

The Relationship between Intramural Sport Participation, Social Integration, and
Institutional Commitment

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Abstract

Higher education administrators are increasingly scrutinizing budgets and limited resources for the allocation of financial support to all academic and non-academic services, including campus recreational sports. With the current fiscal climate the benefits of campus recreation programs need to be examined and identified in order to remain relevant within post-secondary institutions. The purpose of this quantitative study is to examine the relationship between students' participation in intramural sports, social integration into the campus community, and institutional commitment. Three hundred and twenty-four intramural participants (N=324) at a Canadian University completed a questionnaire before or after participating in their chosen intramural sport. MANOVA's, Correlation Matrices, and Hierarchical Regression analyses were conducted, revealing that the quality of intramural participation, consisting of the effort, energy, time, and money a student invests, is a significant predictor of Social Integration into the campus community. Students who are personally invested in their intramural sport participation are more socially integrated into the campus community at their institution. Social integration was not found to be a significant predictor of Institutional Commitment as suggested by Tinto (1993). Future research should explore the relationship between social integration and institutional commitment as identified in Tinto's (1993) Model of Departure, through the investigation of other contributing factors that lead to institutional commitment.

Key words: Campus Recreation, Collegiate Recreational Sports, Involvement,

Personal Investments, Social Benefits

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Chapter 1: Introduction

Campus recreation facilities (CRFs) have become an integral component of college and university campuses. Between 2008 and 2013, 174 US colleges and universities reported committing \$3.96 billion to new construction, additions, remodels, and expansions of campus recreational sports (CRS) facilities (NIRSA, 2008). The New York Times (2009) identified that financial resources allocated to non-academic areas of a university are increasing across the higher education spectrum, within public, private, and elite institutions. Desrochers (2010) demonstrated that financial resources allocated and spent on recreation in Universities are rising more quickly than spending on academic instruction. In today's current fiscal climate however, higher education administrators are increasingly scrutinizing budgets and limiting resources for the allocation of financial support to all academic and non-academic services, including campus recreational sports. This has led to the need for CRS professionals to justify their existence on college/university campuses.

Early efforts in this regard focused on the contributions of CRS participation on student development through involvement in sport club activities leading to enhanced social-emotional development (Todaro, 1993; Nesbitt, 1998; Milton, 2008). Research efforts have shifted towards learning outcomes in an effort to understand the physiological, social, emotional, cognitive, and developmental dimensions associated with CRS participation (Keeling, 2006). Recently in the province of Ontario, the provincial government has reduced funding to post-secondary institutions. As a result, colleges and universities in the province, including this institution, have undergone

budget reduction exercises over the past several years. In addition to budget cutbacks, Universities have also strategized ways to increase revenue, and subsequently formed a retention committee in an effort to retain students, and create a sustainable institution.

Tinto's (1987) Model of Institutional Departure involving Tinto's (1993) Theory of Integration is the most influential model for understanding retention. Outside of the formal and informal academic system that comprises students' institutional experiences, a key component of this model measures student involvement in extra/ co-curricular activities, leading to social integration and resulting in increases in students' institutional commitment. Tinto (1987) specifically recognized the role co-curricular activities have in regards to social benefits by stating "beyond the obvious educational benefits of such activities, the periodic coming together of students and faculty serves to remind persons of, and reinforce the existence of, on-going social and intellectual communities on campus" (p.193). This was previously recognized by Durkheim (1951), acknowledging that integration is both social and intellectual.

Given the renewed interest in, and recognition of, these social benefits of CRS activities, facilities, programs, and services (Artinger et al., 2006; Sturts & Ross, 2013) as well as the role of CRFs in creating a sense of community for students (Dalgarn, 2001), this appears to be an ideal time to determine if participation in these programs, like intramural sports, socially integrates students into the campus community thereby increasing students' institutional commitment. Therefore, the purpose of this quantitative study is to examine the relationship between students'

participation in intramural sports, social integration into the campus community, and institutional commitment.

Significance of Study

In a recent study of over 33,500 students from 38 different colleges and universities across the United States, Forrester (2014) found that 75% of students use on-campus recreation center facilities, programs, and services, and 80% of those students participate in campus recreation programs or activities at least once a week. He also found that 64% of students reported that participation in campus recreation provided them with skills and abilities that will be used after college, thereby identifying the importance of offering successful campus recreation programs and operating an efficient campus recreation facility. Forrester categorized the participants in the study into user levels based on their participation breadth (number of different campus recreational sports they participate in) as well as participation depth (the frequency of participation). The increase in demand for student recreation centers and programs by post-secondary students has become a key consideration for attendance, as 74% of students reported that campus recreation facilities influenced their decision to attend their chosen college/university, and 67% of students reported that campus recreation programs influenced their decision to continue attending their chosen college (Forrester, 2014).

Campus recreation is a crucial element of the post-secondary student experience that is offered at a variety of institutions promoting opportunity for physical and social well-being for all students. Tinto (1987) examined how external assistance and amenities offered to students can increase their commitment and

satisfaction with the institution they have chosen to attend for their post-secondary education experience. “Without external assistance, many will eventually leave the institution because they have been unable to establish satisfying intellectual and social membership” (Tinto, 1987, p.99). A strong campus recreation presence at an institution can greatly impact the retention efforts of the university, as a crucial external assistance mechanism (Blumenthal, 2009).

CRFs offer attractive social environments for all students, faculty, and administration to enjoy. Social integration has been found to be one of the most prominent characteristics of a CRF environment, facilitated by both the nature of the activities offered and design of the facility itself (Huesman, Brown, Lee, Kellogg, & Radcliffe, 2009). The results demonstrated a positive association between CRF usage and both first-year retention and five-year graduation (Huesman et al.). From the data collected the authors hypothesized that CRF’s can promote social integration of students within the campus community, which will in turn contribute to the persistence and academic success of the student at the institution. Based on the strong evidence provided and the influence that CRFs can have on the student body, future research suggests further investigating the influence and social benefits for students from a CRF, and the programs occurring within these facilities.

Personal Significance

Campus recreation has been an influential contributor to my success throughout my university experience. The programs, activities, and experiences offered have opened various opportunities contributing to my success as a student. Through campus recreational facilities and programs, especially intramurals, I have

been able to continue being physically active, create social networks, meet faculty and other students who share the same passion for sports as I, as well as gain employment through campus recreation. I am a passionate and large supporter of campus recreation and the opportunities that it can provide to all students if accessed and used correctly. The programs and facilities offered are a great way for students to become involved with their institution while receiving multiple benefits of; social, physical, academic, mental, emotional, etc. As the literature about campus recreation and the benefits it provides continues to grow, this study will add to this information. Throughout this study I aim to gain information and evidence to provide campus recreation departments with identifying the success and influence that campus recreation has on social integration and institutional commitment throughout an institution's campus community.

Delimitations and Limitations

This study is quantitative in nature, and takes a theoretical approach based on an in-depth review of the literature providing the foundational support to guide this research. The study is delimited to undergraduate and graduate students currently participating in post-secondary intramural sports. These students are attending one specific post-secondary institution, therefore analyzing social integration into the campus community as well as institutional commitment present in one sole location and one area of the campus recreation department (intramurals) is another delimitation of this study.

The limitations of this study include the structure of the survey, involving various questions using a closed-ended Likert scale response system. These pre-

determined answers might force the participant to conform their responses to the options identified by the survey even if they do not directly feel this way. Having no open-ended exploratory questions reduces and limits participants' ability to expand on their answer and provide further insight into their response elaborating on their chosen answer. This is a common limitation in quantitative research (Field, 2013). Also, given that this study is delimited to one area of campus recreation (i.e., intramural sports), at one institution, another limitation is that this may reduce the generalizability of the results to other campus recreation program areas (e.g., fitness/wellness, aquatics, etc....) and/or other post-secondary institutions.

Assumptions

Various assumptions have been made in regards to this study. Intramural sports at this chosen university are solely available and accessible for students, faculty, and alumni. This restrains the community (non-students, faculty, or alumni) from participating and becoming involved within these activities offered. Very few constraints are present for students participating in intramural sport, gaining an understanding that these recreational opportunities are willingly participated in frequently by university students. Since numerous students participate in collegiate intramural sports, a sample size as large as possible will need to be gathered in order to represent this robust population representing a large portion of the students who attend this institution.

It is believed that through positive methods of social integration, and socially enriched environments, students will feel integrated into their community developing a sense of belonging and identification therefore leading to institutional commitment.

Given there are no coaches present within intramural sports and with the lack of parental influence in university students' decisions to engage in certain activities, the driving cue to participation is the benefits students receive.

Conclusion

Campus recreation is a crucial element of the post-secondary student experience, which can help students, integrate into the social fabric of the institution. This research will examine students' participation in post-secondary intramural sports on social integration into the campus community and institutional commitment. In the next two chapters, previous literature on intramural sport participation, social integration, and institutional commitment will continue to be outlined as well as methods explained necessary to conduct this study.

Chapter 2: Literature Review

The intent of this research is to examine students' participation in intramural sports on social integration into the campus community and institutional commitment. This literature review provides the appropriate background information necessary to understand the variables being analyzed within this research, by reviewing and critiquing research in the following areas: (a) how college/university affects students; (b) college impacts/outcomes; (c) Astin's Input-Environment-Outcome model; (d) Astin's theory of involvement; (e) campus recreation; (f) intramural sports; (g) quantifying participation; (h) social integration and; (i) institutional commitment.

College/University Effect on Students

What students do in their extra curricular time, during their post-secondary education, counts more for what they learn and whether they will persist in university than who they are or even where they go to university (Kuh, Kinzie, Schuh, & Whitt, 2005). Numerous researchers have studied the effects of "life outside the classroom" that contributes to students' overall interpretation of their post-secondary experience. Boyer (1987) has emphasized by that the fundamental contribution of these out-of-classroom engagements are a necessity as, "the effectiveness of the undergraduate experience relates to the quality of campus life and is directly linked to the time students spend on campus and the quality of their involvement in activities" (p.180). The university experience has been viewed as an instrumental transitional period for students, embarking on paths of self-discovery and establishing personal identity. Opportunities offered on campus, such as intramural sports, can assist in this process leading to successful and positive experiences.

In a highly renowned and referenced synthesis of the literature on how post-secondary education affects students, Pascarella and Terenzini (1991) found that student involvement holds “significant and positive influence on various dimensions of general cognitive development” (p.147). This seminal study was updated more than a decade later by Pascarella and Terenzini (2005) who indicated that statistical gains were discovered, not only through a student’s factual knowledge and general cognitive and intellectual skills, but changed significantly across a spectrum within the variables of value, attitudinal, psychosocial, and moral dimensions. The authors concluded that “changes occurred in an integrated way, with change in any one area apparently part of a mutually reinforcing network” (p.572). The authors synthesized vast amounts of literature creating an influential, highly referenced source on post-secondary impact by addressing five fundamental questions around the changes a student goes through during and after post-secondary: (1) do students change during college; (2) to what extent are these changes contributing to college attendance; (3) are these changes related to the institution being attended; (4) are these changes shaping a student’s characteristics; and (5) is the influence of college/university durable (p.571). The data collected and analyzed through these questions provides evidence to the overall assumption that attending college has a wide range of impacts on students affecting them in a variety of different ways including: cognitive skills, development and intellectual growth, psychosocial change, attitudes and values, and moral development.

Co-curricular and social involvements are a large part of the university/college experience, and serves as one example of mutually reinforcing networks identified by

Pascarella and Terenzini (2005). In other words these non-academic endeavors can affect career aspirations, career choice, employment, and earnings of a student later in life contributing to their overall well-being, increased happiness, and life satisfaction (Pascarella & Terenzini). There needs to be a better understanding gained by higher education student affairs professionals on the necessity of co-curricular experiences and the impact they have on their students. Perceptions of campus recreational activities needs to shift from a residual perspective to recognizing the impact these services have and the value they bring to the lives of students and the institution (Crompton, 1993).

The impact of post-secondary life has found that students endure positive experiences and growth throughout university contributing to the characteristics and nature of their post-secondary experience (Pascarella & Terenzini, 1991). Previous studies have generally taken one of two basic approaches: developmental or institutional impact (Pascarella & Terenzini). The developmental approach focuses on students and the changes that occur within them and demographic psychological measures of adjustment. The college impact approach focuses on the environmental factors that may affect student outcomes influencing various academic factors or measures of academic or social involvement (Pascarella & Terenzini, 2005). These two theories add significant structure to this thesis in the way that it was shaped. This study directly looks at certain environments and how they can impact certain CRS outcomes. The college impact approach is the method that this thesis is adopting to identify how environmental factors, such as participation in intramural sports, affects student outcomes of social integration and institutional commitment.

College/University Impacts/Outcomes

Academic, social, and emotional benefits are provided through the post-secondary experience. When students attend university their life changes in a variety of different ways, having various impacts and outcomes as they discover and establish their self-identity. If students are not attending post-secondary institutions then they must be doing something else, therefore creating the concept of “college impact” as an individual attending a post-secondary institution may experience different influences than non post-secondary attendees, thereby posing the question: what difference does post-secondary attendance have on the development of an individual (Astin, 1993)?

When attending college/university, a variety of influences can be present in an individual’s life that help shape their beliefs, morals, interests, etc. Astin (1993) states that the “change or growth of a student during college is determined by comparing outcome characteristics with input characteristics” (p.7). Forrester (2006) discussed the college impact approach and how it focuses on the environmental factors that may contribute to, and influence, student satisfaction through various academic variables or measures of academic or social/cultural involvement. Student involvement in recreational sports in particular has been an important contextual variable that has been absent in the literature to date (Forrester, 2006). The way a student is involved can help explain and examine how and why environmental variables affect student outcomes (Astin).

Post-secondary students have different preferences in what they are inclined to participate in throughout their duration at an institution. Some students may be more

inclined to participate in a particular service/program than other students; therefore outcomes associated with this participation may not be impacted by the service directly, but may simply represent the differences in student characteristics and preferences (Astin & Sax, 1998). In order to alleviate this methodological problem within all non-experimental studies examining post-secondary impacts, the Input-Environment-Outcome (I-E-O) model (Astin, 1993) was developed which controls for the effects of these student input characteristics (Astin & Sax, 1998).

Alexander Astin's Input-Environment-Outcome Model

A conceptual framework was developed by Astin (1993) to assess the impact of various environmental experiences by determining whether students grow or change differently under varying environmental conditions. This model could be considered a grand theory due to its wide scope (Fawcett, 1993) and can be used to provide a basis for understanding how to achieve desired outcomes. For example, the environmental conditions a student experiences while on campus determines various social outcomes, and the effect they have on a student's overall life satisfaction, especially considering "satisfaction with student life is affected by more environmental variables than any other satisfaction measures" (Astin, p.284).

The Input- Environment- Outcome Model (*Figure 1*) (Astin, 1993) is broken down into three components:

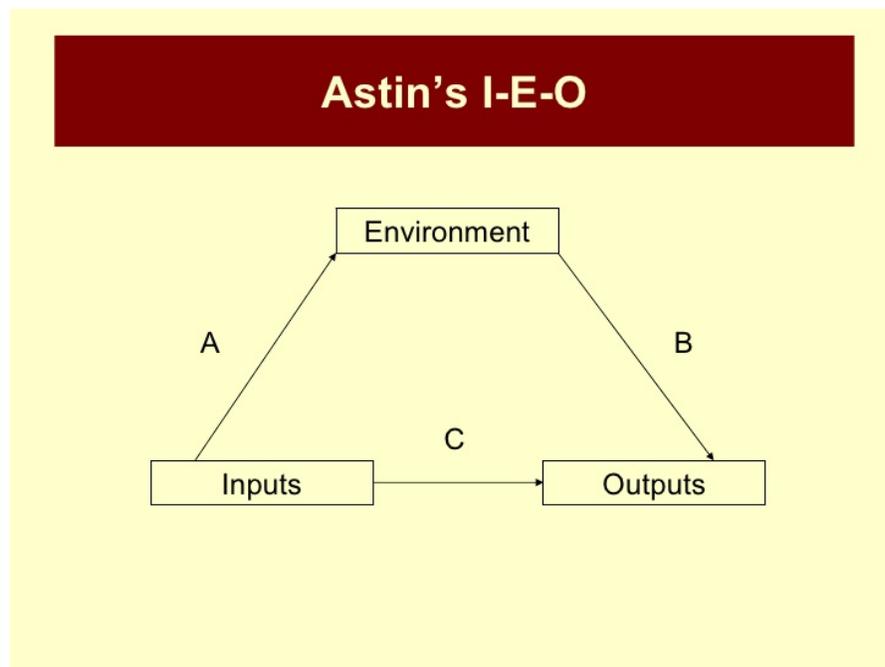
Input: characteristics of the student at the time of initial entry into the institution;

Environment: various programs, policies, faculty, peers, and educational experiences accessed by the student; and

Outcome: characteristics of the student after exposure to the environment that they are presently surrounded with at the institution.

The purpose of this model is to control for input difference, suggesting less bias and inaccurate estimates of how environmental variables affect student outcomes, resulting in a more accurate assessment of the effects of the campus environment and human performance (Thurmond & Popkess-Vawter, 2003).

Figure 1: Input-Environment-Output Model (Astin, 1993)



This model has been used in various studies comparing different environmental factors of student life to determine desired outcomes that students are looking for from a university experience. For example, Kelly (1996) used Astin's (1993) I-E-O Model to examine persistence at the United States Coast Guard Academy by controlling the social environment. The cadets (n=619) were evaluated to determine if input variables and academic and social involvement at the end of

each of the first four semesters differentiated between persisters and non-persisters of the academy, as well as how input variables were related to academic and social integration within the academy. The use of the I-E-O Model (Astin) was able to control for the multiple input variables through hierarchical regression. The study found that the effects of academic and social integration were time-dependent, with the most dramatic impact in the time period after immediately being received. Social integration and academic performance were also found to be indicators of long-term persistence at the academy, indicating their importance.

Astin's (1993) I-E-O Model has also been used to identify aspects of the undergraduate experience that contributes to a student's ethical development (Finelli et al., 2012). Focus groups and interviews were organized accessing 4,000 engineering undergraduate students across 18 institutions examining the relationships between students' curricular and co-curricular experiences and differences in the perceptions of faculties, administrators, and students regarding ethical instruction. After controlling for the input variables within the I-E-O Model, the researchers found that the quantity and quality of students' formal curricular experience and their co-curricular experience related to ethics were high. The authors concluded that institutions should integrate ethical instruction throughout the formal curriculum by controlling for the input variables to isolate the effects of the environmental variables on the outcome variable.

Durdella and Kim (2012) also used Astin's (1984) Involvement Theory and I-E-O Model (1993) to understand the underlying relationship between the experiences of college student veterans, and how they differ from their counterparts who are not

veterans, regarding the effects of college GPA and sense of belonging in college.

Veterans reported a lower GPA score and sense of belonging on campus, in spite of having higher levels of academic participation and interaction compared to their non-veteran partners. Through the I-E-O model multiple variables of; levels of academic participation, academic time, collaborative work, extracurricular engagement, and time employed were able to be controlled for in order to find that overall veteran status is associated with a set of precollege characteristics and college experiences that are related to lower levels of academic achievement and sense of belonging.

Furthermore, a study conducted by Lundberg, Schreiner, Hovaguimian, and Miller (2007) investigated first-generation status and student race/ethnicity as distinct predictors of student involvement and learning. Astin's (1984) Involvement Theory and I-E-O Model (1993) was used to conceptualize the study, determining the outcomes from the college experience as a result of student investment of time and energy within the college experience. This concept was fostered further through Rendon's (1994) theory arguing that non-traditional students are more likely to become involved when others from the institution invite their involvement. The researchers concluded that programs for first generation students must focus on frequent engagement within a positive supportive environment, interacting with diverse others with course learning activities involving collaborative dynamics with other students, minimizing public risk to students.

Investigating student development using the I-E-O Model provides educators, students, and policy makers a more in-depth evaluation to achieving the desired outcomes (Astin, 1993). Astin and Sax (1998) used the I-E-O Model to examine the

effects of service participation after controlling for the effects of student input characteristics. They found that, the most versatile method for implementing the I-E-O Model is blocked stepwise regression analysis; also known as hierarchical regression (Astin & Sax, 1998). The independent variables within their study were comprised in six temporal blocks, five of these blocks contained environmental measures. Through this type of model (I-E-O) the variables being analyzed were able to be controlled and the findings then showed clearly that participation in service activities enhanced students' academic development, life skill development, and sense of civic responsibility. Astin's I-E-O Model identifies input variables to control for, and directly analyzes certain environments that are present throughout a post-secondary experience in order to more accurately determine the impact of these environments on particular outcomes.

Environmental Influences and Astin's Theory of Involvement

The external environment that students are immersed in has a drastic influence on student development whether the individual is aware of the impacts or not. Key variables found to have the most influence on the overall post-secondary experience have been grouped into the following six areas; institutional characteristics, curriculum measures, faculty environment, student peers, financial aid, and student involvement (Astin, 1993). Student involvement refers to the quantity and quality of the physical and psychological energy that students invest in the post-secondary experience. Astin's theory of involvement (1984) explains the empirical knowledge of environmental influences on students' development. The term "involvement"

implies behavioural components amongst students analyzing how the individual feels, does, and behaves. Astin's theory of involvement consists of five general principles:

1. Involvement is the investment of energy in various efforts;
2. Students manifest different degrees of involvement;
3. Involvement can be measured quantitatively or qualitatively;
4. The amount of learning and development is proportional to the quality and quantity of involvement; and
5. The effectiveness of any practice is related to the capacity of that practice to increase student involvement.

Astin's theory of involvement was derived from a previous study focusing on college dropouts (Astin, 1975), identifying factors of the college environment that significantly affected students' persistence in college. The results of that study concluded that every significant effect could be rationalized in terms of the involvement concept: each positive factor was likely to increase student involvement in the undergraduate experience and every negative factor was likely to reduce their involvement. Students who were dropping out of the university and college experience demonstrated a lack of involvement in the university or college they were attending.

Ten years after the initial theory and principles were established; Astin (1993) stated that students learn by becoming involved. Various researchers, and numerous studies, have based their work around Astin's theories and work. Astin reiterated the meaning of involvement expanding on this theory stating that involvement is "a construct that should not be either mysterious or esoteric. Quite simply, student

involvement,” refers to the amount of physical and psychological energy that the student devotes to the academic experience” (p.297). A highly involved student is one who dedicates a considerable amount of time and energy to studying, time on campus, participating in student organizations, and interacting with faculty and other students on a frequent basis (Astin).

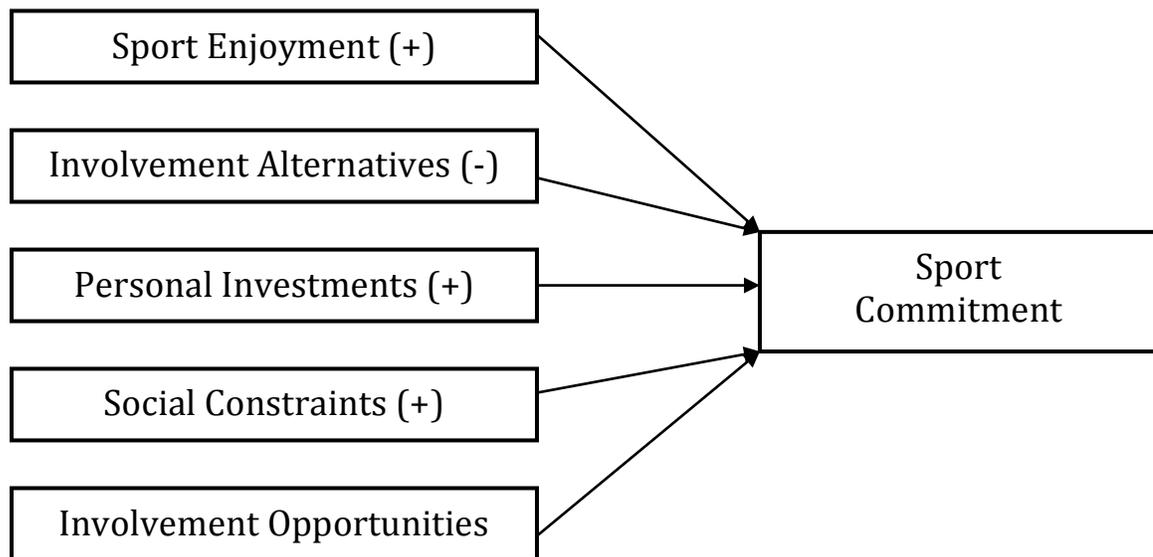
Astin (1993) defines involvement in terms of the quantity and quality of the physical and psychological energy that students devote to the experience. This theory is used universally to measure the quantity of involvement by examining both the depth (frequency) and breadth (number of activities) of involvement, thereby providing an objective measure of an individual’s participation in CRS for example.

Measuring the quality of involvement is more subjective and has failed to be done consistently in the literature. The concept of Quality of Effort developed by Pace (1982); looks at effort as a quality dimension in that some kinds of effort are potentially more educative than others involving personal and social opportunities. The College Student Experience Questionnaire (CSEQ) assesses the quality of a student’s effort and the attainment of their college goals (Pace). This questionnaire consists of 14 scales measuring the quality of effort an individual has invested, covering college facilities and personal/interpersonal experiences at college. The Facilities, Clubs, and Organizations scales of this questionnaire all measure the frequency of participation, quantifiably measuring the depth and breadth of participation. These scales are fairly general in that they do not specifically assess one CRS program area and do not provide a measure of the psychology energy that students devote to the experience as specified in Astin’s (1984) theory of involvement.

Therefore, when going back into the literature and searching for quality of the physical and psychological energy devoted to co-curricular and/or recreational sport experiences, the concept of personal investments was discovered. This concept was first introduced in Rusbult's (1980) Investment Model and later revised and incorporated into the Sport Commitment Model (SCM) (Scanlan, Simons, Carpenter, & Schmidt, 1993), and appears to provide a way to measure the quality of involvement in CRS that is consistent with Astin's theory of involvement (See Figure 2).

The development of the SCM derives from various theoretical concepts of commitment in social and organizational psychology (Scanlan et al., 1993). From a social psychological point of view, it is generally agreed that commitment refers to a person's persistent course of action (Becker, 1960) or relationships (Kelley, 1983). Rusbult's (1980) investment model of commitment was the initial foundation for the SCM, identifying several causal conditions and testing various relationships to commitment through a variety of scenarios (Simmons & Keeler, 1993). This foundational investment model views commitment to a relationship or an activity as a product of satisfaction, alternatives, and investment, and has been found to be highly effective in predicting commitment (Simmons & Keeler).

Figure 2: *Sport Commitment Model (Scanlan et al., 1993)*



The SCM identifies five factors, one of which is personal investments, which influence sport commitment, defined as a “psychological state representing the desire or resolve to continue sport participation” (Simons & Keeler, 1993 p. 6).

Personal Investments can be defined as “personal resources that are put into the activity which cannot be recovered if participation is discontinued” (Simons & Keeler, 1993, p. 7). This variable reflects Rusbult’s (1980) intrinsic investment, looking at the implicit aspect of involvement and the benefits of participation, as these investments cannot be retrieved upon termination. There is overlap and similarities in the Personal Investments construct (Scanlan et al.), Quality of Effort (Pace, 1982) concept, and Astin’s (1984) theory of involvement. All three of these concepts/theories look at psychological energy, effort, and investment individuals are putting into an activity making them continue to be committed and involved enhancing the educative experience. This concept of personal investments best seems to capture Astin’s notion

of psychological energy devoted to the experience and appears particularly relevant given to the intramural sport context of this study.

Astin's theory of involvement (1984) qualitatively differs from other developmental theories as it focuses on the developmental outcomes and is more focused on the behavioural mechanisms and processes that foster student development. The theory of student involvement implies that students can achieve particular development goals as a direct function of the time and effort they devote to activities designed to produce increased gains. Astin's theory of involvement is a crucial component to this study. It provides rationale for measuring the breadth, depth, and quality of co-curricular involvement, in this case intramural sports, in order to determine the outcomes of this involvement. While research is increasingly recognizing the impact of co-curricular involvement on numerous outcomes such as Pascarella and Terenzini (2005) have identified, one area of co-curricular involvement that has been marginalized in this literature has been students' participation in campus recreational sports.

Campus Recreation

Prominent changes have been made in the realm of campus recreation across recent decades, as budgets have drastically increased and the recreation facilities and programs offered have become a recruitment and retention strategy to attract students to universities. Campus recreation facilities and programs have now become an essential element, and desirable factor, of the university lifestyle that students are drawn to and are looking to participate within, thereby improving the campus environment as a whole (Taylor, Canning, Brailsfor, & Rokosz, 2003). Campus

recreation can be defined as: a major sector of recreation programming designed to meet the needs of older teenagers and young adults in college/university settings; often used interchangeably with recreational sport (National Intramural Recreational Sports Association (NIRSA), 2008). Campus recreation has been constantly expanding throughout its evolution justifying the need for programs, services, and facilities within the university community.

All sports were informal, composed of student teams engaged in leisure time play. As these teams grew in popularity with students, those who did not participate in athletic varsity sports wanted to participate in informal organized sport and the term intramurals was created for these informal sports (NIRSA, 2008). Intramurals were first established within fraternities, and incorporated into their “rush” events, as organized competitions. Organized sport training was introduced in 1862 at the University of Minnesota as military training for all men in the freshmen class. After the United States civil war, intercollegiate games became more frequent in schools nation-wide (NIRSA). As varsity athletics became more popular and solidified on college campuses, other students not involved wanted to still participate in extra-curricular informal sport activities. As a result, the earliest intramural programs began in the late 1800s, conducted by varsity coaches or physical education teachers, with the first building built in 1928 by the University of Michigan dedicated to intramural sports (NIRSA).

A major shift occurred ten years after the 20th century establishing an increase in the participation and demand for athletics and intramural sport, as students were now interested in playing for the sake of participation rather than competition.

Colleges and universities began to recognize the opportunities for student involvement that these programs provided, making campus recreation a more prominent aspect of the higher education experience. Further expansion of programs, and activities offered to students created the need for new facilities. NIRSA (2008) reported that 174 colleges and universities between 2008 and 2013 would spend \$3.96 billion on new construction, additions, remodels, and expansions to incorporate more space and equipment for campus recreation programs. The value that students have now placed on their participation in these programs is correlated to their satisfaction with the institution, directly influencing recruitment and retention rates of higher education institutions today (NIRSA).

Participation in Intramural Sport

Historically, intramurals were defined as “those activities carried out under the auspices of a particular institution and in which all the participants are members of the particular institution” (Colgate, 1978, p.1). More contemporary views define intramural sports as; “ school based recreational sport pursuits involving some form of competition between two or more participants, as well as sport activities offered in the game form that are freely chosen by a wide array of participants within a defined boundary for the benefits that they provide (NIRSA, 2008). NIRSA states, “intramural sport programs should be accessible to diverse groups of participants, regardless of age, ability, genre, skill level, and other socio-demographic variables” (p.111).

Through participating in intramural sport a student can receive a variety of benefits that can impact other areas of their life. Astin (1993) states, “participating in

intramural sports has a substantial positive effect on physical health, alcohol consumption, and attainment of a bachelor's degree" (p. 386). Student participation in intramural sports has been shown to have a significant positive effect on satisfaction with student life and the overall college experience (Astin). Student participation in intramural sports has been shown to have a positive relationship with: self-rated physical health, leadership, and satisfaction on student life (Astin).

Participation in intramural sports can result in internal personal outcomes as well as external tangible outcomes, increasing positive experiences as an individual enters the post-secondary atmosphere. Student participation in campus recreational sports programs can be looked at as a necessary ingredient for facilitating satisfaction for a student's well-being throughout their post-secondary educational experience. Intramural sports play an integral role in campus recreation providing opportunities for social interaction within a university setting (Heywood & Warnick, 1976). Tinto (1987) also identified "extra-curricular programs, and intramural sports, for example, may all serve to provide individuals the opportunity to establish repetitive contact with one another in circumstances which lead to the possibility of incorporation into the life of the college" (p.99). Intramural sports specifically offer a positive social outlet influencing lifestyle choices and healthy behaviours amongst students (American College Health Association, 2002).

Social Benefits

The social benefits of co-curricular experiences in general have long been recognized as an important outcome of these experiences (Heywood & Warnick, 1976; Tinto, 1987). Research is increasingly recognizing the social benefits of

intramural sport participation for students as well (Artinger et al, 2006; Sturts & Ross, 2013). Intramural sports take place in student recreation centers (SRCs). Dalgarn (2001) identifies three alternative outcomes that SRCs provide other than physical exercise: (i) users have opportunities to develop positive self-esteem, (ii) enhance their social relationships, and (iii) improve their communication, leadership, and problem-solving skills. Students often associate their success at their chosen post-secondary institution through their academic achievement, although Dalgarn (2001) found what students “value and most often remember are the life-skills and relationships they develop while in college” (p.71).

Involvement in campus recreation activities is strongly correlated with high satisfaction of college life and academic success (Light, 1990) as well as promoting student engagement and enriching students’ social lives (Cheng, 2004). Elkins, Forrester and Noel-Elkins (2011) suggest that recreational sport participation has impacted students’ perceived sense of campus community. Elkins et al. (2011) found through their study of 330 students from a mid-size post-secondary institution, that the more students are involved within the activities offered on campus, the more likely they are to learn about the traditions and history of their campus creating that connection and perception of belonging to the campus community. Furthermore students who held a stronger sense of community were due in part to a higher level of student/faculty interaction. This directly related to the amount of participation a student is actively involved with based on the number of activities they participated in a week (breadth) and the hours that they put into each activity (depth).

A study by Cheng (2004) represents an institution's attempt to make sense of students' perceptions about their campus community in providing future directions and valuable resources for community-building efforts. Through a bi-variate examination of 26 items related to a student's perceived sense of campus community, Cheng found that three aspects of a student's college life were directly associated to their sense of campus community: (1) students feeling cared about, and treated in a caring demeanor not just representing a number in a book, (ii) loneliness, and (iii) quality social life through effective programming and organized social opportunities. Hall's (2006) research further supports these notions by examining the role of campus recreation programs when retaining students at a specific institution. The results portrayed through qualitative interviews demonstrated that recreation participation has a direct relationship with developing a sense of community. Through axial coding, the central phenomenon of "sense of belonging" was a reoccurring theme throughout the interviews indicating the sense of community students experienced. Other themes of friendship, meeting new people, relationships forged, and socialization were direct results of participating in a recreation program helping the student develop the sense of community that they were looking for.

Artinger, Clapham, Hunt, Meigs, Milford, Sampson, and Forrester (2006) describe social benefits as engagements that offer students opportunities to develop and enhance their physical, mental, and emotional capacity. In order to measure the social benefits of intramural sport participation questions were broken down into four categories based on the reviewed literature: university integration, personal social benefits, cultural social benefits, and social group bonding. Artinger et al (2006)

found numerous significant differences in the reported social benefits of intramural sport participation between: on campus and off campus students, first and fourth year student, and males and females. They also found a significant difference in the number of intramural sports played (breadth) and the social benefits students were receiving. From these results, the authors indicated that recreational sport programs should link participation in intramural sports to larger institutional goals through the emphasis of the role social integration plays in incorporating students into a university through recreational sport opportunities. These findings were related to, and supported by, Astin's (1984) theory of involvement, suggesting, "that the more involved students are, or the more intramural sports they participate in, the more they stand to benefit" (Artinger et al., 2006, p.81). This suggests that the more times a week CRS activities are participated in (depth), and the greater the involvement in different CRS activities (breadth), relates to how much a student will benefit.

These findings were supported by Sturts and Ross (2013), who examined the social outcomes of participation in intramural sports using the same social benefits scale developed and used by Artinger et al (2006). A convenience sample population of 301 participants was selected from an intramural basketball program that completed a Likert scale questionnaire. Their findings provided consistent results with previous research showing social outcomes for college students aiding in development, satisfaction, and creating healthy social networks. The researchers concluded that intramural sports are being used in the appropriate manner with healthy living and socialization as the main goals of these programs. Intramural sports provide many social outcomes for post-secondary students that aid in development,

satisfaction, and creation of healthy social networks. The information in this study supports the notion that students experience high levels of social outcomes while participating in campus recreational sport.

Moreover, Henchy (2011) found that participation in campus recreation positively influences other areas of students' lives such as; their overall health, interest in staying fit, fitness level, well-being, and stress management. Students (n=237) identified that their sense of belonging and social benefits increased through their participation in campus recreation programs. Furthermore, research has found that students, who stressed the importance of student recreation centers and programs related to social bonding experiences, increase their social belonging and were more likely to become involved within university activities to receive these social benefits (Miller, 2011). We can conclude from these studies that various elements of social benefits are being achieved through participation in campus recreation facilitated through student recreation centers.

Campus recreational sports programs have also been found to be socially enriching environments as they offer students the opportunity to develop informal support groups, find study partners, and seek advice from other students and faculty (Belch, Gebel, & Mass, 2001). Recreation centers can indeed create environments for an ideal education developing the whole student (Bonfiglio, 2004). These spaces provide opportunities for faculty and students to engage in similar activities outside their normally prescribed roles within the university, thereby offering social benefits to both. Dalgarn (2001) similarly concluded that campus recreation centers could play a significant role in creating a sense of community, "as they have the capacity to

attract members of the campus community and community members at large in exciting, creative, and unique experiences” (p. 69).

Quantifying CRS Participation

Astin’s Theory of Student Involvement (1984) “is central to understanding the impact that out-of-class experiences, such as participation in CRS activities, programs, and services have on the student experience” (Forrester, 2015, p.4). Astin’s Theory of Involvement (1984) involved five basic tenets and can be measured in various ways.

Forrester (2006, 2015) quantitatively measured Astin’s Theory of Involvement through breadth (number of different intramural sports) and depth (number of hours spent participating). Forrester, Ross, Hall, and Geary (2007) also used Astin’s (1984) Theory of Involvement as a theoretical rationale when looking at past recreational sport participation. Students’ involvement in recreational sports were quantitatively measured within this study through the depth (frequency of campus recreational sports participation) and the breadth (number of different campus recreation activities participated). Quantifying CRS participation this way coincides with Astin’s (1984) Theory of Involvement and suggests that the more campus recreational sports the alumni participated in the more likely they were to be currently physically active. Furthermore, Forrester (2015) identifies that the measurement of breadth and depth of CRS involvement is consistent with Astin’s Theory of Student Involvement (1984) when organizing participants into ‘involvement’ levels based on their frequency of participation (depth) and number of different CRS activities participated in (breadth). Forrester (2015) found that the higher levels of a student’s breadth and depth of CRS

participation reflected more identified benefits in outcomes related to retention, health, wellness, and student learning.

Collectively, while important contributions to the literature, this research on the social benefits of intramural sports is largely atheoretical in measuring the independent variables of student participation/involvement in campus recreation. The research has also failed to account for the non-random assignment of participants to programs, and was unable to control for input characteristics identified in Astin's (1993) I-E-O Model.

Research on the social benefits of intramural sport participation also lacks a consistent definition of social benefits, likely stemming from the lack of theoretical frameworks grounding social benefits within these studies. For example, Artinger et al (2006) and Sturts and Ross (2013), defined social benefits as personality or character development, moral development through social values derived from college to real world experiences. Cheng (2004), and Elkins et al. (2011), defined social benefits as enriching students' lives through promoted student engagement. Miller (2011), Henchy (2011), and Huesman et al. (2009), defined social benefits as reoccurring interactions amongst students developing social skills and a sense of belonging through integration into the university through various activities. Kinzie and Schuh (2008), defined social benefits as student involvement and engagement in educationally purposeful activities, being an essential component in developing a sense of campus community.

Previous studies have used the term 'integration' without clearly defining the nature of this term, mistakenly using it interchangeably with the terms of

‘involvement’ and ‘engagement’, therefore, making it difficult for participants to answer the questions correctly in regards to the context and terms the researcher is referring to. The term ‘integration’ relates to a student’s sense of belonging and the relationships between the student and the campus (Wendel, Ward, & Kinzie, 2000), which differs from ‘involvement’ and ‘engagement’. Relatively few studies have examined the role of campus recreational sports participation in general, or intramural sports in particular, on the social integration of students into the campus community.

Social Integration and Tinto’s Model of Institutional Departure

The concept of social integration, while largely overlooked in studies as a way to conceptualize the social benefits of campus recreation participation. Social Integration is a central component of Tinto’s Model of Institutional Departure (1987), the main outcome of student involvement in co-curricular activities, and a key antecedent of students’ goals and institutional commitment. Tinto’s (1993) Model of Integration measures perceptions of students’ interactions and connections to the staff and faculty along with their peers within their involvement in extra-curricular activities.

Social integration measures a student’s sense of belonging, shared values, and similarity to others in the post-secondary environment (Davidson et al., 2009). Tinto (1987) incorporated Durkheim’s (1951) view on integration as being both social and intellectual. Tinto (1987) defined the two categories specified by Durkheim as; “integration which results from personal affiliation from day to day interactions among different members of society” (p.101) and, “the latter comes from the sharing of values which are held in common by the other members of society” (p.101).

Positive, and successful, social integration can directly contribute to a student's overall college experience, thereby increasing their want to continue attending the institution. Social integration can impact a person's self-identity, and feeling of self-worth directly, as being a part of a community developing a sense of belonging. Social integration can also be referred to as the extent "that students are integrated into social systems of the college/university through such activities as informal peer group associations, semi-formal extracurricular activities, and interaction with faculty and staff within college" (Huesman et al., 2009, p.53).

Any individual or student throughout ones post-secondary experience can successfully achieve social integration. The attitudes and beliefs of one's peers and faculty influence personal attitudes and beliefs. Individuals adhere to structural rules and requirements of the institutional culture they are a part of, in order to benefit a variety of areas in their lives (Pascarella & Terenzini, 2005; Tinto, 1993). For example, "positive integration serves to raise one's goals and strengthen one's commitment both to those goals and the institution within which they may be attained" (Tinto, 1987, p.116). Social integration on a post-secondary campus can be present in many different ways, and can directly contribute to the strengthening of a stronger campus community. Tinto (1987) explains the benefits of social integration facilitated on a college campus as "...encourages the development of on campus communities wherever and whenever possible. Whether the institution is residential or non-residential, the creation of campus communities through social integration obtain the same goal of the importance of student involvement, to enhance the likelihood of persistence" (p.193). Social integration refers to a student's perception of interactions

they have with their peers, faculty, and staff at the institution as well as involvement in extra and co-curricular activities (Wendel, Ward, & Kinzie, 2009).

Social integration opportunities are enhanced through campus communities and the implementation of their activities:

“Beyond the obvious educational benefits of such activities, the periodic coming together of students and faculty serves to remind persons of, and reinforce the existence of, on-going social and intellectual communities on campus” (Tinto, 1987, p.193).

Tinto’s (1993) research investigating the impact of students’ college experiences on social integration has found that students who develop satisfying relationships with their peers tend to earn better grades and are more inclined to remain in college than less socially integrated students. To support Tinto’s (1993) theory, a study conducted by Nicpon, Huser, Blanks, Sollenberger, Befort, and Kurpius (2007) investigated college freshman (n=401) that completed a series of standardized instruments during class time. It was found that less loneliness and more social support predicted more positive persistence decisions, which in turn impacts their overall college experience. Neither social support nor loneliness was related to students’ GPA.

In a study of institutional and external influences on social integration in the freshman year, researchers similarly found that “students who become adequately integrated into the social and academic systems of their (university) through participation in extra-curricular activities, interactions with other students, and interactions with faculty develop or maintain strong commitments to attaining a college degree” (Christie & Dinham, 1991, p.412-413). Researchers have

acknowledged that outside of structured freshman programs “recreation may be the single common bond between students” (Bryant, Banta, & Bradley, 1995, p.158).

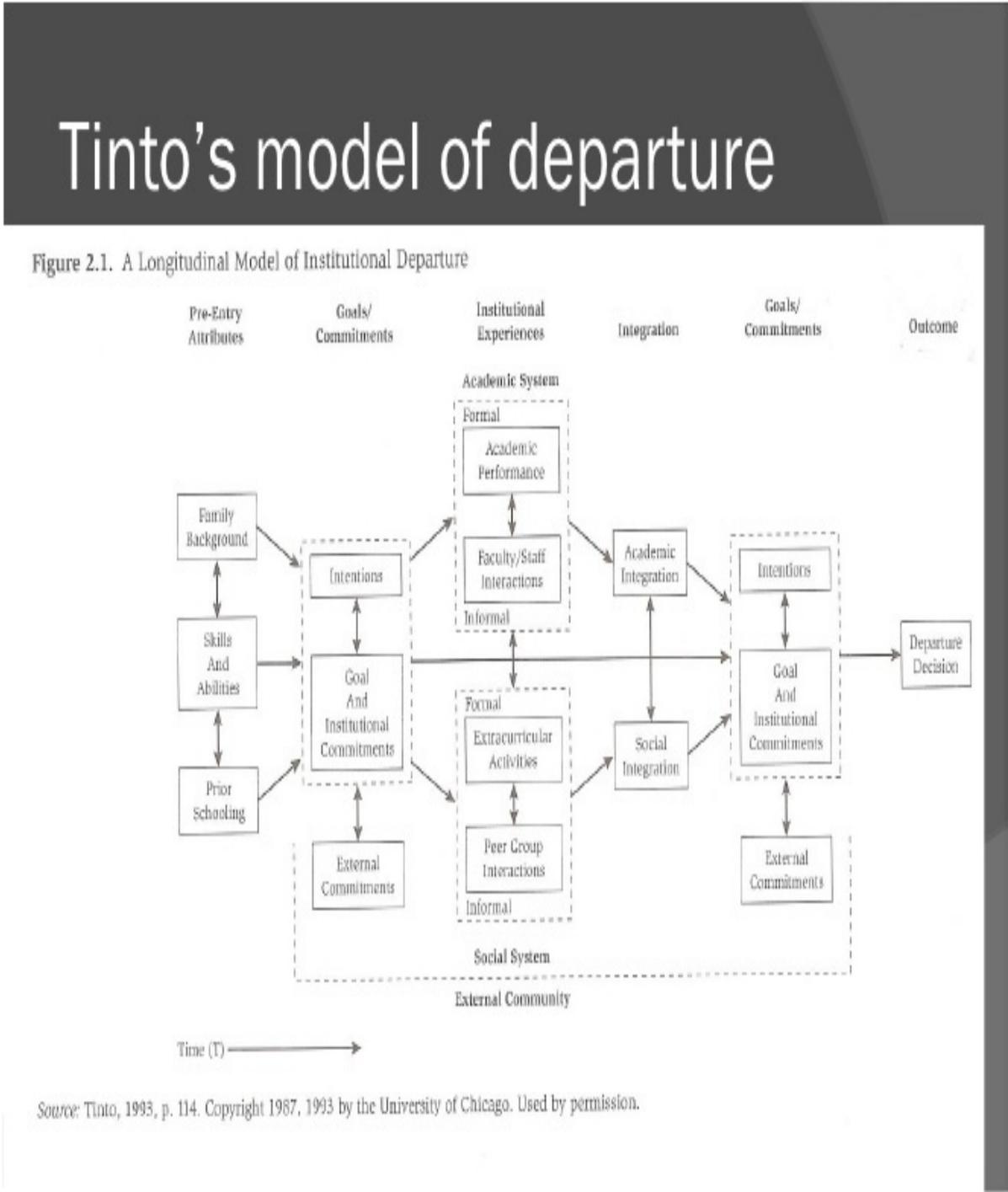
Freshmen have also reported that their involvement in recreation programs and facilities have greatly impacted their decision to continue at the university of their choice (Bradley, Bryant, & Milbourne, 1994).

Social integration within a campus environment is an important component of Tinto’s (1987) Model of Institutional Departure (Figure 2), as:

“... It argues that individual departure from institutions can be viewed as arising out of a longitudinal process of interactions between an individual with given attributes, skills, financial resources, prior educational experiences, and dispositions and other members of the academic and social system of the institution. The individual’s experience in those systems, as indicated by his/her intellectual (academic) and social (personal) integration, continually modifies his or her intentions and commitments. Positive experiences that is, integrative ones reinforce persistence through their impact upon heightened intentions and commitments both to the goal of college completion and to the institution in which the person finds him/herself” (p.113-115).

The concept of social integration also directly relates to co-curricular activities and has been identified as a key component to post-secondary success in various studies as well as in Tinto’s Model of Institutional Departure (1987). Social integration has been a main outcome of student involvement in co-curricular activities, and a key antecedent of students’ goals and institutional commitment as identified by Tinto (1987).

Figure 3: Tinto's (1987) Model of Institutional Departure



Social integration is viewed as a key contributor to student retention, as high levels of integration into social and academic life of an institution can lead to greater commitment to the institution (Tinto, 1987; 1993). Integration is a state of being based on perceptions of student fit with their campus and their interactions reflecting the values and norms of the institution and its culture (Wolf-Wendel, Ward, & Kinzie, 2000). Tinto (1975, 1987, 1993) theorizes that when a student attends a post-secondary institution they obtain various patterns of personal, family, academic characteristics, and skills with intentions and commitments to obtain them through their post-secondary experience. These intentions and commitments are then modified and reformed continuously throughout students' college experience based on the academic and social structures within their external environments while attending the institution (Pascarella & Terenzini, 2005).

The social integration within these structures and systems is what leads to the reformation of commitments and initiations throughout the student's development until time of departure, and reasons for remaining at the institution through the duration of their academic career. Integration is a key component to this model and is defined by the "extent to which the individual shares the normative attitudes and values of peers and faculty in the institution and abides by the formal and informal structural requirements for membership in that community or in sub groups of it" (Pascarella & Terenzini, p.54). Throughout the model, increases in the student integration process will strengthen the student's commitments to both their personal goals and to the institution where the goals will be achieved (Pascarella & Terenzini).

Institutional Commitment

Institutional Commitment has a direct relationship to social integration in Tinto's Model of Departure (1993). This model identifies social integration as a direct contributing factor to institutional commitment, which in turn leads to a departure decision. Social Integration and Institutional Commitment are part of the final steps of Tinto's Model of Institutional Departure resulting in key components to the model's success, as they are directly dependent on one another. Institutional Commitment has been referred to as a variable that holds value and plays a crucial role in contemporary casual models of retention (Davidson, Beck & Milligan, 2009). It is defined as "the extent to which students are confident in and satisfied with their selection of a college or university" (Davidson, Beck & Milligan, p.374). Tinto's Model of Institutional Departure identified Institutional Commitment as one of the final steps and key contributors to a student's departure decision. The factors of Institutional Commitment that will directly affect a student's departure decision are; a student's intention to re-enroll and earn a degree from that institution, a student's confidence in having selected the right institution for them, and their thoughts on whether they want to continue or stop their education. Institutional Commitment was found to be the single best predictor of retention and persistence of an institution, when the CPQ (College Persistence Questionnaire) was tested for reliability and validity (Davidson, Beck & Milligan). By using multiple dimensions of the CPQ it provides colleges and universities a multipurpose tool for decreasing attrition (Davidson, Beck & Milligan).

Campus recreational facilities and programs available can also influence Institutional Commitment. Endo and Bittner (1985) found that participation in

intramural sport programs was directly related to education persisters at the University of Colorado. Mallinckrodt and Sedlacek (1987) discovered that black students at the University of Maryland who participated in recreational trips and multiple hours in the gymnasium were significant factors of predicting retention. Furthermore, Haines (2001) found the convenience and availability of recreation facilities on campus were a highly important factor for prospective students, when deciding on which post-secondary institution to attend as well as remaining at that chosen institution. Barcelona (2002) followed up with results findings that the more students are involved in co-curricular activities in athletics and recreational sports the more they will gain from the chosen post-secondary institution. This then can lead to their institutional commitment as the students are utilizing the amenities offered and receiving benefits from their experiences. Campus recreational activities have been shown to provide various benefits to its participants including social integration and involvement (Forrester, 2014), which in turn relates to institutional commitment through social integration (Tinto) connecting all three variables.

Research Questions and Hypotheses

The review of literature revealed numerous relationships between intramural sport participation and the social benefits of this participation. By using Astin's I-E-O Model as the conceptual framework, Astin's Theory of Involvement and, Tinto's Model of Departure for this study, three types of variables have been identified to be measured, in order to fulfill the purpose of this study. Following the structure of Astin's I-E-O Model input variables consist of: demographic questions (age, gender, etc.), the environmental variables are: breadth, depth, and quality of intramural sport

participation, and the outcome variables consist of: social integration and institutional commitment.

The following is the overall research question for this study: is there a significant relationship between intramural sport participation, social integration into a campus community and institutional commitment? More specifically, the following research questions, and corresponding null (H_0) and alternative (H_1) hypotheses, will guide the study:

1. Is there a significant relationship between the breadth of post-secondary intramural sport participation and social integration into the campus community?

H_{1-1} : There is a significant relationship between the breadth of post-secondary intramural sport participation and social integration into the campus community.

H_{0-1} : There is no significant relationship between the breadth of post-secondary intramural sport participation and social integration into the campus community.

2. Is there a significant relationship between the depth of post-secondary intramural sport participation and social integration into a campus community?

H_{1-2} : There is a significant relationship between the depth of post-secondary intramural sport participation and social integration into a campus community.

H_{0-2} : There is no significant relationship between the depth of post-secondary intramural sport participation and social integration into a campus community.

3. Is there a significant relationship between the quality of post-secondary intramural sport participation and social integration into a campus community?

H₁₋₃: There is a significant relationship between the quality of post-secondary intramural sport participation and social integration into a campus community.

H₀₋₃: There is no significant relationship between the quality of post-secondary intramural sport participation and social integration into a campus community.

4. Is there a significant relationship between social integration and institutional commitment?

H₁₋₄: There is a significant relationship between social integration and institutional commitment

H₀₋₄: There is no significant relationship between social integration and institutional commitment.

Summary

The information provided in this chapter outlines the direction and significance of this research. Astin's (1993) I-E-O Model served as the conceptual framework guiding the study with students' intramural sport participation measured using Astin's (1984) theory of student involvement and the social integration/institutional commitment outcomes of this involvement defined by Tinto's (1993) Model of Institutional Departure. While controlling for student input characteristics, this study statistically examined the impact of students' participation

in intramural sports on social integration into the campus community and institutional commitment.

Chapter 3: Methods

The objective of this study was to examine the relationship between intramural sport participation, students' social integration into a campus community, and institutional commitment. This chapter outlines the methods of this study by describing the following: (i) design, (ii) participants, (iii) ethics, (iv) instrumentation, (v) reliability and validity, (vi) data collection, and (vii) data analysis.

Design

This correlational, non-experimental, quantitative survey study examined the relationship between participation in intramural sport, social integration, and institutional commitment using hierarchical regression and MANOVA calculations. This institution's undergraduate and graduate students were studied using a questionnaire assessing demographic information, intramural sport participation, personal investments using the Athlete Opinion Survey as well as social integration and institutional commitment using the College Persistence Questionnaire. MANOVA calculations and hierarchical regression analyses were used to analyze the data as "the most versatile method for implementing the I-E-O model is blocked stepwise regression analysis, otherwise known as hierarchical regression" (Astin & Sax, 1998, p.252).

Participants

The study's target population included university undergraduate and graduate students currently participating in intramural sports. Purposive sampling was used in order to purposively target students participating in intramural sports. Attending multiple intramural events and assessing a variety of age groups, gender, and types of

sport, this study accessed the target population. Stratified random sampling was used to collect the data from participants, by stratifying the sample by competition level (i.e., competitive A, competitive B, or recreational), dual/individual and team sports, as well as gender composition of the intramural sport (i.e., female only, male only, or co-ed).

When determining a sample size using hierarchical regression Tabachnick and Fidell (2007) provide two equations that can help determine how large one's sample size should be. One equation specifies: N should be greater than or equal to $50+8m$ (the number of independent variables). Or, when testing for additional individual predictors, N should be greater than or equal to $104+m$. In this study there are thirteen independent variables that are being tested. Therefore, this gives us two sample size options through these equations: $N = 154$ ($50+ 8(13) = 154$) or $N = 117$ ($104+13 = 117$).

In the recommendations provided by Tabachnick and Fidell (2007) the effect size is not taken into consideration. The larger the sample size accumulated will produce a more accurate power and effect size (Field, 2013). Like Tabachnick and Fidell, Field suggests the number of predictor variables included in the analyses must be considered. He further recommends generally using 10-15 participants per predictor variable based on a benchmark of Cohen's (1988) effect sizes and that anywhere between 1-20 predictors identified in analyses should have a sample size of: 77 if trying to achieve a large effect size; 160 if trying to achieve a medium effect size; and a couple hundred if trying to achieve a small effect size. For this study a medium effect size aimed to be achieved gaining a sample size of at least 160

participants. Due to the overwhelming success of the data collection efforts in this study, a sample size of 324 was achieved.

Intramural Sport Program

The intramural sports program at a specific institution that was used was located on campus and implemented to stimulate an individual's growth in a contemporary, safe environment that encourages an active lifestyle and fosters social integration and leadership opportunities, supporting lifelong learning and an active healthy lifestyle (Brock University, 2014). The participants in the intramural sports program ranged in age, gender, and association to the university, including both undergraduate, and graduate students.

Students participated in the fall intramural session during the months of October and November (six week period). Intramurals at the university run from October to November (fall semester), December to January (winter semester session 1), and February to March (winter semester session 2). The fall semester intramural session (October to November) consists of 11 sports leagues including: volleyball, slow-pitch baseball, flag football, ball hockey, tchouckball, basketball, inner-tube water polo, outdoor soccer, soccer baseball, badminton, and tennis. A variety of these sports are separated by gender (i.e. Women's Outdoor Soccer/Men's Outdoor Soccer) while some also consist of co-ed sports where both genders play together (e.g. Co-Ed Inner-tube Water Polo). Many of the sports offered are also broken down into tiers of competition levels to differentiate skill level; Comp A (advanced), Comp B (intermediate), and Rec (beginner). By having these varying levels of play and gender compositions offered in each sport, an inclusive environment is provided for all

participants. Different competitive levels, and intramural sports with different gender compositions, were sampled to gain participants from each in an effort to be representative of the range of intramural sports offered.

Ethics

This research adhered to the standards of ethical research identified by the Research Ethics Board (REB) at the University. Participants received an informed consent form to fill out before completing the questionnaire. The informed consent form informed students of their rights as a research participant, and assured them that the study had received ethical clearance from the university's REB, and explained their right to withdraw from the study at any time. Upon completion of the questionnaire, participants were given a feedback letter, thanking them for their participation and reminding them that the information they provided is anonymous and would be kept confidential. The letter also stated that the results of the study would be available to them upon request, by contacting the researcher after a certain date.

Datum collected was kept in a sealed container immediately upon completion to ensure confidentiality of information provided. Once all of the data had been collected from all intramural participants, it was inputted into the Statistical Package for the Social Sciences (SPSS) 20.0 for analysis. The data was stored electronically and password protected, as well as backed up on a password protected external computer drive (USB). The data recorded on the paper copies was kept and stored in a locked cabinet. The data was kept and will be securely stored for one year after the research has been completed at which point the data will be deleted electronically,

and the paper questionnaires will be shredded. The data collected is anonymous and does not ask the participant to identify their name at any point therefore; there is no way to connect the data to the participant who provided it.

Instrumentation

The questionnaire-included questions regarding participants' reactions to various aspects of their lives at the specific institution where the intramural sport is being played. Students were asked to consider each of the questions carefully, and indicate the answer that best represents their thoughts or experiences. There are no "right or wrong" answers, to the questions so it was intended participants would recall upon real life experiences they have encountered throughout their post-secondary experience thus far.

The questionnaire administered to participants in this study involved three sections. The first section consisted of general demographic information from the participant, which is referred to in the data analysis as covariates within the hierarchical regression analysis. This demographic information was collected through variables of; gender, age, year of study, faculty of study, ethnicity, and residence (on campus, off campus, home). These questions were answered through checking off boxes of pre-determined response categories. This demographic section was included to control students' entry characteristics when conducting the hierarchical regression analysis. The I-E-O model (Astin, 1993) controls for the "input" effects, and then determines if intramural sport participation measures ("environmental") add anything to the prediction of the "outcome" variable (social integration) (Astin & Sax, 1998).

This same section of the questionnaire evaluated students' participation in intramural sports. Astin's Theory of Involvement (1984) was built on the belief that the amount of involvement is a critical component to a student's development throughout their post-secondary experience. This theory is based around five influential tenets speaking to the importance of involvement being measured quantitatively and qualitatively. Throughout this section of the questionnaire participants were asked questions regarding the breadth and depth of their participation within intramural sports, in an effort to measure their intramural sports participation/involvement according to Astin's Theory of Involvement. Specifically, participants were asked: the number of fall sports played; frequency of participation; and how many years they have participated. These questions were answered through checking off boxes of pre-determined response categories.

The second section of this questionnaire measured the amount of psychological energy the student devotes to their intramural sport participation, evaluated by the Personal Investments component of the Sport Commitment Model (Scanlan et al., 1993). The SCM is measured through the Athletes Opinion Survey (Simons & Keeler, 1982). The Athletes Opinion Survey uses multiple Likert Scale questions to measure each of the five constructs involved in the SCM, including Personal Investments. The Personal Investment construct represents three valuable commodities that athletes themselves may put into their activity that cannot be redeemed if participation is terminated (Scanlan et al., 1993). Students were instructed to answer the following questions on their personal investments regarding

intramural sports using a five-point Likert Scale anchored by 1(Strongly Disagree) and 5(Strongly Agree).

Table 1

Personal Investments Scale

Questions	Scale
I have invested a lot of effort into playing intramurals.	1 2 3 4 5
I have invested a lot of energy into playing intramurals.	1 2 3 4 5
I have invested a lot of time into playing intramurals.	1 2 3 4 5
I have invested a lot of my own money into playing intramurals.	1 2 3 4 5

The third section of the questionnaire used the Social Integration scale from the College Persistence Questionnaire (CPQ) developed by Davidson, Beck, and Milligan (2009). This section provided the researcher with information on the nature of social integration as well as the information required to answer the research questions of this study. The CPQ is a measurement tool to predict return rate of college freshman for their sophomore year and consists of six reliable factors: Institutional Commitment, Degree Commitment, Academic Integration, Social Integration, Support Services Satisfaction, and Academic Conscientiousness (Davidson, Beck, & Milligan). This study examined the relationship between

intramural sport participation, social integration, and institutional commitment, therefore only the Social Integration and Institutional Commitment sections of the CPQ were administered to participants. The Social Integration component of the CPQ examined a student’s shared values, sense of belonging, and similarity to others within the college environment (Davidson et al.).

Students were instructed to answer the following questions on their social integration experiences at the university by using a five-point Likert Scale (with a sixth option for non-applicable). The wording for the scale depended on the wording of the question. Questions one to three were anchored by 1(very little) and 5(very much); question four was anchored by 1(very weak) and 5(very strong); question five was anchored by 1(very unsatisfied) and 5(very satisfied); questions six and seven were anchored by 1(very poor) and 5 (very good); and question eight was anchored by 1(never) and 5(very often).

Table 2

Social Integration Scale

Questions	Scale
1. How much have your interpersonal relationships with other students had an impact on your personal growth, attitudes, and values?	1 2 3 4 5 6
2. How much have your interpersonal relationships with other students had an	1 2 3 4 5 6

impact on your intellectual growth and interest in ideas?	
3. How strong is your sense of connectedness with other faculty, students, and staff on this campus?	1 2 3 4 5 6
4. How much do you think you have in common with other students here?	1 2 3 4 5 6
5. What do you think about your overall social life here with friendships, college organizations, extra-curricular activities, and so on, are you satisfied?	1 2 3 4 5 6
6. What is your overall impression of the other students here?	1 2 3 4 5 6
7. How many of your closest friends are here in college with you rather than elsewhere such as other colleges, work, or hometown?	1 2 3 4 5 6
8. How often do you wear clothing with your college's emblem?	1 2 3 4 5 6

The Institutional Commitment component of the CPQ examined a student's commitment to their chosen university and willingness to continue their education at that institution. Students were instructed to answer the following questions on their

institutional commitment experiences at the university by using a five-point Likert Scale (with a sixth option for non-applicable). The wording for the scale depended on the wording of the question. Questions one to three were anchored by 1(very likely) and 5(very un-likely); question four was anchored by 1(never) and 5(very often).

Table 3

Institutional Commitment Scale

Questions	Scale
How likely is it that you will earn a degree from (insert institution)?	1 2 3 4 5 6
How confident are you that this is the right University for you?	1 2 3 4 5 6
How likely is that you will re-enroll at (insert institution) next semester?	1 2 3 4 5 6
How much thought have you given to stopping your education at (insert institution) perhaps transferring to another institution, going to work, or leaving this institution for other reasons?	1 2 3 4 5 6

Reliability and Validity

The study used pre-established scales to measure social integration, institutional commitment, and personal investments. Scanlan, Russell, Magyar, and

Scanlan (2009) tested the Sport Commitment Model in order to clarify predictions and reveal avenues for the model's expansion. Throughout their research they found the model demonstrated external validity across gender, and revealed the generalizability of the mechanisms underlying the model (Scanlan et al., 2009). The Athletes Opinion Survey coincides with the Sport Commitment Model including questions to evaluate each construct it measures. (Scanlan, Simons, Carpenter, and Schmidt (1993) tested the internal consistency of this survey as each construct was evaluated through Cronbach's (1951) alpha measure of reliability with personal investments reporting ($\alpha = 0.77$).

Davidson, Beck, and Milligan (2009) established through two different studies that the CPQ demonstrated validity for predicting retention of students, as all variables analyzed depicted a student's experience at the university. These authors suggest that the CPQ is a successful stand-alone instrument although many institutions will combine the CPQ factors with measures of pre-college academic performance or other scales for further investigation. Validity of this scale was measured using the six CPQ factors as predictors of retention as the outcome variable (Davidson et al., 2009). The Social Integration and Institutional Commitment components have remained present in all revisions of the CPQ from version one to version three, with the questions remaining similar trying to access the same information in each version resulting in; the social integration scale holding an alpha of 0.82, and the institutional commitment scale holding an alpha of 0.78 (Davidson, et al., 2009). This tool is constantly being reassessed and improving as each factor provides psychometrically validated measures that can be used in assessing an

institution's effectiveness in more than one area. Even though each factor (i.e. Social Integration) may not be directly correlated with retention it has been deemed useful in evaluating institutions' effectiveness through an exploratory factor analysis and kept within the questionnaire. With the evidence provided from past research endeavors using the CPQ, further evidence of the reliability of the social integration scale is provided in this study using Cronbach's alpha reliability coefficient.

Data Collection

In order to access this population, the researcher set up a recruitment table where the intramural sport was taking place to distribute the questionnaires and compensation to the participants. The table's location varied based on each intramural environment, although was always close to the intramural sport being implemented for convenience of the participant. This method of recruitment was chosen to provide the participants a convenient method of participation, and increase involvement within the study by going to the site directly. The questionnaire took approximately five minutes for completion in order to not burden the participant and a free refreshment (e.g., a sports drink) was offered upon completion of the questionnaire as an incentive to participate. The questionnaires were completed directly at the table and handed in upon completion, where the participants then received the free refreshment as compensation for their participation. Individuals were welcome to come up to the recruitment table before or after their game or at their convenience. Participants were not being approached during their game in order to not disrupt the experience or engagement of the activity being played.

Data Analysis

Collected questionnaires were coded and inputted into the Statistical Package for Social Sciences (SPSS) Version 20. The questionnaires were reviewed for appropriateness and accuracy for each question. Visual screening was used to check that all chosen answers corresponded correctly to the number assigned. SPSS frequency and descriptive statistic checks were run on the data set for each variable to ensure that there were no answers missing in the distributed data. Missing data that exceeded the limit, and were classified as an outlier, were replaced with a series mean to remain a randomly distributed data set. The nominal and ordinal data that was collected was controlled within the hierarchical regression. Case missing data was eliminated from the regression analysis in addition to the removal of the multivariate outliers.

The data was analyzed using a hierarchical regression calculation checking the assumptions of each variable before calculation. Hierarchical regression can be employed to control for various impacts in determining predictors of variables (Misra & McKean, 2000). All analysis followed the I-E-O model “addressing the methodological problem with all non-experimental studies in the social sciences of nonrandom assignment of people (inputs) to programs (environments)” (Astin & Sax, 1998, p.252) identified previously in this chapter. The first hierarchical regression analyses included; Input: Demographic Variables, Environment: Participation in Intramurals, Outcome: Social Integration. The second hierarchical regression analyses included; Input: Demographic Variables, Environment: Participation in Intramurals, Social Integration, Outcome: Institutional Commitment.

Appropriate descriptive statistics based on the level of measurement of the question were reported for all variables. Prior to conducting the hierarchical regression and MANOVA, the data was checked to ensure that it met the assumptions of this procedure by examining: independence of observations; linear relationships; homoscedasticity; multi-collinearity; significant outliers; and residuals. The assumptions outlined for hierarchical regression analysis and MANOVA, determined how the covariates affect the shared variability between the predictors and outcome variable described above.

Table 4

Research Question, Variables, and Measurement

Research Question	Independent Variables	Dependent Variables	Measurement Tool
1. Is there a significant relationship between the breadth of collegiate intramural sport participation and social integration into the campus	Breadth (Demographic Questions, Survey Section I, Question 5)	Social Integration Scale (Survey Section III, Questions 1-8)	Breadth → Demographic Question #5: What intramural sports do you participate in (check all that apply) Social Integration → College

community?			Persistence Questionnaire
2. Is there a significant relationship between the depth of collegiate intramural sport participation and social integration into a campus community?	Depth (Demographic Questions, Survey Section I, Question 8)	Social Integration Scale (Survey Section III, Questions 1-8)	Depth → Demographic Question #8: How many times per week do you participate in intramurals sports? Social Integration → College Persistence Questionnaire
3. Is there a significant relationship between the quality of collegiate intramural sport participation and social integration into a campus	Personal Investments Scale (Survey Section II, Questions 1-4)	Social Integration Scale (Survey Section III, Questions 1-8)	Personal Investments Scale (Sport Commitment Model) Social Integration → College Persistence Questionnaire

community?			
4. Is there a significant relationship between social integration and institutional commitment?	Social Integration Scale (Survey Section III, Questions 1-8)	Institutional Commitment Scale (Survey Section IV, Questions 1-4)	Social Integration → College Persistence Questionnaire Institutional Commitment → College Persistence Questionnaire

Note: All research questions were answered using two different Hierarchical Regression analyses. Research questions one through three were answered through the first Hierarchical Regression, and research question four was answered through the second Hierarchical Regression.

Summary

A questionnaire was distributed to intramural sport participants measuring demographic information, intramural sport participation, and social integration outcomes. The questionnaire was sent to the REB, as part of the research ethics application, as well as Recreation Services at a specific institution where it was administered to gain permission to be distributed to the intramural participants. In order for a study to take place at an educational institution, clearance from the REB must be granted for administration to occur. Once the study received ethics clearance, the questionnaire was distributed at a recruitment table set up at various intramural

events that occurred within the first semester and session of fall intramurals (October-November) for participants to complete. The participant completed the questionnaire on site and questionnaires were administered and collected over a two-week period. All intramural participants were welcome and encouraged to participate in the study before or after their intramural activity. If a student felt the need to discontinue their participation at any time during the questionnaire they were allowed to do so, and their responses were discarded. Students were asked to fill out an Informed Consent Form before completing the questionnaire. Once they had done so they were advised that the questionnaire took approximately five minutes to complete. Once all the data had been collected (324 questionnaires) to meet the previously established sample size it was inputted and analyzed through SPSS using hierarchical regression analysis, in order to control for various inputs of the I-E-O model (Astin, 1993) before examining the impacts of the environmental predictor variables (i.e., students' depth, breadth and quality of CRS participation). Significant, or non-significant relationships, were identified through the analysis based upon the research questions previously stated, in order to answer the purpose of the research.

Chapter 4: Results

Data Analysis

This chapter provides the results generated from the data analysis to answer the research questions of this study. Multiple analyses were conducted using the data obtained from the questionnaires completed for this study. The first analysis was a multiple analysis of variance (MANOVA) procedure to determine the relationship between the dependent variables of Social Integration and Institutional Commitment with the independent variables of; gender, year at institution, type of education, post-secondary (years), and how a student signed up to participate in their intramural sport of choice. The second analysis examined the relationship between input variables (demographic characteristics) and environmental factors (depth, breadth, and quality of involvement) on social integration and institutional commitment (outcomes) using correlation. The third analysis was a hierarchical regression procedure to determine if input variables (demographic characteristics), as well as environmental variables (depth, breadth and quality of involvement) are positive predictors of social integration. Another hierarchical regression was also completed to determine if input variables (demographic characteristics), environmental variables (depth, breath, and quality of involvement) and social integration were positive predictors of institutional commitment. All of these procedures were conducted in order to answer the research questions identified for this study.

Data Screening

A total of 330 questionnaires were collected. Of those questionnaires, five were disregarded due to incompleteness or inappropriate responses (i.e., creating

additional responses that were not allocated on the questionnaire, or answering 6 (N/A) for all the responses to complete the survey quickly). Questionnaires that held missing data greater than 10% were also removed and deemed unacceptable (i.e., more than three questions went unanswered in a single questionnaire). This eliminated six questionnaires. The total number of questionnaires used for analysis was 324. Tabachnick and Fidell (2007) discuss how data screening is an essential factor to be given consideration before analyses therefore, 10% of the questionnaires were reviewed at random to ensure data inputted into SPSS had been completed correctly. The data was visually screened as well as run through frequencies and descriptive statistics with SPSS, looking for incorrectly inputted data that would create obvious outliers within the data set. Where errors occurred within the data, proper corrections were made referring back to the hard copy of the questionnaire itself.

The inspection and data screening process, also identified the distribution of additional missing data was randomly distributed throughout the sample collected. Where missing values were identified within the data set, a series mean was used to replace the missing data. The dependent variables that were used for the hierarchical regression analysis as well as the MANOVA obtained replacement means for each missing data value. For the nominal and ordinal level variables of the demographic characteristics of the participants, a series means was not inputted for these variables as the number represented a category rather than an actual numerical value and a series mean would not be correctly representative for that specific variable. Therefore,

the descriptive statistics reported for demographic characteristics do not contain a series mean, the number of missing cases is reported when necessary.

Background Demographic (Input Variables)

The demographic section of the questionnaire adds control to the students' entry characteristics before completing the rest of the study. The I-E-O model (Astin, 1993) identifies and controls for the background demographics or 'Input' characteristics of the study participants, and then determines if intramural sport participation (the 'Environmental' influence) measures add anything to the prediction of the dependent variables (social integration/institutional commitment) (Astin & Sax, 1998).

Within the 330 collected questionnaires, 324 participants produced usable questionnaires to form a sample of intramural sport participants. The descriptive statistics of the demographic characteristics revealed that 71% (n=230) were males and 29% (n=94) were female. The average age of the participants was 20 years old (M=20.38, SD= 1.92). Of these students, 26.2% (n=85) reported to be in their first year at the institution, 21.3% (n=69) in their second year at the institution, 23.1% (n=75) in their third year at the institution, 18.2% (n=59) in their fourth year at the institution, and 11.1% (n=36) to be in their fifth year or higher of education at the institution. Ninety-one percent (n=295) of respondents indicated they were in Undergraduate Studies, and 8.3% (n=27) reported to be in Graduate Studies and/or Teacher's College, with 0.6% (n=2) missing (Refer to Table 5). Students are beginning their education as well as upgrading and continuing their education, and on

average it was participants' third year of post-secondary education (M=2.89, SD=1.58).

In terms of ethnicity, the majority of participants were White (78.7%, n=255) while 2.5% (n=8) were North American Indian, 1.2% (n=4) were Chinese, 1.9% (n=6) were South Asian, 4.0% (n=13) were Black, 1.2% (n=4) were Filipino, 2.8% (n=9) were Arab, 0.9% (n=3) were Latin American, 0.9% (n=3) were Southeast Asian, .6% (n=2) were West Asian, 0.6% (n=2) were Japanese, and 0.9% (n=3) were missing. Students also identified other ethnicities that were < 0.5% of the sample size. Please refer to Table 6 for a further breakdown. Furthermore, 19.8% (n=64) of participants live on campus, 64.5% (n=209) live off campus, and 15.7% (n=51) live at home.

Table 5

Frequencies for Background Demographics

Characteristics	<u>N</u>	%
<i>Gender</i>		
Male	230	71
Female	94	29
<i>Age (years)</i>		
17	10	3.1
18	46	14.2
19	53	16.4

20	67	20.7
21	73	22.5
22	41	12.7
23	15	4.6
24	6	1.9
25	10	3.1
27	1	0.3
28	1	0.3
29	1	0.3

Year at Institution

First Year	85	26.2
Second Year	69	21.3
Third Year	75	23.1
Fourth Year	59	18.2
Fifth Year/Higher	36	11.1

Type of Education

Undergraduate Studies	295	91.0
Graduate Studies/Teacher's College	27	8.3
Missing	2	0.6

Table 6

Mean Scores for Ethnicity

Variables	<u>N</u>	%
<i>Ethnicity</i>		
White	255	78.7
North American Indian	8	2.5
Chinese	4	1.2
South Asian	6	1.9
Black	13	4
Filipino	4	1.2
Arab	9	2.8
Latin American	3	0.9
Southeast American	3	.9
West Asian	2	0.6
Japanese	2	0.6
Korean	3	0.9
Mixed	1	0.3
Vietnamese	1	0.3
Australian	1	0.3
Mauritian	1	0.3
Sri Lankan	1	0.3

White and Latin American	3	0.9
White/NA Indian/ SE Asian	1	0.3
Chinese and Black	1	0.3
Missing	2	0.6

Residence

On-Campus Living	64	19.8
Off-Campus Living	209	64.5
Home	51	15.7

Breadth, Depth, and Quality of Intramural Participation (Environmental Variables)

Using Astin's Theory of Involvement (1984), in order to get a full scope of the participants' intramural participation, the breadth, depth and quality of their intramural participation needed to be measured. There were various sports and levels offered through intramurals in the fall of 2015 that the participants were able to join. Students were asked which sports they participated in as well as what level of that sport they played. Multiple sports and levels could be chosen to reflect the participants' current sport engagements. (Refer to Table 7)

Table 7

Intramural Sport Participation

Variable(s)	Yes/Participated		No/Did not participate	
	<u>N</u>	%	<u>N</u>	%
Slow-pitch	76	23.5	248	76.5
Flag Football	33	10.2	291	89.8
4's Volleyball	160	49.4	164	50.6
Ball Hockey	69	21.3	255	78.7
Tchoukball	37	11.4	287	88.6
Basketball	50	15.4	274	84.6
Inner-tube Water Polo	5	1.5	319	98.5
Outdoor Soccer	88	27.2	236	72.8
Ultimate Frisbee	20	6.2	304	93.8
Badminton Singles	7	2.2	317	97.8
Tennis Singles	10	3.1	314	96.9

Table 8

Levels of Intramural Sport Participation

Variables	<u>N</u>	%
<i>Slow Pitch</i>		
Did not participate	248	76.5
Co-Ed/CompA	40	12.3
Co-Ed/CompB	24	7.4
Co-Ed/Rec	10	3.1
Co-Ed/CompA, CompB, Rec	1	0.3
Co-Ed/CompB, Rec	1	0.3
<i>Flag Football</i>		
Did not participate	291	89.8
Co-Ed/CompA	12	3.7
Co-Ed/CompB	2	0.6
Men's/CompA	14	4.3
Men's/CompB	2	0.6
Co-Ed/Men's (CompA and Comp B)	3	0.9
<i>4's Volleyball</i>		
Did not participate	164	50.6
Co-Ed/CompA	48	14.8
Co-Ed/CompB	31	9.6

Men's/CompA	32	9.9
Men's/CompB	1	0.3
Women's/CompA	15	4.6
Women's/CompB	8	2.5
Co-ed and Womens/CompA	11	3.4
Co-ed and Men's/CompA	14	4.3

Ball Hockey

Did not participate	255	78.7
Co-Ed	31	9.6
Men's	35	10.8
Co-Ed and Men's	3	0.9

Tchoukball

Did not participate	287	88.6
Co-Ed	37	11.4

Basketball

Did not participate	274	84.6
Men's/CompA	26	8.0
Men's/CompB	6	1.9
Women's/CompA	6	1.9
Women's/CompB	1	0.3
Co-Ed/CompA	5	1.5
Co-Ed/CompB	1	0.3
Co-Ed and Women's CompA	4	1.2

Co-Ed and Men's CompA	1	0.3
<i>Inner-tube Water Polo</i>		
Did not participate	319	98.5
Co-Ed	5	1.5
<i>Outdoor Soccer</i>		
Did not participate	236	72.8
Co-Ed/CompA	45	13.9
Co-Ed/CompB	12	3.7
Men's/CompA	15	4.6
Men's/CompB	10	3.1
Co-Ed and Men's CompA	6	1.9
<i>Ultimate Frisbee</i>		
Did not participate	304	93.8
Co-Ed/CompA	19	5.9
Co-Ed/CompB	1	0.3
<i>Badminton Singles</i>		
Did not participate	317	97.8
Men's	6	1.9
Women's	1	0.3
<i>Tennis Singles</i>		
Did not participate	314	96.9
Men's	7	2.2
Women's	3	0.9

Table 9

Frequencies for Sign-Up

<i>Variables</i>	<u>N</u>	%
Team	282	87.0
Individual	22	6.8
Both	19	5.9
Missing	1	0.3

Table 10

Frequency for Participation each week

<i>Variables</i>	<u>N</u>	%
1	162	50
2	109	33.6
3	34	10.5
4	13	4.0
5	3	0.9
6	1	0.3
7	1	0.3
Missing	1	0.3

The depth measurement entailed how frequently (depth) participants engaged in intramural sports each week (See Table 11). The participants reported that on average they participated two times per week within an intramural sport stated above (M=1.74, SD=. 96). The breadth of participation (see Table 12) was measured through how many sports each student participated in; it was found that on average students participated in two sports out of the 11 intramural sports offered (M=1.72, SD= 1.23).

Table 11

Depth/Frequency of Participation in Intramural Sports

Variable(s)	<u>M</u>	<u>SD</u>
Depth/Frequency of Participation	1.74	.956

Table 12

Breadth of Participation in Intramural Sports

Variable(s)	<u>M</u>	<u>SD</u>
Breadth of Participation	1.72	1.29

Personal Investments (Quality of Effort)

The Personal Investment construct represents three valuable commodities that athletes themselves may put into their activity that cannot be redeemed if participation is terminated (Scanlan et al., 1993). The Personal Investments scale from the Athlete's Opinion Survey was used to analyze the quality of effort of participants in intramural sports. The Personal Investment Scales consists of four questions each evaluating an individual's investments into the intramural sport regarding; effort, energy, time, and money. The scale uses a five-point Likert scale ranging from 1=Strongly Disagree to 5= Strongly Agree. On average, the students chose Neutral/Agree when responding to all four of the personal investments questions regarding the students' effort, energy, time, and money that they devote to their intramural sport participation at this institution.

The skewness and kurtosis values are between -1 and 1, therefore indicating the questions measuring Personal Investments were normally distributed. Question one indicated a skewness value of (-0.645) making it negatively skewed and has a kurtosis value of (0.286) making it leptokurtic. Question two indicates a skewness value of (-0.828) making it negatively skewed and has a kurtosis value of (0.598) making it leptokurtic. Question three indicates a skewness value of (-0.156) making it negatively skewed and has a kurtosis value of (-0.728) making it platykurtic. Question four indicates a skewness value of (-0.041) making it negatively skewed and has a kurtosis value of (-1.019) making it platykurtic. Refer to Table 13 for descriptive statistics of the four Personal Investment items.

Table 13

Personal Investments

Statements	<u>M</u>	<u>SD</u>	<u>Skewness</u>	<u>Kurtosis</u>
1. I have invested a lot of effort into playing intramurals at (institution)	3.82	0.93	-0.645	0.286
2. I have invested a lot of energy into playing Intramurals at (institution)	3.9	0.93	-0.828	0.598
3. I have invested a lot of time into playing Intramurals at (institution)	3.5	1.03	-0.156	-0.728
4. I have invested a lot of my own money into playing Intramurals at (institution)	3.2	1.23	-.041	-1.019

Social Integration (Dependent/ Outcome Variable)

The Social Integration component of the College Persistence Questionnaire (Davidson, Beck, & Milligan, 2009) examines a student's shared values, sense of belonging, and similarity to others within the post-secondary environment (Davidson et al., 2009). Social Integration can directly affect a participants' experience within intramurals and the benefits that they are receiving from their participation. The Social Integration Scale is comprised of eight items measuring social integration through intramural participation. The scale uses a six-point Likert Scale. The wording for the scale depends on the wording of the question. Questions one to three are

anchored by 1(very little) and 5(very much); question four is anchored by 1(very weak) and 5(very strong); question five is anchored by 1(very unsatisfied) and 5(very satisfied); questions six and seven are anchored by 1(very poor) and 5 (very good); and question eight is anchored by 1(never) and 5(very often). The number six for each question is classified as not applicable (N/A). Participants who answered N/A were not included in the calculation of descriptive statistics for Social Integration (Table 14). This was done to ensure that there wouldn't be an inflated or skewed mean for the variable. With the elimination of the answer 6 missing data occurs: [Question: one (2 missing), two (2 missing), three (3 missing), four (0 missing), five (1 missing), six (2 missing), seven (9 missing), eight (2 missing).] On average the students responded to Social Integration questions (1, 2, 3, 5, and 6) by agreeing and being satisfied. While on average, the students answered Social Integration questions (4, 7, and 8) with being neutral to the question.

All skewness and kurtosis values reported for social integration meet the assumptions of a normal distribution between -1 and 1. Question one indicates skewness value of (-.976) making it negatively skewed and has a kurtosis value of (0.847) making it leptokurtic. Question two indicates skewness value of (-0.604) making it negatively skewed and has a kurtosis value of (0.293) making it leptokurtic. Question three indicates skewness value of (-0.533) making it negatively skewed and has a kurtosis value of (-.0041) making it platykurtic. Question four indicates skewness value of (-0.331) making it negatively skewed and has a kurtosis value of (-0.488) making it platykurtic. Question five indicates skewness value of (-0.794) making it negatively skewed and has a kurtosis value of (0.459) making it leptokurtic.

Question six indicates skewness value of (-0.603) making it negatively skewed and has a kurtosis value of (0.211) making it leptokurtic. Question seven indicates skewness value of (-0.454) making it negatively skewed and has a kurtosis value of (-0.656) making it platykurtic. Question eight indicates skewness value of (-0.311) making it negatively skewed and has a kurtosis value of (-0.743) making it platykurtic. Refer to Table 14 for further statistics on Social Integration.

Table 14

Social Integration

Statements	<u>M</u>	<u>SD</u>	<u>Skewness</u>	<u>Kurtosis</u>
1. How much have your Interpersonal relationships with other students had an impact on your growth, attitudes, and values?	4.1	0.89	-0.976	0.847
2. How much have your interpersonal relationships with other students had an impact on your intellectual growth and interest in ideas?	3.95	0.85	-0.604	0.293
3. How much do you think you have in common with				

other students at (institution)?	4.1	0.75	-0.533	-0.0041
4. How strong if your sense of connectedness with other faculty, students, and staff on campus?	3.85	0.88	-0.331	-0.488
5. When you think about your overall social life here at (institution) with friendships, college organizations, extra-curricular activities, and so on, how satisfied are you with yours?	4.24	0.74	-0.794	0.459
6. What is your overall impression of the other students here?	4.29	0.66	-0.603	0.211
7. How many of your closest friends are here at this institution with you rather than elsewhere such as other colleges, work, or hometown?	3.54	1.16	-0.454	-0.656
8. How often do you wear clothing with (institution's) emblem?	3.28	1.19	-0.311	-0.743

Institutional Commitment

The Institutional Commitment Scale, also derived from the College Persistence Questionnaire (Davidson, Beck, & Milligan, 2009), was used to measure how committed the participant is to their current institution as that will then affect

their want to actively engage in their campus community and participate in extra-curricular activities. The Institutional Commitment Scale is evaluated using a six-point Likert scale similar to Social Integration. Questions one to three are anchored by 1(very likely) and 5(very un-likely); question four is anchored by 1(never) and 5(very often). Questions one to four also have a 6 (N/A) option for participants to choose. This option has been removed when calculating descriptive statistics and has now become missing data. This was done to ensure there wouldn't be an inflated or skewed mean for the variable. For each Institutional Commitment item the missing data is as follows; Question: one (6 missing), two (4 missing), three (14 missing), and four (14 missing). On average it was found that students responded very likely to questions one to three, and rarely to question four. The skewness and kurtosis values of Institutional Commitment do not meet the assumptions for a normal distribution between -1 and 1; therefore caution must be taken when dealing with this variable. Questions one and two are furthest from being normally distributed with questions three and four coming closer to being normally distributed. Question one indicates skewness value of (2.194) making it positively skewed and has a kurtosis value of (3.378) making it leptokurtic. Question two has a skewness value of (1.502) making it positively skewed and has a kurtosis value of (1.496) making it leptokurtic. Question three has a skewness value of (1.341) making it positively skewed and has a kurtosis value of (0.097) making it leptokurtic. Question four has a skewness value of (1.055) making it positively skewed and has a kurtosis value of (0.247) making it leptokurtic. Refer to Table 15 for a further breakdown of the demographic statistics for institutional commitment.

Table 15

Institutional Commitment

Statements	<u>M</u>	<u>SD</u>	<u>Skewness</u>	<u>Kurtosis</u>
1. How likely is it that you will earn a degree from (institution)?	1.55	1.21	2.194	3.378
2. How confident are you that (institution) is the right university for you?	1.87	1.16	1.502	1.496
3. How likely is that you will re-enroll at (institution) next semester?	1.9	1.5	1.341	0.097
4. How much thought have you given to stopping your education at (institution) perhaps transferring to another institution, going to work, or leaving (institution) for other reasons?	2.03	1.18	1.055	0.247

Reliability of Scales

To evaluate the reliability of each scale and construct within the questionnaire, Cronbach's alpha was calculated. Each scale needs to obtain an alpha level of 0.7 or

greater to meet the minimum standard criteria for acceptability (Tabachnick & Fidell, 2007). Field (2013) discusses Kline's (1999) theory that when dealing with psychological constructs such as personal investments, social integration, and institutional commitment, alpha values below 0.70 can be expected due to the diversity of the constructs being measured. Therefore, all constructs used in this study have an acceptable alpha score making them reliable scales. Personal Investments reported a Cronbach's Alpha of 0.857, Social Integration (0.691), and Institutional Commitment (0.789). The Personal Investments and Institutional Commitment Scales reported high levels of reliability showing their strength.

MANOVA

A MANOVA analysis has more power than using multiple one-way ANOVA's as more ANOVA's result in a higher chance of a Type 1 error. In a MANOVA calculation the relationship amongst the dependent variables is taken into consideration and examines how groups differ on a combination of dimensions. This MANOVA analyzed the dependent variables of Social Integration and Institutional Commitment upon the independent variables of; gender, age, year at institution, type of education, post-secondary (years), ethnicity, and how the student signed up to participate in their intramural sport of choice. Prior to conducting a MANOVA analysis, four assumptions should be checked; Independence of Observations, Homogeneity of Variance/Covariance Matrices, Multivariate Normality, and Equal Cell Size.

Assumptions

Independence of Observations

Independence of Observation is the assumption that one data point does not influence another. Regarding people, this means that the behaviour of one person does not influence the behavior of another (Field, 2013). Independence of Observation is assumed as participants responded independently to the survey and were not influenced by other participants. This study did not utilize random sample data collection methods completely as surveys were available at multiple intramural sport locations where the participants were actively participating in the sport and could voluntarily complete the survey at their own discretion and convenience. Although this does not mean that the data collected is less significant than if it had met this assumption directly.

Homogeneity of Variance / Covariance Matrices

Homogeneity of Variance is the assumption that the variance of one variable is stable at all levels of another variable (Field, 2013). This assumption can be tested through evaluating the Levene's statistic. This assumption is not met as $p = .006$ for Social Integration and $p = .001$ for Institutional Commitment when examining the Levene's test of Equality of Error Variance.

Evaluating Box M's test of equality of covariance matrices can complete the Assumption of Covariance Matrices. This assumption can be further investigated by testing the covariance matrices in the analyses. The Box M statistic was not significant as $BM = 123.600$ and $p > .05$ concluding that equality of covariance matrices in the data set is assumed.

Multivariate Normality

Multivariate normality is an “extension of normal distribution to multiple variables” (Field, 2013, p.880) and portrays that there is a normal distribution through the joint effect of two variables (Hair et al, 2006). The dependent variable needs to be normally distributed within each grouping of analysis. Field (2005) indicated that there are not exact or direct statistical tests present to conduct this procedure as a whole, but can be addressed by testing the univariate normality of each variable involved. The dependent variable of social integration is normally distributed and will be assumed that it possesses multivariate normality. Although the dependent variable of institutional commitment has violated the assumption by being positively skewed the calculation will still be completed even though it does not meet the assumption of multivariate normality.

Equal Cell Size

Equal cell size is assumed, as $n=316$ for Social Integration and $n= 324$ for Institutional Commitment accounting for all the surveys eligible for analysis.

Analysis

A one-way MANOVA was calculated to examine the effect of various demographic characteristics on students’ social integration responses as well as their institutional commitment at this sole institution. Results revealed a significant multivariate effect for Institution Year for Social Integration [Wilks’ $\lambda = .930$ $F(8,522) = , p < .05$ observed power = .898, effect size = .036], Institution Year * Education for Institutional Commitment [Wilks’ $\lambda = .938$, $F(8,522) = , p < .05$, observed power = .848, effect size = .031], as well as Institution Year * Education *

Gender for Institutional Commitment [Wilks' $\lambda = .956$, $F(4,522) = , p < .05$, observed power = .796 and effect size = .022]. (Refer to Table 16)

Given the significance of the multivariate test, the univariate main effects were examined. Significant univariate main effects were obtained for Social Integration and Institution Year, [$F(4,262) = 4.140$, $p < .05$, observed power = .917, effect size = .059], when conducting a one-way ANOVA, Tukey's post-hoc follow-up tests for Year at (institution) and Social Integration revealed significant differences between First Year and Fourth Year students ($p < .05$), as well as Second Year and Fourth Year ($p < .05$) students. Fourth year students reported significantly higher levels of Social Integration when compared to first and second year students. No significant differences were discovered for the other years at the institution and Social Integration. (See Table 16)

Table 16

MANOVA Multivariate Effects (N =324)

Variable	df	Social Integration			df	Institutional Commitment			
		SS	MS	F		SS	MS	F	
Gender	1	.015	.015	.063	1	2.133	2.133	.142	
<i>Institution</i>									
Year	4	4.046	1.012	4.140*	4	2.779	.695	.588	
Education	1	.259	.259	1.059	1	.931	.931	.947	
Residence	2	1.100	.550	2.250	2	.043	.021	.022	
Sign Up	2	.657	.329	1.345	2	2.727	1.364	1.387	
Institution	4	1.181	.295	1.208*	4	11.209	2.802	2.850	
<i>Year x Education</i>									
Gender x Institution	2	.500	.250	1.023	2	10.396	5.198	5.286**	
<i>Year x Education</i>									
Error		262	64.018	.244	--	262	257.642	.983	--
Total		321	5012.033	--	--	321	1313.268	--	--
Correlated Total		320	84.748	--	--	320	332.211	--	--

** . Significant at the 0.01 level (2-tailed).

* . Significant at the 0.05 level (2-tailed).

Significant univariate main effects for were obtained for Institutional Commitment and (institution) Year * Education, [F (4,262) =2.850, $p < .05$, observed power=. 770, effect size= .042]. Significant univariate main effects for were also obtained for Institutional Commitment and (institution) Year * Education * Gender [F (2,262) =, 5.286 $p < .05$, observed power=. 833, effect size= .039].

Post Hoc tests were also completed for the significant multivariate comparison of (institution) Year*Education*Gender and Institutional Commitment, to determine significant differences between groups. Further follow-up analysis were completed on this significant interaction effect and produced no significant differences between any of the variables.

Relationships between Variables in Astin's I-E-O Model

A correlation matrix determines which factors correlate and which are mutually exclusive. The first correlation matrix was calculated to analyze the relationship between two interval level demographic/input variables (age and post-secondary education) and the dependent/outcome variables of social integration and institutional commitment. A correlation matrix was also produced to measure the direction and magnitude of the linear relationship (Nicol & Paxman, 1999) between the environmental variables from Astin's I-E-O Model (depth, breadth, and quality of intramural sport participation) and the outcome variables of social integration and institutional commitment. Multiple significant relationships were identified through the correlation matrix between breadth, depth, and quality of experience and social integration and institutional commitment.

Demographic/Input Variables (Age, Post-secondary years) and

Dependent/Outcome Variables

The first correlation matrix did not reveal any significant relationships between the independent variables of age and post-secondary years and the dependent variables of social integration and institutional commitment (See Table 17).

Table 17

Correlation Matrix

Variables (s)	1	2	3	4
1. Age	---	.716**	-.029	-.067
2. Post-secondary years	.716**	---	.059	-.072
3. Social Integration	-.029	.059	---	-.091
4. Institutional Commitment	-.067	-.072	-.091	---

** . Correlation is significant at the 0.01 level (2-tailed).

* . Correlation is significant at the 0.05 level (2 tailed).

Relationships between Environmental (Breadth, Depth, and Quality) and Outcome

Variables

A second correlation matrix was produced to determine if any significant relationships existed between the various environmental variables (depth, breadth, and quality) and dependent/outcome variables of social integration and institutional

commitment. This correlation matrix identified a significant relationship between breadth of intramural participation (i.e. number of sports) and social integration ($p=.021$), personal investments (quality of intramural participation) and social integration ($p < .001$) as well as a significant correlation between the depth of intramural participation (frequency of participation) and social integration ($p=.002$) (See Table 18).

The second Correlation Matrix also revealed significant relationships between institutional commitment and breadth, depth, quality or social integration measures (See Table 18).

Table 18

Correlation Matrix

Variables (s)	1	2	3	4	5
1. Breadth of Intramural sport Participation	---	.273**	.575**	.128*	-.038
2. Personal Investments	.273**	---	.378**	.355**	-.084
3. Depth of Intramural sport Participation	.575**	.378**	---	.172**	-.024
4. Social Integration	.128*	.355**	.172**	---	-.091
5. Institutional Commitment	-.038	-.084	-.024	-.091	---

** . Correlation is significant at the 0.01 level (2-tailed).

*. Correlation is significant at the 0.05 level (2 tailed).

Hierarchical Regression

This hierarchical regression follows the pattern of Astin's (I-E-O) Model examining to what extent the demographic characteristics of gender, age, year at institution, type of education, post-secondary years, ethnicity, residence, and sign up (independent/input variables) as well as the depth, breadth, and quality of intramural sport participation (independent/ environmental variables) predict social integration and institutional commitment (dependent/outcome variables) of the students participating in intramural sports.

Assumptions

Field (2013) discusses various assumptions that must be examined when completing hierarchical regression calculations. These assumptions include: univariate and multivariate outliers, multi-collinearity, normality at all levels, and independence of errors.

Univariate Outliers

Field (2013) defines outliers as a score that has been recorded that is outside the rest of the data set. These outliers can be determined through scatterplot graphs as they will be separate from the rest of the data cluster. Field (2013) noted, "obvious outliers on a partial plot represent cases that might have undue influence on a predictor's regression coefficient, and non-linear relationship" (p.348). Scatterplot graphs were generated for both hierarchical regressions on both social integration and

institutional commitment. These graphs revealed that no univariate outliers were identified as no cases deviated from the mid-line. These plots were very useful when determining the distribution of variables, as it would have clearly pointed out the outliers, as they would have deviated from the cluster.

Multivariate Outliers

Field (2013) identified three different methods that can be used in order to determine multivariate outliers. Cook's distance "is a measure of the overall influence of a case on the model" (Field, 2013, p.306). Field also suggests that values greater than one may be cause for concern. When using Leverage values, the influence of the observed value is gauged on the outcome variable over the predicted values. Field suggests that leverage has a maximum value of one. The final test would be Malhonobis distance, where the distance of cases from the mean is measured. The Malhonobis distance is based on the number of variables as well as participants there are present in the data set. To address the concern of multivariate outliers, the Cook's distance was calculated in order to determine the outliers. It was found that in the Cook's distance calculation of the regression regarding social integration and institutional commitment, no variables reported a value of higher than one therefore this assumption has been met through Cooks' Distance. This assumption can also be calculated through Leverage Values and Malhonobis distance. For Leverage Values it was found that for social integration, as well as institutional commitment, all variables reported values less than one meeting the assumption using Leverage Values. When looking at Malhonobis distance, various variables in both social integration as well as institutional commitment did not meet the required number and

exceeded the pre-determined value. A hierarchical regression analysis proceeded as the data set met two of the three tests when meeting the Multivariate outliers' assumption.

Absence of Multi-collinearity

Field (2013) refers to multi-collinearity as a situation in which two or more variables are very closely linearly related, suggesting that multi-collinearity is present in variables that record a value higher than $r = 0.80$. The independent variables that are being used within the hierarchical regressions must not demonstrate multi-collinearity in order to not double the amount of standard of errors from the regression coefficients. In this study the independent variables do not obtain any Pearson correlation coefficient over $r = 0.80$ therefore demonstrating an absence of multi-collinearity.

Normality, linearity, homoscedasticity of residuals

Field (2013) describes this assumption as “the assumption in regression analysis that the residuals at each level of the predictor variables have similar variances, at each point along any predictor variables the spread of residuals should be fairly constant” (p.876). Residuals for both hierarchical regression analyses for social integration as well as institutional commitment showed normality, linearity, and homoscedasticity in both of their distributions. The distribution in independent and dependent variables for both of these hierarchical regression analyses were evenly distributed and linear in nature meeting the assumption of residuals. For the hierarchical regression of social integration the cases (dots) followed directly along the diagonal indicating normal distribution and suggesting residuals are also normally

distributed. The dots are slightly off the diagonal in the plot for institutional commitment although resembling a similar pattern suggesting normal distribution among residuals as well. This analysis makes sense as the Institutional Commitment variable is slightly positively skewed in nature and would then portray a slight deviation from the diagonal line of residuals.

Independence of Errors

Field (2013) explains that for any two observations in regression the residuals should be uncorrelated or independent to meet the assumption of independence of errors. This assumption was conducted through the Durbin-Watson test, which analyzed the serial correlation between errors to see if the residuals are correlated. Field (2013) discusses the Durbin-Watson test as “useful in assessing the assumption of independence of errors” (p.874). He also states “the test statistics can vary between zero and four, with a value of two meaning that the residuals are uncorrelated. A value greater than two indicates a negative correlation between adjacent residuals, whereas a value below two indicates a positive correlation” (p.874). The size of the Durbin-Watson calculation depends on the number of predictors that the calculation holds in the model as well as the number of observations. For this study Durbin-Watson tests were completed for all hierarchical regression analysis. The Durbin-Watson value was 1.852 for the hierarchical regression of Social Integration. The Durbin-Watson value was 1.758 for the hierarchical regression of Institutional Commitment. Both of these values were very close to two, portraying that the errors in these tests showed very low correlation. With these two scores institutional

commitment was more positively correlated than Social Integration, which may be related to Institutional Commitment being slightly positively skewed.

Analysis of Control Variables

The Social Integration scale as well as the scale evaluating Institutional Commitment both used a six-point Likert Scale. The Social Integration scale was composed of eight questions whereas the Institutional Commitment scale was based on four questions. These two variables were indicated as outcome variables in the hierarchical regression analyses to evaluate participants' pre-determined characteristics involving intramural sport participation. In the first hierarchical regression (social integration) the input characteristics (demographic variables) were added for the first model, and then environmental factors (depth, breadth, and quality) were added for the second model. For the institutional commitment hierarchical regression the first two models followed the same guidelines as the first (social integration) hierarchical regression, and then added a third model with social integration as an additional independent variable.

Social Integration (Outcome Variable)

To answer research questions one, two and three a hierarchical multiple regression was used. Predictors of Social Integration were examined, while statistically controlling for the input variables (demographic characteristics) of gender, age, year at institution, type of education, post-secondary years, ethnicity, residence, and sign-up, and using environmental variables (depth, breadth, and quality).

Research Question one asks; *is there a significant relationship between the breadth of post-secondary intramural sport participation and social integration into*

the campus community? Research question two asks; *is there a significant relationship between the depth of post-secondary intramural sport participation and social integration into a campus community?* Research question three asks; *is there a significant relationship between the quality of post-secondary intramural sport participation and social integration into a campus community?* Model 1, which only holds input variables (demographic characteristics) as predictors were significant ($R = .338$, $R^2 = .114$, Adjusted $R^2 = .091$, $F(8,307) = 4.960$, $p < .001$). When environmental factors (depth, breadth, and quality) are added to Model 2 it was also significant ($R = .443$, $R^2 = .197$, Adjusted $R^2 = .168$, $F(3,304) = 10.368$, $p < .001$). Between Model 1 and Model 2 there is 7.7% additional variance by adding environmental variables to the total prediction of Social Integration. Therefore, both of these models demonstrate that input and environmental variables are a positive predictor of social integration.

In each model certain variables demonstrated a significant value and were deemed a positive predictor of Social Integration. In Model 1 year at institution was found to be a significant predictor of Social Integration as ($B = .141$, $t = 4.599$, $p = .000$) as well as Sign-Up ($B = -1.54$, $t = -2.885$, $p = .004$). In Model 2 Year at institution was found as a significant predictor of social integration ($B = 1.02$, $t = 3.308$, $p = .001$) as well as Sign-up- up ($B = -.142$, $t = -2.749$, $p = .006$) and Quality (personal investments) ($B = .172$, $t = 5.095$, $p < .001$). Results of the regression analysis can be found in Table 19. Therefore these results identified that Year at Institution, Sign-up and Quality of Involvement are significant predictors of Social Integration through intramural sport participation in this study.

Table 19

*Hierarchical Regression 1**Hierarchical Regression Analysis of Variables predicting Social Integration (N=316)*

Variable	Model 1			Model 2		
	B	SEB	Beta	B	SEB	Beta
Gender	-.081	.061	-.072	-.041	.060	-.037
Age	-.053	.022	-.199*	-.046	.021	-.174*
Year at Institution	.141	.031	.367**	.102	.031	-.174**
Type of Education	.077	.110	.042	.064	.105	.035
Post-Secondary Years	-.015	.030	-.047	-.018	.028	-.055
Ethnicity	-.009	.007	-.070	-.012	.007	-.086
Residence	-.081	.051	-.093	-.028	.050	-.033
Sign-Up	-.154	.053	-.156**	-.142	.052	-.145**
Depth				.012	.037	.022
Breadth				.003	.025	.008
Quality				.172	.034	.292**

** . Significant at the 0.01 level (2-tailed).

* . Significant at the 0.05 level (2 tailed).

Institutional Commitment

To answer research question four, a hierarchical multiple regression analysis was used to predict Institutional Commitment while statistically controlling for input variables (demographic characteristics) of gender, age, year at Institution, type of education, post-secondary years, ethnicity, residence, and sign-up, and using environmental variables (depth breadth, and quality) as well as Social Integration as the predictors.

Research question four asks; *is there a significant relationship between social integration and institutional commitment?* Model 1 containing input variables (demographic characteristics) was not significant as $p > .05$. Model 2 with the addition of environmental variables (depth, breadth, and quality) was also not significant as $p > .05$. Model 3 with the addition of social integration was also not significant as $p > .05$ (Refer to Table 20). These results demonstrated that these variables are not significant predictors of Institutional Commitment.

In each model (1,2,3) involving Institutional Commitment no variables were found to be significant in the hierarchical regression, therefore concluding that no input or environmental variables from Astin's I-E-O Model are positive predictors of Institutional Commitment in this study. Results of this regression analysis can be found in Table 20.

Table 20

Hierarchical Regression 2

Hierarchical Regression Analysis of Variables predicting Institutional Commitment

(N=316)

Variable	Model 1			Model 2			Model 3		
	B	SEB	Beta	B	SEB	Beta	B	SEB	Beta
Gender	-.184	.128	-.082	-.186	.132	-.083	-.191	.132	-.085
Age	-.025	.045	-.047	-.030	.046	-.057	-.036	.046	-.068
Year at Institution	-.054	.064	-.070	-.043	.067	-.057	-.030	.069	-.039
Type of Education	.222	.229	.061	.234	.230	.064	.242	.230	.066
Post-Secondary Yrs.	-.029	.062	-.046	-.027	.062	-.042	-.029	.062	-.045
Ethnicity	.013	.015	.050	.015	.015	.056	.013	.015	.050
Residence	.180	.107	.105	.164	.110	.095	.160	.110	.093
Sign-Up Depth	-.038	.111	-.020	-.054	.113	-.028	-.073	.115	-.037
Breadth				.043	.081	.040	.045	.081	.041
Quality				-.101	.055	-.012	-.009	.055	-.012
Social Integration				-.096	.074	-.082	-.073	.077	-.063
							-.130	.125	-.065

** . Significant at the 0.01 level (2-tailed).

* . Significant at the 0.05 level (2-tailed)

Summary of Findings

Each hierarchical regression that was performed was done so to answer research questions previously stated. The first hierarchical regression involved social integration and investigated research questions one through three. The findings revealed that demographic characteristics alone predicted Social Integration. Model 1 was significant (Year at Institution and Sign Up). This concludes and accepts the research hypothesis stating that H0-1: There is a significant relationship between demographic characteristics of intramural sport participants and social integration into the campus community. When environmental variables of (breadth, depth, and quality) were added to the hierarchical regression (Model 2) in order to answer research question two, three and four it was found that depth and breadth were not significant positive predictors of Social Integration as they were not significant. Although quality of involvement was a significant positive predictor of Social Integration agreeing with the research hypothesis of research question four; H₁₋₄: There is a significant relationship between the quality of post-secondary intramural sport participation and social integration into a campus community.

The second hierarchal regression involved Institutional Commitment and addressed research question four. The findings revealed that input variables (demographic characteristics), environmental variables (breadth, depth, and quality),

as well as social integration were not significant predictors of Institutional Commitment. Therefore, the null hypothesis was accepted for research question four.

Chapter 5: Discussion

This correlational, non-experimental, quantitative questionnaire study examined the relationship between participation in post-secondary intramural sport, social integration, and institutional commitment, through hierarchical regression and MANOVA analyses. Astin's (1993) I-E-O Model was used throughout this study as a conceptual framework guiding the research along with Astin's (1984) Theory of Involvement and Tinto's (1993) Model of Departure.

The research objectives of this study included; first, examining the relationship between the dependent/outcome variables of social integration and institutional commitment and the independent /input variables of; gender, year at institution, type of education, post-secondary (years), and how a student signed up to participate in their intramural sport of choice through a MANOVA analysis. The second objective of this study was initiated from Astin's (1993) I-E-O Model, examining the relationship between input variables (demographic characteristics) and environmental factors (depth, breadth, and quality of intramural sport involvement) on social integration and institutional commitment (outcomes) through a correlation matrix analysis. The third objective was examined through a hierarchical regression procedure identifying if input variables (demographic characteristics), as well as environmental variables (depth, breadth, and quality of involvement), were significant predictors of social integration. A separate hierarchical regression was also completed to determine if input variables (demographic characteristics), environmental variables (depth, breadth, and quality of involvement) and social integration were significant predictors of institutional commitment. This chapter examines the findings of this

study and relates them to previous literature and research that shaped the direction and intention of this study.

Examination of Relationships

This section intends to explore the various relationships determined from the research questions that were carried out through: MANOVA, Correlation Matrix, and Hierarchical Regression analyses. Results from previous research and literature played a contributing role to the direction of this study and will therefore be looked back upon for comparison. Astin's (1984) Theory of Involvement as well as Tinto's (1993) Model of Departure was used to guide this study along with Astin's (1993) I-E-O conceptual framework.

Cronbach's alpha was calculated for the reliability of each scale and construct within the questionnaire, following Field's (2013) guidance on acceptable alpha reliability scores. Personal Investments reported a Cronbach's Alpha of 0.857, Social Integration (.691), and Institutional Commitment (.789). The Personal Investments and Institutional Commitment Scales reported high levels of reliability showing their strength. The Personal Investment scale from the Sport Commitment Model has been used in various studies such as: Scanlan et al. (1993), Raedeke (1997), Alexandris, Zahariadis, Tsorbatzoudis, and Grouios (2002), and Weiss and Weiss (2007), recording an alpha between 0.66 and 0.84. These findings are consistent with the reliability score of this study identifying the scales' reliability when used in various research throughout the sport and recreation literature.

Background Demographics

The I-E-O Model (Astin, 1993) controls for the pre-determined characteristics of respondents, or inputs, and determines if post-secondary intramural sport participation measures add to the prediction of the dependent variables (social integration/institutional commitment) (Astin & Sax, 1998). The background demographic characteristics are used as the input characteristics of this conceptual framework. The demographic characteristics of the sample population differ slightly from those of the sample population identified by Forrester (2014) when studying the benefits of campus recreation. The sample in the study by Forester consisted of a majority of students in third and fourth year of their post-secondary education whereas the sample in this study weighed heavily in first and second year of post-secondary education. A difference between studies also occurred when examining the participants' living accommodations. Forrester had a particularly even amount of students who lived on-campus and off campus, whereas the sample in this study weighed heavily in students living off campus. When ethnicities were compared both studies demonstrated similar results with a majority of participants falling into the "white" category. Given the demographic characteristics differ slightly in this study, it perhaps shouldn't be surprising the results of this study may also differ from previous research.

Through a One-way ANOVA, students who were in their fourth year of post-secondary education were found to have a significantly higher level of social integration into the campus community when compared to first and second year students. This finding directly correlates with Heywood and Warnick's (1976)

previous research discussing intramural participation having an integral role in social interaction within a university setting. The longer students have the opportunity to participate in intramural sports by how many years they have been attending post-secondary institutions, the greater the chance they have to experience social integration. This is further supported by Artinger et al (2006) who found participation in intramural sports was a contributing factor to social integration that then leads to institutional goals incorporating students into the university through sports.

When further analyzed through a hierarchical regression analyses, year at Institution as well as Sign-Up (how a student signed up for the intramural sport; individual, team, or both) were found to be significant predictors of social integration. These findings support Tinto's (1987) assertions that extra-curricular programs, including intramural sports, provide students the opportunity to engage in repetitive contact with one another that may lead to incorporation into the post-secondary setting. Students want to sign up together as a team in order to gain this repetitive contact with one another that then leads to social integration into the campus community. The more years a student spends at a post-secondary institution, as well as the more times a student signs up for intramural sports and are involved in intramurals, the more likely it is that the student will become socially integrated into the campus community. Smith and Thomas (1982) similarly found that "engaging in intramurals could predict salary, feeling positively about your pay in your job, satisfaction with educational experiences then and now, and satisfaction with your present social and cultural experiences" (p.12).

The participation patterns in this study may help explain why the results contradict previous literature and challenge previous findings. The sample results did not display a large amount of students participating in various intramural sports. On average, each student participated in two out of eleven sports offered in the fall semester. Previous studies (Webb & Forrester, 2015; NIRSA, 2008) have found that the breadth and depth of participation in intramural sports and campus recreation activities lead to social benefits, satisfaction, and a sense of belonging. The students from this specific institution on average did not participate in as many intramural sports in the fall semester or as many times per week, which may have led to the varying results not coinciding with previous literature. Perhaps, had students participated in more sports in this study (i.e., greater breadth), and participated more frequently (i.e., greater depth), results would have revealed greater linkages between the number of intramural sports played and the frequency of this participation and social integration.

Breadth and Depth of Intramural Sport Participation

In regards to research questions one and two; breadth and depth of intramural sport participation are identified through Astin's (1984) Theory of Involvement to access a full scope of a participant's intramural experience. Breadth and depth are also used as environmental factors within Astin's (1993) I-E-O conceptual framework. The breadth of participation was measured through how many sports each student participated in. On average students participated in two sports out of the 11 intramural sports offered ($M=1.72$, $SD= 1.23$). The depth measurement entailed how frequently participants engaged in intramural sports each week. Participants reported that on

average they participated two times per week within an intramural sport stated above ($M=1.74$, $SD=.96$).

When examining a correlation matrix, a significant relationship was found between breadth, as well as depth, of intramural sport participation and social integration. This supports previous research by Artinger et al (2006) as well as Webb and Forrester (2015) where they suggested that the more students are involved, and the more intramural sports they participate in, the more they will benefit. Although when further analyzed through a hierarchical regression analysis, there was no significant relationship identified for either breadth or depth. Perhaps breadth and depth is not significant because there is some sort of interaction effect happening between them. Breadth and depth might be significant predictors when analyzed at different levels of the other variable. For example, maybe depth of participation would be a significant predictor of social integration when examining only participants with high breadth of participation but not low breadth of participation or vice versa. Or, perhaps breadth of participation would be a significant predictor of social integration when examining only participants with high depth of participation but not low depth of participation or vice versa.

These conclusions support previous literature identifying that involvement refers to the amount of physical and psychological energy students devote to the experience (Astin, 1993). This is related to social integration as Wendel et al (2009) refers to social integration as a student's perception of the interaction they have with their peers, faculty, and staff that can be gained through involvement in co-curricular activities. Drawing on the connection as more physical and psychological energy

students put into a co-curricular activity the more interaction they will have with their peers, faculty, and staff. Previous literature (Forrester) has linked breadth and depth of intramural sport participation to various benefits that a student can achieve such as social integration. However, in this study, when depth and breadth were investigated and compared to social integration through a hierarchical regression: physical amount of time and frequency (breadth and depth) was not a significant predictor of social integration, although quality of involvement through personal investments (psychological energy) was a significant predictor of social integration.

The data for this study were only collected at one point before the midpoint of the first semester of the academic school year. Collecting data at the end of the fall semester, or later in the second semester, could have provided a better indicator of the students' breadth and depth of intramural participation and, in turn, may have significantly predicted social integration. The sample population in this study consisted of 50% first and second year students therefore possibly not giving the students enough time in their post-secondary careers to become integrated into the campus community at the institution, especially since the collection of data occurred in the fall semester. Barcelona and Ross (2002) indicated through their results that students who live on campus tend to participate in more of a variety of recreational programs than those who live off campus. Eighty percent (80%) of the sample population in this study lived off campus, which may have reduced the number of intramural sports students participated in and perhaps decreased their social integration into the institution's campus community as they are not on site as often and have to commute to campus.

Personal Investments (Quality of Effort)

Research question three was analyzed through the Athlete's Opinion Survey, based on Scanlan et al (1993) Sport Commitment Model derived from various theoretical concepts of commitment in social and organizational psychology. Personal investments represent valuable commodities that athletes themselves may put into their activity of choice (intramurals) that cannot be directly redeemed if participation is terminated through, effort, energy, time, and money (psychological factors).

Through the correlation matrix, personal investments were positively and significantly related to social integration. When further explored through a hierarchical regression analysis, personal investments were a significant predictor of social integration. This supports previous literature regarding the definition of a highly involved student as one who dedicated a considerable amount of time and energy (personally invested) to studying, time on campus, participating in student organizations, and interacting with faculty and other students on a frequent basis (Astin, 1993). Scanlan, Russell, Magyar, and Scanlan (2009) found that investing personal resources strengthened commitment amongst the athletes studied, further clarifying the understanding of the personal investments construct of the Sport Commitment Model.

Barcelona and Ross (2002) examined quality of student effort through campus recreation participation patterns over a fifteen year period using secondary national data from the CSEQ (Pace, 1982). Results found that younger students were more involved in campus recreation programs than older students, as well as males compared to females. These results draw common parallels to the results of this study

demonstrating the same results within the demographic characteristics related to the quality of effort. Barcelona and Ross suggested that the campus recreational programs may not be addressing the needs of older students through the campus recreational sports offered, which is now a problem, as on average only one sixth of undergraduate students fit into the traditional student category of between 18-22 years old (Kuh, 1993). These same results were also found in this study identifying the need for further expansion of amenities such as family night, child care, specialized target marketing etc., in order to address the need of older students and not hinder the quality of effort involved through their campus recreational program participation.

The post-secondary experience is a result of events, scenarios, and facilities that are implemented in order to facilitate student learning and development (Pace, 1982). Student involvement has also been looked upon as an investment of time and effort that students put forth in utilizing the amenities, opportunities, and programs that the post-secondary institution has available (Davis & Murrell, 1993). Drawing the conclusion that to be highly involved in a campus community and be social integrated, a student must devote time and energy into the activity or learning objective of their choice in order to receive the benefits associated. Students who are not personally invested or involved in extra-curricular or campus activities are found to have a higher dropout rate (Astin, 1975). Scanlan et al (1993) previously identified that through a hierarchical regression personal investments was a significant predictor of sport commitment. This relates to the findings of this study identifying that personal investments, as a measure of quality of effort, are direct predictors of social integration. Personal Investment has also been examined in other areas of research

within the broader field of applied health science. Duda and Tappe (1988) found through a multiple regression analysis that present and future exercise behaviors were significantly correlated with social psychological variables reflecting personal investment through personal incentives, sense of self, and perceived options.

The more personally invested a student is into the activity or sport, the more committed they are to that activity or sport in turn relating to the higher possibility of becoming socially integrated into a campus community based on their personal investment and commitment. The number of sports a student plays (breadth) and the frequency of their participation (depth) do not significantly predict social integration. The quality of effort a student invests into their intramural sport participation predicts social integration. Therefore, implying that it's not how many sports, or how frequently a student participates, but how much they invest themselves into the experience that makes the difference.

These conclusions provide information to the future research directions identified by Weiss, Kimmel, and Smith (2001) emphasizing the intrinsic and social aspects of certain activities in order to sustain involvement. These authors proposed that future researchers should address the psychological commitments that an individual may have demonstrating the linkage with their intentions to continue their participation. Furthermore, Zahgariadis et al, (2002) suggest through their findings using the Sport Commitment Model and Personal Investments scale that individuals who are willing to invest more money, their free time, and effort are less likely to drop out of sports and receive further benefits, in turn supporting the conclusions of

this study through the relationship between quality of effort measured through personal investments and social integration.

The four questions used to measure personal investments involving; effort, energy, time, and money are fairly similar to the questions measuring social integration. The questions in the CPQ measuring social integration ask the participant how much effort, energy, time, and money they devote to their relationships formed throughout the post-secondary institution. If the participant is personally invested in the campus recreation program of intramural sports through effort, energy, time and money then similar levels of investments into their social integration patterns through effort, energy, time, money also appear to be occurring.

With these conclusions and findings discovered, a relationship could be drawn to the current intramural program offered at the institution studied. Since personal investments is a significant predictor of social integration displaying that the money invested playing intramural sports as well as the effort, time, and energy the intramural sport requires is exactly where it needs to be in order to provide the student participants the benefits that they deserve, contributing to their overall post-secondary experience. If the intramural programs continue to operate this way social integration will be a continual benefit the participants will receive. If slight adjustments and increases are made then a relationship may also form with social integration but also institutional commitment as well as leading to further benefits and contributing to the institution as a whole.

Social Integration

NIRSA (2008) outlines the benefits of campus recreational sports, displaying the dynamic elements it can achieve from academic benefits to emotional support. Campus recreational sports programs have been found to be socially enriching environments as they offer students the opportunity to develop informal support groups, find study partners, and seek advice from other students and faculty (Belch, Gebel, & Mass, 2001). Out-of-class experiences, such as participation in campus recreational sports programs, have also been shown to help with social integration (Bradley et al, 1994; Christie & Dinham, 1991). There are various types of social benefits through; involvement, engagement, and integration. Social integration looks at the relationship between the students and the campus directly through a sense of belonging (Wendel et al, 2000).

Tinto's (1993) Model of Departure measures perceptions of students' interactions and connections to the staff and faculty along with their peers within their involvement in extra-curricular activities. Social integration can encourage the development of campus communities and improve student involvement (Tinto, 1987). Davidson, Beck, and Milligan (2009) developed the College Persistence Questionnaire with a Social Integration component examining a student's shared values, sense of belonging, and similarity to others within a college environment. Positive and successful social integration can directly contribute to a student's overall post-secondary experience. Social integration is present in a variety of different areas although heavily present in campus recreation that has guided this study. Wendel et al (2009) identified that social integration refers to a student's perception of interaction

they have in their peers, faculty, and staff at an institution as well as their involvement in extra or co-curricular activities.

As previously indicated, year at institution, type of sign up and personal investments/quality of effort were significant predictors of social integration through the hierarchical regression analysis. These results identify that it is not directly how often, or how many, intramural sports a student directly participates in but the quality of their effort throughout the activity and to the extent which they have personally invested copious amounts of effort, energy, time, and money into the activity in which the student will then become socially integrated into the campus community. These results can add information towards a more sophisticated body of knowledge not only demonstrating that there are social benefits that come out of participation in campus recreation activities but what specifically can be done in order to achieve those social benefits such as social integration into a campus community. This study dives deeper into the true meaning of social benefits through social integration and the connection a student obtains between their experience and the campus directly.

As discussed in chapter two, social integration measures a student's sense of belonging, shared values, and similarity to others in a post-secondary environment (Davidson et al., 2009). Social integration contributes to a student's overall post-secondary experience, therefore increasing their want to continue attending the institution (Tinto, 1987). The findings of this study contradict these findings, as social integration was not a significant predictor of institutional commitment. The experience captured through this study from the students at this specific institution can add a unique element to this current body of research surrounding the topic of

social integration. With the demographic characteristics of the sample in this study displaying high levels of first and second year students, as well students living in off campus housing, this may be an indicator and further explain the non-significant relationship found between social integration and institutional commitment.

However, the findings of this thesis are supported by Scanlan et al (2003) as they found personal investments to be the motivational mechanism for continued participation. Therefore, the longer an individual participates in a specific activity, the more opportunity they have to attain subsequent benefits associated such as social support.

Institutional Commitment

Institutional commitment is also a part of the College Persistence Questionnaire and is used to measure how committed a student is to their current institution. Bryant, Banta, and Bradley (1995) found that thirty percent of the sample population they examined, students considered recreational facilities and programs integral components in deciding where to embark on their post-secondary education. Previous literature has found that external assistance and amenities offered to students can increase their commitment and satisfaction with the institution they have chosen to attend for their post-secondary education experience (Tinto, 1987). This leads to the creation of Tinto's (1993) Model of Departure linking social integration and extra-curricular activities directly to institutional commitment leading to a departure decision from the chosen institution. The results of this study did not find the direct relationships between social integration and institutional commitment as identified in the model. This may have been in part due to the large amount of commuter students

(off campus housing) identified in the sample, therefore preventing more frequent participation in the campus recreational sports programs provided. Students at this institution may be solely focused on their academic studies and have decided to not engage in co-curricular activities throughout their post-secondary career, not relating to the institution as a whole. Another contributing factor leading to the lack of relationship between social integration and institutional commitment may be awareness. These students may not have been educated or informed of the campus recreational programs that are available thereby resulting in their lack of participation. The institutional commitment scale may not have been able to fully capture the institutional commitment of the students, due to the questions asked and the way the scale was measured.

Institutional commitment has been referred to as a variable that holds value and plays a crucial role in contemporary casual models of retention (Davidson, Beck & Milligan, 2009). Blumenthal (2009) supported this notion by identifying that having a strong campus recreation presence at an institution can greatly impact the retention and attendance of a university.

Through the results and conclusions of this study when examining research question four, there were no significant relationships or findings discovered that involved the variable of institutional commitment in any of the analyses. These discoveries contradict previous literature such as Christie and Dinham (1991) as they identified students who are integrated efficiently into social and academic systems through participation in extra-curricular activities (intramurals), interactions with others, and interactions with faculty are found to develop strong commitments to

attaining their post-secondary degree. Bradley et al, (1994) also reported that involvement in recreation programs and facilities greatly impact a student's decision to continue at their university. This was further supported by Nicpon et al (2007) as they identified social support predicted positive institution persistence.

The findings and results of this study are also not congruent with Tinto's (1993) Model of Departure as there was no significant relationship determined between social integration and institutional commitment. Tinto's (1987) Model of Departure identifies that high levels of social integration directly leads to a greater commitment to the institution. There are various possibilities and factors that may have contributed to the inconsistency between previous literature and the findings of this study. The institutional commitment scale was skewed and therefore may not have been able to grasp the true meaning of what participants were trying to explain regarding their institutional commitment. Since this study was completed at one post-secondary institution, results may be unique to this institution, or perhaps even the participants of this study, and may not be generalizable to other settings.

Limitations

Various elements of this study may limit validity of the data collected and presented, as some limitations related to internal sources of the design of the study and questionnaire, where others were related to the external components involved relating to the generalizability of the data collected. The subsequent sections outline both the internal and external limitations of this study.

Internal: Research Design

As outlined in chapter one, the design of the study holds a limitation in the structure of the survey. The scale utilized (Athlete's Opinion Survey and the College Persistence Questionnaire) had pre-determined answers through closed-ended Likert scale responses. These types of questions tend to force the participant to conform their responses to the standard identified by the survey even if they do not directly feel this way. By having no open-ended exploratory questions, this reduces and limits the participants' ability to expand on their answer and provide further insight into their response elaborating on their chosen answer. This is a common limitation in quantitative research.

Further limitations of this study dealt with the data collection and distribution of questionnaires. This study used purposive sampling in order to purposively target students participating in post-secondary intramural sports. Attending multiple intramural events and assessing a variety of age groups, gender, and types of sport, this study accessed the target population and was a convenient method for the researcher to gain a large amount of completed questionnaires. Stratified random sampling was used to collect the data from participants, by stratifying the sample by competition level (i.e., competitive A, competitive B, or recreational), dual/individual and team sports, as well as gender composition of the intramural sport (i.e., female only, male only, or co-ed). Even though two types of sampling methods were used, there are more male only sports than female only sports offered in the fall semester at a specific institution therefore not obtaining a full random sample and increasing the chance of type 1 error (Tabachnick & Fidell, 2007) as it is an assumption of the

MANOVA analysis. All questionnaires were distributed on an institution's campus property to the intramural participants as dictated by ethics. Intramural hockey programs are offered at an off-campus location and therefore were excluded from the study. All other intramural sports offered in the fall semester were attended and data was collected obtaining a sample size of 324 participants.

External: Generalizability

The sample population and study was gathered and initiated at one university, therefore reducing the generalizability of the results. The results identified may not be congruent across other university campuses due to the various programs and student populations. The Athlete's Opinion Survey, as well as the College Persistence Questionnaire, are a common tool that are used on university student populations to draw conclusions about social integration and institutional commitment, therefore these scales can be used to replicate this study at other campuses. Certain questions within the questionnaire were positively and negatively skewed based on the wording of the question as well as the sample population analyzed leading to problematic generalizability. The institutional commitment scale portion of the questionnaire was negatively skewed as the Likert scale was reversed to make sure participants were thoroughly reading the question and responding accordingly. However, this question was frequently answered incorrectly and negatively skewed the data. Due to this, the results yielded no significant relationship with the dependent variable of institutional commitment, which contradicts the literature previously identifying direct links between social integration and institutional commitment. However, it should be noted that these answers may not have been a misunderstanding and are truly how the

participants feels, still negatively skewing the data. Overall caution should be taken into consideration when interpreting results related to institutional commitment.

The demographic variable of ethnicity was skewed as a majority of the participants classified themselves as 'White'. Therefore, these results more accurately represent a 'White'/Caucasian intramural athlete population reflecting the majority of the population at the chosen university for this study. The questionnaire does access various ethnicities, although the 'White' ethnicity has a considerably higher portion of participants in its category. The results from this study may still be generalized at various universities and recreation services where the majority of intramural participants are also Caucasian.

Implications

The purpose of this quantitative study was to examine the impact of students' participation in post-secondary intramural sports on social integration into the campus community and institutional commitment. There are various studies previously examining the academic benefits of campus recreational sport participation, but limited research in linking social integration and institutional commitment through campus recreation intramural sports. The goals of this research were to further investigate the relationships between post-secondary intramural sports participation and social integration leading to institutional commitment, thereby enhancing our understanding of the benefits that a student can receive from this amenity offered through their institution.

Implications for Theory

The results of this study support researchers such as Elkins et al (2011), Artinger et al (2006), Scanlan et al (1993), as well as Astin's (1984) Theory of Involvement, displaying various social benefits through participation in campus recreation activities specifically intramural sports.

Astin's (1993) I-E-O Model provided a useful framework to conceptualize this study and connect all of the variables together. Astin's I-E-O Model has not been used as frequently as other conceptual frameworks, or Astin's (1984) Theory of Involvement, Tinto's (1993) Model of Departure, or Scanlan et al's (1993) Sport Commitment Model within the field of campus recreational sports. The Sport Commitment Model through the Personal Investment factor was a successful tool when measuring quality of involvement as it provided a psychological measurement tool different than the other physical measurement tools of breadth and depth when quantifying intramural sport participation. This study provides a useful example of how Astin's (1993) I-E-O Model can be successfully implemented and provides a foundation to be used in future research endeavors. When using the I-E-O Model through hierarchical regression analysis, the model will directly control and identify the input variables chosen in order to determine the contributing factors affecting the outcome variables.

The results of this study are congruent with other trends identified in previous research identifying the social benefits that can come from campus recreational programs and facilities offered to students. If accessed correctly the benefits are high and can directly affect a student's post-secondary experience. This study is multi-

faceted involving different concepts from various fields of study. It not only addresses research topics in the recreation and sport fields but also relates to psychological and educational faculties. Simmons and Keeler (1993) discuss how a student's psychological state can represent the desire to continue sport participation. The results of the study directly identify how a psychological state through personal investments is a significant predictor of social integration into a campus community.

The structural theories of Astin's (1984) Theory of Involvement as well as Tinto's (1993) Model of Departure can be updated or slightly adjusted through the findings of this study adding quality of involvement through personal investments as a predictor of social integration through intramural sport participation. This study adds on to Forrester (2015) as he identified that depth and breadth of CRS participation are related to outcomes of retention, health, wellness, and student learning. The findings of this study add to this knowledge adding more distinct predictors through the quality of involvement as related to social integration.

These results can be used as evidentiary factors in various theories to provide justification as well as to re-consider research findings previously discovered within the campus recreation literature. Conclusions drawn from this study support the Sport Commitment Model created by Scanlan et al (1993) as well as Astin's (1984) Theory of Involvement through the personal investments factor in that the more a student personally invests in the activity, or sport, the more benefits they will receive. However, the findings contradict Tinto's (1993) Model of Departure, as social integration was not a significant predictor of institutional commitment. Pascarella and Terenzini (2005) discuss that increases in a student's social integration process will

strengthen a student's commitment to the institution. The results of this study contradict this and therefore would benefit from further examination in future studies. The I-E-O Model, and subsequent hierarchical analyses, identifies and then controls for participant background characteristics (inputs) and determines the additional contribution of intramural sport participation, defined/conceptualized by the depth, breadth and quality of involvement (environmental factors), in predicting/explaining social integration or institutional commitment (outcomes). However, this analysis examines these environmental factors individually, one at a time, without considering the interaction between them. Future research should examine this interaction in order to determine if there are significant differences between varying levels of these independent variables on the outcome variables.

Implications for Practice

The conclusions drawn from this study should be taken into consideration by various campus recreational sport professionals including; intramural coordinators, community programmers, sport practitioners, university recruitment officers, etc. The results of this study identified that there is a direct significant relationship between the quality of involvement in intramural sports and social integration into a campus community. Social integration in a campus community may not directly depend on how many post-secondary intramural sports a student plays, or how many hours a week a student spends playing post-secondary intramural sports, but the quality of involvement or personal investments, that students put into the post-secondary intramural sport that will result in social integration into a specific institution's campus community. Recruitment officers as well as intramural coordinators and sport

practitioners need to explore these results educating participants on the benefits that post-secondary intramural sports can provide students with when they are personally invested in a program and their quality of involvement, is high. This information can be helpful to various departments of the university when promoting or recruiting students as well as getting current students involved and socially integrated into the campus community to create a positive post-secondary experience. These findings may also be transferable to recreation professionals as it shows that when an individual is personally invested in the program itself, thereby increasing their quality of involvement, they may receive benefits from it such as social integration into that specific culture where the program is being implemented.

Future Research Recommendations

Future research should focus on, and further explore, the relationship between social integration and institutional commitment as identified in Tinto's (1993) Model of Departure. Future research should consider investigating other contributing factors that lead to institutional commitment in order to provide findings that will lead to further promotional, recruitment, and retention strategies that universities can implement in order to increase their student population and awareness of their institution.

Further suggestions for future research would be to continue studying social integration and explore other areas of a campus community, such as; clubs, varsity sports teams, events, etc. Through studying other areas of a campus community more contributing factors may be identified to successful social integration into the campus community other than the quality of involvement through campus recreation

intramural sports identified in this study. This information would add to recruitment and promotional strategies when informing and educating students on the amenities and benefits an institution has to offer, as well as getting current students involved and creating a positive sense of community for them throughout their duration on campus.

A final recommendation for future research would be to build off this study and explore if the social integration into the campus community through their participation in intramural sports throughout a student's post-secondary experience plays a role in their alumni participation. Alumni contributions and donations are a large part of institutions ability to grow, expand or update facilities, and adding up to date modern amenities for current students to enjoy. Contributing alumni are still connected to their post-secondary institution and have the sense of campus community. Future researchers could examine this relationship to see if through a student's personal investment in their participation in intramural sports, which lead to their social integration into the campus community, played a contributing role into their current contribution and donations as alumni.

Conclusion

This study was intended to examine the impact of students' participation in post-secondary intramural sports on social integration into the campus community and institutional commitment at this specific institution. Through the distribution of questionnaires and various analyses involving MANOVA, Correlation Matrix, and Hierarchical Regression, it was determined that the quality of involvement identified from personal investments was a significant contributing factor to a student's social

integration into their campus community. Therefore, the focus is not on how much, or how many post-secondary intramural sports a student participates in, but the quality of that participation and how much the student has personally invested into their participation. Additionally, this study found no significant relationships between depth, breadth, quality of involvement, or social integration and a student's institutional commitment. This finding contradicts past literature drawing connections between social integration and institutional commitment.

All conclusions and findings drawn from the study will add and contribute to the current body of knowledge on the benefits of campus recreational sports as well as contributing factors to social integration and institutional commitment in a post-secondary setting. This study directly provides further evidence identifying significant contributing factors to social integration on a campus community through intramural sport programs. The findings provide support for Astin's (1984) Theory of Involvement as well as the Sport Commitment Model in that the more a student is personally invested and gaining a quality experience from a program the more benefits they will receive, in this case; being socially integrated into a campus community.

Looking forward, these findings and conclusions can be used as a baseline for future studies exploring these relationships on various post-secondary campuses. Post-secondary campus recreation departments, specifically intramural sport coordinators, can use this information to increase participation in intramural programs by educating students on the benefits they have the opportunity to receive as well as developing quality programs that are worthy of students investing their personal time

in. If these types of intramural programs are offered, students will then build social networks and a sense of campus community connecting them to their institution and resulting in a positive post-secondary experience.

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Appendices

Appendix A

Research Ethics Clearance



Brock University

Research Ethics Office Tel: 905-688-5550 ext. 3035 Email: reb@brocku.ca

Social Science Research Ethics Board

Certificate of Ethics Clearance for Human Participant Research

DATE: PRINCIPAL INVESTIGATOR: FILE: TYPE:

9/5/2015 FORRESTER, Scott - Recreation and Leisure Studies 14-294 -
FORRESTER Masters Thesis/Project STUDENT: Shenise Power

TITLE:

SUPERVISOR: Scott Forrester Intramural Sport Participation, Social Integration, and
Institutional Commitment

ETHICS CLEARANCE GRANTED

Type of Clearance: NEW Expiry Date: 9/30/2016

The Brock University Social Science Research Ethics Board has reviewed the above named research proposal and considers the procedures, as described by the applicant, to conform to the University's ethical standards and the Tri-Council Policy Statement. Clearance granted from 9/5/2015 to 9/30/2016.

The Tri-Council Policy Statement requires that ongoing research be monitored by, at a minimum, an annual report. Should your project extend beyond the expiry date, you are required to submit a Renewal form before 9/30/2016. Continued clearance is contingent on timely submission of reports.

To comply with the Tri-Council Policy Statement, you must also submit a final report upon completion of your project. All report forms can be found on the Research Ethics web page at <http://www.brocku.ca/research/policies-and-forms/research-forms>.

In addition, throughout your research, you must report promptly to the REB:

- . a) Changes increasing the risk to the participant(s) and/or affecting significantly the conduct of the study;
- . b) All adverse and/or unanticipated experiences or events that may have real or potential unfavourable implications for participants;
- . c) New information that may adversely affect the safety of the participants or the conduct of the study;
- . d) Any changes in your source of funding or new funding to a previously unfunded project.

We wish you success with your research. Approved:

_____ Kimberly Maich, Chair Social Science Research
Ethics Board

Note: Brock University is accountable for the research carried out in its own jurisdiction or under its auspices and may refuse certain research even though the REB has found it ethically acceptable.

If research participants are in the care of a health facility, at a school, or other institution or community organization, it is the responsibility of the Principal Investigator to ensure that the ethical guidelines and clearance of those facilities or institutions are obtained and filed with the REB prior to the initiation of research at that site.

Appendix B

Informed Consent

Date:

Project Title: Intramural Sport Participation, Social Integration, and Institutional Commitment

Principal Investigator (PI): Scott Forrester, PhD, Associate Professor

Department of Recreation and Leisure Studies, Brock University

(905) 688-5550 Ext. 4247 e-mail: sforrester@brocku.ca

Student Investigator: Shenise Power, Master's Candidate

Faculty of Applied Health Sciences (Leisure Studies)

Brock University

E-mail: sp12up@brocku.ca

Faculty Supervisor: Scott Forrester, PhD, Associate Professor

Department of Recreation and Leisure Studies, Brock University

(905) 688-5550 Ext. 4247 E-mail: sforrester@brocku.ca

INVITATION

You are invited to participate in a study that involves research. The purpose of this quantitative study is to examine the impact of students' participation in intramural sports on social integration into the campus community and institutional commitment at (institution).

WHAT'S INVOLVED

As a participant, you will be asked to:

1. Provide your consent to participate in the study;
2. Complete a questionnaire.

Participation will take approximately 5 minutes of your time.

POTENTIAL BENEFITS AND RISKS

Possible benefits of participation include:

1. Better understanding of how intramural sport participation relates to your social integration into the campus community and institutional commitment.
2. Helping Recreation Services better understand how student's become socially integrated into the campus community by participating in intramural sports.
3. Assisting (institution) in identifying the impact of student participation in intramural sports on institutional commitment.

There are no known or anticipated risks associated with participation in this study.

CONFIDENTIALITY

Data collected will be kept in a sealed container immediately upon completion to ensure confidentiality of information provided. Once all of the data has been collected from all intramural participants, it will be inputted into the Statistical Package for the Social Sciences (SPSS) for analysis. The data will be stored electronically and password protected, as well as backed up on a password protected external computer drive (USB). The data recorded on the paper copies will be kept and stored in a locked cabinet. The data will be kept and securely stored for one year after the research has been completed at which point the data will be deleted electronically, and the paper surveys will be shredded. The data being collected is anonymous and does not ask the participant to identify their name at any point therefore; there is no way to connect the data to the participant who provided it.

Access to this data will be restricted to **Shenise Power** and **Scott Forrester**.

VOLUNTARY PARTICIPATION

Participation in this study is voluntary. If you wish, you may decline to answer any questions or participate in any component of the study. Further, you may decide to withdraw from this study prior to submitting your completed questionnaire. Once the questionnaire is submitted, it is not possible to withdraw from the study as there is no way to link a submitted survey to the participant who completed it.

PUBLICATION OF RESULTS

Results of this study may be published in professional journals and presented at conferences. Feedback about this study will be available to all participants through contacting Shenise Power at **sp12up@brocku.ca**.

CONTACT INFORMATION AND ETHICS CLEARANCE

If you have any questions about this study or require further information, please contact Shenise Power (**sp12up@brocku.ca**) or Scott Forrester (**sforrester@brocku.ca**) using the contact information provided above. This study has been reviewed and received ethics clearance through the Research Ethics Board at Brock University [insert file #]. If you have any comments or concerns about your rights as a research participant, please contact the Research Ethics Office at (905) 688-5550 Ext. 3035, **reb@brocku.ca**.

Thank you for your assistance in this project. Please keep a copy of this form for your records.

Appendix C

Questionnaire

Intramural Sports Participation, Social Integration and Institutional Commitment

INSTRUCTIONS:

Please invest a few moments of your time to provide information about your current intramural sports participation here at (institution). This survey will only take 5 minutes of your time. Please return the completed survey to the researcher. Thank You!

SECTION I: General Information

Have you read the information letter, and do you freely consent to participate in this research project? Yes No

1. Gender : (please specify) _____
2. Age: _____ (years)
3. Year at Institution: 1st year 2nd year 3rd year 4th year 5th year or higher
4. Type of Education: Undergraduate Studies Graduate Studies/ Teacher's College
5. Ethnicity: White North American Indian Metis Inuit Chinese South Asian Black Filipino Arab
 Latin American Southeast Asian West Asian Japanese Korean Other: _____
6. What Intramural Sports do you participate in? (please check all that apply)
 - Slow Pitch: Co-Ed : Comp A Comp B Rec
 - Flag Football: Co-Ed Men's : Comp A Comp B
 - 4's Volleyball: Co-Ed Men's Women's : Comp A Comp B
 - Ball Hockey: Co-Ed : Comp A Comp B
 - Tchouckball: Co-Ed : Comp A Comp B
 - Basketball: Men's : Comp A Comp B
 - Inner-tube Water Polo: Co-Ed : Comp A Comp B
 - Outdoor Soccer: Co-Ed Men's Women's : Comp A Comp B
 - Ultimate Frisbee: Co-Ed : Comp A Comp B
 - Badminton Singles: Men's Women's : Comp A Comp B
 - Tennis Singles: Men's Women's : Comp A Comp B
7. Did you sign up for intramurals as a: Team Individual Both
8. Residence: On-Campus Living Off Campus Housing Home
9. How many times per week do you participate in intramural sports? _____ times per week.

SECTION II – Personal Investments

Please indicate your level of agreement to the following questions...	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
1. I have invested a lot of effort into playing intramurals at (institution).	1	2	3	4	5
2. I have invested a lot of energy into playing intramurals at (institution).	1	2	3	4	5
3. I have invested a lot of time into playing intramurals at (institution).	1	2	3	4	5
4. I have invested a lot of my own money into playing intramurals at (institution).	1	2	3	4	5

SECTION III – Social Integration

Please rate the following questions...	Very Little	Little	Neutral	Much	Very Much	N/A
1. How much have your interpersonal relationships with other students had an impact on your personal growth, attitudes, and values?	1	2	3	4	5	6
2. How much have your interpersonal relationships with other students had an impact on your intellectual growth and interest in ideas?	1	2	3	4	5	6
3. How much do you think you have in common with other students at (institution)?	1	2	3	4	5	6

Please rate the following questions...	Very weak	Weak	Neutral	Strong	Very Strong	N/A
4. How strong is your sense of connectedness with other faculty, students, and staff on (institution) campus?	1	2	3	4	5	6

Please rate the following questions...	Very Unsatisfied	Unsatisfied	Neutral	Satisfied	Very Satisfied	N/A
5. When you think about your overall social life here at (institution) with friendships, college organizations, extra-curricular activities, and so on, how satisfied are you with yours?	1	2	3	4	5	6

Please rate the following questions...	Very Poor	Poor	Neutral	Good	Very Good	N/A
6. What is your overall impression of the other students here?	1	2	3	4	5	6
7. How many of your closest friends are here at (institution) with you rather than elsewhere such as other colleges, work, or hometown?	1	2	3	4	5	6

Please rate the following questions...	Never	Rarely	Neutral	Often	Very Often	N/A
8. How often do you wear clothing with (institution) emblem?	1	2	3	4	5	6
SECTION IV - Institutional Commitment						
Please rate the following questions...	Very Likely	Likely	Neutral	Un-Likely	Very Un-Likely	N/A
1. How likely is it that you will earn a degree from (institution)?	1	2	3	4	5	6
2. How confident are you that this is the right University for you?	1	2	3	4	5	6
3. How likely is it that you will re-enroll at (institution) next semester?	1	2	3	4	5	6
Please rate the following questions...	Never	Rarely	Neutral	Often	Very Often	N/A
4. How much thought have you given to stopping your education at (institution) perhaps transferring to another institution, going to work, or leaving (institution) for other reasons?	1	2	3	4	5	6

Appendix D

Feedback Letter

Dear Participant

Thank you for participating in this research project entitled 'Intramural Sport Participation, Social Integration, and Institutional Commitment'. Your data will be very useful in helping me to explore the relationship between intramural sport participation, social integration into the campus community, and institutional commitment at (institution). The benefits of recreational activities and leisure experiences is a topic of much importance in my field and your data will go towards producing a research project that will help defend the importance of intramural sports in a university setting. Once again all data collected is anonymous and confidential. This means that the results of your questionnaire cannot be traced back to you. The data will be stored electronically and password protected, as well as backed up on a password protected external computer drive (USB) that will be carried with the Student Investigator (Shenise Power). The data recorded on the paper copies will be kept and stored in a locked cabinet. The data will be kept and securely stored for one year after the research has been completed at which point the data will be deleted electronically, and the paper surveys will be shredded.

If you wish to obtain the results of this study I would be glad to send you a copy over email. You may contact me any time after June 1st, 2016 at sp12up@brocku.ca and request that I send you the results of my research. You may also contact me if you have any other questions pertaining to the study.

If you have any pertinent questions about your rights as a research participant, please contact the Brock University Research Ethics Officer (905 688-5550 ext 3035, reb@brocku.ca).

Best Regards

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