as learning environments must provide a challenge to students but also come alongside students when overwhelmed.

The beginning days and weeks are the most crucial in determining success for students in a course or program as early success often follows with future success (Tinto, 2012). Universities have used academic support programs such as summer bridge programs, first-year seminar courses, supplemental instruction, learning communities, embedded academic support, and basic skills courses to help students transition and experience success early in their collegiate experience (Tinto, 2012).

Integrating into college socially is imperative as well (Tinto, 2012). Tinto states social relationships help to reduce academic stress levels. Social relationships also help students understand the landscape of their university by gaining informal knowledge of their peers. Lastly, social relationships increase students’ attachment or commitment to their university along with their desire to remained enrolled (Tinto, 2012). Social relationships derive from interactions with faculty, staff, and students both inside and outside the classroom and can take place in extracurricular activities, residential settings, and academic support programs (Tinto, 2012). Advising, mentoring, residential life programs, campus recreation programs, counseling, health, and career services are all avenues in which students receive assistance in acclimating to their university (Tinto, 2012). These programs are particularly beneficial to first-year, first-generation, and international students.

The third element Tinto (2012) claims to be essential student persistence is for students to receive proper assessment and feedback. This includes assessment-at-entry, classroom assessment, and student experience assessment. Assessment-at-entry provides knowledge to
administrators on the level of academic rigor each student needs (Tinto, 2012). By assessing students early in the course as well as throughout gives students an idea of their progress. Classroom assessments often serve as an early warning resource to allow educators to be aware of academic issues (Tinto, 2012). A student experience assessment gathers data from students about their academic experience as a whole. Although assessment and feedback in many areas of the university are helpful to student retention, Tinto (2012) labels classroom assessment the most crucial as it ties directly to current academic experiences.

The most crucial element to student retention is involvement or engagement (Tinto, 2012). Tinto describes first-year involvement as the foundation for relationships for students with faculty and aids in academic and social engagement as well as persistence towards graduation. These experiences do not happen by circumstance but through social and cultural settings among individuals who possess shared values (Tinto, 2012). Further, the amount of involvement does not affect retention but how involvement helps to create social and academic relationships which result in a sense of belonging (Harris, 2006; Hoffman, Richmond, Morrow, & Salomone, 2002; Tinto, 2012; Tucker, 1999).

Mirroring Chavis and McMillan’s (1986) sense of community theory, sense of belonging comes from a perception from students of their involvement along with the support they experience (Hoffman et al., 2002; Tinto, 2012). The quality of involvement is reliant on the students’ perception of relevance toward their collegiate experience. Therefore, universities must determine which types of involvement will help to create success for their students (Tinto, 2012).

Academically, these opportunities occur through pedagogies for engagement, learning communities, and service learning (Tinto, 2012). Pedagogies for engagement are methods that
require students to be aware and active within the classroom. Examples include cooperative or collaborative learning which requires students to work in groups with the tasks necessitating each member to participate in order to succeed (Tinto, 2012). Similarly, problem-based and project-based learning requires students to work together for a common goal (Tinto, 2012). Learning communities are also an avenue for creating relationships as students co-register in courses in an effort to create natural study groups and help to develop peer social support groups (Tinto, 2012). When fully utilized, learning communities increase both academic and social engagement among students (Tinto, 2012). Service learning requires students to engage in service experiences outside of the classroom linked to their education. Often these experiences reinforce reflective practices such as journaling (Tinto, 2012).

Summary

Chapter two focused on examining the framework of Astin’s (1984, 1997) student involvement theory, Tinto’s (2007, 2012) interactionalist student retention theory, and Chavis and McMillan’s (1986) sense of community theory. Astin’s (1984, 1997) student involvement theory asserts students’ time and energy are limited and necessary to experience personal growth. Tinto’s (2007, 2012) student integration theory emphasizes the importance of peer and faculty interaction for students, particularly in settings outside of the classroom. McMillan and Chavis’ (1986) sense of community theory and its four elements of membership, influence, integration and fulfillment of needs and shared emotional connection were explored as well as Ernest Boyer’s (1990) research and input on the concept of community within the university setting.

Moreover, a discussion was presented on the history of student involvement within the college setting. Numerous studies referenced the impact of the student experience such as student and faculty relationships, student social activities, and recreational activities on students’
academic performance and sense of belonging. The history of recreational facilities upon college campuses was explored along with studies showing benefits of physical health, sense of community, and academic performance for those who participated in recreational facility offerings. Studies were explored to learn how sense of community could be attained or strengthened through mediums such as participating in student activities, recreational sports, off-campus service projects, and electronic communication. Lastly, research on why the present study will use length and frequency of participation for the predictor and outcome variables and housing status, ethnicity, gender, and class status for the control variables.
CHAPTER THREE: METHODS

Overview

This chapter contains an explanation of the methods used to implement the non-experimental, correlational design examining the relationship between the predictor variables (length of participation in intramural sports, frequency of participation in intramural sports, gender, class status, housing status, and ethnicity) and the criterion variable (sense of community) within undergraduate students on two private liberal arts campuses. This chapter consists of an explanation of the design, participants and setting, instrumentation and procedures for the study.

Design

The research for the current study used a non-experimental, correlational design that examined the relationship between six predictor variables (length of participation in intramural sports, frequency of participation in intramural sports, gender, class status, housing status, and ethnicity) and a single criterion variable (sense of community) within undergraduate students on two private liberal arts campuses. Specifically, a multiple regression design was chosen due to its fit with the purpose and the questions guiding the current inquiry: the desire to study the relationship between multiple variables—a criterion (sense of community) and several predictors (length, frequency, gender, class status, housing status, and ethnicity). Field (2013), Gall et al., (2015) and Warner (2013) suggest using multiple regression when conducting a study with multiple predictor variables and a single criterion variable. This design provides both statistical significance and magnitude of the relationships between variables (Gall et al., 2007).

For regression analysis to produce a credible model that fits the data, each variable should be well-grounded in the theoretical or empirical research literature (Field, 2014; Gall et
al., 2015). Sense of community was the sole criterion variable considered within this study.

Sense of community derives from McMillan and Chavis’ (1986) and McMillan’s (2006) sense of community theory and has been used in other empirical research (Warner & Dixon, 2013; Phipps, 2012; O’Keefe, 2013). As a construct, sense of community is defined as members experiencing a sense of belonging, valuing each other within the community, and possessing the belief that individuals’ needs were met within the group (McMillan & Chavis, 1986). The criterion was measured by the Chavis, Lee, and Acosta’s (2008) Sense of Community Index-2 Scale (SCI-2) which is a 24-item questionnaire with a four point Likert scale. The predictor variables included (a) length of participation in intramural sports (b) frequency of participation in intramural sports (c) gender (d) class status (e) housing status and (f) ethnicity. Length of participation was measured by the number of semesters a student participated in intramural sports while frequency of participation was measured by the number of sports a student participated in during any given semester (Phipps et al., 2015). Gender was defined as a traditional dichotomy (male or female), while ethnicity was defined multinomially as Caucasian, African American, Hispanic, Asian/Pacific Islander, and Other. Class status was defined as first year, second year, third year, and fourth year. Finally, housing status was defined as residential or commuter. These variables were selected based on theoretical and empirical research indicating their predictive success and explanatory power related to sense of community or related constructs (Artinger et al., 2006; Burlison et al., 2015; Hamilton, et al., 2009; Kranzow et al., 2015; Rickel et al., 2012; Warner & Dixon, 2015).
Hypothesis

H_0: There is no significant predictive relationship between undergraduates’ criterion variable (sense of community) and predictor variables (length of participation, frequency of participation, gender, class status, housing status, and ethnicity) in intramural sports.

Research Question

RQ1: Is there a significant predictive relationship between the criterion variable (sense of community) and the linear combination of predictor variables (undergraduate students’ length and frequency in participation in intramural sports, gender, class status, ethnicity, and housing status), as measured by Chavis’ (2008) Sense of Community Scale (SCI-2).

Participants and Setting

Participants of this study consisted of undergraduate students from two private liberal arts institutions. They were chosen based on the study’s purpose of better understanding the relationship between sense of community and undergraduate students’ participation in intramural sports and also based on the convenience of sample for the researcher, an accepted practice within social scientific research (Gay & Airasian, 2003; Salkind, 2012). Institution A, located in the central Midwest, has an undergraduate population consisting of 40% male and 60% female. The ethnicity consisted of 69% Caucasian, 6% African American, 6% American Indian, 3% Hispanic, and 16% other (NCES, 2016). Total undergraduate enrollment in fall of 2015 was 1,986 with 794 of these students participating in at least one intramural sport throughout the academic year (NCES, 2016; H. Edwards, personal communication, August 10, 2016). The tuition price is $22,710, excluding room and board, with their website stating 99% of students receive financial aid. Institution A is a liberal arts school with undergraduate majors in the fields
Institution B, also located in the central Midwest, has an undergraduate population that is 36% male, 64% female. The ethnicity breakdown is 70% Caucasian, 4% African American, 1% American Indian, 2% Hispanic, 1% Asian, and 22% other (NCES, 2016). Total undergraduate enrollment in fall of 2015 was 2,967 with approximately 600 participating in at least one intramural sport throughout the academic year (NCES, 2016; C. Allison, personal communication, August 14, 2016). The tuition price is $21,600, excluding room and board, with their website also stating 99% of students receive financial aid. Institution B is also a liberal arts school with undergraduate majors in the fields of business, education, science, mathematics, computer sciences, arts, language, music, social sciences, theology and ministry.

Because intramural participants are required to establish a profile through IMleagues, a convenience sample was selected from the IMleagues database from each institution. All of these students receive information regarding intramural sports through their personal IMleagues profile and could be surmised to have likely participated in at least one sport on their campus. The IMleagues database organizes participants, teams, and schedules within each institution. The sample came from the approximately 1,400 participants between the two institutions. The sample population consisted of 51.1% male and 48.9% female. Class status within the population was 22.2% first year, 23.4% second year, 28.1% third year, and 25.3% fourth year students. The ethnicity of the sample equaled 87.8% Caucasian, 3.6% African American, 1.7% Hispanic, 2.3% Asian/Pacific Islander, 1.4% Multiracial, 0.5% Unknown, and 3.6% Preferred not to answer. Students were solicited for participation through an initial advertisement being
distributed once the survey was available as well as text messages sent to all intramural participants.

**Instrumentation**

The instrument used for operational measurement of the outcome variable was the Sense of Community Index Scale 2 (SCI-2) by Chavis, Lee, and Acosta (2008). See Appendix C for the full instrument. Research to develop this measurement tool began as the Sense of Community Profile (SCP) in 1979 (Chavis, et al., 2008). Its purpose, then and now, is to measure sense of community within social settings, and it has been used in numerous studies to include samples ranging from virtual communities, university students and athletes, and parents of adolescent participants (Abfalter, Zaglia, & Mueller, 2012; Chavis et al., 2008; Phipps et al., 2015; Warner & Leierer, 2015).

The Sense of Community Profile (SCP) was originally developed in 1979 and consisted of 44 items with questions grouped into the fields of membership, influence, integration and fulfillment of needs, shared emotional connection, and miscellaneous items (Chavis, Hogge, McMillan, & Wandersman, 1986). The Sense of Community Index (SCI) was formulated from the SCP in 1986 and consisted of 12 questions (Chavis et al., 1986). Original reliability provided an alpha coefficient of .97, though through numerous further studies, the instrument proved to provide inconsistent reliability within the four subscales (Chavis et al, 1986; 2008). In 2006, Peterson, Hughey, and Speer concluded the instrument needed to be updated to exclude negative responses. The Sense of Community Index 2 (SCI-2) was created, eliminating the negative responses and using a 24-item scale with subscales of six questions with each measuring Reinforcement of Needs, Membership, Influence, and Shared Emotional Connection, to provide an accurate scale to measure sense of community (Chavis et al., 2008; Peterson et al., 2006).
Phipps et al. (2015) used the SCI-2 to study how sense of community created within participation in intramural sports contributed to retention. The study focused on students at a large public institution, measured their amount of participation within intramural sports, and correlated it with their perceived sense of community on campus (Phipps et al., 2015). Phipps et al. (2015) population consisted of 4,968 intramural participants with 303 respondents of which 250 were students. Results of Phipps et al. (2015) revealed that Students who participated in intramural sports for a longer period of time possessed a greater perceived sense of community. Further, Phipps et al. (2015) determined the longer one participated in intramural sports, the greater the sense of membership and sense of connection towards the institution.

Sawyer, Beavan, Stringer, & Hermena (2013) studied elementary students’ sense of community within their primary school. Based upon Chavis and McMillan’s (1986) SCI-2, Sawyer et al. (2013) developed the Sense of Community Index-Primary (SCI-P) and piloted the study with 452 fifth and sixth grade students. Results indicated that students experienced sense of community within their school only when they perceived to be a member of the community while also receiving support from community members. Sawyer et al. (2013) found results from primary students to differ from adults, which is potentially caused by the differences in how different ages experience sense of community.

Examples of other studies include employees within geographically dispersed organizations as well as the impact of community violence on sense of community within a group of people in Lima, Peru (Carrillo, Welsh, & Zaki, 2015; Chigeza, Roos, & Puren, 2013; Coffman & BeLue, 2009; Peters-Van Havel, 2013). The purpose of this instrument is to measure the perception of membership, influence, meeting needs, and shared emotional connection (Chavis et al., 2008).
The SCI-2 is grounded in the sense of community theory developed by McMillan and Chavis in 1986. Each of the 24 questions uses a four point Likert Scale with the following scoring: 0=Not at all; 1=Somewhat, 2=Mostly, 3=Completely. The combined possible score on the SCI-2 ranges from 0 to 96 points. A score of 0 points is the lowest possible score, meaning a participant perceives little or no sense of community, whereas a score of 96 for the participant signifies a strong sense of community. The approximate time of the survey is 10 minutes; to score the instrument, the sum of each question is equated (Chavis et al., 2008). Scoring was computed through the survey and documented by the researcher. Validity has been achieved through the pilot study, specifically within the instrument’s correlation with life satisfaction at .320, social and community participation at .381, and civic participation at .315 with \( p \leq .01 \) for each correlation (Chavis et al., 2008, Chavis & Lee). The SCI-2 shows strong reliability with an overall Cronbach’s coefficient alpha coefficient of .94 with subscales also measuring reliable coefficients: reinforcement of needs, .83; membership, .79; influence, .83; shared emotional, .86 (Chavis et al., 2008). Use of the instrument is granted to individuals or organizations within the instrumentation instructions. The current researcher also gained permission from the author (Appendix E) (Chavis, et al., 2008).

**Procedures**

Before proceeding with research, permission was requested and granted from each institution to conduct this study. IRB approval was requested and granted by Liberty University, Institution A, and Institution B in December of 2016. An online survey tool was created combining the SCI-2 instrument created by Chavis et al. (2008) including the informed consent (Appendix B) along with the demographic information of gender, ethnicity, class status, housing status, frequency of participation in intramural sports, and length of participation in intramural
sports. Contact was made with the Dean of Students from institution A and Vice President of Student Development from institution B in early January 2017 to gain permission to solicit students for the study on their campuses in February. Intramural administrators from each institution were then contacted to schedule the distribution of the survey as well as the solicitation messages.

The distribution list was obtained through each university’s IMleagues accounts. This outside service allows institutions to organize their intramural programming and participants for more efficient implementation. Students must create a profile through IMleagues in order to participate in intramural sports. The survey was dispersed February 2-16, 2017. For both institutions studied, this was the beginning of their intramural basketball season, which provided the highest amount of participation of all sports offered at each campus.

A text message was composed for each instance participants were contacted which included a solicitation for participation and link for the online survey (Appendix A). The first message was sent on February 6th, the first day of the intramural basketball season for both institution A and B. The second message was sent on February 13th, with the last message being sent on February 16th. These text messages were addressed from each administrator responsible for intramural sports on their campus to distribute to participants in order to gain the most participation. The researcher continued communication with administrators from both institution A and B as the survey was being administered.

A flyer (Appendix F) was created to increase completion of the survey. It was distributed at organized intramural events, meetings with student leaders on campus, as well as in public areas of campus. Organized intramural events included a captains’ meeting on February 2nd and each night intramural sports were offered (February 6th, 7th, 9th, 13th, 14th, and 16th). The flyer
was also distributed at a meeting with student leaders on February 3rd. The researcher also distributed the flyer in public areas such as the student union and cafeteria throughout the timeframe of the survey. In total, seven structured events provided opportunities for surveys to be distributed (one captains’ meeting and six nights of intramural events) at both institution A and B as well as solicitation in public areas throughout the two-week timeframe.

The survey was available for two weeks for completion. Once the window for responses closed, the data was gathered from the survey and security precautions were taken to secure the data. Such precautions included saving the document as password protected onto a jumpdrive, then copied to the researcher’s personal Dropbox account and personal computer. The files remained password protected in each of these locations.

**Data Analysis**

Multiple regression was used to analyze the research questions and hypotheses. Package for Social Sciences – Version 24.0 (SPSS 24.0) was used to perform the analysis and determine statistical and practical significance among the variables that comprise this study. A correlational study was the most appropriate method to investigate the relationship between the sense of community (criterion) and length of participation and frequency of participation (predictors) while controlling for the covariates of gender, class status, housing status, and ethnicity. Multiple regression is best when working with two or more predictors and one criterion (Gall et al., 2007; Tabachnick & Fidell, 2013; Warner, 2013). The sense of community score (SCI-2) was used to measure the criterion variable, while institution A and Institution B provided the source for each categorical, independent variable used as a predictor (Gall et al., 2007, 2015).
At its core, regression analysis is based on relationships between variables; consequently, even though the statistical output for the general linear model will present as more complicated and sophisticated than just basic correlation, Correlation coefficient $R$ is used to determine the relationship between the criterion and each predictor variable (Warner, 2013), and the coefficient of determination ($R^2$) specifies the effect size (Howell, 2008). The minimum desirable population for testing the significance of individual predictors ($k$) is $N > 104 + k$ assuming medium effect size at alpha < .05 (Meyers, Gamst, & Guarino, 2013; Warner, 2013). The survey for the current study yielded 221 participants which met this requirement of 110 participants. Correlations were calculated while controlling for the gender, ethnicity, housing status and class status predictor variables, all of which were dummy coded using appropriate strategies for dichotomous and multinomial categorical variables (Field, 2013). Descriptive statistics were analyzed, and the mean, median, mode, and standard deviation were reported.

The purpose of this study was to determine how strongly length and frequency of participation predict sense of community. To conduct the multiple regression analysis for sense of community, the predictor variables (length and frequency of participation, along with gender, ethnicity, housing status, and class status) and the criterion variable were entered into SPSS, producing three separate output tables comprising the regression analysis: (1) model summary (goodness of fit); (2) ANOVA table (statistical significant of the model); and (3) an individual coefficients table. The model summary generated a coefficient of determination ($R^2$), an output that explains, overall, how strongly this particular model explains the output variable—sense of community. The second table produced was the ANOVA table; this output indicates if the aforementioned model summary is statistically significant (Field, 2013; Lind, Marchal, & Wathan, 2013). The third table contained a regression output, or the report of individual
coefficients. This part of the analysis indicated which of the individual independent variables were statistically significant predictors of the outcome variable, holding all other predictors constant (Lind et al., 2013; Pearson, 2010). Taken together, the three regression output tables indicated how well the model fit the data, if that model is statistically significant, and which predictor variables can be said to influence the outcome variable, thus providing evidence for rejecting or failing to reject the null hypothesis (Field, 2013; Lind et al., 2013; Pearson, 2010).

It is important to run assumption testing on linearity, homogeneity of variance (based on residual analysis), normality of residuals, multicollinearity (excessive relationship between variables), and independent residuals within a multiple regression analysis. Linearity and homogeneity of variance was assessed with scatterplots. Normality of the residuals was appraised by a normal probability distribution, creating a frequency distribution of the residuals, and then by examining a normal probability plot (Lind et al., 2012). Next, multicollinearity was assessed by the variance inflation factor to ensure the predictor variables were not excessively correlated. Finally, the assumption of independent residuals or error relates to independence of residual terms for any two observations and was measured with the Durbin-Watson test (Field, 2013). The specific results of assumption testing and diagnostics are available in chapter four’s data analysis.

**Summary**

Using sense of community theory (McMillan & Chavis, 1986), and Chavis, Lee, and Acosta’s (2008) Sense of Community Index 2 (SCI-2) scale, the purpose of this quantitative correlational study was to answer the following question: Does a relationship exist between undergraduate students’ length and frequency in participation in intramural sports and their sense of community, holding constant the impact of gender, ethnicity, housing status, and class status?
To answer this question, samples from two Midwest private liberal four-year institutions were used as the foundation for the multiple regression study. This research study is designed to help improve student engagement and the overall experience of undergraduates in higher education, contributing both to the individual personal improvement of students and the overall collective good of American higher education.
CHAPTER FOUR: FINDINGS

Overview

This chapter contains the findings of the non-experimental, correlational design examining the relationship between the predictor variables (length of participation in intramural sports, frequency of participation in intramural sports, gender, class status, housing status, and ethnicity) and the criterion variable (sense of community) within undergraduate students on two private liberal arts campuses. This chapter reviews the research question and hypothesis and presents the descriptive statistics and results of the findings from the study.

Research Question

RQ1: Is there a significant predictive relationship between the criterion variable (sense of community) and the linear combination of predictor variables (undergraduate students’ length and frequency in participation in intramural sports, gender, class status, ethnicity, and housing status), as measured by Chavis’ (2008) Sense of Community Scale (SCI-2)?

Hypothesis

H01: There is no significant predictive relationship between undergraduates’ criterion variable (sense of community) and predictor variables (length of participation, frequency of participation, gender, class status, housing status, and ethnicity) in intramural sports.

Descriptive Statistics

The data in this study were generated from the use of the Sense of Community Scale (SCI-2). The authorship, reliability, and validity were discussed fully in Chapter three. The survey contained two sections. The first included demographic information with the second the 24-question survey provided by Chavis (2008). Chavis’ (2008) survey consisted of four subscales: Reinforcement of needs, influence, membership, and shared emotional connection.
Scores from each subscale were compiled resulting in a total Sense of Community score.

Instructions for scoring were included with the instrument.

Undergraduate students at two private liberal arts institutions within the Midwest were given access to the survey through their IMleagues intramural account, university portal, intramural captain’s meetings, student leadership meetings, and flyers handed out during intramural events. Specifically, the population consisted of undergraduate students who have participated in an intramural sport. Combined populations total close to 5,000 undergraduate students with almost 1,400 students participating in intramural sports annually between the two institutions. Of the 1,400 possible students, 363 participants began the survey with 302 submitting it as completed. Of the 302, 22 participants did not classify as undergraduate students and, therefore, were removed from the study. Three students submitted empty surveys and were also removed from the study. Fifty-six students who completed the survey submitted two answers to the same question at least one time or failed to answer at least one question and were consequently removed from the data analysis. In total, 221 undergraduate students, approximately 16% of the total participants in intramural sports between the two institutions, completed the survey correctly.

Descriptive statistics and frequencies were gathered to help understand the sample characteristics such as class status, gender, race/ethnicity, full or part-time, student status, and housing status. The participants consisted of 49 freshmen (22.2%), 54 sophomores (24.4%), 62 juniors (28.1%), and 56 (25.3%) seniors.

Of the 221 respondents, 113 (51.1%) were male, 108 (48.9%) were female. Participants were predominantly White/Caucasian (87.8%) with 194 participants, followed by Black or African-American (3.6%) with 8 participants and 8 participants who chose “prefer not to
answer” or left the item blank (3.6%). Five Asian participants responded (2.3%), three
multiracial students responded (1.4%), two Hispanic students participated (1.7%), and one
participant did not know their racial identity (0.5%). Responses regarding Race/Ethnicity can
below in Table 4.1.

Table 4.1

Respondents by Race/Ethnicity

<table>
<thead>
<tr>
<th>Race/Ethnicity</th>
<th>Frequency (n=278)</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>White/Caucasian</td>
<td>194</td>
<td>87.8</td>
</tr>
<tr>
<td>Black or African American</td>
<td>8</td>
<td>3.6</td>
</tr>
<tr>
<td>Hispanic</td>
<td>2</td>
<td>1.7</td>
</tr>
<tr>
<td>Asian</td>
<td>5</td>
<td>2.3</td>
</tr>
<tr>
<td>Multiracial</td>
<td>3</td>
<td>1.4</td>
</tr>
<tr>
<td>Racial identity unknown</td>
<td>1</td>
<td>0.5</td>
</tr>
<tr>
<td>I prefer not to report my race/ethnicity</td>
<td>8</td>
<td>3.6</td>
</tr>
</tbody>
</table>

Almost all participants (n = 219; 98.2%) were full-time as opposed to part-time (n = 2;
1.8%). Residential students (n = 165; 74.7%) outnumbered those who commuted from home (n
= 6; 2.7 %) or held an off-campus residence (n = 50; 22.6%).

Participants were asked to report their amount of involvement in intramural sports both in
length and frequency of participation. Length of participation was defined as the number of
semesters a student has participated within intramural sports throughout their college career
(Phipps et al., 2015). Frequency of participation was defined as the number of intramural sports
a student participates in any given semester (Phipps et al., 2015). For this research, the fall 2016
semester was chosen to be measured.
The mean number of semesters respondents participated in intramurals was 3.47 semesters with a given range of 1-8 semesters. The mean number of sports respondents participated in during the fall 2016 semester was 2.26 different offerings with a range of 1-12 offerings. Three participants did not indicate any participation in fall 2016 intramural sports. The greatest number of participants were active in intramurals for only one semester (24.4%) and in only one sport during the fall of 2016 (40.8%). Below are tables concerning the length in semesters and frequency of participation in intramural sports from the survey respondents.

**Table 4.2**

*Length of Participation of Participants*

<table>
<thead>
<tr>
<th>Number of Semesters</th>
<th>Frequency (n=221)</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>58</td>
<td>24.4</td>
</tr>
<tr>
<td>2</td>
<td>38</td>
<td>17.2</td>
</tr>
<tr>
<td>3</td>
<td>31</td>
<td>14.0</td>
</tr>
<tr>
<td>4</td>
<td>37</td>
<td>16.7</td>
</tr>
<tr>
<td>5</td>
<td>14</td>
<td>6.3</td>
</tr>
<tr>
<td>6</td>
<td>20</td>
<td>9.0</td>
</tr>
<tr>
<td>7</td>
<td>10</td>
<td>4.5</td>
</tr>
<tr>
<td>8</td>
<td>17</td>
<td>7.7</td>
</tr>
</tbody>
</table>

Mean = 3.47  
Median = 3  
Mode = 1  
Standard Deviation = 2.198
Table 4.3

*Frequency of Participation of Participants*

<table>
<thead>
<tr>
<th>Number of Offerings</th>
<th>Frequency (n=221)</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>89</td>
<td>40.8</td>
</tr>
<tr>
<td>2</td>
<td>60</td>
<td>27.5</td>
</tr>
<tr>
<td>3</td>
<td>35</td>
<td>16.1</td>
</tr>
<tr>
<td>4</td>
<td>13</td>
<td>6.0</td>
</tr>
<tr>
<td>5</td>
<td>10</td>
<td>4.6</td>
</tr>
<tr>
<td>6</td>
<td>5</td>
<td>2.3</td>
</tr>
<tr>
<td>7</td>
<td>3</td>
<td>1.4</td>
</tr>
<tr>
<td>8</td>
<td>2</td>
<td>.9</td>
</tr>
<tr>
<td>10</td>
<td>1</td>
<td>0.5</td>
</tr>
</tbody>
</table>

Mean = 2.26  
Median = 2  
Mode = 1  
Standard Deviation = 1.581
Results

Data Screening

Data screening was conducted on the independent and dependent variables for data inconsistencies, outliers, linearity, homogeneity of variances, normality, multicollinearity, and independent residuals in keeping with procedures recommended by Lind et al. (2012), Field (2013), and Warner (2013). The researcher, as well as an assistant, viewed the data for each survey and double-checked responses before entering them into SPSS® to ensure no unlikely or outlying responses were present.

During data entry, missing values as well as questions which contained more than one response were identified. A survey was considered incomplete if it contained more than one entry per question or left a question incomplete. Fifty-nine surveys were removed from the data set for being completed incorrectly. Warner (2012) suggests groups with fewer than 10 cases be combined with other groups or excluded; therefore, full/part-time status was excluded from the regression. Also, race/ethnicity was redistributed to white and non-white and housing status was reorganized to on/off campus.

Assumptions Testing/Diagnostics

Linearity was tested to determine if a linear relationship existed between the dependent variable and the set of independent variables by examining scatter diagrams that plot the dependent variable against each independent variable. The residuals were centered on the 0 axis and contained a random distribution of both positive and negative responses while showing no sign of an obvious pattern (Lind et al., 2012). Figure 4.1 below shows the results of the scatterplot.
Figure 4.1. Scatterplot of Perceived Sense of Community Sum of Scores

Homoscedasticity, or the variation in the residuals, was tested by using the same plot of residuals used to test for linearity. Variation was identical for both large and small values of the outcome variable, thus indicating that variation in residuals is not determined by differences in small or large values of the outcome criterion variable (Lind et al., 2012).

Normality of the residuals was appraised by following the normal probability distribution. This assumption was tested through creating a frequency distribution of the residuals and by examining a normal probability plot. See figure 4.2 and 4.3 below. Both plots indicated a normality of distribution (Lind et al., 2012). Next, multicollinearity was assessed to ensure the predictor variables were not excessively correlated. This assumption was tested by
examining the variance inflation factor (VIF), and the tolerance statistic for each predictor (Lind et al., 2012). A variance inflation factor of less than 10 is satisfactory for independent variables. Each predictor variables’ VIF passed the assumption of multicollinearity. The assumption of independent residuals or error relates to independence of residual terms for any two observations and was measured with the Durbin-Watson test. The result of the Durbin-Watson test was 1.965, and a result near 2 assures this assumption not to be violated (Field, 2013).

Figure 4.2. Frequency Distribution of Residuals for Sense of Community Sum of Scores
Figure 4.3. Normal Probability Plot of Regression for Sense of Community Sum of Scores

The nominal variables of gender, ethnicity, housing status, and class status were dummy coded using appropriate strategies for dichotomous and multinomial categorical variables (Field, 2013). Outliers within the predictor variables can be found by viewing the residuals within the scatterplot. Residuals scored more than 3.3 or less than -.3.3 are considered to be outliers (Pallant, 2010). No outliers were found within the regression.

Hypothesis

The null hypothesis states “There is no significant predictive relationship between undergraduates’ criterion variable (sense of community) and predictor variables (length of
participation, frequency of participation, gender, class status, housing status, and ethnicity) in intramural sports”. A linear regression analysis was conducted to examine the correlation between participants’ SOC scores and length of participation, frequency of participation, class status, gender, race/ethnicity, and housing status. The $R^2$ value indicates how much variation of the outcome variable can be explained by the model predictors. Adjusted $R^2$ is “a less biased estimate of the true squared correlation in the population” (Howell, 2008, p. 255), which means it gives the shared variance if the model came from the population instead of the current sample (Field, 2013). The values should be the same or similar; in the event they are not, adjusted $R^2$ is the more conservative estimate and should be used (Pearson, 2010) even though Howell (2008) suggests that it is never reported. This coefficient of determination (adjusted $R^2 = .048$) reveals the amount of shared variance between the variables. In this instance, less than 5% of the variance in one’s perceived sense of community can be explained by the combined model variance of (a) length of participation in intramural sports, (b) frequency of participation in intramural sports, (c) gender, (d) class status, (e) housing status, and (f) ethnicity, which would be a small effect, given the recommendations from Cohen (1988). Results from the model summary can be seen in table 4.4.

Table 4.4

Model Summary of Multiple Regression

<table>
<thead>
<tr>
<th>$R$</th>
<th>$R^2$</th>
<th>Adjusted $R^2$</th>
<th>$F$</th>
<th>$p$</th>
<th>Durbin Watson</th>
</tr>
</thead>
<tbody>
<tr>
<td>.288</td>
<td>.083</td>
<td>.048</td>
<td>2.365</td>
<td>.019</td>
<td>1.975</td>
</tr>
</tbody>
</table>

*p < .05

The ANOVA table is presented in Table 4.5 and indicates that the results of the model summary are statistically significant ($F = 2.365, p = .019, R^2 = .048$). This result indicates less than a 2% chance that an $F$-ratio this large or larger would occur if the null hypothesis were true.
In other words, there is less than a 2% chance that the model results were determined by chance. Therefore, it can be concluded that the regression model results in significantly better prediction of sense of community than if the mean value of sense of community was used (Field, 2013). In short, the regression model overall predicts sense of community better than chance although it accounts for less than 10% of the explained variance in the outcome variable with this sample and less than 5% in the population overall.

Table 4.5

ANOVA Table

<table>
<thead>
<tr>
<th>Model</th>
<th>Sum of Squares</th>
<th>df</th>
<th>Mean Square</th>
<th>F</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Regression</td>
<td>3329.663</td>
<td>8</td>
<td>416.208</td>
<td>2.365</td>
<td>.019</td>
</tr>
<tr>
<td>Residual</td>
<td>36781.962</td>
<td>209</td>
<td>175.990</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>40111.624</td>
<td>217</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*p < .05

However, when examining the contribution of each individual predictor, no variable indicated a significant relationship with a student’s perceived sense of community, the outcome criterion. Overall, then, the results show that the model fits the data moderately well (although with a low effect size) and the model was statistically significant, but no individual predictors significantly predicted perceived sense of community within undergraduate students better than chance, based on the apriori significance level of $p \leq .05$. Therefore, it was determined that the null hypothesis failed to be rejected. The research question and hypothesis focused on the statistical significance of individual predictor variables while holding the other predictors constant, not on model building with all the variables; therefore, the null had to be accepted (failed to be rejected). Though seemingly uncommon, it is possible to produce non-significant predictors with an overall significant model (Dretzke, 2008). Chapter five will explore this result.
in more detail, but in this instance, it most likely occurred due to the additive contribution of more than one individual predictor variable being close to significant, which could have produced an overall significant model without any predictor being statistically significant (Field, 2013; Osborne, 2017; Pearson, 2010). Results of coefficients can be seen in Table 4.6.

Table 4.6

*Predictors of Sense of Community*

<table>
<thead>
<tr>
<th>Variables</th>
<th>B</th>
<th>t</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>Male vs. Female</td>
<td>1.445</td>
<td>.780</td>
<td>.437</td>
</tr>
<tr>
<td>White vs. Non-white</td>
<td>-3.609</td>
<td>-1.285</td>
<td>.200</td>
</tr>
<tr>
<td>Junior vs. Freshman</td>
<td>5.752</td>
<td>1.909</td>
<td>.058</td>
</tr>
<tr>
<td>Junior vs. Sophomore</td>
<td>5.005</td>
<td>1.896</td>
<td>.059</td>
</tr>
<tr>
<td>Junior vs. Senior</td>
<td>-4.665</td>
<td>-1.679</td>
<td>.095</td>
</tr>
<tr>
<td>On vs. Off Campus</td>
<td>1.273</td>
<td>.520</td>
<td>.604</td>
</tr>
<tr>
<td>Length of Participation</td>
<td>.696</td>
<td>1.090</td>
<td>.277</td>
</tr>
<tr>
<td>Frequency of Participation</td>
<td>1.102</td>
<td>1.791</td>
<td>.075</td>
</tr>
</tbody>
</table>

*p < .05

**Summary**

This chapter provided a description of the data collected in this study as well as the procedures for analyzing the data statistically. Data consisted of answers submitted by participants through an online survey which measured their demographics and sense of community score as measured by the SCI-2 (Chavis, 2008). Both descriptive and inferential statistics were reported, and multiple regression was used for understanding the correlation between the predictor and criterion variables.

The main finding of the study was that the model was a significant predictor of sense of community among undergraduate students participating in intramural sports. Individual
predictor variables--length and frequency of participation, gender, housing status, class status
and race/ethnicity--however, provided no statistically significant correlation with undergraduate
students’ perceived sense of community. Though the model was statistically significant, its
effect size measure indicated the model explained just under 5% of the outcome variable. With
no statistically significant relationship between individual predictors and the outcome variable,
the null hypothesis failed to be rejected. This result will be explored in the next chapter.
CHAPTER FIVE: DISCUSSIONS, CONCLUSIONS, AND RECOMMENDATIONS

Overview

The purpose of this study was to expand research (Miller, 2011; Phipps et. al., 2015; Williams & Ferrari, 2015) concerning the influence of length and frequency of undergraduate participation within intramural sports on college students’ perceived sense of community. A non-experimental, correlational design was used examining the relationship between the predictor variables (length of participation in intramural sports, frequency of participation in intramural sports, gender, class status, housing status, and ethnicity) and the criterion variable (sense of community) within undergraduate students on two private liberal arts campuses. This chapter consists of the summary of findings from the study, a discussion of the findings, and the implications pertaining to literature on sense of community in higher education and recreational sports, implications from the study, delimitations and limitations, as well as recommendations for further research.

Discussion

The purpose of this quantitative correlational study was to determine the relationship between participating in intramural sports and a student’s sense of community. The null hypothesis, which failed to be rejected, stated that no significant predictive relationship existed between undergraduates’ criterion variable (sense of community) and predictor variables (length of participation, frequency of participation, gender, class status, housing status, and ethnicity) in intramural sports. A multiple regression was used to examine the relationship between the predictor variables and the criterion, outcome variable with undergraduate students on two private liberal arts campuses. Though the model was statistically significant with all variables, no individual predictor variable proved to be statistically significant in relation to perceived
sense of community although multiple variables could be interpreted as influential outside the
apriori and arbitrary decision to select a certain alpha level for significance testing \((p \leq .05)\). A
less conservative \(p\)-value, such as \(p \leq .10\), would have resulted in four individual predictor
variables being statistically significant within the model.

As an individual predictor variable, class status was revealed to have the most influential
relationship with sense of community among participants even though the result was not
statistically significant. Underclassmen produced a positive correlation while upperclassmen
produced an inverse relationship to perceived sense of community. Contributions to this finding
could be institutional emphasis on first-year programs and students’ transitions to encourage
belonging their first year followed by less programming as students progress (Tinto, 2012).
Further, underclassmen may be more likely to invest into campus life with two or three years left
whereas upperclassmen are less focused on academics and more on future careers. Another
related factor could be that as students reach upper levels of education, they have less housing
requirements and thus find community in areas outside the university.

The other correlation worth highlighting is frequency of participation and sense of
community. Though not statistically significant, this relationship did have greater significance
than variables beyond class status (i.e. freshmen and sophomores). Past research confirms
students who participate more frequently in activities are more likely to assimilate into campus
and experience connections (Alfano & Eduljee, 2013; Astin, 1984, 1999a, 1999b; Case, 2011;
Kahn, 2014; Krylow & Qin, 2013; O'Keefe, 2013; Phipps et al., 2015).

Student activities, peer relationships, and relationships with faculty outside of the
classrooms are few examples which administrators have utilized to foster sense of community
(O'Keefe, 2013). Traditionally, perceived commitment has been gained through participating in
extra-curricular and social activities as well as developing relationships with both peers and faculty and staff (O’Keefe, 2013; Webber et al., 2013). The most significant element to establishing a sense of community is students perceiving themselves as a valuable aspect of the community (Cheng, 2004).

Astin’s (1984, 1999b) student involvement theory places the greatest emphasis on student time, believing this is the university’s greatest resource since students’ time and energy are limited and necessary to experience growth. Astin (1984) determined certain environmental factors, such as living in a residence hall, participating in on-campus activities, and being employed on-campus contributed to students’ experience and persistence at an institution. The results of this study support Astin’s (1984, 1999b) theory as the overall model, or when all predictors are present, predicts perceived sense of community and support that student experience cannot often be attributed one factor.

Research shows students who use campus recreation facilities have the potential to experience the most community within all experiences of college as these facilities provide a social atmosphere through common interests, which increases the likelihood of social encounters (Huesman et al., 2009). Miller (2011) found the recreational facility to be a place of bonding for current students as well as a major factor for students choosing this institution.

Fine et al. (2016) claim community satisfaction does not solely depend on student participation, which supports the findings of this study that the individual predictor variables did not correlate with sense of community. Administrators and staff have a responsibility to establish and uphold the community of the recreation facility and not solely rely on its offerings (Fine et al., 2016). This study affirms Sturts and Ross (2013) as they found intramural sports provided social outcomes for students to aid in their development, satisfaction, and creation of
This study sought to expand Phipps’ et al. (2015) study which found that students who participated in intramural sports more frequently perceived to have a greater sense of community. Though not significant, the findings of this study did mirror Phipps et al. (2015). Frequency of participation yielded a significance level of $p = 0.075$ with sense of community, suggesting it might have a more significant correlation than length of participation, gender, or housing status. Their study focused on students at a large public institution, measured their amount of participation within intramural sports, and correlated it with their perceived sense of community on campus (Phipps et al., 2015). Further, Phipps et al. (2015) determined the longer one participated in intramural sports, the greater the sense of membership and sense of connection towards the institution.

**Conclusions**

The research question examined if a relationship existed between the criterion variable (sense of community) and the predictor variables length and frequency of participation, gender, class status, full/part time housing status, and race/ethnicity. McMillan and Chavis’ (1986) Sense of Community theory suggests investment into one’s community will help to create a sense of belonging. Further, on university campuses, involvement in extra-curricular activities provides numerous benefits such as making friends, adjusting to campus, and deepening relationships (Astin; 1984; Webber et al., 2013).

The results of this study revealed that the regression model was statistically significant but that no significant relationship existed between the perceived sense of community and length and frequency of participation in intramural sports, gender, race/ethnicity, and class status exists. These findings neither confirm nor contradict McMillan and Chavis’ (1986) sense of community...
theory. Other literature supports this study’s findings. Boyer (1990) presented the concept of sense of community on campus as a phenomenon requiring six elements: (a) relationships with faculty both inside and outside the classroom, (b) an open community, (c) a just community, (d) a caring community, (e) students upholding personal obligations, (f) and a celebrative community. This suggests participants may need more experiences than intramural sports participation to gain a perceived sense of community. Further, Cheng (2004) found that less than one third of students agreed they had experienced community on campus.

The finding that students do not rely on participation in intramural sports for sense of community corresponds to Astin’s (1999b) student involvement theory. Astin (1986, 199b) claims a number of factors, such as residence life, student activities, and relationships with both peers and faculty, contribute to students’ experience at an institution. Participation in intramural sports may not solely be where students find their community on campus. Rather for most students, it is an outlet for exercise, a break from academics, and perhaps one opportunity for community building (Huesmann et al., 2009).

This study sought to measure perceived sense of community among students at two private liberal arts campuses as opposed to Phipps et al. (2015) who conducted their study at one larger public institution. The difference in findings could be attributed to the types of institutions studied. The private liberal arts institutions may foster community among other avenues, such as through clubs and organizations, residence halls, or faculty relationships, with its smaller nature of size. Further, both were small private liberal arts institutions located in the central Midwest holding similar religious values and emphasizing community within their mission. With community being an emphasis throughout each campus, students have numerous opportunities to experience it through other clubs/organizations, residence halls, and local events, among others.
This is affirmed by Astin (1999a) who claims liberal arts universities provide more benefits and that student satisfaction is greater than at other universities.

A second explanation could be the participants’ housing statuses. Residence halls are essential to the student experience and designed to help facilitate community among residents (Sickler & Roskos, 2013). Alfano and Eduljee (2013) claim students who live on campus are more likely to integrate into campus and experience a greater sense of community. With almost 75% of participants holding residence on-campus, these participants could be finding their source of community within their living spaces (Alfano & Eduljee, 2013).

**Implications**

Research suggests that the more undergraduate students participate in college or university life (academic and social integration), the greater their perceived connection to their institution (Astin, 1984, 1999; Harris, 2006; Hoffman et al., 2002; Tinto, 2007, 2012; Tucker, 1999;). Even with these benefits, enrollment within the liberal arts has declined from the early 20th century with around 70% of undergraduates in the U.S. majoring in the liberal arts compared to 40% today (Roche, 2013), and only 20% of undergraduate students attend a traditional residential four-year college (Selingo, 2013). By conducting this study, the desire was to help administrators make decisions about not just the effectiveness of intramural programs, but overall community building, sense of belonging, and the integration in campus life that research has clearly pointed to is important for undergraduate student academic achievement and gains after college (Strayhorn, 2012; Tinto, 2012).

This study affirms Fine et al.’s (2016) claim about community satisfaction not solely depending on student participation. Campus recreation administrators and staff must use non-traditional methods to connect their students to each other through the use of the college facilities.
(Fine et al., 2016). This could include offering other group activities such as exercise or fitness classes or group weightlifting and nutrition educational opportunities. Many facilities offer incentives for participation, such as t-shirts or workout accessories. Increasing the value of these items may increase participation while providing opportunities for relationship building. Administrators and employees can also emphasize customer service within their facilities to ensure participants feel comfortable each time they enter.

Administrators in charge of intramural programs may evaluate their objectives within intramurals. Participating in sports has traditionally been tied to intense competition, though some students may participate solely for social reasons (Warner et al., 2013). Offering different opportunities for students, competitive and non-competitive, may allow students to align their goals with their participation.

Engaging off-campus students is necessary for institutions. Numerous studies found residential students to experience greater sense of community than commuter students in regard to participation in intramural sports or clubs/organizations (Alfano & Edjulee, 2013; Artinger et al., 2006; Burlison et al., 2015; Kranzow, Hinkle, & Foote, 2015). Further, living on campus includes outcomes such as greater sense of belonging, commitment to peers, and ability to work within a team while commuter students experience more difficulty engaging with the university (Artinger et al., 2006; Burlison et al., 2015; Kranzow, Hinkle, & Foote, 2015). Both cohorts agreed they desired to participate in more school-sponsored activities (Alfano & Edjulee, 2013). Beyond a decrease in sense of belonging or sense of community among off-campus students, with many of these students being upperclassmen it begs the question of whether this decrease of belonging or community continues into alumni relationships. Institutional success is dependent on its alumni for financial contributions and recruitment of future students (Weerts, Cabrera &

**Delimitations and Limitations**

There were several limitations to this study. First, the use of a questionnaires, which are prone to non-response bias and other shortcomings, do not allow for error-free appraisal of attitudes, beliefs, and experiences of respondents’ intramural participation (Gall et al., 2007). Also, questionnaires cannot be modified once the respondents view them, even if they avoid unclear items (Gall et al., 2007).

At the time the survey was administered, both universities were beginning their intramural basketball season, which allowed for exposure to be similar at captain’s meetings and intramural events through the first two weeks of the season. Both populations were given access to the same survey for the same period of time. Though the time and exposure was similar at both campuses, the researcher had direct access to students at institution B and was able to solicit students at intramural events. An employee at institution A was also soliciting students on his campus but did not have the same connection to the study as the researcher.

Another limitation was the structure of survey. Participants were able to skip or provide two answers to questions which resulted in numerous incomplete surveys. This could have been avoided with completion requirements to each question of the survey. Also, the survey was conducted during a short time period and over one sport offering. Though all intramural participants were given access to the survey, those who were currently involved were more likely to participate with being solicited at captain’s meetings and intramural events.

A lack of racial diversity is also a limitation to this study. Participants reported were 87.8% white. Although this percentage is representative of the populations at both universities,
this percentage does not represent the demographics of American higher education. A more diverse participant sample may have contributed to a stronger study.

Another aspect that could have strengthened the study relates to the non-representative nature of the sample. The convenience sample chosen for this study limits its generalizability and perhaps affected the results of the regression analysis. Participants were enrolled at two central Midwest liberal arts universities due to ease of access to the researcher. Both were similar in size, academic offerings, population, and intramural sports participation. Therefore, the results of this study may not necessarily be applied to undergraduate students at different types of institutions or institutions in other geographical regions.

The final limitation to be discussed relates to the overall finding of a significant model with no individual predictor variables. It is possible that variables might relate to one another when interacting but not have individual predictive strength. Body mass index might be considered one such example; the height and weight of a person are not necessarily strong predictors of health risks individually; however, the interaction between them leads to predictive success when considering risks for a myriad of health-related ailments. It is also possible, however, that important variables were left out of the regression model. Clearly, given the results of this study, 90-95% of the variation in sense of belonging has to be explained by variables other than the collection selected for this study.

**Recommendations for Further Research**

There are a number of areas related to this research in which additional scholarship would be valuable. First, it would be beneficial to know if the finding of the existence of greater relationship in connection with sense of community and underclassmen is consistent among multiple campuses and involvement opportunities. Are there factors beyond first-year
experience programs and living in residence halls that might contribute to underclassmen potentially experiencing a greater sense of community than upperclassmen? A study using institutions with active retention programming might also yield different results within this area.

This study sought to expand Phipps’ et al. (2015) research by using samples from more than one campus. It would be helpful not only to expand the population to two or more institutions, but also to compare the institution’s average sense of community scores. This could be carried out with similar institutions, such as in this study, or could combine different types of institutions, such as public, private, liberal arts, and community colleges. This might help determine if the number or types of offerings, as well as attendance at specific institutions affect students’ perceived sense of community.

The present study could be replicated to include multilevel modeling using each of the subscales and a causal ordering of the predictor variables. Specifically, research of this type would answer the questions related to the power of individual predictors as related membership, emotional connection, influence, and reinforcement of needs (Chavis & McMillan, 1986). McMillan and Chavis (1986) posit that symbols are an important aspect to membership. Intramural teams are charged with choosing a team name, and some teams design logos and jerseys for participation, which could help influence membership. The subscale of influence could also be described as trust (McMillan, 1996). Members of a team usually aim for the same objective, which in the case of intramural sports is winning or having fun. If the needs are similar within a team, then one might surmise that participants and the team could experience the cyclical perceived influence (McMillan & Chavis, 1986). Emotional connection and reinforcement of needs could also be influenced by participation in intramural sports as
emotional connections are often made with shared experiences and needs could be met through being a part of team.

An upcoming avenue in which to study sense of community may be through eSports programs. At the time this study began, eSports on college campuses did not exist beyond two or three institutions. Since, a number of institutions have established varsity eSports programs which compete online throughout the country. One institution sampled within the current study has recently started varsity and intramural eSports programming in an effort to reach a new population of students. As these programs grow and become more prevalent on college campuses, a similar study could be conducted focusing solely on eSports participants, particularly if these programs are helping to aid in a greater perceived sense of community on campus to include perceived sense of community online.

Finally, based on this study’s results, which indicated a statistically significant model but no statistically significant predictors, more research needs to be conducted to ascertain what variables are missing in the model and what variables can be left out. For example, the demographic variables of race/ethnicity and gender clearly did not predict sense of community. Similarly, housing status and length of participation were also not strongly predictive of the criterion variable. Including these variables in the model (even though all appeared to be initially justified via theory or empirical research) may have skewed the regression equation and biased the model. Conducting data analysis without non-significant variables should improve the model’s ability to predict the outcome variable. The same can be said for variables left out of the model. Clearly, human behavior is complex, nuanced, and difficult to measure with precision. With a low effect size, the model in this study leaves open the question as to what
other variables would help explain sense of community among traditional undergraduate students.
REFERENCES


doi:10.1016/j.chb.2011.10.010


APPENDICES

APPENDIX A

The below message was sent on Day 1, 8, and 14 of the survey time through text message or email.

Message 1 (Day 1)

Hello!

Are you interested in a chance to win a $10 gift card? As an intramural participant, you have been invited to participate in a study exploring perceived sense of community within students who participate in intramural sports.

Click this link for more information:

Thanks

Chris Allison/ David Gardner

Message 2 (Day 8)

Hello!

There is still time to win a $10 gift card! This study will explore perceived sense of community within students who participate in intramural sports.

Click this link for more information and participate in the survey:

Thanks

Chris Allison/ David Gardner

Message 3 (Day 14)

This will be your last chance to win $10 gift card for taking this survey! This study will explore perceived sense of community within students who participate in intramural sports.

Click this link for more information and participate in the survey:

Thanks

Chris Allison/ David Gardner
APPENDIX B

CONSENT FORM
EXPLORING THE IMPACT OF UNDERGRADUATE INTRAMURAL SPORTS ON UNDERGRADUATE STUDENTS PERCEIVED SENSE OF COMMUNITY
Nathan Penland
Liberty University
School of Education

You are invited to be in a research study of exploring perceived sense of community among undergraduate students who participate in intramural sports. You were selected as a possible participant because you have participated in at least one intramural sport and are a current undergraduate student. I ask that you read this form and ask any questions you may have before agreeing to be in the study.

Nathan Penland, a doctoral candidate in the school of education at Liberty University, is conducting this study.

Background Information: The purpose of this study is to determine the relationship between participating in intramural sports and a student’s sense of community.

Procedures: If you agree to be in this study, I would ask you to do the following things:
1. Take the attached survey which will take approximately 10-15 minutes. The answers will be recorded, but will remain confidential and anonymous.

Risks and Benefits of being in the Study:

The risks involved in this study are minimal, no more than you would encounter in everyday life.

Participants should not expect to receive a direct benefit simply from taking a survey or participating in an interview, however they may receive a direct benefit if the results of this study are utilized to improve intramural programming. This study will also benefit student development professionals and wellness center managers who desire to connect students to each other and the institution.

Compensation: Each participant will be entered into a drawing to earn a prize for participating. At each location, 10 gift cards from local businesses will be given to individuals who complete the survey and provide the necessary information. A total of 20 winners will be drawn, ten from each institution.

Confidentiality: The records of this study will be kept private and confidential; In any sort of report I might publish, I will not include any information that will make it possible to identify a subject. Research records will be stored securely and only the researcher will have access to the records. We may share the data we collect from you for use in future research studies or with other researchers; if we share the data that we collect about you, we will remove any information that could identify you before we share it.
• All private information will be stored on a jumpdrive in a password protected file. Data will be deleted after three years.
• All results will be kept on a password protected jumpdrive and only used for this study or other publications associated with this study. Data will be destroyed after three years through deletion and the jumpdrive being destroyed.
• The risk to confidentiality to student participants in minimal. Even if the data is taken, the data will be unidentifiable making it useless to identity thieves.

Voluntary Nature of the Study: Participation in this study is voluntary. Your decision whether or not to participate will not affect your current or future relations with Liberty University, Southwest Baptist University, or Oklahoma Baptist University. If you decide to participate, you are free to withdraw at any time without affecting those relationships.

How to Withdraw from the Study:

If you choose to withdraw from the study, simply exit the browser at any point. Should you choose to withdraw, data collected from you will be destroyed immediately and will not be included in this study.

Contacts and Questions: The researcher conducting this study is Nathan Penland. You may ask any questions you have now. If you have questions later, you are encouraged to contact him at [417-329-1828/npenland2@liberty.edu. You may also contact the researcher’s faculty advisor, Dr. Jeffery Savage, at jsavage2@liberty.edu.

If you have any questions or concerns regarding this study and would like to talk to someone other than the researcher, you are encouraged to contact the Institutional Review Board, 1971 University Blvd, Green Hall 1887, Lynchburg, VA 24515 or email at irb@liberty.edu.

Please notify the researcher if you would like a copy of this information to keep for your records.

Statement of Consent: I have read and understood the above information. I have asked questions and have received answers. I consent to participate in the study.

(Note: DO NOT AGREE TO PARTICIPATE UNLESS IRB APPROVAL INFORMATION WITH CURRENT DATES HAS BEEN ADDED TO THIS DOCUMENT.)

If you agree, push the next button below.
APPENDIX C

Questionnaire

What is your sex?
☐ Male ☐ Female

What is the racial/ethnic group(s) with which you identify? (Check all that apply)
☐ White ☐ Black or African American ☐ Hispanic ☐ Asian ☐ American Indian/Alaskan Native
☐ Native Hawaiian/Pacific Islander ☐ Multiracial ☐ Racial identity unknown ☐ I prefer not to report my race/ethnicity

What is your classification on campus (as of Fall 2016)?
☐ Freshman ☐ Sophomore ☐ Junior ☐ Senior ☐ Graduate Student ☐ Faculty ☐ Staff

What is your status on campus?
☐ Full-time ☐ Part-time

Where do you live?
☐ On-Campus ☐ Off-Campus ☐ Commuter

For how many semesters have you participated in Intramural Sports?
☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐ 6 ☐ 7 ☐ 8 ☐ 9 ☐ 10 ☐ 11 ☐ 12 ☐ more than 12

How many different intramural offerings (sports) have in participated in during the fall 2016 semester? Each sport or tournament will count as one offering (i.e. basketball, volleyball, soccer, sand volleyball).
☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐ 6 ☐ 7 ☐ 8 ☐ 9 ☐ 10 ☐ 11 ☐ 12 ☐ more than 12

The following questions about community refer to your participation in the Intramural Sports community.

How important is it to you to feel a sense of community with other community members?
☐ Prefer not to be a part of this community ☐ Not important at all ☐ Not very important ☐ Somewhat important ☐ Important ☐ Very important

How well do each of the following statements represent how you feel about this community?
1. I get important needs of mine met because I am part of this community.
☐ Not at all ☐ Somewhat ☐ Mostly ☐ Completely

2. Community members and I value the same thing.
☐ Not at all ☐ Somewhat ☐ Mostly ☐ Completely

3. This community has been successful in getting the needs of its members met.
☐ Not at all ☐ Somewhat ☐ Mostly ☐ Completely

4. Being a member of this community makes me feel good.
☐ Not at all ☐ Somewhat ☐ Mostly ☐ Completely

5. When I have a problem, I can talk about it with members of this community.
☐ Not at all ☐ Somewhat ☐ Mostly ☐ Completely

6. People in this community have similar needs, priorities, and goals.
☐ Not at all ☐ Somewhat ☐ Mostly ☐ Completely

7. I can trust people in this community.
☐ Not at all ☐ Somewhat ☐ Mostly ☐ Completely

8. I can recognize most of the members of this community.
☐ Not at all ☐ Somewhat ☐ Mostly ☐ Completely

9. Most community members know me.
10. This community has symbols and expressions of memberships such as clothes, signs, art, architecture, logos, landmarks and flags that people can recognize

11. I put a lot of time and effort into this community.

12. Being a member of this community is a part of my identity.

13. Fitting into this community is important to me.

14. This community can influence other communities.

15. I care about what other community members think of me.

16. I have influence over what this community is like.

17. If there is a problem in this community, members can get it solved.

18. This community has good leaders.

19. It is very important to me to be a part of this community.

20. I am with other community members a lot and enjoy being with them.

21. I expect to be a part of this community for a long time.

22. Members of this community have shared important events together, such as holidays, celebrations, or disasters.

23. I feel hopeful about the future of this community.

24. Members of this community care about each other.

Please review your responses and click the "Next" button once you are ready to submit the survey. You will then receive instructions to enter your name and email address into a separate database to be entered for the optional prize drawing.

Next
APPENDIX D

Prize Drawing Entry

To be entered into the drawing for participating in this survey, please provide your name and university issued email address below. This information will only be stored in the prize drawing file, which is separate from your survey responses. Your name and contact information will not be associated with your responses from the survey.

By providing your name and university issued email address, you will be entered into the prize drawing to win one of 10 (ten) $10 amazon gift cards!

The prize drawing will take place after the closing of the survey on December xx, 2016, and winners will be notified via email. All survey participants will receive one (1) entry into the prize drawing.

First Name  _________________________________

Last Name  _________________________________

University Issued Email Address  _________________________________

Your identifying information must be valid for you to enter the prize drawing. Please review your name and email address to ensure they have been entered correctly. When finished, click the "next" button to submit your information for the drawing.
RE: SCI-2 Information and Permission

Ryan Schooley <rschooley@communityscience.com>
Thu 9/22/2016 3:14 PM

to: PENLAND, Nathan <npenland2@liberty.edu>;

1 attachments (458 KB)
Sense of Community Index-2(SCI-2).pdf;

Hi Nathan,

We have looked over your request form; please feel free to use the SCI-2 for your study. The Index is attached. As a reminder, you may not make changes to SCI-2 without the permission of Community Science (and Dr. Chavis) and we ask that you please share how you used the instrument at the completion of the study. Also, I am working to find relevant information regarding the construct validity of the subscales. I will let you know when I find something that may be helpful.

Good luck with your dissertation!

Thank you,

Ryan Schooley, M. Ed
Research Assistant
Community Science
438 N. Frederick Ave. Suite 315
Gaithersburg, MD 20877
(301) 519-0722 ext. 104 (office)
(301) 519-0724 (fax)
www.communityscience.com [Learn more about us]
www.senseofcommunity.com [Resources and discussions on SOC]

Community Science is a group practice of social change professionals who use knowledge to build healthy, just, and equitable communities.

Please consider the environment before printing this e-mail.
APPENDIX F

I am conducting research as part of the requirements for a doctoral degree at Liberty University. The purpose of my research is to explore if a correlation exists between sense of community and intramural sports participation.

If you:

- Are at least 18 years old.
- Participated in Intramural Sports on Campus.
- Are willing to complete a questionnaire taking approximately 10-15 minutes.
- Would like the chance to win an Amazon.com gift card.

Visit the link provided or scan the QR code, complete the consent document, then complete the attached questionnaire.

The consent document contains additional information about my research. Please click on the next button at the bottom of the consent information to indicate that you have read the consent information and would like to take part in the survey.

Nathan Penland
Doctoral Candidate, Liberty University

http://intramural-sports-study.questionpro.com