

EXPLORING STUDENT LEADERS FOR SUSTAINABLE  
DEVELOPMENT: LEADERSHIP COMPONENTS &  
PERSONAL PRACTICES

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Submitted to the Faculty of the  
Graduate College of the  
Oklahoma State University  
in partial fulfillment of  
the requirements for  
the Degree of  
DOCTOR OF PHILOSOPHY  
May, 2014

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PERSONAL PRACTICES

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Title of Study: EXPLORING STUDENT LEADERS FOR SUSTAINABLE  
DEVELOPMENT: LEADERSHIP COMPONENTS & PERSONAL  
PRACTICES

Major Field: DOCTOR OF PHILOSOPHY IN HUMAN SCIENCES

Abstract: The increasing complex global sustainability challenges that society faces, call for leaders that are skilled in collaborative sustainable development (SD) change. Leaders that possess the capacities to encourage collaboration will be more effective helping society move toward sustainability. Leaders equipped with mastery of personal capacities possess the abilities to engage members with a holistic understanding of self and society.

The purpose of this study was to explore the leadership components (leadership roles, leadership personal capacities, and leadership styles) and personal practices of student leaders who have indicated an interest in supporting sustainable development within the higher education system. These student leaders are referred to student leaders for sustainable development (SLfSD). Leadership personal capacities directly influence the style of leadership that may be brought to an organization or situation. A clear understanding of leadership components and personal practices of SLfSD may help to cultivate sustainability promotion. Preparing student leaders, who possess the personal capacities to impart SD change during time in academia, may ultimately assist in the development of strategies that will allow organizations/institutions to move towards SD.

Leadership component and personal practice data were gathered and analyzed from 293 SLfSD who attended the 2013 AASHE (Association of the Advancement of Sustainability in Higher Education) conference. This exploratory study was designed with the intent of developing a baseline of knowledge pertaining to SLfSD upon which: formal and informal programs may be developed and future qualitative and quantitative research may be conducted.

Key findings from this study included: unequal distribution of ethnicity in formal leadership roles, low involvement from adult learners, the interaction of role, age, and/or gender on leadership personal capacity outcomes, particularly Optimism and Confidence: Perseverance. Ethnicity was found to be particularly influential on transactional leadership style scores, contrary to previous transformational leadership literature. Gender, in combination with role and age were found to be influential on transformational leadership style scores, where gender was previously considered as an individual influencer. Demographic dynamics significantly influence the exercise (frequency) of personal practices.

This study contributed to the literature regarding education for sustainable development, student leadership, and overall SLfSD leadership components and personal practices. This study suggested variables for consideration when developing programs for student development and outlined personal practices that SLfSD parameter groups may prefer to exercise in the programs. This study gathered information that will assist in planning and development of future studies regarding SLfSD.

## TABLE OF CONTENTS

Chapter	Page
I. INTRODUCTION.....	1
Opening and Outline.....	1
Background of Problem.....	2
The Sustainability Challenge.....	2
Education’s Role.....	3
Statement of the Problem.....	4
Research Structure.....	5
Purpose of the Study.....	5
Epistemological Stance and Theoretical Perspectives.....	5
Theoretical Frameworks.....	7
Transformative leadership.....	7
Education for sustainable development.....	7
Strategic sustainable development.....	8
Strategic education for sustainable development (SESD).....	8
Terms and Definitions.....	8
Scope and Limitations.....	10
Significance of the Study.....	10
Organization of the Study.....	11
II. REVIEW OF LITERATURE.....	12
Introduction.....	12
Body of the Review.....	12
Student leadership.....	12
Leadership roles.....	14
Leadership personal capacities.....	15
Personal capacities to facilitate collaboration in SSD.....	16
Developmental paths and the 9 disciplines of a facilitator.....	17
Leadership styles.....	19
The 9-factor model.....	20
Gender.....	21
Ethnicity.....	21
Personal practice.....	23
Programming for SESD.....	24
Transformative sustainability learning.....	24

Chapter	Page
Informal programs .....	25
Chapter Summary .....	26
III. METHODOLOGY .....	28
Introduction.....	28
Research Objectives.....	29
Research Design.....	29
Setting and Participants.....	30
Population .....	31
Sample.....	31
Sampling method .....	31
Response rate .....	32
Data Collection and Instrument .....	32
Demographic characteristics.....	33
Leadership role.....	35
Leadership personal capacities .....	35
Pilot study .....	35
Personal practices.....	37
Leadership styles.....	39
Validity and reliability .....	40
Data Analytic Plan .....	40
Chapter Summary .....	42
IV. RESULTS .....	43
Introduction.....	43
Sample.....	44
Descriptive Information .....	44
Exploratory Research Questions.....	46
Research Question 1 .....	47
Optimism.....	49
Confidence: Perseverance.....	49
Being Present .....	50
Compassion and Intrinsic Confidence .....	50
Continual Improvement .....	50
Transformational Leadership .....	51
Transactional Leadership .....	52
Passive/Avoidant.....	52
Research Question 2 .....	53
Research Question 3 .....	55
Research Question 4 .....	58

Chapter	Page
Meditation .....	61
Relaxation exercises.....	61
Yoga.....	61
Martial arts .....	62
Chanting.....	63
Spending time in nature .....	63
Energy work.....	64
Visualization .....	65
Sport.....	66
Artistic Expression.....	67
Reflective journaling.....	67
Self-inquiry .....	67
Therapy or counseling.....	68
Retreat .....	69
Exercise.....	70
Games .....	70
Check-in.....	71
Dance .....	71
Music.....	72
Asking for help .....	73
Chapter Summary .....	74
V. DISCUSSION .....	76
Introduction.....	76
Discussion and Implications .....	77
Leadership Personal Capacities .....	78
Support of the SSD seven personal capacity model .....	80
Leadership Styles .....	80
Personal Practices .....	82
Practice vs. preference .....	82
Dynamics of personal practices .....	83
Recommendation for Future Research.....	85
Leadership Component Future Research .....	85
SLfSD leadership personal capacity scale .....	85
Qualitative approaches to SLfSD research .....	86
Personality and leadership .....	86
Personal Practice Future Research.....	87
Personal practice categories.....	87
Concluding Remarks.....	88

Chapter	Page
REFERENCES .....	90
APPENDICES .....	98
A. AASHE Conference Schedule .....	98
B. Survey Instrument: SLfSD Questionnaire.....	99
C. SLfSD Demographic Characteristics .....	105
D. Leadership Personal Capacity Descriptive Statements .....	108
E. Leadership Personal Capacity Developmental Process.....	110
F. Outcome Correlations .....	116
G. Multivariate Regression .....	119
H. Multifactor Leadership Questionnaire (MLQ) Leadership Characteristics .....	129
I. IRB approval letter and application.....	132

## LIST OF TABLES

Table	Page
2-1. Seven personal capacities to facilitate co-learning and co-creation in Strategic Sustainable Development (SSD).....	26
2-2. Discipline Descriptions of Developmental Paths .....	28
3-1. SLfSD Basic Demographic Characteristics.....	42
3-2. SLfSD Leadership Roles & Organization Involvement .....	43
3-3. Summary of alpha scores for Leadership Personal Capacities Scale .....	44
3-4. Comparison of Developmental Paths and SLfSD Leadership Personal Capacities ...	45
3-5. SLfSD personal practices mean score comparisons .....	46
3-6. SLfSD preferred personal practices ranked comparisons.....	47
3-7. SLfSD Leadership Styles mean score comparisons .....	48
3-8. Tabulation to acquire n distribution.....	50
4-1. Leadership role characteristics .....	52
4-2. Leadership personal capacity characteristics.....	53
4-3. Leadership style characteristics .....	54
4-4. Leadership component multivariate regression .....	55
4-5. Leadership personal capacities multivariate regressions .....	56
4-6. Leadership styles multiple regression.....	59
4-7. SLfSD personal practices mean score comparisons .....	62
4-8. SLfSD personal practices rankings.....	64
4-9. Personal practices multivariate regression significance .....	66
4-10. Personal practice multivariate regression .....	67



## LIST OF FIGURES

Figure	Page
1-1. Research elements utilized in the study.....	14
2-1. Seven personal leadership capacities to facilitate co-learning and co-creation in SSD .....	25
2-2. The Developmental Paths and the Disciplines .....	27
2-3. The dynamic of top-down-bottom-up processes across levels of culture .....	32
3-1. Collegiate institutions organized by state .....	43
4-1. Role x age x gender interaction for Optimism leadership personal capacity .....	57
4-2. Role x age interaction for Confidence: Perseverance leadership personal capacity ..	58
4-3. Role x age x gender interaction for Transformational leadership style.....	59
4-4. Role x ethnicity interaction for Transactional leadership style .....	60
4-5. Meditation role x age interaction.....	69
4-6. Martial Arts role x gender x age interaction.....	70
4-7. Chanting role x gender x age interaction.....	71
4-8. Spending time in Nature role x age interaction .....	72
4-9. Spending time in Nature gender x age interaction .....	72
4-10. Visualization role x age interaction .....	73
4-11. Visualization gender x age interaction .....	74
4-12. Sport role x gender x age interaction.....	74
4-13. Reflective journaling role x gender interaction .....	75
4-14. Therapy/Counseling role x age interaction.....	76
4-15. Therapy/Counseling gender x age interaction .....	76
4-16. Retreat role x age interaction.....	77
4-17. Retreat gender x age interaction .....	77
4-18. Exercise role x age interaction.....	78
4-19. Check-in role x age interaction.....	79
4-20. Dance role x gender x age interaction .....	79
4-21. Music role x gender x age interaction .....	80
4-22. Asking or Help role x age interaction.....	81
4-23. Asking for Help gender x age interaction.....	81
4-24. Asking for Help role x ethnicity interaction .....	82

## CHAPTER I

### INTRODUCTION

#### **Opening and Outline**

The United Nations (UN) General Assembly adopted a resolution to establish 2005-2014 as the UN Decade of Education for Sustainable Development (DESD) and challenged institutions of higher education to integrate sustainability into their educational structure, through both formal and informal modes of education (UNESCO, 2003). Education and learning are the keys to sustainable development (SD) and require a balance of discipline consideration. Economic and social goals, as well as ecological responsibility should be considered in curricular structures, along with education that can provide skills, perspectives, values, and knowledge to live in a sustainable manner. Education for sustainable development should be taught as an interdisciplinary topic which integrates concepts and analytical tools from a variety of educational disciplines (de Haan, Bormann, & Leicht, 2010).

Many institutions of higher education are deep-rooted in traditions and techniques of the past. Challenges to adopt new practices could leave higher education underequipped to address the growing sustainability challenge of the present and future. Higher education administrators have struggled to produce the leadership and vision required to make substantial transformative change toward SD (van der Leeuw, Wiek, Harlow, & Buizer, 2012). Leadership is “a process of social influence in which one person is able to enlist the aid and support of others in the accomplishment of a common task” (Chemers, 2000, p. 27). Leaders, regardless of context, are assumed to possess certain characteristics that are associated with identified leadership styles. Each of these styles may be employed in circumstances to attain specific goals. Leaders,

specifically student leaders who promote sustainable development, have the potential to play a considerable role in the drive and development of educational opportunities. Academia may be able to advance and transform educational structures through formal and informal educational programming to prepare graduates to address sustainability issues.

This study explores the leadership components (leadership roles, leadership styles, and leadership personal capacities) and personal practices of collegiate student leaders for sustainable development (SLfSD). Leadership component identification and development improves awareness and realization (clarification) of one's own values and improves facilitation of collaborative engagement processes. The focus of this study is to better understand the "interior state" of student leaders for SD. The "interior state" or "true self" of a leader is important to understand because it is where actions, intentions, and inspirations originate. This study stems from a combined framework of Education for Sustainable Development (ESD) and Strategic Sustainable Development (SSD), and utilizes the framework of Transformative Leadership as a foundation to identify leadership components and personal practices of SLfSD. Identification of SLfSD leadership components and personal practices can guide opportunities to develop programs, which promote and encourage SD transformation.

This chapter outlines the sustainability challenge, the key role of education in promoting sustainable development, the problem statement and purpose of the study, epistemological stance and theoretical perspectives, theoretical frameworks that provide support for SLfSD exploration, central terms and definitions, the scope and limitations, and the significance of this study.

## **Background of Problem**

### **The Sustainability Challenge**

Sustainability challenges are infinite, urgent, and complex. These challenges are manifested in many interdependent crises, including biodiversity loss, global climate change, poverty, air pollution, deforestation and desertification, violent conflicts, resource scarcity, and institutional distress (Scharmer, 2008; Wiek, Farioli, Fukushi, & Yarime, 2012). These problems stem from large-

scale industrial economic policy, society's prioritization on material goods (materialization), and the dominance and preference of profit over sustainability (van der Leeuw et al., 2012).

Many different definitions and descriptions have characterized the sustainability challenge and the need for sustainable development. A widely used definition devised by the Brundtland Commission explains sustainable development (SD) as meeting “the needs of the present without compromising the ability of future generations to meet their own needs” (WCED, 1987, p. 43). This definition has created widespread consensus around what a sustainably developed society could be.

### **Education's Role**

The 1992 Earth Summit in Rio de Janeiro promoted the concept of SD. The outcome of this conference, known as Agenda 21, outlines a range of strategies for understanding and actualizing SD, specifically highlighting the role of education. With a vision of reorienting education toward sustainable development, Agenda 21 recommended that students of all ages have accessibility to sustainability education in formal and non-formal areas using new and traditional techniques (UNESCO, 2003). The objective of sustainable development, the integrated nature of the global environment, and economic development challenges pose problems for organizations. Specifically, there are programs within institutions of higher education that struggle to see the importance of connecting their programs in an interdisciplinary manner (Sherren, 2008).

Sustainability challenges are both interdependent and integrated, requiring comprehensive approaches and widespread participation. Kofi Annan, then Secretary General of the UN, commented on accomplishments and outcomes of the Earth Summit by stating, “our biggest challenge in this new century is to take an idea that seems abstract – sustainable development – and turn it into a reality for all the world's people” (UNESCO, 2003, p. 3).

AASHE (the Association for the Advancement of Sustainability in Higher Education) developed a rating system (STARS – Sustainability Tracking, Assessment, and Rating System) that assigns point values for actions involving sustainability, notably in the area of formal and informal education (STARS Technical Manual, 2012). AASHE's STARS is an example of an internationally

recognized system that acknowledges the value and potential of education's role in achieving SD goals. In addition to organizational systems that promote and value SD transformation, many published studies have reported findings pertaining to policy (Wright, 2002), formal education curriculum and pedagogy (Armstrong & LeHew, 2013; Hopkinson & James, 2010), student knowledge (literacy) (Winter & Cotton, 2012), and actions (activities and events) (Hopkinson, Hughes, & Layer, 2008) for SD in higher education.

### **Statement of the Problem**

Sustainability concepts have been well rooted in conservation and environmentalism topics, but is still a newcomer to the American academic system and has yet to find a place among established traditions of curriculum and pedagogy (Feinstein & Carlton, 2013). As the impacts of various environmental problems become better understood, it is becoming clear that solutions are complex and will require cross-sectorial (interdisciplinary) efforts (Hopkins, 2013). Education has the potential to play an important role in meeting the sustainability challenge by fostering "innovation, changing behavior, and shifting discourse in the direction of sustainability," (Feinstein & Carlton, 2013, p. 37) however, much of this potential has yet to be realized. The value of American formal education is being questioned because modern educational systems are not up to the task of educating for life in an uncertain future (Executive Office of the President, 1996). If formal education continues on its current path, future US citizens (today's students) may lack the necessary capabilities to address sustainability challenges. The same could be said for informal educational systems.

Informal educational systems typically consist of co-curricular student groups which include campus-wide organizations, professional clubs, honorary societies, and special interest clubs (Eklund-Leen & Young, 1996). Student organizations and leaders increase visibility and acceptability of various attributes. Student organizations on college campuses currently exist for the promotion of sustainability awareness. Organizations and leaders can serve as conduits to the larger student body. SD resolutions and policy transformation may result from this action. Research concerning the underlying constructs of SD student leaders is deficient.

## Research Structure

### Purpose of the Study

The purpose of this study is to explore the leadership components and personal practices of student leaders who indicate an interest in supporting sustainable development within the higher education system. Leadership personal capacities directly influence the style of leadership that may be brought to an organization or situation (Baan et al., 2011). Better understanding the leadership components and personal practices of SLfSD may help to cultivate sustainability promotion. This exploratory study is designed with the intent of developing a baseline of knowledge pertaining to SLfSD upon which formal and informal programs may be developed and future qualitative and quantitative research may be conducted.

### Epistemological Stance and Theoretical Perspectives

The research purpose presented is well suited to an exploratory study design, based on the constructionist epistemology and symbolic interactionism perspectives. Epistemology pertains to the understanding of educational connections and can also be described as “how we know what we know” (Crotty, 1998, p. 8). Figure 1-1 outlines the research elements, based upon epistemology, utilized in this study.

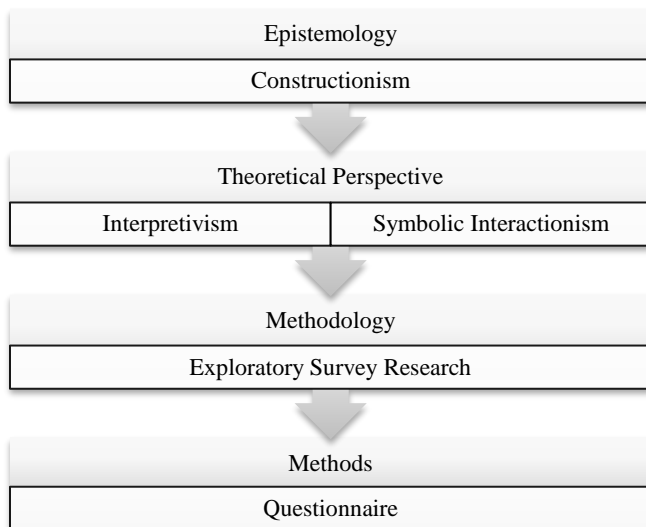


Figure 1-1. Research elements utilized in the study

The constructionist epistemological paradigm is organized to reflect how meaning is formed by individuals. According to Crotty (1998), meaning is made by the relationship between individuals and the environment. Meaning associated with a particular event, experience, or interaction amongst beings in an environment may only be understood by taking into account the uniqueness of the individual involved. Meaning is constructed by individuals through interpretation - layer by layer – throughout the lifetime (Crotty, 1998). Construction of meaning is influenced by context, fellow participants, and prior knowledge and experiences. With this understanding, exploring leadership components and personal practices of student leaders for sustainable development provides a clearer understanding of the contextual influences (e.g. SD challenges in higher education) that SLfSD encounter, react to, and experience. Under the constructivist epistemological stance, there is no definitive interpretation or definitive conclusions when describing SLfSD, as the individual changes over time (cognitively and socially). Conclusions and interpretations of this study may enhance SD programming for leadership development.

Theoretical perspective describes the basic set of assumptions brought to the research process, influenced by epistemological stance, and reflected in the methodology of the study. The theoretical perspective “is a way of looking at the world and making sense of it” (Crotty, 1998, p. 8). Within a constructivist epistemological position, the interpretivist paradigm includes a series of theoretical perspectives and frameworks that help to shape the unknown, or phenomenon, being studied. The research design is organized to explore a specific type of student leader, identify leadership components and personal practices, and suggest how they might influence development of future educational opportunities to promote SD in higher education.

Symbolic interactionism is positioned within the interpretivist paradigm. It is a specific theoretical perspective that is structured to explain how entities and relationships in an individual’s environment contribute to meaning-formation and influence behaviors. Symbolic interactionism is a perspective on life, society, and the world. The work of social psychologist, Mead (1934), encapsulated symbolic interactionism by the phrase, “Mind, Self, and Society” (Crotty, 1998, p. 72).

It assumes that action/behavior is based on meaning from occurrences and relationships that build upon one another within a contextual structure. A constructivist epistemology and symbolic interactionism perspective allows for identification of constructed leadership personal capacities, styles, and roles as well as conscious purposeful action (personal practices) of SLfSD.

### **Theoretical Frameworks**

**Transformative leadership.** Transformative leadership aims to expand and advance the interests and knowledgebase of followers through education for the greatest good of the whole. Transformative leadership is a universal paradigm for empowering, inspiring, and challenging individuals to transcend self-interests for the purpose of achieving a higher level of functioning (Bass, 1999; Bass, 2003; Rafferty & Griffin, 2004). It may be viewed as a natural partner with ESD. Transformative leadership and the ESD structure aim to educate with the intention of transforming knowledge, attitudes, and behaviors of individuals. A relationship between transformative leadership, ESD, and SSD has the potential to empower individuals to reconstruct their frames of reference or worldviews by critically reflecting upon personal attitudes and actions, thus reaching new, more sustainable ways of thinking and being (Baan et al., 2011; McKeown & Hopkins, 2005; Sipos, Battisti, & Grimm, 2008). The style in which they lead serves as a conduit to implementation and success of the initiative. Understanding the leadership components of student leaders can provide insight into the types of resources they would need to lead efforts for SD transformation.

**Education for sustainable development.** Education for sustainable development (ESD) has rapidly become part of educational discourses worldwide. The ESD framework is typically used by educational organizations to integrate SD into academic programs in a variety of ways to address the needs and issues of the academic unit. ESD programs vary widely as they strive to be locally relevant and culturally appropriate. However, all ESD programs seek to address four basic areas or “thrusts”:

- 1) Improving access and retention in quality basic education,
- 2) Reorienting existing educational programs to address sustainability,
- 3) Increasing public understanding and awareness of sustainability, and



- 4) Providing training to all sectors of the workforce.

Thrusts one and two primarily involve formal education, over which students have little control as it is developed and approved by faculty and administration. Thrusts three and four are mainly concerned with nonformal and informal education, which can be influenced through student input as exhibited by the formation of SD-focused student organizations and student-led initiatives.

**Strategic sustainable development.** Strategic sustainable development (SSD) enables organizations and communities to operationalize sustainability in their own context (Ny et al., 2006). The SSD framework has typically been used to transition non-educational organizations toward SD. SSD may also be utilized as a model in informal education, specifically within student organizations as they share common characteristics: hierarchical roles, structure, and management (Bush & Miller, 2011). Because of these similarities, comparing roles of leaders who support SD transformation is feasible and worthy of study.

**Strategic education for sustainable development (SESD).** As explained by the individual frameworks of ESD and SSD, along with the UNDES, the higher education system is looking for new ways to shift their schooling structure and incorporate sustainable development (UNESCO, 2003). Since 2005, there have been a number of changes in higher education as universities and colleges have recognized their role in helping to reorient education systems to address sustainable development (Hopkins, 2013). The SESD framework provides a different lens to study how student leaders could serve as facilitators in educating, engaging, and transforming the greater student-population towards sustainable development.

### **Terms and Definitions**

The following is a list of terms used in this study. They are conceptually and operationally (where appropriate) defined as follows:

1. Adult learner: a student 25 years of age or older, regardless of academic classification.

2. Aspiring leader: a student at a college or university who voices concern for and deep interest in transforming their campus to be more sustainable. Aspiring leaders are also referred to as peer leaders or student sustainability advocates.
3. Formal leader: a student at a college or university who is in a leadership position (i.e. elected officer, chairperson of standing committee, club representative to student government -at-large, member of a leadership organization (Eklund-Leen & Young, 1996).
4. Leadership components: a combination of leadership roles, leadership styles, and leadership personal capacities.
5. Leadership personal capacities: unique dimensions of an individual based upon the 9 disciplines of a facilitator by Jenkins and Jenkins (2006); ‘qualities of ‘being’, which may be developed through experience and practice, as the source from which our actions flow.
6. Leadership roles: a student at a college or university that self-identifies as either a formal leader (elected officer, chair of committee, or organization member) or an aspiring leader (one who did not identify a specific leadership role).
7. Leadership styles: based upon the mean scores of subscales of the MLQ (Multi-factor Leadership Questionnaire) and corresponding to styles of: Transformational, Transactional, and Passive/Avoidance
8. Personal practice: action or activity that an individual performs to hone his or her leadership personal capacities; to enhance individual - intrinsic and extrinsic; psychological and physical; mind, body, and spirit – capabilities, by frequency and preference for practice of 20 listed items identified in the study of Baan, Long, and Pearlman (2011).
9. Sustainability literacy: is an umbrella term for the perspectives and insights that enable students to understand the symbiotic relationships between environmental, social, and economic dimensions of sustainable development.
10. Traditional student: a student between the ages of 18 and 24, regardless of academic classification.

## **Scope and Limitations**

The scope of this study does not include skills or sustainability content knowledge of student leaders. The purpose of this study is to explore leadership components and personal practices of student leaders for sustainable development (SLfSD).

A limitation of this study may include the sample participants. This study is an exploratory study that utilizes a purposive sampling method. Purposeful sampling may be viewed as a limitation but was chosen because the student attendees of the AASHE conference fit the description of SLfSD under review. The AASHE conference is organized to target and engage active members (faculty, staff, students, and sustainability coordinators) of the higher education community to advance SD knowledge and form sustainability partnerships. “The AASHE annual conference is the largest stage in North America for higher education sustainability through leadership” (AASHE, 2013). Students who registered and attended the 2013 annual AASHE conference were the sample population. The findings of this study are only generalizable to SLfSD.

## **Significance of the Study**

Education for sustainable development has yet to find a place among the established traditions associated with formal education (Feinstein & Carlton, 2013). As the impacts of environmental and humanitarian degradation continue to escalate, society faces greater danger of catastrophic disarray. Over-population, lack of uncontaminated natural resources, and consumer behaviors associated with consumption and waste, will soon be topics of ultimate concern. Education has the potential to play an impactful role in combating sustainability issues of the present and near future.

To combat complex challenges on an institutional level, a strategic education for sustainable development approach is necessary – educating, training, and challenging student leaders through targeted programming. Formal student leaders hold roles that may potentially lead to policy and curricular transformation to embody sustainability. Formal and aspiring student leaders are in positions to influence the larger student population through campus events and activities. Students

turn to peer leaders (in any discipline) for acceptance, empowerment, and engagement. It is now necessary to identify and support student leaders who have recognized and adopted sustainable development as a mind-set and way of life. Exploring leadership components and personal practices of SLfSD, may assist with the development of programming to better address SD and this group of students. Customized leadership programs/training have been supported by the works of Ingleton (2013) and Christiano and Robinson (1982) and identified as a key thrust for ESD (McKeown & Hopkins, 2003). Taking the time to better understand and identify the leadership components and practices of SLfSD can provide a better picture for how to construct a strategy for moving the sustainability movement forward and ultimately cultivate and support these components and practices through customized programming.

This study will contribute to the literature regarding education for sustainable development, transformative leadership, and overall knowledge of SLfSD. The findings of this study may interest student development and leadership professionals, higher education administrators, and sustainability campus coordinators as findings can provide direction for programming. The data gathered in this study may further serve to guide directions for achieving university education and sustainability action goals.

### **Organization of the Study**

This chapter provided the background of the problem and purpose of the study, theoretical and practical frameworks for the study, defined terms, as well as the significance of the study. Chapter II provides a review of literature regarding leadership components and personal practices. Chapter III outlines the methods used for this study, including a description of the research design, participants, and survey questionnaire. Chapter IV will outline the results of the research including characteristics of the sample and present the findings of the data analyses as they relate to the research questions. Chapter V summarizes the findings, creates links to previous literature, and closes with final remarks.

## CHAPTER II

### LITERATURE REVIEW

#### **Introduction**

This chapter will provide an overview of previous work pertaining to student leadership and informal educational opportunities, and student-led sustainable development actions in higher academia. A review of student leadership will primarily focus on the impact and significance of holding a leadership role(s), the importance of identifying and understanding leadership personal capacities, as well as leadership styles. The literature review will also address new research that has identified personal practices that may be exercised for cultivation of leadership component development. Leaders equipped with mastery of leadership personal capacities and leadership styles through personal practice, possess the abilities to intensely engage group members, through informal educational programming with a holistic understanding of self, others and society.

#### **Body of the Review**

##### **Student leadership**

Leaders can garner the support of others to influence change toward a common goal. Leaders who are concerned about organizational transformation seek to foster organizational cultures that are hospitable and conducive to creativity, problem solving, risk taking, and experimentation (Bass & Avolio, 1993). More specifically, student leaders, also referred to as “peer leaders,” are students who have a role within an organization in which they serve as a leader or educator for other students (Haber, 2011, p. 70). Student leaders assist in the development of other students’ leadership skills, knowledge, or abilities. A student (peer) leader

is an individual that:

- Provides a valuable real-time, experiential learning and development experience for other peers.
- Facilitates interaction with peers; assisting in social engagement
- Provides a support system for less-experienced peer individuals and can assist in their overall campus life experience and holistic development.
- Serves in a leadership role that may potentially increase peer students' ownership and commitment to an institutional initiative.
- Serves as a valuable human resource for the institution.
- Provides insight into the current culture of the peer group/organization to address specific interests and needs (Haber, 2011, p. 70).

Education delivered by student leaders provides a number of opportunities for increased leadership capacity and enhanced organizational development and transformation (Bass & Avolio, 1993; Haber, 2011). When leaders show interest and consideration for followers by promoting and actively participating in activities, followers view the leader as someone who is dedicated to the individuals of the group as well as the overall group/organization. The individual and group dedication embodied and displayed by the leader encourages acceptance of the transformation(s) occurring within the organization, regardless of the context or goal.

Exploring the interactions of demographic characteristics to SLfSD leadership components and personal practices may indicate implications for informal education SD programming. The attitudes and behaviors that one possesses may be traced back to the symbolic meaning formed from an experience(s), and these experiences may be influenced by demographic characteristics. Social identity theorist, Stryker (2007) stated, "the content of a person's experiences and the meanings derived from those experiences are shaped by where the person is located in the social structures of ethnicity, gender, age, religion, and so forth" (p. 1098). Rafferty and Griffin (2004) suggest that demographics such as age, gender, and classification may contribute to a leaders' style and interpersonal skills. Williams and Page (2011) also suggest religion and family of origin information (such as ethnicity and income) may influence a leader's characteristics. Literature supports consideration of the demographic characteristics of age, gender, and ethnicity (culture) as these

variables have indicated influence on leadership component outcomes. In any discussion of leadership component and personal practice literature, demographic literary support is also included.

**Leadership roles.** Colleges and universities provide students with numerous opportunities to be involved on campus through formal (curricular) and informal (co-curricular) activities. Informal education researchers have identified positive relationships between students' involvement in co-curricular activities and academic growth (Terenzini & Wright, 1987), level of intrinsic interest and motivation in learning (Cordova & Lepper, 1996; Pascarella & Terenzini, 1991), and overall higher satisfaction with the educational experience (Astin, 1999, 2001; Pasque, Bowman, Small, & Lewis, 2009). Additionally, opportunities for involvement assist students with their personal growth and development, including identity (role) development (Evans, 1996) and relates to positive improvements in self-esteem and independence (Kuh, 1996; McKinney, Vacca, Medvedeva, & Malak, 2004). Astin (1999) stated, "it is easier to become involved when one can identify with the college environment" (p.524). This statement alludes to the idea that students who identify with a particular group/club/organization will be more likely to become actively involved (potentially holding a formal or aspiring leadership role) within the group and therefore develop personal and professional characteristics while completing their degree requirements.

Informal opportunities for involvement can occur through membership, committee chair, or officer role of a student interest club or student government organization. These positions of involvement are explained in this study as formal leadership roles. Informal involvement may also occur through participation in activities, workshops, conferences, etc. organized by other groups or organizations. Participatory involvement is important as it serves the purposes of recruitment and sustainability of the group or organization. Participatory students typically attend activities based upon their personal interest and investment in the topic. This position of involvement is explained in this study as an aspiring leadership role.

Miles (2011) indicated the need for formal leadership role engagement of adult learners. Adult learners are categorized as individuals age 25 and older who are engaged in postsecondary

learning, as opposed to traditional-aged students (ages 18-24). Miles (2011) contends that adult learners, as a group, are more diverse than traditional-aged students and may bring perspectives that are more diverse to student organizations by holding formal leadership roles. Students who are involved with student government, in particular, have been shown to demonstrate changes in attitudes and behaviors due to the effects of peer-group interactions (Astin, 1999). The more frequently a student interacts with peer-groups, the more frequently attitude and behavioral change opportunities exist and are encouraged. Adult learners can be regarded as more capable and effective of achieving attitude and behavioral changes in others because of the personal experiences and communication maturity they bring to any setting. Research of 'young' leaders has indicated that this group of individuals possess interpersonal competencies by identifying the needs of individuals within a group and are adaptable in different leadership situations (i.e. these leaders are aware of employing different leadership styles when appropriate) (Youngs, 1988). As literature has indicated the value of adult learners as leaders in the informal education process, age of the SLfSD should be considered.

Astin (1999) indicated that it would be useful to determine whether “different types of student peer groups can be consciously used to enhance student involvement in the learning process” (p.528). In this study, SLfSD are the student peer group researched to gain a better understanding of their leadership component characteristics and personal practices. Findings can lead to development of customized programming to transmit learning of sustainable development to the greater student population. Programming for student leadership development has shown benefits that may bring about positive change in local, national, and international contexts (Ingleton, 2013).

**Leadership personal capacities.** Various authors argue the terminology associated with the dimensions/personal capacities of a facilitative leader. Personal capacities of a leader or facilitator are characterized as the “qualities of being” from which actions flow (Baan et al., 2011, p. 8). The seven personal capacity model for facilitative leadership in SSD, conceptualized by Baan, Long, and Pearlman (2011) and the nine disciplines of a facilitative leader, conceptualized by Jenkins and Jenkins (2006) pose potential for framing SLfSD leadership personal capacities.



***Personal capacities to facilitate collaboration in SSD.*** Baan, Long, and Pearlman (2011) conducted a qualitative study which sought to identify the leadership capacities for facilitative SSD co-leadership and co-creation. Eight highly experienced facilitative SSD experts were interviewed. Based on responses of experts, the authors conceptualized a model that outlined the personal capacities used by facilitative leaders in the field. It was suggested that a leader should master these personal capacities to effectively influence collaboration, co-leadership, and co-creation among organization members/followers. Figure 2-1 illustrates the seven personal leadership capacities to facilitate co-learning and co-creation in SSD and table 2-1 briefly describes each of personal capacities.

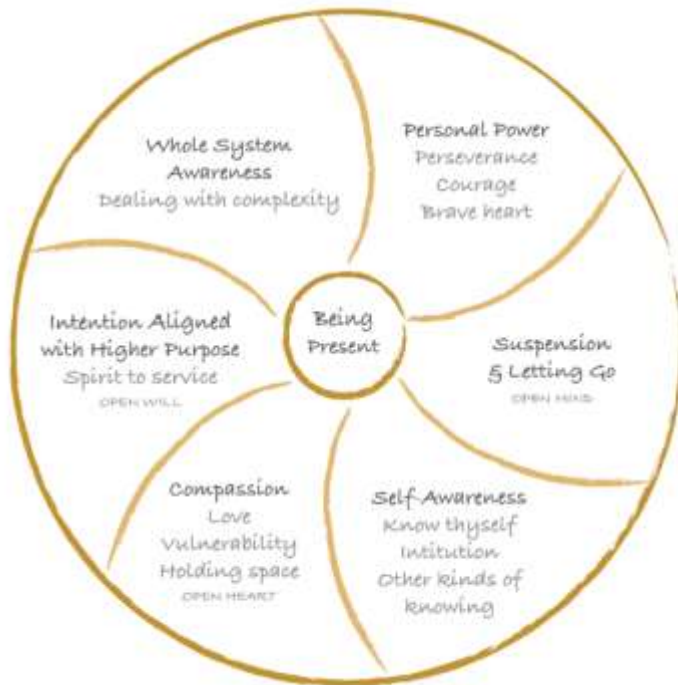


Figure 2-1. Seven personal leadership capacities to facilitate co-learning and co-creation in SSD.

Table 2-1

*Seven personal capacities to facilitate co-learning and co-creation in Strategic Sustainable Development (SSD)*

<b>Personal Capacities</b>	<b>Brief Descriptions</b>
Being Present	Being fully aware and awake in the present moment –physically, mentally, and spiritually. This includes connecting oneself to others, the environment, and circumstances.
Self-Awareness	The continual lifelong process of paying attention to knowing oneself; it involves consciously and intentionally observing various dimensions of the self (including the body, mind, senses, emotional and spiritual realms of oneself). It is the capacity to observe how one’s self is thinking, relating, feeling, sensing and judging. Self-Awareness includes perceptions beyond cognition, such as intuition.
Suspension & Letting Go	The ability to actively experience and observe a thought, assumption, judgment, habitual pattern, emotion or sensation like fear, confusion and conflict and then refraining from immediately reacting or responding to the situation.
Intention Aligned with Higher Purpose	Aligning one’s authentic nature with the natural order in the world. This alignment trickles down to all facets of life including our personal, professional, and spiritual dimensions. “Where your deepest personal passion and the world’s greatest needs align, there is opportunity.” Embodying this capacity helps one embrace the unknown with profound trust.
Whole System Awareness	The capacity to quickly switch between different perspectives, scales and worldviews to see the big picture, interconnections within the system, and being able to scale down to small details. Whole System Awareness is not just cognitive understanding – you ‘sense’ it.’ It is the understanding that everything is interconnected within a system.
Personal Power	The ability to use one’s energy and drive to manifest wise actions in the world for the greater good, while being aware of one’s influences on a situation. It includes the ability to face one’s fears with courage and to persevere in difficulty.
Compassion	The continual act of having unconditional acceptance and kindness toward all the dimensions of oneself and others, regardless of circumstance. Compassion involves the ability to reflect upon oneself and others without judgment, but with recognition and trust that others are doing the best that they can in any given situation.

*Note.* Adapted from “Cultivating personal leadership capacities to facilitate collaboration in Strategic Sustainable Development” by C. Baan, P. Long and D. Pearlman, 2011, Blekinge Institute of Technology, Karlskrona, Sweden, p. 16-17.

Interview questions directed to the experts in the study conducted by Baan, Long, and Pearlman (2011) were structured from the extensive facilitator research of Jenkins and Jenkins (2006).

***Developmental paths and the 9 disciplines of a facilitator.*** Facilitative leadership refers to the enabling of members to actively participate in personalized meaningful ways, focusing on his or her individual strengths. Jenkins and Jenkins (2006) propose that one of the most difficult things any facilitative leader can do is to master him or herself. One way that leaders can master themselves is to better understand their developmental path or internal relationship with others, self, and life.

The three developmental paths (regarding others, regarding myself, and regarding life) are based on commonalities amongst individual disciplines. Figure 2-2 is the model for developmental paths and disciplines. There is a relationship among the three disciplines in each row. The left and right disciplines are in tension with one another. The middle discipline encompasses the art of standing in tensions between the other two, illustrated by the cluster (Jenkins & Jenkins, 2006).

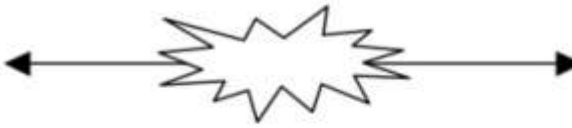
<b>Developmental Path</b>			
<i>Regarding Others</i>	Detachment	Focus	Engagement
<i>Regarding Myself</i>	Interior Council	Sense of Wonder	Intentionality
<i>Regarding Life</i>	Awareness	Presence	Action

Figure 2-2. The Developmental Paths and the Disciplines. From “The 9 Disciplines of a Facilitator: Leading Groups by Transforming Yourself,” by J. Jenkins and M. Jenkins, 2006, p. 4.

Table 2-2 provides a brief description of each of the disciplines and the corresponding paths (Jenkins & Jenkins, 2006). Developmental paths are grounded in concrete research of discipline development and categorization association.

Table 2-2

*Discipline Descriptions of Developmental Paths*

<b>Developmental Path</b>	<b>Disciplines</b>		
<b>Regarding Others</b>	<b>Detachment:</b> Stepping Back	<b>Focus:</b> Willing One Thing	<b>Engagement:</b> Committing to the Group
<u>Description</u> ~ The way the leader relates to others	<i>Capacity to step back, to set aside, to suspend immediate thinking and emotions</i>	<i>Concentrating the will so that the moment is fulfilled and the future is also fulfilled; balancing group conflict and dynamics</i>	<i>Capacity to care, to commit, and to be generous with who and what you are, without knowing what the outcome may be</i>
<b>Regarding Myself</b>	<b>Interior Council:</b> Choosing Advisors Wisely	<b>Sense of Wonder:</b> Maintaining the Capacity to Be Surprised	<b>Intentionality:</b> Aligning the Will to Succeed
<u>Description</u> ~ The way the leader relates to self	<i>Attentiveness &amp; choice of voices that guide day-to-day life (ideas, sayings, images, etc.); based on past experiences</i>	<i>Looking at reality for what it truly is and finding excitement; being open and responding to the miraculous</i>	<i>Capacity to make choices freely; harnessing both the dark side and greatness within; willing something new into existence, self-actualization</i>
<b>Regarding Life</b>	<b>Awareness:</b> Knowing What Is Really Going On	<b>Presence:</b> Inspiring and Evoking spirit in others	<b>Action:</b> Effective Doing
<u>Description</u> ~ The way the leader relates to inventing his/her life	<i>Capacity to confront the truth of a situation in all of its dimensions; respectful of others; understanding life occurrences (outside of self)</i>	<i>Intersection of knowing and doing; sensitive and insightful about barely discernable emerging futures</i>	<i>Capacity to critically understand the world and one's role within it; purposeful action</i>

As mentioned above, terminology related to the topic of personal capacities of leaders varies greatly due to the underlying purpose/objective of the research conducted. The underlying constructs (essences of being/interior states) upon which the disciplines outlined by Jenkins and Jenkins (2006) and personal capacities identified by Baan, Long, and Pearlman (2011), have also been supported in other studies (Kearney & Zuber-Skerritt, 2012; Claus Otto Scharmer, 2001; P. Senge, Scharmer, Jaworski, & Flowers, 2004). In order to clearly understand the “qualities of being” of SLfSD for program development, leadership personal capacities should be studied.

**Leadership styles.** The leadership process may occur in one of three stylized modes: transformational, transactional, or in a manner that is passive/avoidance. Burns (1978) originally labeled effective and inspirational leaders as transformational. The transformational leadership concept was then elaborated by Bass and associates (1987; 1985a) and continued to contrast transformational leaders to transactional leaders (Avolio et al., 1999; Eagly, Johannesen-Schmidt, &

van Engen, 2003). In addition to these two styles, Bass, Avolio, and Atwater (1996), distinguished a passive/avoidant or laissez-faire style (Eagly et al., 2003). These three styles of leadership were developed and conceptualized in the 9-factor model.

*The 9-factor model.* The 9-factor model is based upon an extensively researched list of components (facets or scales) that measure higher-order leadership factors that are organized into three leadership styles. Five scale components measure transformational leadership, two scale components measure transactional leadership, and two scale components measure the passive/avoidant leadership style; totaling nine factors of leadership style measurement. The 9-factor leadership model aims to identify characteristics (participant responses to the Multifactor Leadership Questionnaire - MLQ) that may be cultivated for improved leader-follower outcomes, not to label an individual as transformational, transactional, or passive/avoidant. It has been determined that most leaders have a profile of the full range of leadership that includes characteristics of all styles and sub-scales (Bass & Steidlmeier, 1999). Characteristics of leadership styles and sub-scale items (developed for the MLQ) are outlined in Appendix H. Other researchers of leadership styles have proposed additional components, such as vision, inspirational communication, intellectual stimulation, supportive leadership, and personal recognition (Rafferty & Griffin, 2004), trust and reliance (Podsakoff, MacKenzie, Moorman, & Fetter, 1990), and empowerment (Thomas & Velthouse, 1990). Some studies have suggested reducing the number of factors (Heinitz, Liepmann, & Felfe, 2005). Nonetheless, the 9-factor leadership model remains the most highly utilized leadership style instrument in research (Avolio & Bass, 2004).

A transformational leader differs from a transactional one by not merely recognizing followers' needs, but by attempting to develop those needs from lower to higher levels of maturity. Transformational leaders engage the full person so that aspiring leaders may be developed into formal leaders. Such leadership can occur top-down, but it also can occur between two followers (or individuals who have similar roles), and bottom-up where a follower influences his or her leader to reconsider the focus, mission, or vision he or she is pursuing (Jung & Sosik, 2002; Wheatley, 2006).

Burns (1978) and Bass (1985a) described transformational leaders as those who:

- Raise associates' (followers') level of awareness of the importance of achieving valued outcomes and the strategies for reaching them
- Encourage associates (followers) to transcend their self-interest for the sake of the team, organization, or larger policy
- Develop associates' (followers') needs to higher levels in such areas as achievement, autonomy, and affiliation, which can be both work and non-work related.

The transactional leadership relationship between leaders and followers has been described as one where the leader outlines expectations as well as compensation (e.g. monetary, recognition, and/or promotion) in return for fulfillment of the outlined requirements (Bass, 1990). Behaviors of transactional leaders are described in the 9-factor leadership model as contingent reward and management-by-exception (active).

Leaders actively transform followers in multiple ways. Researchers have further studied specific dimensions of transformational leaders and have identified significant demographic distinctions in two areas: gender and ethnicity (culture). These dimensions are outlined below.

***Gender.*** Several studies have shown that women tend to be somewhat more transformational than their male counterparts in similar roles (Bass, Avolio, & Atwater, 1996). Some researchers argue that affirmative action has pushed women faster and higher to excel in the workplace, thus advancing them into leadership roles. Studies also show that women are less likely to practice management-by-exception but are about the same as men in making use of contingent recognition (transactional leadership dimensions). However, women practice management-by-exception, and tend to temper criticism with positive feedback as compared to men (Bass et al., 1996). Bass, Avolio, and Atwater (1996), suggest that the transformational leadership qualities observed in females may be due to women's propensity to be more nurturing than males. As leadership style differences exist between gender categories in previous literature, gender must be considered when reviewing SLfSD.

***Ethnicity.*** Cultural competency expands beyond ethnicity (global and national culture) to also include the culture of the organization and group (Erez & Gati, 2004). Culture (ethnicity and

organization) has been found to be one of the most important variables that influence leadership style and perception (Hsieh, 2010). Greater understanding of ethnicity and culture is becoming even more imperative as economies are becoming increasingly integrated into global trading relations. Cultural competency is imperative for today's leaders as various ethnic and organizational cultures and lifestyles are being experienced in the workplace.

Cultural competency involves the understanding of methods of meaning by which individuals/groups perceive the world (conceptual schemes); understanding one's own conceptual scheme; integrating other views into one's respective conceptual schemes; and valuing the diversity of all conceptual schemes (Bass, 1999; Nahavandi, 2012). Symbolic interactionism lends itself to cultural competency because culture influences the way meaning and conceptual schemes are formed. Meaning and conceptual schemes between different cultures (ethnicities) vary drastically and in turn the attitudes and behaviors (based upon the meanings and schemes) of individuals from different cultures vary. Stryker (2007) indicates that culture/ethnicity (by means of symbolic interactionism) may be linked to follower commitment, which in turn may influence leadership style perception and rating. Transformational leaders are rated by their followers as individuals who possess high levels of cultural awareness and competency (Hsieh, 2010).

Culture generally exists on three levels: national culture, group culture, and organizational culture. Even though various levels of cultural interactions affect and impact others, national culture strongly shapes group culture and organization culture (Nahavandi, 2012). Transformational leaders are rated by their followers as individuals who possess high levels of cultural awareness and competency (Hsieh, 2010). Figure 2-3 illustrates the cultural levels to which an individual determines his or herself.



*Figure 2-3.* The dynamic of top-down-bottom-up processes across levels of culture. Adapted from “A dynamic, multi-level model of culture: From the micro level of the individual to the macro level of a global culture” by M. Erez and E. Gati, *Applied Psychology: An International Review*, p. 588.

Even though various levels of cultural interactions affect and impact others, national culture (ethnicity) shapes group culture and organizational culture (Nahavandi, 2012). As ethnicity has been documented as influencing leadership style ratings, ethnic information should be considered when exploring SLfSD leadership component characteristics and personal practices.

**Personal practice.** Research has supported the impact of individual (leadership) growth and development through the act of practice. Practice, in many research articles, has been referred to as the action of repeating a skill or replicating a technique learned from formal education (Ingleton, 2013; Pepper & Wildy, 2008; Van Oosten, 2006). While practice, in the sense of repetitive action, is important for behavioral change, personal practice is an exercise that one consciously and willingly enrolls in to enhance individual (intrinsic and extrinsic; psychological and physical; mind, body, and spirit) capacities. Practice versus personal practice differs in the purpose of the activity.

Literature supports the development of personal capacities for facilitative leaders through practice, exercise, and experience (Wheatley, 1999). Baan, Long, and Pearlman (2011) sought to identify the specific practices that SSD experts exercise to cultivate individual personal capacities. Twenty-nine different personal practices were identified by these SSD experts. These personal



practices included exercises such as: peer support, meditation, martial arts, and guided imagery to name a few (see Baan et al., 2011, p. 25 for the complete list of personal practices). Some of the personal practices identified (e.g. meditation and holistic awareness) were similar practices outlined in the “whole person” Living and Learning pedagogy (UNESCO, 2012) and supported by EfS (educating for sustainability) researchers (Podger, Mustakova-Possardt, & Reid, 2010). Particularly, the personal practice of meditation has been forecasted for curricular inclusion to address ‘well being’ and ‘quality of life’ priorities in response to the current global depression (Bent, Goodman, Hardyment, Watt, & Wessling, 2008).

SSD experts indicated that personal practice was useful in the development of personal capacities related to their work. However, some experts were less able to articulate or describe exactly how, and to what extent the practice was useful for development. Some experts felt personal practices related more holistically to all the personal capacities, rather than specific practice-to capacity correlations (Baan et al., 2011). As literature supports the development of leaders’ personal capacities through personal practice, identification of SLfSD frequently exercised, and preferred personal practices should be considered for programming development.

### **Programming for SESD**

As the main end goal of SESD (strategic education for sustainable development) is to educate the greater student body, it is important to introduce a framework that may assist SLfSD leadership component cultivation via programming and highlight some sustainability-focused informal programs. One framework that has been recently studied in the area of pedagogy for sustainable development is transformative sustainability learning (TSL).

**Transformative sustainability learning.** Transformative learning has recently been viewed as a partner with education for sustainable development (ESD) as both frameworks aim to educate with the intention of transforming knowledge, attitudes, and behaviors of individuals. This joint pedagogical framework, termed Transformative Sustainability Learning (TSL), is a process for affecting change in a particular frame of reference (i.e. life experiences) (Mezirow, 1994; Moore,

2005), with an underlying belief that individual and social change may result through transformative group learning (Cranton, 1994). Incorporating the TSL framework into an educational setting has the potential to empower individuals to reconstruct frames of reference or worldviews by critically reflecting upon personal attitudes and actions, to reach new, more sustainable ways of thinking and being (Cranton, 1994; Sipos et al., 2008). The TSL framework is based on the principles of head, hands, and heart (Sipos et al., 2008). Head, hands, and heart is shorthand for engaging cognitive, psychomotor, and affective learning domains (Bloom, 1956).

Education professionals may use the TSL framework to transform formal and informal educational opportunities to address SD. TSL may be utilized to assist SLfSD leadership component cultivation program development. Research has indicated the positive impact that informal education and learning can contribute to the development of a well-rounded and holistic thinking individual. The higher education community may look to SLfSD to promote holistic thinking and SD.

**Informal programs.** Thomas (2009) indicated that capabilities, capacities, and skills for SD do not transfer easily between different contexts and suggested bringing real-world, applicable elements into the learning environment. These capabilities, capacities, and skills are related to the key competencies outlined for formal education sustainability program development (Wiek, Withycombe, & Redman, 2011), and have the potential to be fostered within informal educational programs.

Helferty and Clarke (2009) conducted an analysis of campus sustainability-focused (climate change) initiatives in Canada and discovered that a variety of program types, ranging from awareness-raising to policy development, were being organized and led by students. Student-led initiatives indicated that student leadership and involvement occurred at different levels (socialization, to influence, to power) depending on the type of program. It was also noted that the roles held (overlapping formal and aspiring leadership roles) were integral to the short term and long term success of the (informal) programs in transforming campus climate-change efforts (Helferty & Clarke, 2009). The opportunity for a student to hold multiple roles (i.e. formal leadership in one initiative/program and aspiring leadership in another program) during the course of his or her

collegiate experience provided optimum potential for student leadership growth (Astin, 2001).

Kerr and Hart-Steffes (2012) indicated the unique opportunity that higher education, particularly in student affairs, has to impact global sustainability initiatives. Student affairs was highlighted because this unit is typically the home of campus life/student organizations (i.e. informal educational programming leaders). Student learning outcomes or goals, established by the student organizations' formal leaders, are directly tied to the successful acceptance (social student buy-in) of the program, initiative, and/or sustainability policy promoted by the informal program (Helferty & Clarke, 2009; Kerr & Hart - Steffes, 2012). Informal programs have the potential to serve as ideal platforms to introduce the greater post-secondary student population to environmental concerns, sustainability, and promote attitude and behavior transformation toward sustainable development (Messineo, 2012). It is the critical role of institutions of higher education to “produce educated and engaged citizens needed for a thriving and civil society making education, research, and practice for a sustainable society a reality” (Kerr & Hart - Steffes, 2012, p. 10). This reality may be assisted through the development and implementation of informal sustainability-focused programming, structured upon the characteristics of present SLfSD.

### **Chapter Summary**

This chapter provided a detailed discussion of research pertaining to student leadership roles, leadership styles, and leadership personal capacities, and identified particular demographic categories (age, gender, and ethnicity/culture) that may influence each of the leadership components. Personal practices that may be exercised for leadership personal capacity cultivation were reviewed in relation to forecasted educational needs. Finally, this chapter provided a broad overview of the Transformative Sustainability Learning (TSL) framework and provided insight into informal programming opportunities, particularly those led by students.

Many of the sustainability-focused studies cited in this chapter were conducted through qualitative methodologies, therefore it would be beneficial to quantifiably study the above mentioned

leadership components and practices. Based upon the literature review and the potential for sustainability-focused programming via informal education, SLfSD leadership characteristic exploration is needed and the following research questions were established.

1. How does the association of leadership role with leadership styles and leadership personal capacities vary by age, gender, and ethnicity?
2. Among the specified personal practices, how frequently do SLfSD exercise each practice to support their development, by age, gender, and ethnicity?
3. Among the specified personal practices, which do SLfSD prefer to exercise to support their development, by age, gender, and ethnicity?
4. How does the association of leadership role with frequently exercised personal practices vary by age, gender, and ethnicity?

Chapter III outlines the research methodology and analytic strategy of this particular study.

## CHAPTER III

### METHODOLOGY

#### **Introduction**

In the previous chapters, the sustainability challenge was reviewed, indicating an avenue for higher education to integrate sustainable development education into its structure via informal education (i.e. student organizations) using a SESD (strategic education for sustainable development) approach. Leadership was reviewed demonstrating the impact that leaders, specifically Student Leaders for Sustainable Development (SLfSD), may have on the transformation of views and actions of fellow students, their campus, community, and world to meet the overall goal of SD. SLfSD may possess certain characteristics, personal leadership components, and personal practices that assist them in performing leadership duties and transforming their campus to be more sustainability focused. This study seeks to identify those characteristics, leadership components, and practices that SLfSD possess.

This chapter discusses the identification and recruitment of SLfSD for participation in this study and how characteristics, leadership components, and practice information data were collected and analyzed. In this chapter the study's methodology is detailed in the following order: 1) research questions, 2) research design; 3) setting and participants; 4) data collection procedures; 5) information about survey instrument; and 6) data analytic plan.

## **Research Questions**

The purpose of this study is to explore and identify the leadership components and personal practices of student leaders who indicate an interest in supporting sustainable development within the higher education system. This exploratory study is designed with the intent of developing a baseline of knowledge pertaining to SLfSD upon which programming may be developed. The research questions of this study are:

1. How does the association of leadership role with leadership personal capacities and leadership styles vary by age, gender, and ethnicity?
2. Among the specified personal practices, how frequently do SLfSD exercise each practice to support their development, by age, gender, and ethnicity?
3. Among the specified personal practices, which do SLfSD prefer to exercise to support their development, by age, gender, and ethnicity?
4. How does the association of leadership role with frequently exercised personal practices vary by age, gender, and ethnicity?

To clearly define and categorize the sample, the characteristics of Student Leaders for Sustainable Development (SLfSD), will be described by the leadership components of Leadership Roles, Leadership Styles, and Leadership Personal Capacities, and age, gender, and ethnicity. Identifying the leadership components and personal practice characteristics of SLfSD, tailored programming may be developed to efficiently address SLfSD needs through activities (practices) that are specific to the leader (i.e. categorized demographic group).

## **Research Design**

The design of this study was a quantitative surveying method, which involved a descriptive-exploratory cross-sectional design. This study was cross-sectional in nature because it had no time dimension, relied on existing differences amongst SLfSD rather than change following any sort of intervention, and participants were selected based on an existing difference rather than random allocation.

Certain sections of this study were outlined as a descriptive-exploratory research design. This study was descriptive, as it helped to provide answers to questions of who, what, when, where, and how associated with a particular research question (Cohen et al., 2007). Descriptive research is used to obtain information concerning the current status of a phenomena (in this study the current leadership characteristics of SLfSD) and to describe "what exists" (Cohen et al., 2007).

### **Setting and Participants**

The annual AASHE (Association for the Advancement of Sustainability in Higher Education) conference was chosen as the data collection site. The AASHE conference was held on Sunday, October 6, 2013 to Wednesday, October 9, 2013 in Nashville, Tennessee. See full conference schedule in Appendix A. According to the AASHE 2013 Conference website, the AASHE annual conference is one of our most powerful tools for empowering higher education to lead the sustainability transformation. Attendees from around the world share innovations, activities, frameworks, learning outcomes, tools, strategies, research, theory and leadership initiatives that are changing the face of sustainability in higher education (AASHE, 2013). Conference attendees include faculty, staff, and students from all parts of a college or university campus, and members of the commercial, governmental, and nonprofit organizations. Specifically, the 2013 AASHE Student Summit brings together hundreds of students from around the world to share ideas, ask questions, challenge each other, and be inspired by sustainability leaders (AASHE, 2013).

Data were collected from student attendees of the AASHE student summit and conference. The students who registered and attended this conference were targeted as individuals who “are just learning about sustainability issues, seasoned sustainability student leaders, students interested in professional development, and students interested in gaining the skills and knowledge to lead sustainability transformation” at their college/university and beyond (AASHE, 2013). Therefore, it is assumed that students who register and attend the AASHE student summit and/or conference are student leaders for sustainable development (SLfSD).

**Population.** The population of this study includes students at post-secondary educational institutions who are SLfSD. Formal leadership role is defined as a student at a college or university who is in a leadership position (i.e. elected officer, chairperson of standing committee, club representative to student government, members of a leadership organization (Eklund-Leen & Young, 1996). Aspiring leaders are students who have voiced concern and deep interest in transforming the campus to be more sustainable.

**Sample.** The sample in this study was focused towards SLfSD attending the 2013 AASHE student summit and/or conference. These SLfSD must be enrolled students at a college or university and show interest in sustainability issues, efforts, and initiatives for higher education transformation, which is assumed by their registration and attendance of the conference. AASHE conference coordinators estimated approximately 500 student attendees at the student summit (personal communication with Melanie Horton, August 14, 2013). Taking into account the fact that this study is exploratory and small in nature, Rea & Parker (2005) recommend a sample size of 50 percent of the population size (registered student attendees). Based on the total number of student registrants, a minimum of 250 SLfSD AASHE student registrants were required for analysis.

**Sampling method.** A purposive sampling method was utilized in this study. Purposive sampling (a tool to convenience sampling) refers to the non-probability process by which a researcher gathers statistical data from a subunit of the population (Rea & Parker, 2005). Purposive sampling method is recommended when attempting to assess trends in human development or to gain a better understanding of variables (underlying constructs of leadership components) (Rea & Parker, 2005).

The SLfSD attendees were purposely identified and selected based upon a common existing difference – sustainability interest – rather than collecting data from leaders of student organizations in general. Because of this common difference, outcomes may be estimated or generalized to the study population, as the sample is a subset of the population.

Announcements for SLfSD survey participation were performed during the student summit. During the onsite registration, a space was set up for student recruitment. During check-in for the



student summit, a small flyer containing a short synopsis of the study, researcher contact information, and links to the Facebook page and QR code for survey completion was given to each of the student summit participants. Data collection electronic questionnaires were distributed via iPad/tablet at lunch and break times during the student summit and general conference.

As incentive to participate in the study, all students were awarded a five-dollar Starbucks e-gift card. As an additional incentive to participate, an Eco-prize pack was offered as a door prize. The drawing was conducted at the close of the student summit. Contact information (i.e. email address) was collected from door prize entry forms for post-conference communication.

***Response rate.*** Responses from personal communication and Eco-prize pack email communications totaled 143 from 178 invitations. Responses from the AASHE attendee student email list totaled 158 from 223 email invitations. Four hundred-one students were recruited and invited to participate in this study and 301 student responses were recorded for data analysis. Of these 301 responses, 293 entries were fully complete and analyzable for interpretation, yielding a 73% response rate.

### **Data Collection and Instrument**

Data were collected from the electronic survey questionnaire using the Qualtrics online survey system. Upon submission of the survey responses, an email was sent to the student participant awarding him or her with the five-dollar gift card. Two weeks after the conference an email was sent to all student email addresses gathered from door prize entry forms and from the AASHE student attendee list. This email thanked the participants for completing the survey and asked those who had yet to participate to consider completing the survey. A link to the questionnaire was included. Two weeks after the initial email was sent, a second (and final) email was sent to student participants, repeating the same message.

The measure gathered SLfSD demographic characteristics and leadership role information, leadership personal capacities, leadership styles, and personal practices. This questionnaire was composed of five segments (labeled A-E on the questionnaire, see Appendix B):

- A. Demographic Characteristics
- B. Leadership Role(s)
- C. Leadership Personal Capacities
- D. Personal Practices
- E. Leadership Style

Each of these questionnaire segments, along with reliability and validity (where necessary) are discussed in the following sub-sections. Basic SLfSD characteristic information is also provided to offer a quick overview of the SLfSD sample as an overall group.

**Demographic characteristics.** Consistent with Rafferty and Griffin's (2004) and Williams and Page (2011) suggestions that characteristics may contribute to leadership development, demographic information for each participant was collected. In this study, demographic characteristic questions were asked pertaining to: student classification level, college or university attending, major/degree path, age, gender, current GPA, cultural/ethnic background, religion, personal income, and family of origin income. Table 3-1 summarizes the basic demographic characteristics of the SLfSD sample. Summary tables of all demographic characteristics collected from the sample are listed in Appendix C. Figure 3-1 is a graphic of institutions represented in this study.

Table 3-1

*SLfSD Basic Demographic Characteristics*

	Frequency	% of Responses	Condensed Categories
<b>Age (N = 300)</b>			
18	12	4.0 %	Traditional n = 238 79.3 %
19	32	10.6 %	
20	49	16.3 %	
21	62	20.6 %	
22	38	12.6 %	
23	30	10.0 %	
24	15	5.0 %	
25-26	30	10.0 %	Adult Learners n = 62 20.7 %
27-30	19	3.6 %	
31+	13	4.3 %	
<b>Gender (N = 301)</b>			
Male	138	45.8 %	
Female	163	54.2 %	
<b>Ethnicity (N = 294)</b>			
White/Caucasian	197	67.0 %	White/Caucasian
American Indian /Alaskan/Hawaiian	24	8.2 %	Minority n = 97 33.0 %
Hispanic, Caribbean, Central & South American	21	7.1 %	
African American/Black	20	6.8 %	
Asian	16	5.4 %	
Indian (sub-continent)	11	3.7 %	
Other	5	1.7 %	



Figure 3-1. Collegiate institutions organized by state.

Note: Gold = 1-10 participants, Blue = 11-15 participants, Green = 16+ participants. Numerical values stated with each state border indicate the collegiate representation of the SLfSD participants.

**Leadership role.** One, two-level student organization activity and leadership role question was asked of each SLfSD. The student participant was asked to identify at least one student organization in which he or she was involved and then asked to identify his or her leadership role within that particular organization. Table 3-2 summarizes the SLfSD leadership roles.

Table 3-2

*SLfSD Leadership Roles & Organization Involvement*

	Frequency	% of Responses	Condensed Categories	
<b>Leadership Role (N=301)</b>				
President	30	10.0%		
Vice President	12	4.0%	Officer	<b>Formal</b>
Other Elected Officer Position	37	12.3%	n = 89	<b>Leader</b>
Chairperson of Committee	10	3.3%		<b>n = 143</b>
Club representative to Student Government	1	0.3%		<b>47.5%</b>
Member (nominated or volunteer)	54	17.9%	Member	
Aspiring Leader	157	52.2%		<b>Aspiring Leader</b>

*Note: Participants were able to identify up to three student organizations for involvement along with their corresponding roles within each group; the highest-ranking role was selected for analysis.*

**Leadership personal capacities.** The Leadership Personal Capacities scale was developed by the researcher based on the works of Jenkins and Jenkins (2006) and Bann, Long, & Pearlman (2011). A five point Likert scale where 0 = Not at all, 1 = Once in a while, 2 = Sometimes, 3 = Fairly often, and 4 = Frequently, if not always, scored leadership personal capacity responses.

**Pilot study.** A pilot study (administered using Qualtrics) was conducted to measure validity of the leadership personal capacity scale statements. In the first stage of the pilot study, undergraduate students in the department of Design Housing & Merchandising at Oklahoma State University responded to the 27-statement leadership personal capacity scale. Psychometric (psychology) experts were consulted for statement revisions. The second stage of the pilot study consisted of 36 descriptive statements and surveyed undergraduate Psychology students at Oklahoma State University. The revised scale was used to collect data from SLfSD. Table 3-3 outlines Cronbach’s alpha scores that are a measure of internal reliability.

Table 3-3

*Summary of alpha scores for Leadership Personal Capacities Scale*

Developmental Path & Disciplines	Stage 1: DHM Student Pilot N=112	Stage 2: Psychology Student Pilot N = 93	SLfSD Study N = 301
	Overall alpha ( $\alpha$ )		
<b><i>Regarding Others</i></b>	.657	.604	.338
Detachment	.455	.209	.221
Focus	.384	.295	.001
Engagement	.578	.361	.124
<b><i>Regarding Myself</i></b>	.714	.621	.414
Interior Council	.527	.354	.241
Sense of Wonder	.481	.334	.148
Intentionality	.507	.374	.160
<b><i>Regarding Life</i></b>	.767	.721	.375
Awareness	.576	.293	.272
Presence	.446	.543	.207
Action	.606	.467	.011

Due to an approximate .3 decrease in alpha scores amongst each of the SLfSD leadership personal capacity scores compared to the previous pilot study results, the scree plot, exploratory factor, and structural matrix analyses were conducted to identify factors that empirically emerged from the SLfSD sample. Through these analyses, construct validity was determined and six factors specific to SLfSD were identified. Each factor was labeled as the following SLfSD Leadership Personal Capacities: Factor 1 = Optimism, Factor 2 = Confidence: Perseverance, Factor 3 = Being Present, Factor 4 = Compassion, Factor 5 = Intrinsic Confidence, and Factor 6 = Continual Improvement. The emerged leadership personal capacities were labeled according to the underlying theme of the corresponding descriptive statements and related to the seven personal leadership capacities to facilitate co-learning and co-creation in SSD, as similarities existed between the two personal capacity lists. Table 3-4 illustrates the pre and post-factor analysis alpha scores.

Table 3-4

*Comparison of Developmental Paths and SLfSD Leadership Personal Capacities*

<b>SLfSD Study</b>			
Developmental Path & Disciplines (Jenkins & Jenkins)	<i>Cronbach's Alpha</i>		SLfSD Leadership Personal Capacities (Eike)
<b>Regarding Others</b>	.338	.602	<b>Optimism</b>
<b>Regarding Myself</b>	.414	.494	<b>Confidence: Perseverance</b>
<b>Regarding Life</b>	.375	.493	<b>Being Present</b>
		.511	<b>Compassion</b>
		.477	<b>Intrinsic Confidence</b>
		.382	<b>Continual Improvement</b>

Cronbach alpha scores generated in the post-factor analysis indicate lower than recommended minimum alpha (.6) for an exploratory study (Hassad, 2010). The SLfSD leadership personal capacity of Optimism achieved this minimum alpha, while the remaining personal capacities did not. The low reliability of the leadership personal capacity scale/measure is a limitation to this study. However, due to the inferential process of the pilot, the empirical data identified in these analyses will be used for analysis of research questions and implications for this study. See Appendix E for further details regarding the SLfSD Leadership Personal Capacity developmental process.

**Personal practices.** The Personal Practices scale consisted of two questions. Student participants were asked to rate the frequency that he/she utilizes a particular practice from a provided list, based on the original list of personal practices exercised by SSD experts (Baan et al., 2011). Practice frequency data were collected using a five-point Likert frequency scale format. Table 3-5 outlines the personal practices and the overall mean SLfSD frequency of each exercise.

Table 3-5

*SLfSD personal practices mean score comparisons*

Personal Practice	M	SD
Music (i.e. listening to music, singing, playing instrument)	3.79	1.090
Check-in (i.e. managing time, creating lists, goal setting)	3.74	1.096
Self-inquiry (awareness of personal thoughts, emotions, and values)	3.63	1.108
Sport (individual or team sports)	3.33	1.510
Exercise (i.e. lifting weights, aerobics, group fitness classes)	3.32	1.064
Artistic expression	3.25	1.365
Relaxation exercises/ Attention to breath	3.25	1.304
Games (i.e. board games, crossword puzzles, Sudoku, video games, etc.)	3.14	1.125
Spending time in nature (by self or with others)	3.11	1.249
Asking for help, having a mentor, coach, or collaborator; dialog circle or others that help you to develop your personal capacities	3.06	1.234
Dance/ Body movement	2.97	1.301
Meditation/ Mindfulness/ Silence	2.91	1.202
Energy work (i.e. gardening, construction, yard work, etc.)	2.84	1.173
Reflective journaling	2.80	1.267
Visualization/ Guided imagery	2.53	1.182
Yoga or Tai Chi	2.45	1.220
Retreat/ Workshop/ Excursion	2.12	1.160
Therapy or counseling	1.90	1.097
Martial Arts	1.68	1.173
Chanting	1.65	1.105

*Note: M = Mean and SD = Standard Deviation*

The second question asked the SLfSD participant to rank his/her top three preferences of practice for developing his/her personal capacities, with 1 = top practice preference. Table 3-6 illustrates the ranked practices according to SLfSD preference. As some SSD experts were less able to articulate or describe exactly how, and to what extent each personal practice was useful for development, preference for personal practice is asked for SLfSD response to identify favored activities for program development and delivery. The practices are listed according to overall total ranking occurrence.

Table 3-6

*SLfSD preferred personal practices ranked comparisons*

Personal Practice	Ranking Categories			Total Sum
	1st	2nd	3rd	
Spending time in nature (by self or with others)	<b>46<sub>1</sub></b>	<b>34<sub>1</sub></b>	23 <sub>3</sub>	103
Self-inquiry (awareness of personal thoughts, emotions, and values)	28 <sub>2</sub>	19	24 <sub>2</sub>	71
Music (i.e. listening to music, singing, playing instrument)	17	24 <sub>2</sub>	<b>28<sub>1</sub></b>	71
Exercise (i.e. lifting weights, aerobics, group fitness classes)	18	23 <sub>3</sub>	22	63
Energy work (i.e. gardening, construction, yard work, etc.)	13	21	22	56
Check-in (i.e. managing time, creating lists, goal setting)	22 <sub>3</sub>	20	11	53
Asking for help, having a mentor, coach, or collaborator; dialog circle or others that help you to develop your personal capacities	12	14	21	48
Yoga of Tai Chi	17	13	14	43
Sport (individual or team sports)	13	15	15	43
Games (i.e. board games, crossword puzzles, Sudoku, video games)	9	16	15	40
Relaxation exercises/ Attention to breath	21	12	5	38
Artistic expression	7	14	17	38
Meditation/ Mindfulness/ Silence	17	8	10	35
Reflective journaling	4	11	11	26
Dance/ Body movement	5	2	11	18
Martial Arts	8	6	3	17
Visualization/ Guided imagery	3	4	7	14
Therapy or counseling	5	4	3	12
Retreat/ Workshop/ Excursion	2	3	6	11
Chanting	2	5	1	8

*Note:* Preferred practices are listed according to overall ranking occurrence (i.e. total summed frequencies of rank). Bolded numbers indicate highest frequency amongst each ranking placement of first, second, or third. Subscript numeration identifies the most frequently cited practices within each of the ranking categories.

**Leadership styles.** The Multifactor Leadership Questionnaire (MLQ) has been used extensively in field and laboratory research to study transformational, transactional, and passive/avoidance leadership styles (Avolio & Bass, 2004). The MLQ instrument can be used for individual, group, or organizational development. The MLQ (5X short) contains 45 statement items that identify and measure key leadership behaviors shown in prior research to be strongly linked with both individual and organizational success (Avolio & Bass, 2004). Each of the nine factor leadership model facets, which accumulate to identify leadership style, is measured by the MLQ. The five point scale used to evaluate the MLQ facets are: 0 = Not at all, 1 = Once in a while, 2 = Sometimes, 3 = Fairly often, and 4 = Frequently, if not always. Table 3-7 provides SLfSD mean and standard deviation scores. These subscale items are used to measure and categorize leadership styles.



See Appendix F for complete leadership style and subscale descriptions.

Table 3-7

*SLfSD Leadership Styles mean score comparisons*

<b>Leadership Styles</b>	<b>M</b>	<b>SD</b>
Transformational Leadership Style	3.52	.363
Transactional Leadership Style	3.30	.541
Passive Avoidant Leadership Style	2.91	.807

*Note: M = Mean and SD = Standard Deviation*

**Validity and reliability.** Antonakis, Avolio, and Sivasubramaniam (2003) conducted a series of two studies, to test the validity and reliability of the MLQ. Results indicated strong and consistent evidence that the nine-factor model best represented the factor structure underlying the MLQ (Form 5X) instrument. Furthermore, their results demonstrated the MLQ (Form 5X) could be used to represent the full-range model of leadership styles (sub-factors of transformational, transactional, and passive/avoidance). Results indicated that the scales that seek to identify a rater’s leadership style are indeed distinct ( $\Delta_{\square}^2 = 2041.94$ ,  $df = 20$ ,  $p < .001$ ) (Antonakis, Avolio, & Sivasubramaniam, 2003). The MLQ manual states that the leadership scale has a .30 validity coefficient with unit/organization performance under standard conditions (Avolio & Bass, 2004). The “MLQ (Form 5X) instrument measures construct reliably between groups of raters” (Antonakis et al., 2003, p. 283). Results provided further evidence that data from contextually similar conditions (i.e. SLfSD group in the current study) supported the reproduction of the nine-factor model and reliability of the MLQ.

**Data Analytic Plan**

As stated in the research design section of this chapter, this study is primarily exploratory. Analysis of descriptive statistics defines the status of an identified variable. Studies involving descriptive statistics provide systematic information about a sample, population, and/or phenomenon (Cohen et al., 2007). Multiple regression analyses are “methods of explaining or predicting the variability of a dependent variable using information about one or more independent variables” (Vogt, 1993, p. 192).

Data were analyzed using SPSS Statistics software version 20.0. Appropriate analytic techniques were applied to answer the research questions of the study, including, descriptive statistics, and Multiple Regression. In this study, the multiple outcomes are: Leadership Personal Capacity scores (Optimism, Confidence: Perseverance, Being Present, Compassion, Intrinsic Confidence, and Continual Improvement), Leadership Style scores (Transformational, Transactional, and Passive/Avoidance), and SLfSD personal practices (see table 3-6). The independent variable in this study are Leadership Role (Formal Leader and Aspiring Leader), Ethnicity (White and Minority), Age (Traditional Leaders and Adult Learners), and Gender (Male and Female). Age, gender, and ethnicity are viewed as moderator variables in describing the sample characteristics. Descriptive statistics (e.g. mean scores and frequencies) were used for analyzing research questions 2 and 3. The following multivariate multiple regression model was used for analyzing research questions 1 and 4. Correlation among leadership personal capacities and leadership style outcomes, as well as personal practice outcomes, indicated small correlational effect size therefore warranting multivariate analyses.

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The multivariate multiple regression model was developed based upon the entities possible for analysis (i.e. the n-value distribution). Table 3-8 provides SLfSD participant frequencies for each possible interaction. Certain interactions were not considered in the model, as low n-values were present. The 4-way interaction and the 3-way interaction involving ethnicity were not considered.

Table 3-8

*Tabulation to acquire n distribution*

<b>Leadership Role (N=293)</b>	<b>Ethnicity</b>	<b>Age</b>	<b>Gender</b>	<b>n</b>
Formal Leaders (n=141)	White	Traditional	Male	24
	White	Traditional	Female	75
	White	Adult	Male	9
	White	Adult	Female	14
	Minority	Traditional	Male	5
	Minority	Traditional	Female	13
	Minority	Adult	Male	1*
	Minority	Adult	Female	0*
Aspiring Leaders (n=152)	White	Traditional	Male	25
	White	Traditional	Female	18
	White	Adult	Male	18
	White	Adult	Female	14
	Minority	Traditional	Male	50
	Minority	Traditional	Female	22
	Minority	Adult	Male	3*
	Minority	Adult	Female	2*

*Note: In cases where n-values totaled 5 or less, the interaction possibility was not considered and interaction categories were collapsed. These values are marked with an \**

### Chapter Summary

This chapter provided information regarding the research design of the study, the SLfSD sample population, and data collection procedures. This chapter also provided detailed information on the developmental process of the Leadership Personal Capacity scale and cumulative (overall) SLfSD data for the variables under analysis. Furthermore, a data analytic plan and model were reviewed for analysis and interpretation of the research questions.

## CHAPTER IV

### RESULTS

#### **Introduction**

The purpose of this study was to explore the leadership roles, leadership styles, leadership personal capacities, and personal practices of student leader for sustainable development (SLfSD). Exploring and identifying leadership component characteristics and personal practices of SLfSD may develop a baseline of knowledge pertaining to SLfSD upon which: future formal and informal programming and qualitative and quantitative research may be developed. Specifically, this study was guided by the following research questions.

1. How does the association of leadership role with leadership personal capacities and leadership styles vary by age, gender, and ethnicity?
2. Among the specified personal practices, how frequently do SLfSD exercise each practice to support their development, by age, gender, and ethnicity?
3. Among the specified personal practices, which do SLfSD prefer to exercise to support their development, by age, gender, and ethnicity?
4. How does the association of leadership role with frequently exercised personal practices vary by age, gender, and ethnicity?

This chapter is divided into three sections. The first section describes the demographic characteristics of the sample. The second section outlines the statistical analyses used to answer each research question, along with the findings. The chapter ends with a summary of the findings.

## Sample

AASHE student registrants and attendees of the 2013 annual conference were recruited for study participation via personal and email communications. Two hundred ninety-three responses were valid for statistical analyses.

### Descriptive Information

To clearly define and categorize the sample, the characteristics of Student Leaders for Sustainable Development (SLfSD) are described by the leadership components of Leadership Roles (table 4-1), Leadership Personal Capacities (table 4-2), and Leadership Styles (table 4-3), organized by age, gender, and ethnicity. The outcomes (dependent variables-DV), though not consistently correlated with each other, indicated small correlational effect sizes, thus warranting multivariate analyses. The full correlation matrix is in Appendix F. The following tables present mean and standard deviation scores as starting points to look for significance among the independent variable (IV) interactions.

Table 4-1

#### *Leadership role characteristics*

	Formal Leaders		Aspiring Leaders		Totals
	n	%	n	%	
<b>Ethnicity</b>					
White/Caucasian	122	41.64	75	25.60	197
Minority	19	6.48	77	26.28	96
<b>Age</b>					
Traditional	117	39.93	115	39.25	232
Adult Learner	24	8.19	37	12.63	61
<b>Gender</b>					
Male	39	13.31	96	32.79	135
Female	102	34.81	56	19.11	158

Comparing the categories of leadership roles to each other, and separating the total sample (N=293) into demographic categories, provides a picture of group distribution of the SLfSD. Looking at ethnicity, whites/Caucasians tend to hold the majority of formal leadership roles, while aspiring leadership roles are about evenly split between whites (n=75) and the minority group (n=77). Looking

at age, traditional students (those aged 18-24) hold greater numbers of formal and aspiring leadership roles compared to the adult learner age group (25+). Looking at gender, females hold more (approximately 2.5 times as many) formal leadership roles than males. However, males hold about double the quantity of aspiring leadership roles when compared to females.

Table 4-2

*Leadership personal capacity characteristics*

	Optimism		Confidence: Perseverance		Being Present		Compassion		Intrinsic Confidence		Continual Improvement	
	M	SD	M	SD	M	SD	M	SD	M	SD	M	SD
<b>Role</b>												
Formal (n=141)	18.20	2.14	8.95	2.92	18.18	2.09	14.67	1.54	12.30	3.53	10.93	1.66
Aspiring (n=152)	19.79	3.08	8.18	2.96	17.19	2.33	14.49	2.18	12.66	2.57	9.65	1.78
<b>Ethnicity</b>												
White/C (n=197)	20.31	2.91	7.85	2.87	17.98	2.28	14.76	1.79	12.42	2.34	10.56	1.74
Minority (n=96)	18.40	2.48	8.87	3.07	17.15	2.18	14.26	2.06	12.64	2.34	9.65	1.92
<b>Age</b>												
Traditional (n=232)	19.38	2.78	8.52	3.12	17.68	2.24	14.61	1.96	12.47	3.19	10.16	1.90
Adult L (n=61)	17.53	2.19	8.65	2.27	17.73	2.36	14.47	1.61	12.53	3.01	10.69	1.54
<b>Gender</b>												
Male (n=135)	19.46	2.85	7.99	2.95	17.32	2.37	14.37	2.13	12.74	2.75	9.91	1.90
Female (n=158)	18.63	2.66	9.04	2.89	17.98	2.14	14.75	1.64	12.27	3.32	10.58	1.72

Note: M = Mean, SD = Standard Deviation

Looking at the leadership personal capacities overall, mean scores differ (by at least 1.0 increase or decrease) in the capacity categories of Optimism (roles, ethnicity, and age), Confidence: Perseverance (ethnicity and gender), Being Present (roles), and Continual Improvement (roles and ethnicity). As mean values differ in each of these leadership personal capacities, and these differences incorporate each of the demographic categories (role, ethnicity, age, and gender), some significant main effects and interactions may exist in multivariate analyses and are examined under research question 1.

Table 4-3

*Leadership style characteristics*

	<b>Transformational</b>		<b>Transactional</b>		<b>Passive/Avoidant</b>	
	M	SD	M	SD	M	SD
<b>Role</b>						
Formal	68.84	8.49	27.59	4.43	20.35	6.13
Aspiring	71.94	5.46	25.27	3.92	26.05	5.46
<b>Ethnicity</b>						
White/Caucasian	69.76	7.92	27.08	4.19	22.05	6.36
Minority	71.96	5.49	24.93	4.26	25.86	5.71
<b>Age</b>						
Traditional	70.24	7.23	26.03	4.39	23.16	6.45
Adult Learner	71.10	7.46	27.87	3.80	23.47	6.44
<b>Gender</b>						
Male	71.22	6.87	25.96	4.46	25.76	5.63
Female	69.75	7.73	26.79	4.20	21.15	6.37

Note: M = Mean, SD = Standard Deviation

Looking at the leadership styles overall, it is important to realize that mean scores for transformational leadership styles contain higher mean values compared to transactional and passive/avoidant because the transformational leadership style is calculated by averaging 5 scales, where transactional and passive/avoidant styles are calculated by 2 scales each. In this table, only comparisons within each of the style categories should be performed. Looking at the transformational leadership style, aspiring, minority, adult, males tend to be more transformational. Formal, white/Caucasian, adult, females tend to be more transactional, and aspiring minority, males, regardless of age, tend to be more passive/avoidant in leadership situations. As mean values differ in each of these leadership styles, and these differences incorporate each of the demographic categories (role, ethnicity, age, and gender), some significant main effects and interactions may exist in multivariate analyses and are examined under research question 1.

### **Exploratory Research Questions**

The following sections outline the findings with regard to analysis of data for each research question in this exploratory study. The multivariate multiple regression model was developed based upon the tabulated n-value distribution of the SLfSD sample. Table 3-8 outlined all independent

variable interactions and determined (due to low n frequency) that the 4-way interaction as well as the 3-way interaction involving ethnicity did not contain enough power so are not considered in the model. The 3-way interaction of ethnicity, age, and gender is also not considered in the model because research questions (RQ1 and RQ4) specifically seek outcome data associated with leadership role.

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Table 4-4 outlines the results of the multivariate regression analysis and indicates overall model significance. As visible in the table, overall significance did not occur among scores for the leadership personal capacities of Compassion and Intrinsic Confidence, therefore these capacities are not further analyzed for interpretation. Non-significance in the regression model indicates demographics that may be ignored (to a certain extent) when looking at outcomes.

Table 4-4

*Leadership component multivariate regression*

	R-square	F-statistic	p-value
<b>Leadership Personal Capacities</b>			
Optimism	0.2567	10.85929	***
Confidence: Perseverance	0.0909	3.145275	**
Being Present	0.0946	3.284065	***
Compassion	0.0433	1.422942	n.s.
Intrinsic Confidence	0.0346	1.125929	n.s.
Continual Improvement	0.1852	7.145738	***
<b>Leadership Styles</b>			
Transformational	0.0908	3.141251	**
Transactional	0.2355	9.684183	***
Passive/Avoidance	0.2661	11.3985	***

Note: \*p.05, \*\*p<.01, \*\*\*p<.001 n.s. = not significant

**Research Question 1**

Research question 1 asked: How does the association of leadership role with leadership personal capacities and leadership styles vary by age, gender, and ethnicity? The purpose behind this



question was to identify if and how the interactions of role, ethnicity, age, and gender (parameters) influence the leadership personal capacity and the leadership style outcomes for SLfSD. Table 4-5 reports the significant parameters from the estimated model for the Leadership Personal Capacities. Refer to the multivariate multiple regression model and Appendix G for all parameters estimated. The intercept value indicates the predicted score for aspiring, traditional, minority, males.

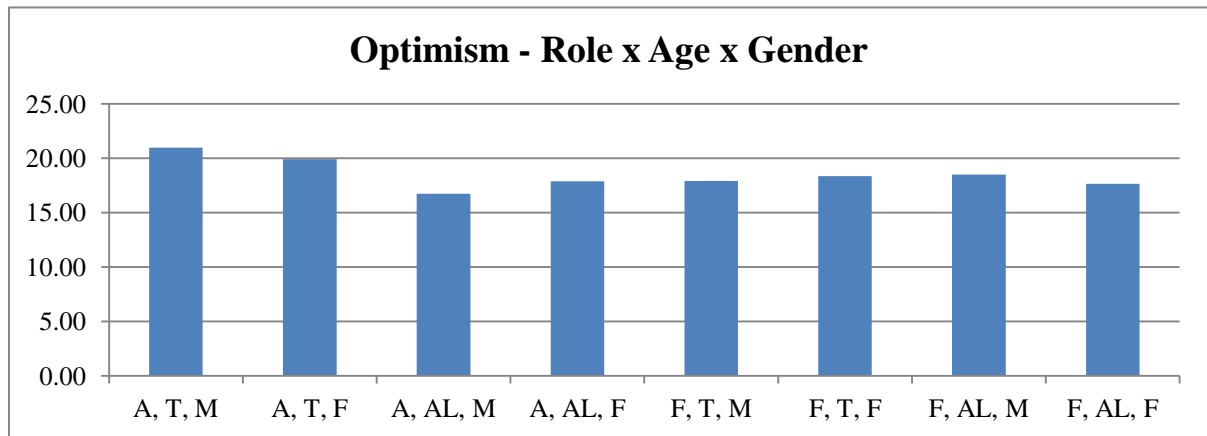
Table 4-5

*Leadership personal capacities multivariate regression*

<b>Personal Capacities</b>	<b>Coef.</b>	<b>Std. Err.</b>	<b>p-value</b>
<b>Optimism</b>			
Gender	-0.9802644	0.4777188	*
Role x Age x Gender	-3.452024	1.46851	*
Intercept	21.23924	0.3156731	
<b>Confidence: Perseverance</b>			
Gender	1.419541	0.5667787	*
Role x Age	-2.639553	1.302093	*
Intercept	7.012973	0.3745232	
<b>Being Present</b>			
Role x Age x Gender	-2.542384	1.331795	~*
Intercept	16.9543	0.2862846	
<b>Compassion</b>			
Ethnicity	0.7150621	0.3393963	*
Age	-1.151699	0.4984713	*
Intercept	14.34831	0.2454359	
<b>Intrinsic Confidence</b>			
Gender	-1.235219	0.6028164	*
Intercept	13.11366	0.3983367	
<b>Continual Improvement</b>			
Role	1.439353	0.5210979	**
Age	1.016914	0.4493727	*
Intercept	9.218036	0.2212609	

*Note: Coef. = Correlation Coefficient, Std. Err. = Standard Error; ~\*p.051-.06, \*p.05, \*\*p<.01, \*\*\*p<.001*

**Optimism.** The main effect of gender showed a significant influence, indicating that females show less optimism than males. An interaction of role, age, and gender also indicated significant influence on the outcome of optimism. Figure 4-1 illustrates the role x age x gender interactions.

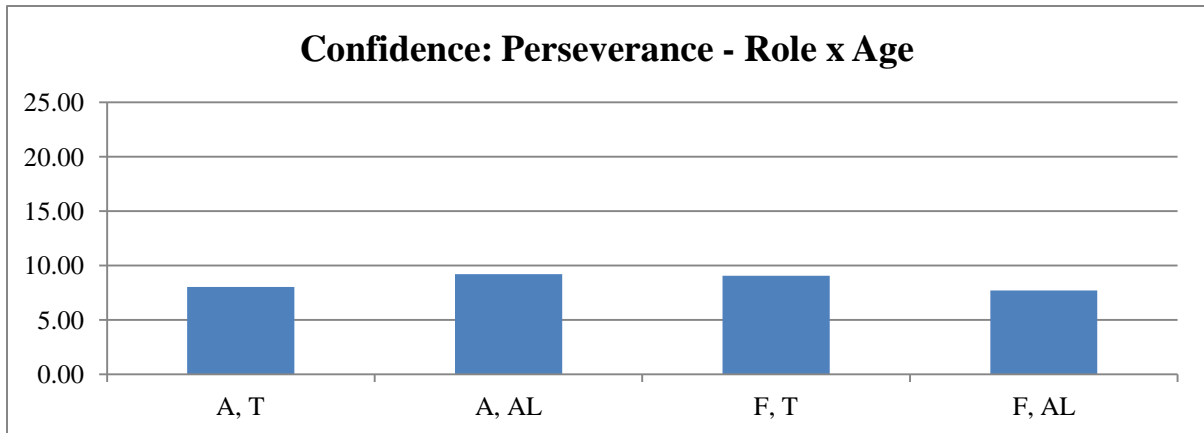


Note: IVs (x-axis) are labeled as: Role (A = Aspiring, F = Formal), Age (T = Traditional, AL = Adult Learners), then Gender (M = Males, F = Females).

Figure 4-1. Role x age x gender interaction for Optimism leadership personal capacity

Gender difference is significant amongst the aspiring leaders. Aspiring traditional males have higher levels of optimism, but lower levels as age increases. Interaction of gender difference switches significance depending on the age and role of the SLfSD. When looking at formal leaders, traditional student females have higher levels of optimism, but as the female ages into the adult learner category, her optimism decreases. Whereas formal male leaders increase optimism as the age of the participants increases.

**Confidence: Perseverance.** The main effect of gender showed a significant influence, indicating that SLfSD females have more confidence in perseverance capacities than SLfSD males. A 2-way interaction of role and age indicated significant influence on the outcome of Confidence: Perseverance. Figure 4-2 illustrates the role x age interactions.



Note: IVs (x-axis) are labeled as: Role (A = Aspiring, F = Formal) then Age (T = Traditional, AL = Adult Learners)  
 Figure 4-2. Role x age interaction for Confidence: Perseverance leadership personal capacity

Figure 4-2 indicates that traditional age aspiring leaders have lower levels of confidence: perseverance, but these levels increase as age increases. Adult learner formal leaders have higher levels of confidence: perseverance, but levels lower as age increases. Interaction of age difference switches significance depending on the role of the SLfSD.

**Being Present.** Evidence of a significant 3-way interaction between role, age, and gender was indicated through multivariate analyses ( $p = .057$ ). However, as the calculated significance did not meet the .05 p-value significance level, Being Present is not interpreted. However, it is important to note the evidence for possible future research.

**Compassion and Intrinsic Confidence.** Compassion and Intrinsic Confidence leadership personal capacities were not found to be significant in the overall multiple regression model therefore analyses are not interpreted. However, other researchers may want to consider exploring Compassion by age and gender and Intrinsic Confidence by gender, as significant main effects were indicated.

**Continual Improvement.** The main effects of role and age showed significant influences for continual improvement outcomes. Formal leaders and adult leaders had higher continual improvement scores compared to aspiring and traditional (younger) leaders.

Table 4-6 reports the significant parameters from the estimated multivariate model for the SLfSD Leadership Styles.

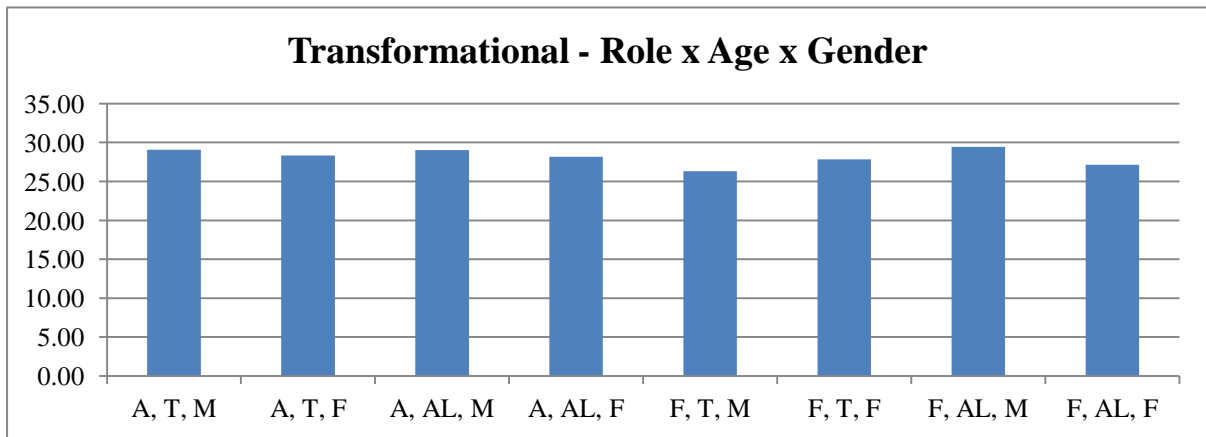
Table 4-6

*Leadership styles multiple regression*

Leadership Styles		Coef.	Std. Err.	p-value
<b>Transformational</b>				
	Role	-5.976173	2.163366	**
	Role x Age x Gender	-9.036593	4.273216	*
	Intercept	72.97836		
<b>Transactional</b>				
	Ethnicity	1.648115	0.6927185	*
	Role x Ethnicity	-3.460144	1.182995	**
	Intercept	23.25063		
<b>Passive/Avoidant</b>				
	Role	-7.338359	1.701634	***
	Gender	-3.133354	1.093418	**
	Intercept	28.0647		

Note: Coef. = Correlation Coefficient, Std. Err. = Standard Error; ~\*p<.06, \*p.05, \*\*p<.01, \*\*\*p<.001

**Transformational Leadership.** The main effect of role was significant. An interaction of role, age, and gender also indicated significant influence on the transformational leadership style outcome. Figure 4-3 illustrates the role x age x gender interactions. Transformational leadership style scores were transposed in order to make visual comparisons with the other leadership style figures, as scale items were unequal.

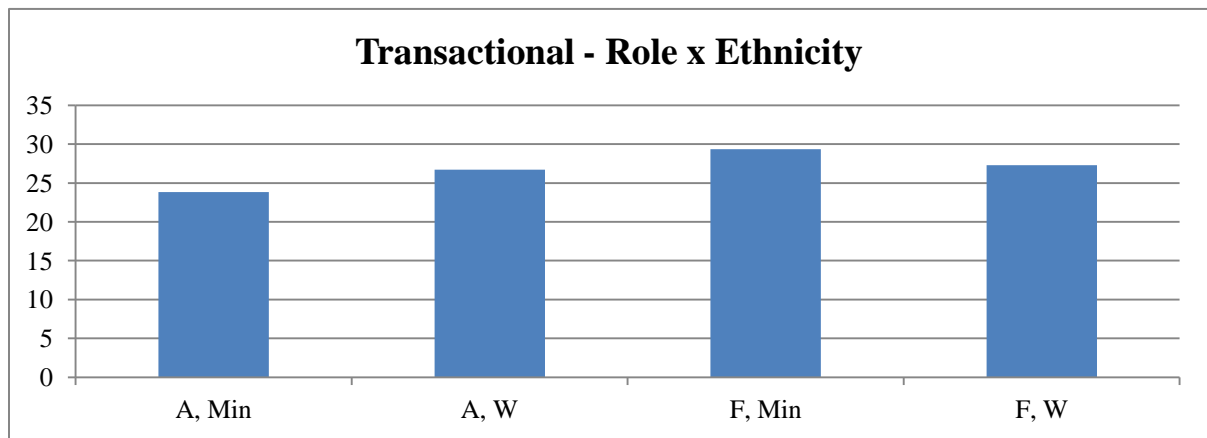


Note: IVs (x-axis) are labeled as: Role (A = Aspiring, F = Formal), Age (T = Traditional, AL = Adult Learners), then Gender (M = Males, F = Females).

Figure 4-3. Role x age x gender interaction for Transformational leadership style

Age difference is significant amongst the aspiring and formal leader groups. Aspiring traditional males have higher transformational scores, but significantly lower scores when transitioned into a formal leadership role. Males tend to have higher transformational scores compared to females, except in the case of formal traditional-age females. When looking at formal leaders, traditional student males increase transformational scores as age increases.

**Transactional Leadership.** The main effect of ethnicity as well as the interaction of role and ethnicity indicated a significant influence on transactional leadership style outcomes. Figure 4-4 illustrates the role x age x gender interactions.



Note: IVs (x-axis) are labeled as: Role (A = Aspiring, F = Formal) then Ethnicity (W = White/Caucasian, Min = Minority)  
 Figure 4-4. Role x ethnicity interaction for Transactional leadership style

Role difference is significant amongst the ethnicity groups. Aspiring minorities have lower transactional scores compared to minorities holding formal leadership roles. When looking at aspiring leaders, white/Caucasian student leaders have higher transactional scores compared to minority student leaders. However, when aspiring leaders transition into the formal student leader role, the minority group possess higher transformational characteristic scores compared to whites.

**Passive/Avoidant.** The main effect of role indicated significant influence, indicating that formal leaders possess less passive/avoidant characteristics than aspiring leaders. The main effect of gender showed a significant influence, indicating that females show less passive/avoidant characteristics than males.

## **Research Question 2**

Research question 2 asked: Among the specified personal practices, how frequently do SLfSD exercise each practice to support their development, by age, gender, and ethnicity? The idea behind this question was to identify which personal activities SLfSD practice on a regular basis to support their work (personal and organizational) and capacity development. Descriptive statistics for each of the twenty SLfSD personal practice options were analyzed to answer this question. Table 4-7 reports the mean scores for each personal practice organized by age, ethnicity, and gender. Brief personal practice descriptions/examples may be found in table 3-5.

Table 4-7

*SLfSD personal practices mean score comparisons*

Personal Practice	T, Min., M n = 55		T, Min., F n = 35		T, W, M n = 49		T, W, F n = 93		AL, Min., M n = 4		AL, Min., F n = 2		AL, W, M n = 27		AL, W, F n = 28		Overall M
	M	SD	M	SD	M	SD	M	SD	M	SD	M	SD	M	SD	M	SD	
Meditation	2.64	0.93	2.74	1.22	2.69	1.18	2.82	1.18	4.25	0.50	3.00	1.41	3.41	1.31	3.71	1.21	3.16
Relaxation exercises	4.11	0.79	3.40	1.38	3.12	1.33	2.69	1.26	4.00	0.82	3.00	1.41	3.41	1.25	3.32	1.31	3.38
Yoga	2.35	1.02	2.17	1.15	2.18	1.20	2.34	1.16	3.50	0.58	2.50	2.12	2.89	1.28	3.36	1.45	2.66
Martial Arts	1.75	0.99	1.40	0.88	1.86	1.24	1.28	0.77	3.25	1.71	1.00	0.00	2.74	1.79	1.82	1.28	1.89
Chanting	1.49	0.69	1.37	0.77	1.65	0.93	1.32	0.82	3.25	1.71	1.00	0.00	2.81	1.66	2.14	1.46	1.88
Spending time in nature	2.02	0.89	2.46	1.09	2.94	1.20	3.66	1.10	4.00	1.15	3.50	0.71	3.81	0.79	3.75	1.08	3.27
Energy work	2.02	0.87	2.31	1.16	2.68	1.15	3.02	1.08	4.50	1.00	3.00	0.00	3.59	0.89	3.50	0.96	3.08
Visualization	2.76	0.54	2.80	1.05	2.41	1.04	2.14	1.20	3.75	0.50	1.50	0.71	3.22	1.63	2.43	1.45	2.63
Sport	4.42	0.85	3.66	1.47	3.67	1.41	2.72	1.42	3.75	0.50	1.00	0.00	3.22	1.60	2.61	1.57	3.13
Artistic expression	4.27	0.87	3.51	1.31	3.16	1.42	2.66	1.26	3.75	0.96	3.00	1.41	3.22	1.34	3.14	1.30	3.34
Reflective journaling	3.25	0.89	2.89	1.16	2.57	1.37	2.53	1.25	3.25	1.50	3.50	0.71	2.93	1.54	2.79	1.45	2.96
Self-inquiry	3.33	0.72	3.40	1.01	3.51	1.24	3.75	1.20	4.50	1.00	4.50	0.71	3.78	1.09	3.89	1.20	3.83
Therapy	1.78	0.63	1.69	0.83	1.78	1.09	1.70	1.03	3.00	1.83	2.00	1.41	2.85	2.14	1.43	1.30	2.03
Retreat	1.60	0.81	1.94	1.03	1.92	1.10	2.13	1.06	3.50	1.29	2.50	2.12	3.15	1.35	2.43	1.32	2.40
Exercise	3.18	0.51	3.23	0.88	3.33	1.14	3.29	1.21	4.00	0.82	2.50	0.71	3.44	1.28	3.68	1.16	3.33
Games	3.55	0.72	3.17	1.15	3.24	1.09	2.80	1.20	3.50	1.00	2.50	2.12	3.52	1.16	2.93	1.12	3.15
Check-in	3.76	0.82	3.74	0.95	3.53	1.19	3.77	1.18	4.00	1.41	4.50	0.71	3.70	1.27	3.82	1.16	3.85
Dance	3.42	1.08	3.11	1.23	2.90	1.37	2.69	1.30	4.25	0.96	2.00	0.00	2.93	1.57	3.04	1.17	3.04
Music	3.40	1.08	3.66	1.16	3.80	1.21	4.02	1.01	4.00	0.82	3.50	2.12	3.74	0.98	4.00	0.86	3.77
Asking for help	2.53	1.00	3.00	1.16	2.65	1.15	3.20	1.26	4.25	1.50	3.50	2.12	4.00	1.00	3.21	1.23	3.29

Note: M = Mean SD = Standard Deviation; Variables are labeled as: Age (T = Traditional, AL = Adult Learners), Ethnicity (Min. = Minority, W = White/Caucasian), then Gender (M = Males, F = Females); Boarder # indicates highest mean scores for each parameter

The comparison of mean scores for each of the SLfSD personal practices indicates that the practice of check-in was the most frequently exercised amongst all SLfSD. Looking at this data in separate categories of age, ethnicity and gender, traditional-age student leaders frequently exercise the personal practices of: sport, check-in, and music. Whereas adult learners frequently exercise the personal practices of: self-inquiry, energy work, and asking for help as well as check-in and music. Student leaders of minority ethnic groups exercise sports, check-in, energy work, self-inquiry, and check-in personal practices. Male student leaders frequently exercise the practices of sport, music, energy work, self-inquiry, and asking for help. Female student leaders frequently exercise the personal practices of: check-in, music, and self-inquiry. It is important to note that definitive personal practice rankings cannot be concluded for adult learner-age minority students due to small sample size. Because of the small n-values for the adult learner minority group (both male and female), estimates are not reliable (see table 3-8 for n distribution).

### **Research Question 3**

Among the specified personal practices, which do SLfSD prefer to exercise to support their development, by age, gender, and ethnicity? The idea behind this question was to identify which personal practices SLfSD *prefer* to perform to support their work (personal and organization) and capacity development. Descriptive ranking statistics (frequency of practice rank) for each of the twenty SLfSD personal practice options were gathered. SLfSD were asked to identify their top-three preferred practices and rank them in preference order, where 1 = first preference. Table 4-8 illustrates the ranked practices according to SLfSD preference organized by age, ethnicity, and gender.



Table 4-8

*SLfSD personal practices rankings*

Personal Practice	T, Min., M n= 41			T, Min., F n =28			T, W, M n =44			T, W, F n =91			AL, Min., M n = 4			AL, Min., F n = 2			AL, W, M n = 26			AL, W, F n = 26			Total Rankings			Total
	1 <sup>st</sup>	2 <sup>nd</sup>	3 <sup>rd</sup>	1 <sup>st</sup>	2 <sup>nd</sup>	3 <sup>rd</sup>	1 <sup>st</sup>	2 <sup>nd</sup>	3 <sup>rd</sup>	1 <sup>st</sup>	2 <sup>nd</sup>	3 <sup>rd</sup>	1 <sup>st</sup>	2 <sup>nd</sup>	3 <sup>rd</sup>	1 <sup>st</sup>	2 <sup>nd</sup>	3 <sup>rd</sup>	1 <sup>st</sup>	2 <sup>nd</sup>	3 <sup>rd</sup>	1 <sup>st</sup>	2 <sup>nd</sup>	3 <sup>rd</sup>	1 <sup>st</sup>	2 <sup>nd</sup>	3 <sup>rd</sup>	
Meditation	1	1	0	3	2	2	3	1	1	5	2	5	0	0	0	0	0	1	0	0	0	4	1	0	16	7	9	32
Relax exercise	2	2	0	0	2	1	3	2	0	4	3	3	1	0	0	0	0	0	7	0	0	3	1	1	20	10	5	35
Yoga	0	2	0	3	1	1	0	2	0	7	4	9	0	0	0	1	0	0	0	1	0	6	3	2	17	13	12	42
Martial Arts	0	3	0	1	2	0	3	1	2	0	0	0	1	0	0	0	0	0	3	0	1	0	0	0	8	6	3	17
Chanting	1	1	0	0	0	0	0	2	0	1	1	0	0	0	1	0	0	0	0	0	0	0	1	0	2	5	1	8
Nature	6	1	6	0	5	1	10	3	4	23	18	6	1	0	0	0	1	0	1	3	2	4	3	3	45	34	22	101
Energy work	2	3	7	3	1	2	2	6	3	1	4	8	0	0	0	0	0	0	5	5	1	0	2	1	13	21	22	56
Visualization	1	2	0	0	0	3	0	1	1	1	0	3	0	0	0	0	0	0	1	0	0	0	0	0	3	3	7	13
Sport	4	3	3	0	1	2	4	1	4	1	3	3	0	1	1	0	0	0	1	4	1	3	2	1	13	15	15	43
Artistic	3	2	2	0	1	2	2	2	2	2	7	5	0	1	0	0	0	0	0	0	2	0	1	3	7	14	16	37
R. Journaling	1	1	1	0	2	1	1	0	2	0	5	6	0	0	0	0	1	0	0	1	0	1	0	1	3	10	11	24
Self-inquiry	7	7	4	2	1	2	6	1	4	9	3	7	0	1	1	0	0	0	2	1	5	2	5	1	28	19	24	71
Therapy	0	1	0	2	0	0	2	0	1	0	0	1	0	0	0	0	0	0	0	1	1	0	2	0	4	4	3	11
Retreat	0	0	1	0	1	1	2	0	0	0	2	3	0	0	0	0	0	0	0	0	0	0	0	1	2	3	6	11
Exercise	3	1	5	1	2	1	4	7	4	9	8	7	0	0	0	0	0	0	0	2	2	1	2	3	18	22	22	62
Games	3	4	3	2	3	1	0	4	3	3	1	3	0	0	1	0	0	0	1	3	3	0	0	1	9	15	15	39
Check-in	1	3	2	6	0	0	1	6	1	11	7	5	0	0	0	0	0	0	2	2	2	1	2	1	22	20	11	53
Dance	1	0	1	0	0	2	0	0	3	3	2	3	1	0	0	0	0	0	0	0	1	0	0	1	5	2	11	18
Music	3	3	3	4	3	4	0	4	7	7	11	8	0	1	0	0	0	1	1	1	1	1	1	2	16	24	26	66
Help	2	1	3	1	1	2	1	1	2	4	9	5	0	0	0	1	0	0	2	2	4	0	0	4	11	14	20	45

Note: M = Mean SD = Standard Deviation; Variables are labeled as: Age (T = Traditional, AL = Adult Learners), Ethnicity (Min. = Minority, W = White/Caucasian), then Gender (M = Males, F = Females); Boarder # indicates largest count of 1<sup>st</sup>, 2<sup>nd</sup>, and 3<sup>rd</sup> place ranking frequencies for each parameter; N decreased for ranking scores – 31 participants did not provide personal practice rankings (N=262); for the parameter of traditional, white/Caucasian, Female, the sample size is 91, but one participant identified only her 1<sup>st</sup> practice choice (n=90 for 2<sup>nd</sup> and 3<sup>rd</sup> rankings in the T, W, F category)

Frequency score rankings for the SLfSD personal practices indicate that the practice of spending time in nature (by self or with others) is the most preferred practice amongst the sample participants. In terms of total ranking placements, spending time in nature received 1<sup>st</sup> and 2<sup>nd</sup> place rankings, followed by the practices of music. Looking at this data in each combination of demographic category, the preferred personal practice rankings (1<sup>st</sup>, 2<sup>nd</sup>, then 3<sup>rd</sup>) are as for traditional, minority, male student leaders: self-inquiry (1<sup>st</sup> and 2<sup>nd</sup>) and energy work (3<sup>rd</sup>). The preferred personal practice rankings for traditional, minority, female student leaders are: check-in, spending time in nature, and music. The preferred personal practice rankings for traditional-aged, white/Caucasian, male student leaders are: spending time in nature, exercise, and music. The preferred personal practice rankings for traditional-aged, white/Caucasian, female student leaders are: spending time in nature (1<sup>st</sup> and 2<sup>nd</sup>) and yoga.

The preferred personal practice ranking (1<sup>st</sup>, 2<sup>nd</sup>, then 3<sup>rd</sup>) are as for adult learner-aged, minority, male student leaders: relaxation exercises, martial arts, spending time in nature, and dance (tied for 1<sup>st</sup> place), sport, artistic expression, self-inquiry, and music (tied for 2<sup>nd</sup> place), and chanting, sport, self-inquiry, and games (tied for 3<sup>rd</sup> place). The preferred personal practice rankings for adult learner, minority, female student leaders are: yoga and asking for help (tied for 1<sup>st</sup> place), spending time in nature and reflective journaling (tied for 2<sup>nd</sup>), and meditation and music (tied for 3<sup>rd</sup> place). It is important to restate that given the data for these parameters (adult learners of minority ethnicity), definitive practice ranking cannot be concluded due to small sample size. Because of the small n-values for adult learners of the minority group (both male and female), estimates for preferred personal practice ranking are not reliable. The preferred personal practice rankings for adult learner-aged, white/Caucasian, male student leaders are: relaxation exercises, energy work, and self-inquiry. The preferred personal practice rankings for adult learner, white/Caucasian, female student leaders are: yoga, self-inquiry, and asking for help.

#### Research Question 4

Research question 4 asked: How does the association of leadership role with frequently exercised personal practices vary by age, gender, and ethnicity? The purpose behind this question was to identify if and how the interactions of role, ethnicity, age, and gender (parameters) influence the personal practice outcomes (frequency) for SLfSD. Correlation among personal practice outcomes (DV) indicated small correlational effect size, thus warranting multivariate analyses. Correlation matrix is in Appendix F. Table 4-9 outlines the results of the multivariate regression analysis and indicates overall model significance. As visible in the table, overall significance did not occur for the personal practice of self-inquiry, therefore significant main effects and/or interactions for this personal practice are not interpreted.

Table 4-9

*Personal practices multivariate regression significance*

<b>Personal Practices</b>	<b>R-square</b>	<b>F-statistic</b>	<b>p-value</b>
Meditation	0.1283	4.630101	***
Relaxation exercises	0.2487	10.40743	***
Yoga	0.1078	3.799765	***
Martial Arts	0.2762	11.99659	***
Chanting	0.2995	13.44522	***
Spending time in nature	0.4076	21.63163	***
Energy work	0.2443	10.16798	***
Visualization	0.1476	5.44537	***
Sport	0.2738	11.85639	***
Artistic expression	0.2640	11.27665	***
Reflective journaling	0.1602	5.99691	***
Self-inquiry	0.0564	1.879248	n.s.
Therapy	0.2293	9.35461	***
Retreat	0.2242	9.085526	***
Exercise	0.0721	2.443986	**
Games	0.1562	5.819206	***
Check-in	0.0808	2.763837	**
Dance	0.1515	5.615046	***
Music	0.1094	3.864056	***
Asking for help	0.2195	8.842909	***

Note: \* $p < .05$ , \*\* $p < .01$ , \*\*\* $p < .001$ , n.s. = not significant

Table 4-10 reports the significant parameters from the multivariate regression model for the SLfSD personal practices. Refer to the model and Appendix G for all parameters estimated. The intercept value indicates the predicted score for aspiring, traditional, minority, males.

Table 4-10

*Personal practice multivariate regression*

		<b>Coef.</b>	<b>Std. Err.</b>	<b>p-value</b>
<b>Meditation</b>				
	Role x Age	-1.622088	0.513825	**
	Intercept	2.553112	0.1477923	
<b>Relaxation</b>				
	Role	-1.283819	0.3510434	***
	Ethnicity	-0.4741386	0.2061177	*
	Intercept	4.184713	0.1490549	
<b>Yoga</b>				
	Age	0.7700198	0.3108172	*
	Intercept	2.356679	0.1530393	
<b>Martial Arts</b>				
	Role x Age x Gender	1.482239	0.6158717	*
	Intercept	1.791828	0.1323886	
<b>Chanting</b>				
	Role x Age x Gender	1.395395	0.5683527	*
	Intercept	1.426965	0.1221739	
<b>Spending time in Nature</b>				
	Role	1.718524	0.2985137	***
	Ethnicity	0.695984	0.1752745	***
	Age	1.553532	0.2574256	***
	Gender	0.5321352	0.1918158	**
	Role x Age	-1.524628	0.4406696	***
	Age x Gender	-0.8243254	0.3757246	*
	Intercept	1.754672	0.1267505	
<b>Energy Work</b>				
	Role	0.8495166	0.3148974	**
	Ethnicity	0.4402991	0.1848942	*
	Age	1.316034	0.2715542	***
	Intercept	1.973234	0.1337071	
<b>Visualization</b>				
	Age	1.106115	0.2926113	***
	Role x Age	-0.9949896	0.5009017	*
	Age x Gender	-0.905699	0.4270799	*
	Intercept	2.782679	0.1440752	

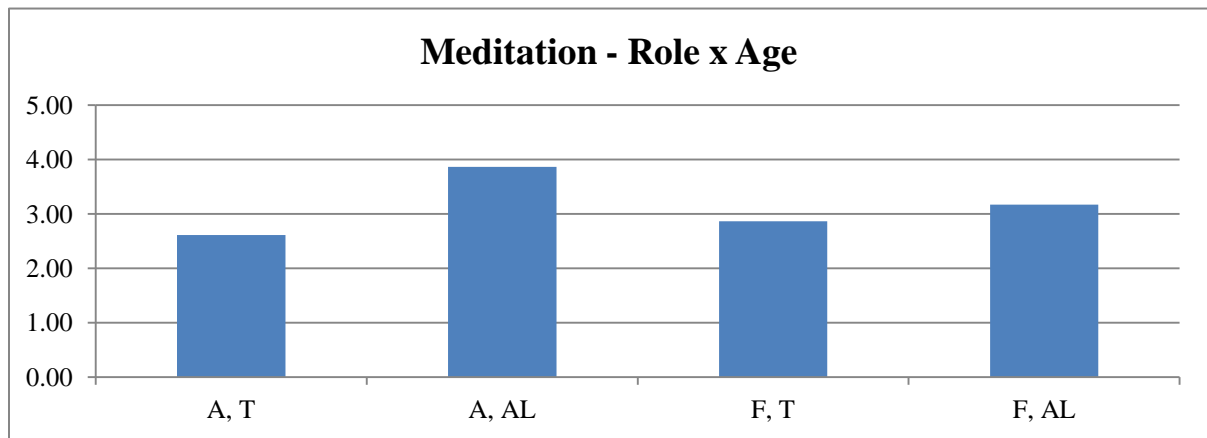
<b>Sport</b>				
	Ethnicity	-0.6391737	0.2349523	**
	Role x Age x Gender	2.264456	0.7904061	**
	Intercept	4.533058	0.1699068	
<b>Artistic Expression</b>				
	Role	-1.47069	0.3614007	***
	Ethnicity	-0.6898944	0.212199	***
	Intercept	4.376631	0.1534526	
<b>Journaling</b>				
	Role x Gender	0.8642274	0.3437361	*
	Intercept	3.383495	0.1537185	
<b>Self Inquiry</b>				
	Age	0.79937	0.2891052	**
	Role x Age	-1.162228	0.4948998	*
	Intercept	3.269902	0.1423488	
<b>Therapy</b>				
	Age	1.588204	0.2571616	***
	Role x Age	-1.792972	0.4402177	***
	Age x Gender	-0.7857293	0.3753393	*
	Intercept	1.713705	0.1266205	
<b>Retreat</b>				
	Role	0.9383673	0.3176976	**
	Age	1.951824	0.273969	***
	Role x Age	-1.90052	0.4689891	***
	Age x Gender	-1.043321	0.3998705	**
	Intercept	1.5051	0.1348961	
<b>Exercise</b>				
	Age	0.7112839	0.2741312	**
	Role x Age	-1.587569	0.4692668	***
	Intercept	3.108393	0.134976	
<b>Games</b>				
	Role	-0.8302261	0.3201213	**
	Intercept	3.618842	0.1359252	
<b>Check-in</b>				
	Role x Age	-1.210951	0.4831825	*
	Intercept	3.796268	0.1389786	
<b>Dance</b>				
	Role x Age x Gender	2.148955	0.735851	**
	Intercept	3.505994	0.1581796	
<b>Music</b>				
	Role x Age x Gender	1.349984	0.6263907	*
	Intercept	3.27571	0.1346498	

**Help**

Role	1.47354	0.339195	***
Age	1.804084	0.2925074	***
Role x Ethnicity	-0.8832449	0.3401182	**
Role x Age	-1.322771	0.5007238	**
Age x Gender	-0.9391341	0.4269281	*
Intercept	2.312902	0.144024	

Note: \* $p < .05$ , \*\* $p < .01$ , \*\*\* $p < .001$

**Meditation.** The personal practice of meditation involved the exercise of mindfulness, reflection, and silence. Significant interactions involving role and age were indicated for the personal practice of meditation. Figure 4-5 illustrates the 2-way interaction.



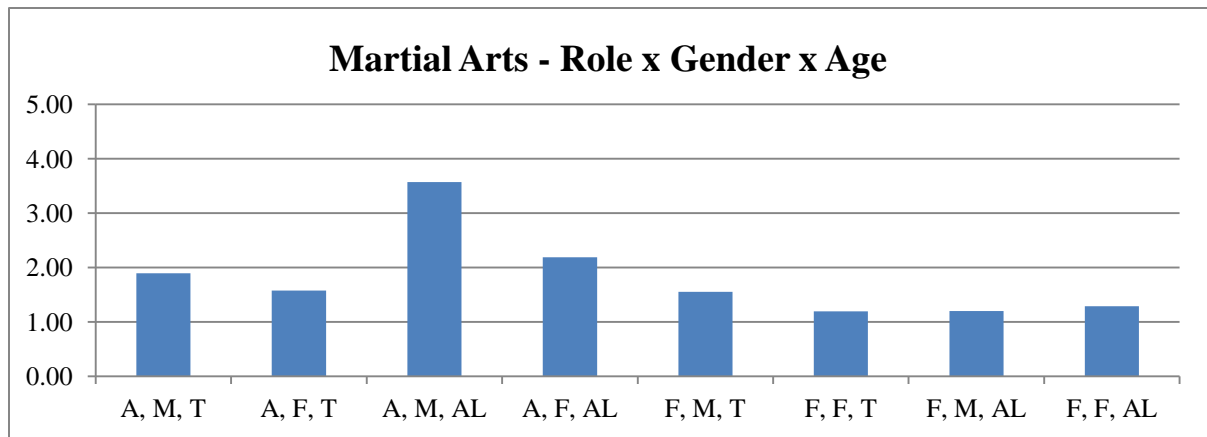
Note: IVs (x-axis) are labeled as: Role (A = Aspiring, F = Formal) then Age (T = Traditional, AL = Adult Learner)  
Figure 4-5. Meditation role x age interaction

Figure 4-5 indicates higher practice frequency of meditation for adult learners compared to traditional-age SLfSD, specifically within the aspiring leader category.

**Relaxation exercise.** The main effect of role and the main effect of ethnicity indicated significant influence on the personal practice of exercises involving relaxation. An example of a relaxation exercise may involve paying attention to breath/controlled breathing. Aspiring leaders are more likely to practice relaxation exercises.

**Yoga.** The main effect of age indicated significant influence on the personal practice of yoga, signifying that adult learners more frequently practice yoga compared to traditional-age SLfSD.

**Martial arts.** Significance was found for the interaction of role, age, and gender for the personal practice of martial arts. Figure 4-6 illustrates the 3-way interaction.

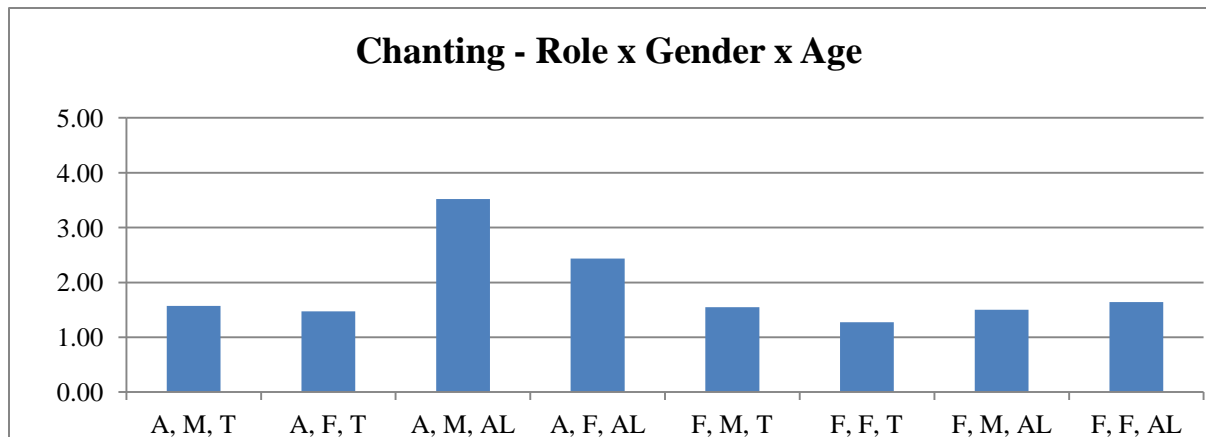


Note: IVs (x-axis) are labeled as: Role (A = Aspiring, F = Formal), Gender (M=Male, F = Female) then Age (T = Traditional, AL = Adult Learner)

Figure 4-6. Martial Arts role x gender x age interaction

Figure 4-6 indicates higher practice frequency of martial arts for aspiring leaders compared to formal leaders, specifically within the male, adult learner category. Looking within the aspiring leader group, males tend to practice martial arts more frequently than females. Aspiring adult learners tend to practice martial arts more frequently than the traditional-age aspiring leaders. Slight differences exist among the formal leader group. Formal, traditional males practice martial arts more frequently than females in the same role and age group. However, formal, adult learner females tend to practice martial arts more often than their male counterparts.

**Chanting.** Significance was found in the interaction of role, age, and gender for the personal practice of chanting. Figure 4-7 illustrates the 3-way interaction.



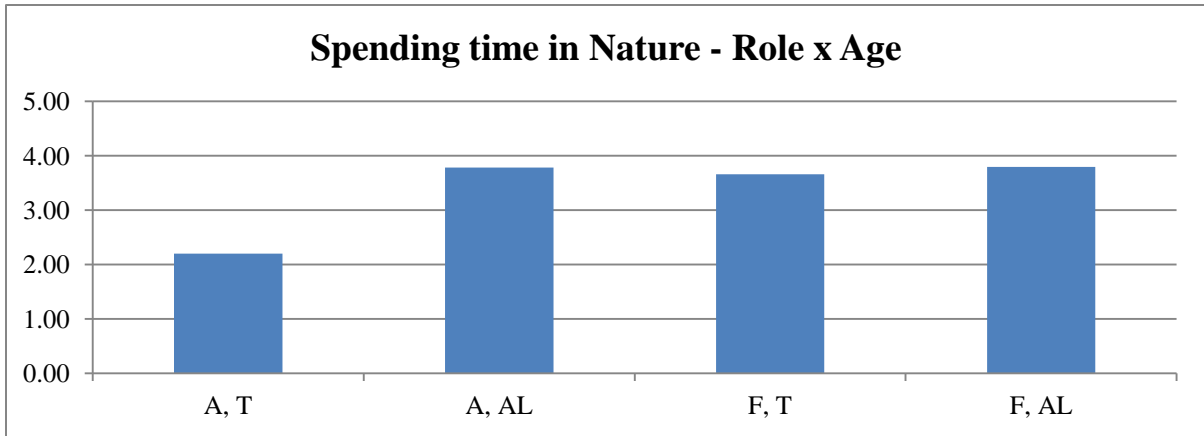
Note: IVs (x-axis) are labeled as: Role (A = Aspiring, F = Formal), Gender (M=Male, F = Female) then Age (T = Traditional, AL = Adult Learner)

Figure 4-7. Chanting role x gender x age interaction

Figure 4-7 indicates higher practice frequency of chanting for aspiring leaders compared to formal leaders, specifically within the male, adult learner category. Looking within the aspiring leader group, males tend to chant more frequently than females. Formal, traditional males chant more often than females in the same role and age group. However, formal, adult learner females tend to chant more frequently than formal, male, adult learners. This 3-way interaction structure is similar to that of the personal practice of martial arts.

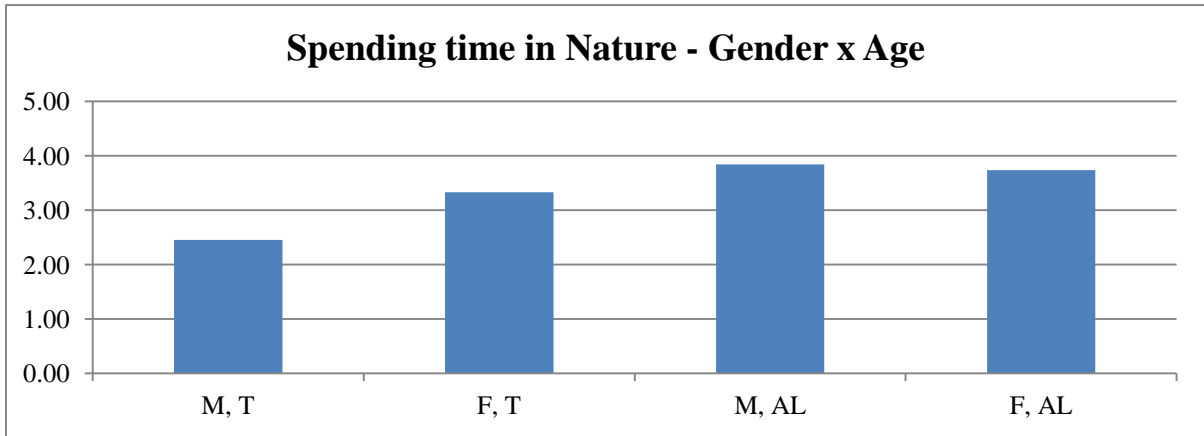
**Spending time in nature.** The main effects of role, age, and gender were significant. The main effect of ethnicity was also found to be significant among the SLfSD sample, indicating that student leaders who are white/Caucasian are more likely to spend time in nature compared to the minority group. Significance was also found in the interaction of role and age for the personal practice of spending time in nature. Figure 4-8 illustrates the 2-way interaction.





Note: IVs (x-axis) are labeled as: Role (A = Aspiring, F = Formal) then Age (T = Traditional, AL = Adult Learner)  
 Figure 4-8. Spending time in Nature role x age interaction

Figure 4-8 indicates that aspiring traditional-age leaders are less likely to spend time in nature than aspiring adult-learner leaders and SLfSD in formal roles. Significance was also found in the interaction of gender and age for the personal practice of spending time in nature. Figure 4-9 illustrates the 2-way interaction.



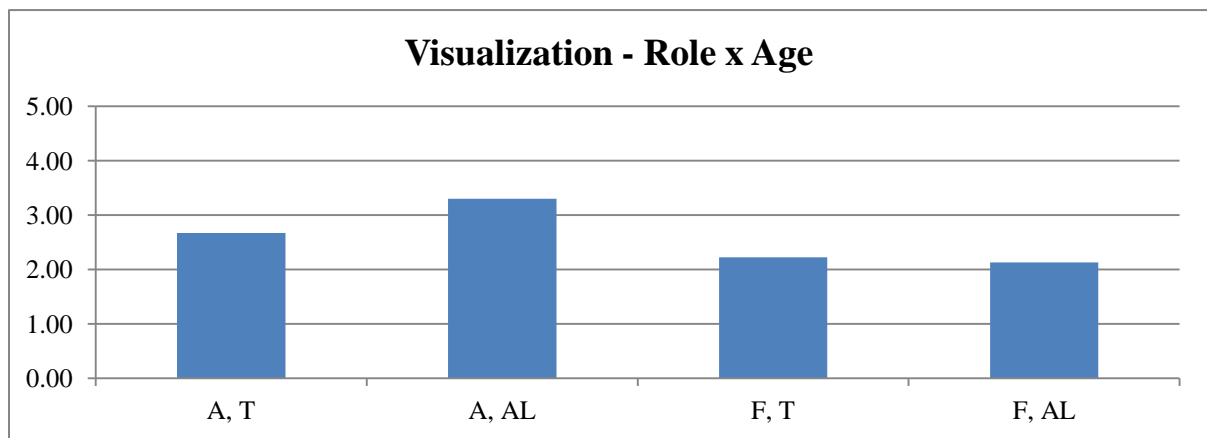
Note: IVs (x-axis) are labeled as: Gender (M = Male, F = Female) then Age (T = Traditional, AL = Adult Learner)  
 Figure 4-9. Spending time in Nature gender x age interaction

Figure 4-9 indicates that adult learner-age SLfSD more frequently practice the exercise of spending time in nature compared to the traditional-age student leader. Looking at the traditional age category, females tend to spend time in nature more often than males. However, looking at adult learners, males practice spending time in nature slightly more often than females.

**Energy work.** The main effect of role, the main effect of ethnicity, and the main effect of age indicated significant influence on the personal practice of energy work. Examples of energy work

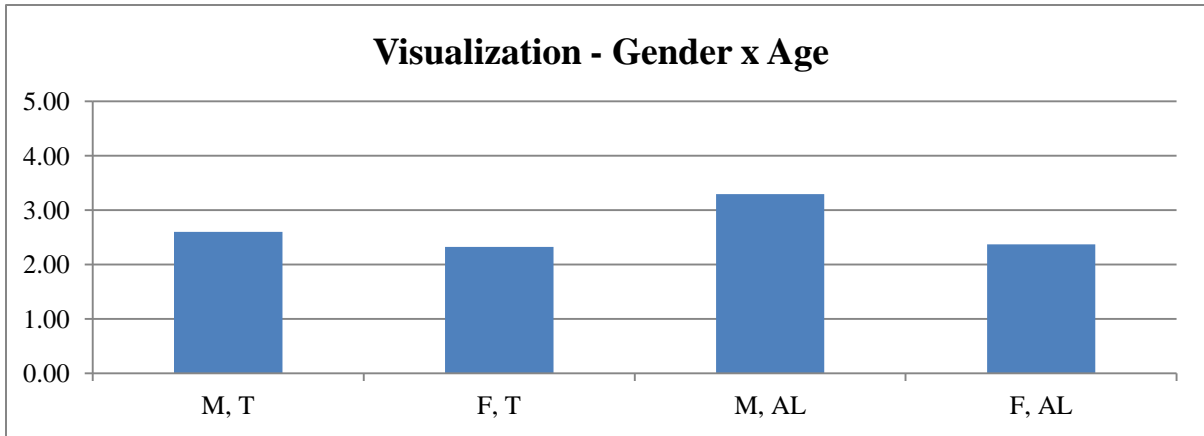
may involve gardening, construction, or yard work. Formal leaders more frequently exercise energy work practices. Whites/Caucasians practice energy work more often than the minority group. The adult learner group also exercises the practice of energy work more frequently than the traditional-age SLfSD group.

**Visualization.** The main effect of age was significant on the personal practice of visualization, indicating that adult learners more frequently practice visualization compared to traditional students. Visualization may also be thought of as guided imagery. Significance was also found in the interaction of role and age for the personal practice of visualization. Figure 4-10 illustrates the 2-way interaction.



Note: IVs (x-axis) are labeled as: Role (A = Aspiring, F = Formal) then Age (T = Traditional, AL = Adult Learner)  
Figure 4-10. Visualization role x age interaction

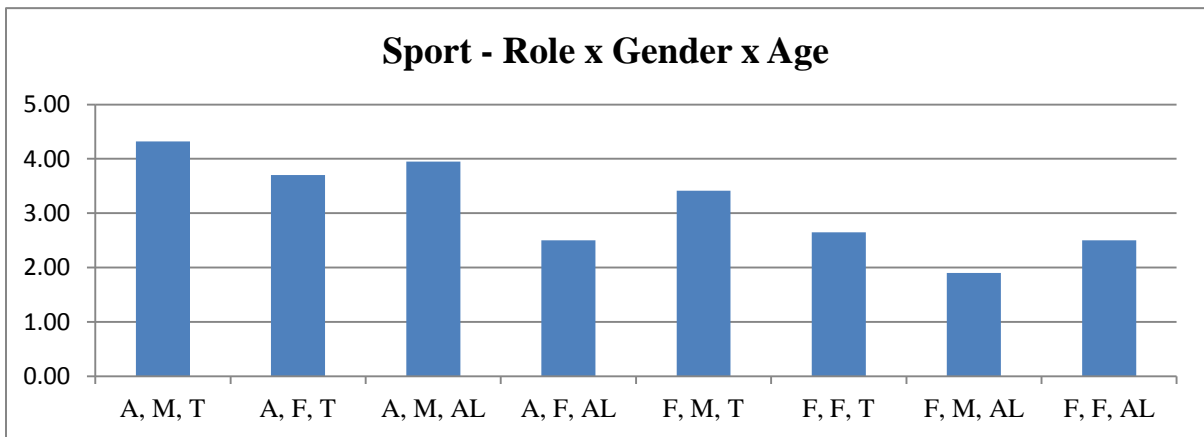
Figure 4-10 indicates that aspiring leaders in the adult learner age category are more likely to practice visualization than aspiring traditional-age students and SLfSD in formal roles. Within formal roles, traditional-age students practice visualization slightly more often than formal adult learners. Significance was also found in the interaction of gender and age for the personal practice of visualization. Figure 4-11 illustrates the 2-way interaction.



Note: IVs (x-axis) are labeled as: Gender (M = Male, F = Female) then Age (T = Traditional, AL = Adult Learner)  
 Figure 4-11. Visualization gender x age interaction

Figure 4-11 indicates that adult learner-age male SLfSD more frequently practice visualization compared to the female adult learner and the traditional-age male student leader. Males tend to practice visualization more often than females, among the two age categories.

**Sport.** The main effect of ethnicity was significant on the personal practice of sport (individual or team), indicating that whites/Caucasians engage more frequently in sport practices compared to minority student groups. Significance was found in the interaction of role, age, and gender for the personal practice of sport. Figure 4-12 illustrates the 3-way interaction



Note: IVs (x-axis) are labeled as: Role (A = Aspiring, F = Formal), Gender (M=Male, F = Female) then Age (T = Traditional, AL = Adult Learner)

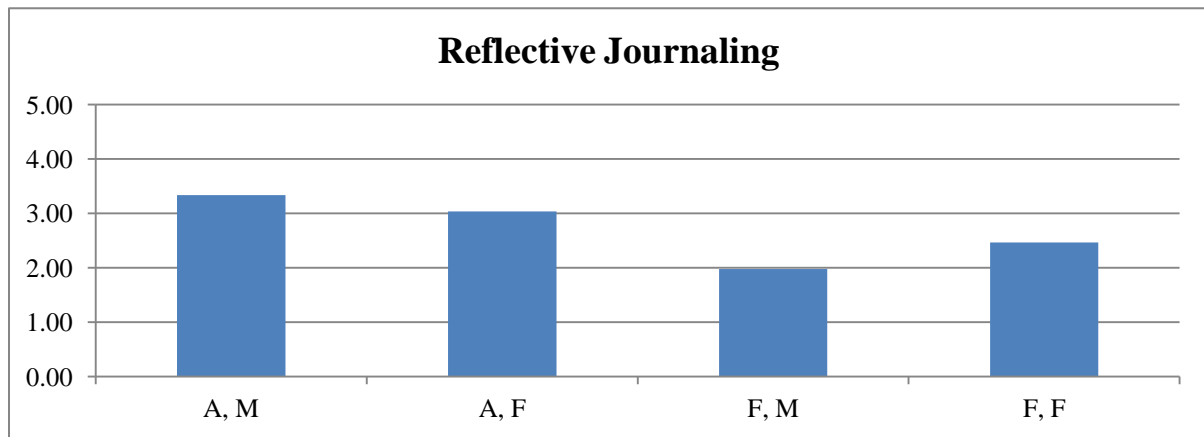
Figure 4-12. Sport role x gender x age interaction

Figure 4-12 indicates higher practice frequency of sport for aspiring leaders compared to formal leaders, specifically within the male, traditional-age category. Looking within the aspiring

leader group, males tend to practice sport play more frequently than females. Looking within the formal leader group, traditional-age males practice sport play more often than females, but female adult learners practice sport play more frequently than male adult learners.

**Artistic expression.** The main effect of role and the main effect of ethnicity indicated significant influence on the personal practice of artistic expression. Aspiring leaders more frequently exercise artistic expression practices. The minority ethnic group practices artistic expression more often than the white/Caucasian group.

**Reflective journaling.** Significance was found in the interaction of role and gender for the personal practice of reflective journaling. Figure 4-13 illustrates the 2-way interaction.

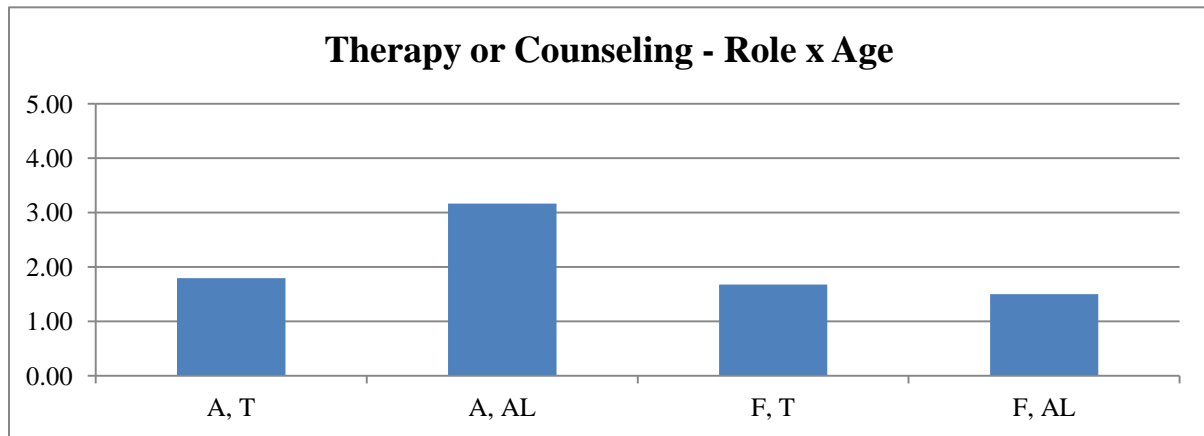


Note: IVs (x-axis) are labeled as: Role (A = Aspiring, F = Formal) then Gender (M=Male, F = Female)  
Figure 4-13. Reflective journaling role x gender interaction

Figure 4-13 indicates that aspiring male student leaders more frequently practice visualization compared to aspiring females and students in formal leadership roles. Females in formal leadership roles practice reflective journaling more frequently than males in formal roles. The greatest reflective journaling difference occurs between aspiring and formal male SLfSD.

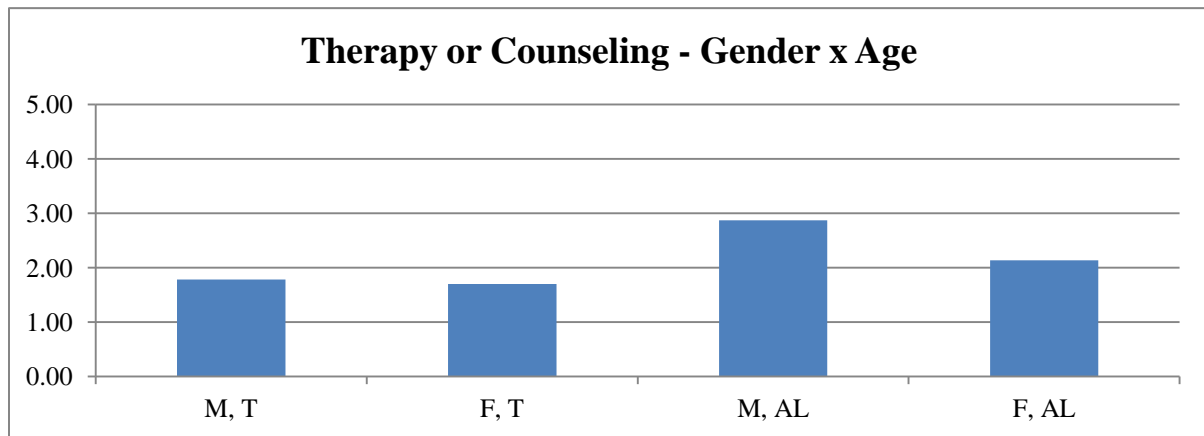
**Self-inquiry.** The personal practice of self-inquiry (awareness of personal thoughts, emotions, and values) was not found to be significant in the overall multiple regression model therefore analyses are not interpreted. However, other researchers may want to consider exploring the main effect of age on the practice of self-inquiry. The interaction of role and age may also be further researched as significance was indicated.

**Therapy or counseling.** The main effect of age was significant for the personal practice of therapy/counseling. Significance was also found in the interaction of role and age for the personal practice of therapy/counseling. Figure 4-14 illustrates the 2-way interaction.



Note: IVs (x-axis) are labeled as: Role (A = Aspiring, F = Formal) then Age (T=Traditional, AL = Adult Learner)  
 Figure 4-14. Therapy/Counseling role x age interaction

Figure 4-13 indicates that aspiring leaders in the adult learner category are more likely to practice therapy/counseling than aspiring traditional-age students and SLfSD in formal roles. Within formal roles, traditional-age students practice therapy/counseling slightly more often than formal adult learners. Significance was also found in the interaction of gender and age for the personal practice of therapy/counseling. Figure 4-15 illustrates the 2-way interaction.

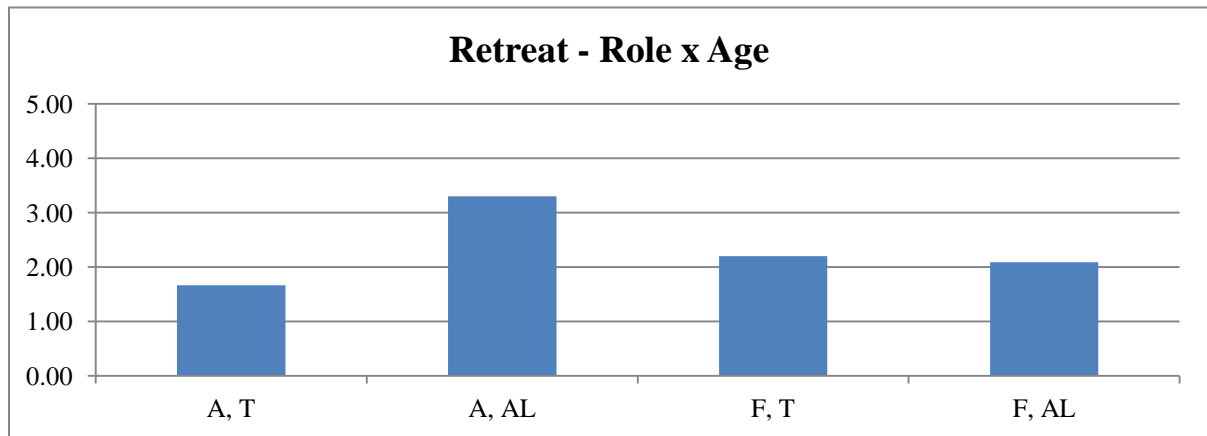


Note: IVs (x-axis) are labeled as: Gender (M = Male, F = Female) then Age (T = Traditional, AL = Adult Learner)  
 Figure 4-15. Therapy/Counseling gender x age interaction

Figure 4-15 indicates that male adult learner SLfSD more frequently practice therapy/counseling compared to the female adult learner and the traditional-age male SLfSD. Males

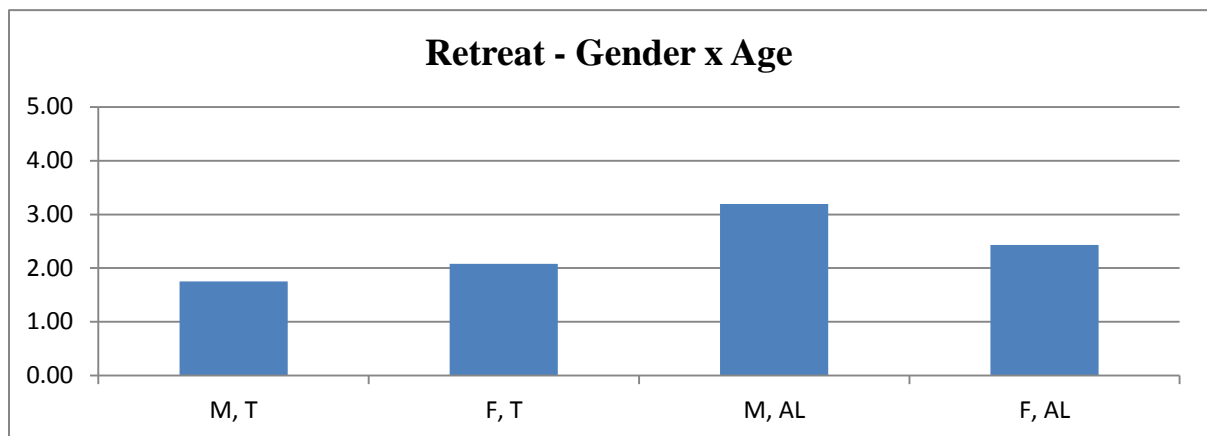
tend to practice therapy/counseling more often than females, among the two age categories.

**Retreat.** The main effects of role and age were significant for the personal practice of retreat. The personal practice of retreat may also include attending workshops or excursions. Significance was also found in the interaction of role and age for the personal practice of retreat. Figure 4-16 illustrates the 2-way interaction.



Note: IVs (x-axis) are labeled as: Role (A = Aspiring, F = Formal) then Age (T=Traditional, AL = Adult Learner)  
 Figure 4-16. Retreat role x age interaction

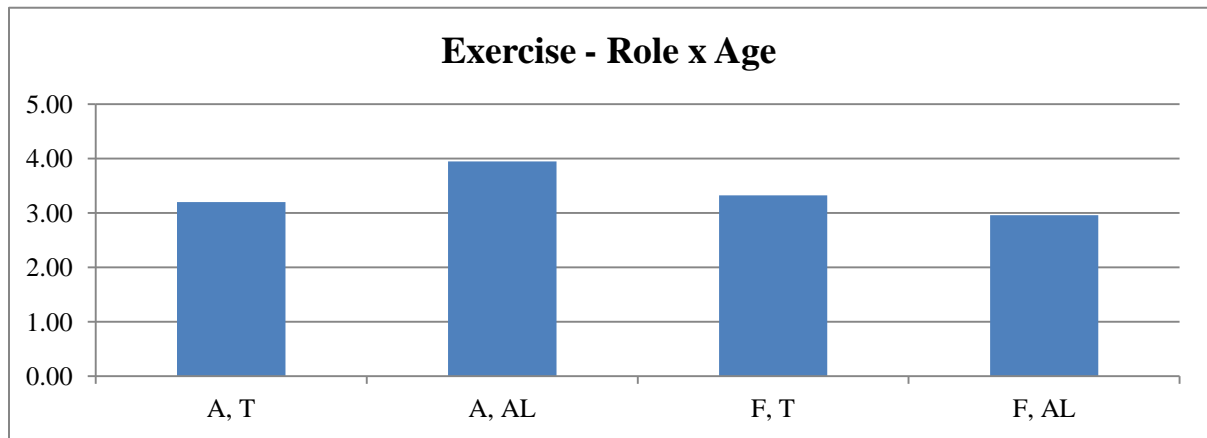
Figure 4-16 indicates that aspiring leaders in the adult learner age category are more likely to practice retreat/workshop/excursions than aspiring traditional-age students and SLfSD in formal roles. Within formal roles, traditional-age students practice retreat/workshop/excursions slightly more often than formal adult learners. Significance was also found in the interaction of gender and age for the personal practice of retreat. Figure 4-17 illustrates the 2-way interaction.



Note: IVs (x-axis) are labeled as: Gender (M = Male, F = Female) then Age (T = Traditional, AL = Adult Learner)  
 Figure 4-17. Retreat gender x age interaction

Figure 4-17 indicates that adult learner-age male SLfSD more frequently practice retreat/workshop/excursion compared to the female adult learner and the traditional-age students. Looking at the traditional-age category, females tend to practice retreat/workshop/excursion more often than males.

**Exercise.** The main effect of age was significant for the personal practice of exercise. The personal practice of exercise may involve lifting weights, performing aerobic exercises, or attending group fitness classes. Significance was also found in the interaction of role and age for the personal practice of exercise. Figure 4-18 illustrates the 2-way interaction.

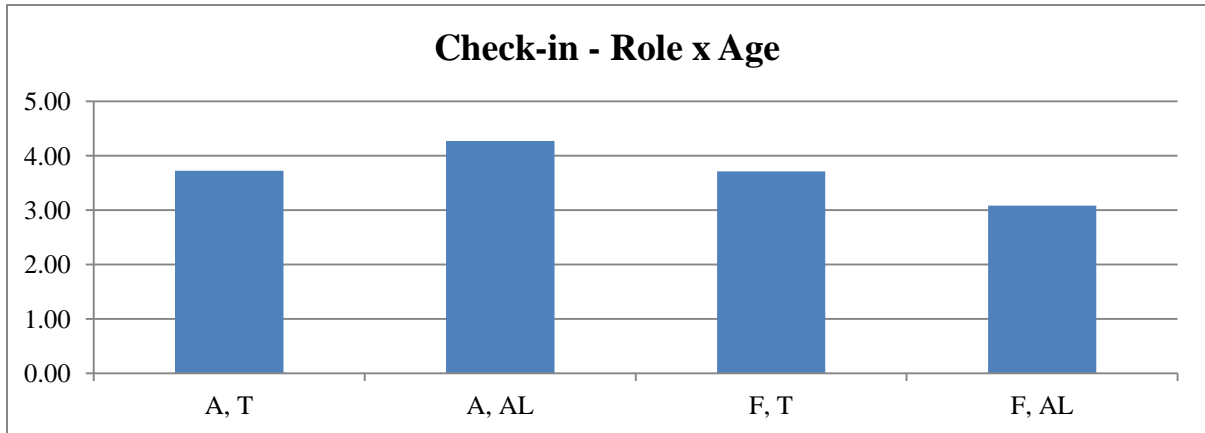


Note: IVs (x-axis) are labeled as: Role (A = Aspiring, F = Formal) then Age (T=Traditional, AL = Adult Learner)  
 Figure 4-18. Exercise role x age interaction

Figure 4-18 indicates that aspiring leaders in the adult learner age category are more likely to practice exercise than aspiring traditional-age students and SLfSD in formal roles. Within formal roles, traditional-age students practice exercise slightly more often than formal adult learners.

**Games.** The main effect of role indicated significant influence on the personal practice of game play. Game play may include games such as board games, crossword puzzles, Sudoku, and video games. Aspiring leaders more frequently exercise game play practices.

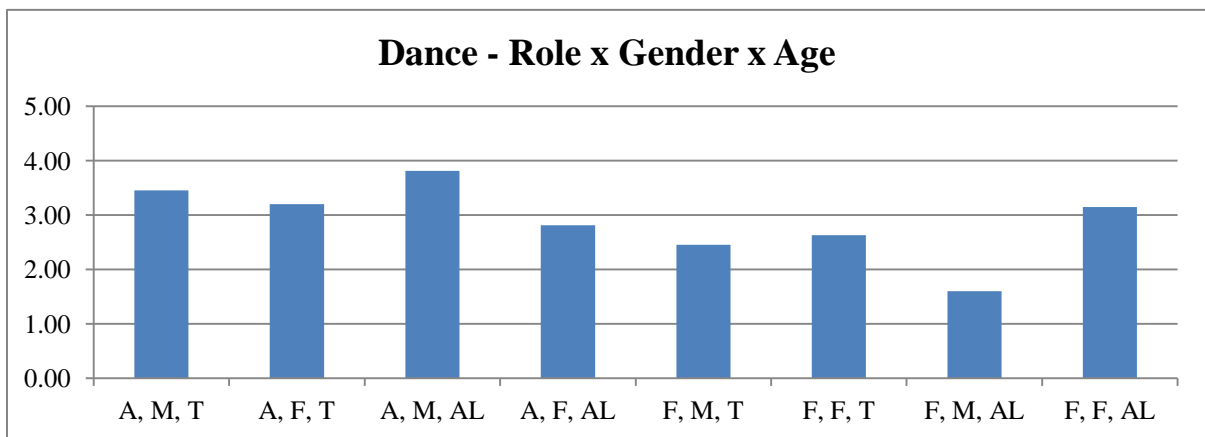
**Check-in.** The interaction of role and age was significant for the personal practice of checking-in. The personal practice of check-in may involve managing time, creating lists, and setting goals. Figure 4-19 illustrates the 2-way interaction.



Note: IVs (x-axis) are labeled as: Role (A = Aspiring, F = Formal) then Age (T=Traditional, AL = Adult Learner)  
 Figure 4-19. Check-in role x age interaction

Figure 4-19 indicates that aspiring leaders in the adult learner age category are more likely to exercise check-in practices than aspiring traditional-age students and SLfSD in formal roles. Within formal roles, traditional-age students practice check-in activities more often than formal adult learners.

**Dance.** Significance was found in the interaction of role, age, and gender for the personal practice of dance. Figure 4-20 illustrates the 3-way interaction.

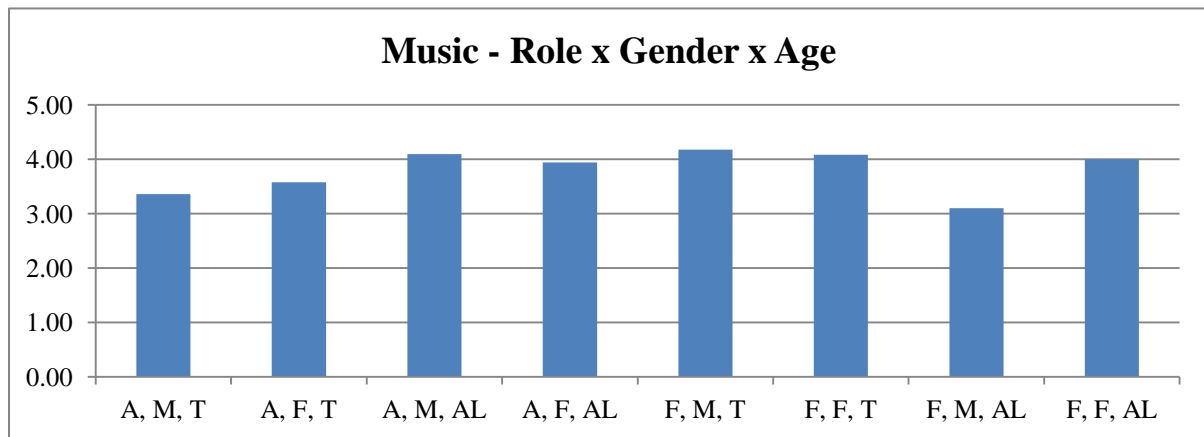


Note: IVs (x-axis) are labeled as: Role (A = Aspiring, F = Formal), Gender (M=Male, F = Female) then Age (T = Traditional, AL = Adult Learner)  
 Figure 4-20. Dance role x gender x age interaction



Figure 4-20 indicates higher practice frequency of dance for aspiring leaders compared to formal leaders, specifically within the male, adult learner category. Looking within the aspiring leader group, males tend to practice dance more frequently than females. However, when looking at the formal leader category, females practice dance more frequently than males. Formal, traditional, and adult learner males practice dance less frequently than their female counterparts.

**Music.** Significance was found in the interaction of role, age, and gender for the personal practice of music. Practices of music may involve listening to music, singing, or playing an instrument. Figure 4-21 illustrates the 3-way interaction.

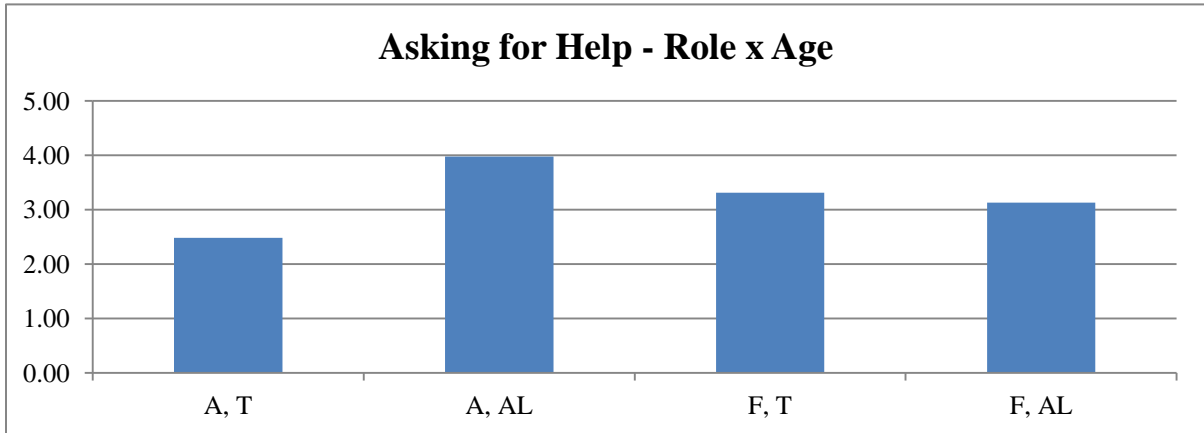


Note: IVs (x-axis) are labeled as: Role (A = Aspiring, F = Formal), Gender (M=Male, F = Female) then Age (T = Traditional, AL = Adult Learner)

Figure 4-21. Music role x gender x age interaction

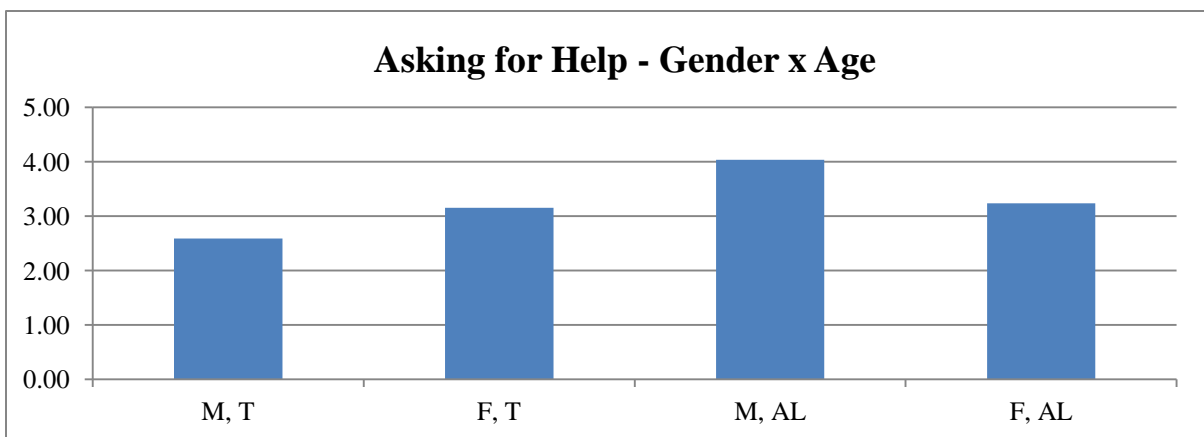
Figure 4-21 indicates higher practice frequency of music for formal male traditional-age leaders compared to formal males in the adult learner category. Aspiring female traditional leaders exercise music practices more frequently than aspiring male traditional leaders. Aspiring adult learner males tend to practice music activities more frequently than aspiring traditional-age males. Among adult learner-age formal leaders, females exercise music practices more frequently than males.

**Asking for help.** The main effect of role and the main effect of age indicated significant influences on the personal practice of asking for help. The practice of asking for help may include having a mentor, coach, or collaborator, participating in a dialog circle, or reaching out to others than may help in the development of personal capacities. The interaction of role and age was significant for the personal practice of asking for help. Figure 4-22 illustrates the 2-way interaction.



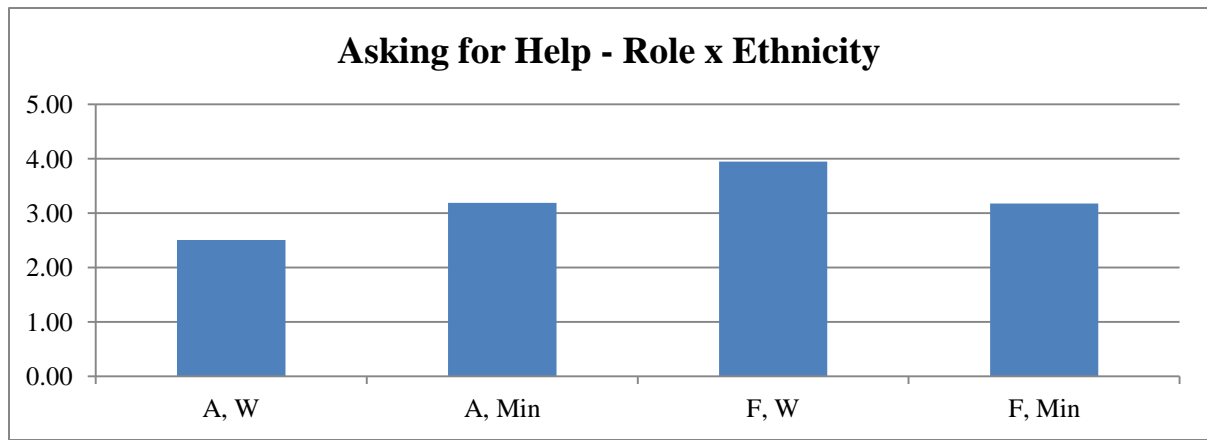
Note: IVs (x-axis) are labeled as: Role (A = Aspiring, F = Formal) then Age (T=Traditional, AL = Adult Learner)  
 Figure 4-22. Asking or Help role x age interaction

Figure 4-22 indicates that aspiring leaders in the adult learner category are more likely to exercise practices involving asking for help than aspiring traditional-age students and SLfSD in formal roles. Within the formal role category, traditional-age students practice help-asking more often than adult learners. Significance was found in the interaction of gender and age for the personal practice of asking for help. Figure 4-23 illustrates the 2-way interaction.



Note: IVs (x-axis) are labeled as: Gender (M = Male, F = Female) then Age (T = Traditional, AL = Adult Learner)  
 Figure 4-23. Asking for Help gender x age interaction

Figure 4-22 indicates that adult learner-age male SLfSD more frequently practice asking for help compared to the female adult learner and the traditional-age students. Looking at the traditional-age category, females tend to practice asking for help more often than males. The gender by age interaction results of asking for help are similar to the interactions found in the practice of retreat/workshop/excursion. Significance was found in the interaction of role and ethnicity for the personal practice of asking for help. Figure 4-24 illustrates the 2-way interaction.



Note: IVs (x-axis) are labeled as: Role (A = Aspiring, F = Formal) then Ethnicity (W = Whites/Caucasians, Min. = Minority)

Figure 4-24. Asking for Help role x ethnicity interaction

Figure 4-24 indicates that white/Caucasian SLfSD in formal leadership roles more frequently practice asking for help actions compared to the minority ethnic group. Looking at the aspiring leader role category, minorities tend to practice asking for help more often than whites/Caucasians. A significant ethnicity interaction was only present in the practice of asking for help.

### Chapter Summary

This chapter presented the results of the exploratory study and addressed the four research questions. Results of this study indicated that scores of leadership personal capacities are influenced by the demographic categories of age, gender, and ethnicity, and in some cases the interaction of these variables. The interaction of role, age, and gender was significant for the leadership personal capacity of Optimism. Leadership style scores were also influenced by the main effects and interactions (within transformational and transactional style scores) involving role, age, gender, and

ethnicity. Comparing the scaled figures of 4-3 and 4-4 it may be inferred that SLfSD possess higher levels of transformational leadership characteristics than transactional characteristics.

Personal practices also varied by the demographic categories of age, gender, and ethnicity, and in some cases the interaction of these variables. Almost all of the suggested personal practices were found to have significant influences by at least one main effect (role, age, gender, or ethnicity) or a combination of the variables. The interaction of role and age was significant for the practices of meditation, spending time in nature, visualization, therapy/counseling, retreat/workshop/excursions, exercise, check-in, and asking for help. The interaction of gender and age was significant for the practices of spending time in nature, visualization, therapy/counseling, retreat/workshop/excursions, and asking for help. However, the interaction of role, age, and gender were significant in martial arts, chanting, sport, dance, and music. Overall, it may be stated that individual dynamic (i.e. demographic make-up) will influence outcomes of leadership personal capacities, leadership styles, and personal practices. Chapter V discusses these findings and suggests implications for informal education.

## CHAPTER V

### DISCUSSION

#### **Introduction**

Strategic education for sustainable development (SESD) was a suggested approach to address sustainable development challenges at the post secondary level of education through informal education. Over-population, lack of uncontaminated natural resources, and consumer behaviors associated with consumption and waste, will soon be topics of ultimate concern. Student leaders who have demonstrated interest and dedication to sustainable development action currently exist in the higher educational system, but little has been known about this group of student leaders until now.

The purpose of this study was to explore the leadership components (leadership roles, personal capacities, and styles) and personal practices of student leaders for sustainable development (SLfSD). Conducting exploratory research to better understand the underlying personal dimensions of SLfSD will allow educators to develop educational programming to cultivate strengths and weaknesses within each formal and aspiring SLfSD. Preparing student leaders who possess the personal capacities to impart sustainable development (SD) change during time in academia and in the workforce may ultimately assist in the development of strategies that will allow nations to move on to processes of growth for SD (WCED, 1987). SLfSD possess the potential to lead students and other followers by bringing SD to the forefront of campus issues and rally support to address and resolve sustainability issues of the present and future.

Findings from this study provided a baseline of knowledge pertaining to SLfSD. This study was not designed to form absolute statements or create conclusive evaluations about SLfSD, but to form a foundation of rich and meaningful information upon which future formal and informal programming and qualitative and quantitative research may be developed. This study provided a formative descriptive assessment of SLfSD and was guided by the following exploratory research questions:

1. How does the association of leadership role with leadership personal capacities and leadership styles vary by age, gender, and ethnicity?
2. Among the specified personal practices, how frequently do SLfSD exercise each practice to support their development, by age, gender, and ethnicity?
3. Among the specified personal practices, which do SLfSD prefer to exercise to support their development, by age, gender, and ethnicity?
4. How does the association of leadership role with frequently exercised personal practices vary by age, gender, and ethnicity?

Chapter five is divided into three sections. The first section discusses some of the key findings of this study and recommends suggestions for programming opportunities. The second section outlines recommendations for future research. The chapter ends with concluding remarks.

### **Discussion and Implications**

Leaders have the potential to influence change and move others toward a common goal. A recent study found that college students who have shown interest in making a positive difference in society are participating in leadership development (Ingleton, 2013). The desire to make a positive difference expressed by these students may be connected to any social movement including sustainable development (SD). As recent research has demonstrated the current action of student leader development, a more in depth understanding of the leader's characteristics was warranted, especially of those student leaders advocating for SD. The findings from this study suggested personal capacities and leadership style areas that may be cultivated within SLfSD via programming

involving preferred and/or frequently exercised personal practices. SLfSD not only possess varying leadership components and personal practices, but also possess varying demographic characteristics, specifically within age, gender, and ethnicity categories. Significant main effects of the demographic categories of age, gender, and ethnicity as well as interactions of these demographics were found to be influential on leadership personal capacity, leadership style, and personal practice scores. As each of the research questions asked demographic (age, gender, & ethnicity) information, these demographic variations are discussed within each key finding discussion section.

Research questions 1 and 4 ask the association of leadership roles on outcomes. Looking at the leadership role sample as an overall group (table 4-1) it may be inferred that minorities may need leadership development programming to transition from the aspiring leader to a formal leader because of the difference in ethnic representation between these two groups. Ethnically diverse (minority) leaders have shown to possess high transformational leadership qualities (Hsieh, 2010), therefore, supporting minority individuals to hold formal leadership roles may prove to be beneficial for successful group work. Miles (2011) indicated that student organizations may benefit from adult learners holding formal leadership roles and bringing their perspectives and experiential wisdom to group exchanges, however few adult learners hold these formal leadership roles. This study indicated that adult learners might need development programming to increase involvement as both aspiring and formal leaders, because as age increased involvement decreased.

### **Leadership Personal Capacities**

Many of the leadership personal capacities were significantly influenced by the main effect of role, age, gender, or ethnicity. The leadership personal capacities of Optimism and Confidence: Perseverance were significantly influenced by the interaction of these main effects. Optimism was influenced by the interaction of role, age, and gender. Upon further examination of figure 4-1 it may be inferred that aspiring leaders possess higher level of Optimism, but upon transferring into the formal leader role, Optimism decreases, specifically for traditional-age male students. Among the formal leaders, slight differences exist between the age and gender categories. Therefore, it may be

inferred that upon acquiring a formal leadership role, student's Optimism decreases indicating that formal leaders may face leadership challenges, possibly institutional structure/policy challenges or group management challenges, which may require programming assistance and support to rejuvenate optimism to lead for SD.

Findings for Confidence: Perseverance indicate that scores are influenced by the interaction of role and age. For aspiring leaders, Confidence: Perseverance levels increase as age increases, however for formal leaders these levels decrease as age increases. This change in Confidence: Perseverance levels may infer that younger (traditional-aged) students possess higher self-confidence in their abilities to persevere when faced with challenges, where adult learner's levels are dampened in similar challenging situations, particularly upon transition from the aspiring leader to the formal leader role. Therefore, it may be inferred that adult learners, particularly, possess lower levels of Confidence: Perseverance and may benefit from programming that would boost confidence and perseverance when faced with challenges. It is important to note that although aspiring traditional student leaders possess increasing values of Confidence: Perseverance upon transition into the formal role and adult learners' Confidence: Perseverance levels decrease upon role change, the overall sample possess very low averages of Confidence: Perseverance compared to Optimism levels (comparing figures 4-1 and 4-2; mean score comparisons in table 4-2). Therefore, it may be suggested that all SLfSD may benefit from programming to increase one's confidence to persevere when faced with challenges. Challenges that SLfSD might be facing is lack of peer support, inadequate ability to deal with difficult people, challenges with balancing of academic work and SD initiative development, or personal issues that are influencing the student's self confidence and ability to persevere. One example of programming that may boost Confidence: Perseverance could involve unit workshops with specialists who focus in stress identification and management that may trigger low self-confidence: perseverance.

Findings indicate that role and age influence Continual Improvement scores. The difference between these demographic main effects (role and age) poses potential for programming



opportunities of partnering/pairing formal adult leaders with aspiring traditional leaders for Continual Improvement personal capacity cultivation. The formal adult leader may serve as a mentor to the aspiring traditional student to share experiences and benefits of participating in self-improvement activities. Programming facilitators may assist the mentorship relationship by organizing and promoting continual improvement activities. One example of a continual improvement activity may include watching a documentary on evolution and adaptation followed with group or mentorship structured dialogue.

**Support of the SSD Seven Personal Capacity Model.** The leadership personal capacities that emerged through factor analysis indicated capacity description similarities with the SSD model proposed by Baan, Long, and Pearlman (2011) (see Appendix E). Even though the samples varied drastically, in methodological approach (qualitative vs. quantitative) expertise (expert vs. novice), and sample size (N=8 vs. N=293), the findings indicated potential for inferring connections between SD leaders, in early and established developmental stages. Therefore, it may be inferred that SLfSD possesses similar personal capacities as those of experts for SSD. It may also be inferred that through leadership personal capacity cultivation (via programming) at the collegiate level, SLfSD may possess higher levels of 'being' (self-mastery of internal relationship with others, self, and life) compared to present-day SSD experts, which may lead to more efficient and effective SD transformation.

It is important to remind the reader that low reliability of the leadership personal capacity scale/measure is a limitation to this study. As the SSD seven personal capacity model was supported through the findings of this study, a merged scale that incorporates Baan, Long, and Pearlman's (2011) factors may provide stronger reliability upon which concrete leadership personal capacity conclusions may be drawn.

### **Leadership Styles**

Christiano and Robinson (1982), support the identification of a leader's style for individualized developmental educational opportunities. This study identified SLfSD leadership

styles with the intention of recommending and developing programming that will cater to this group of individuals (SLfSD) for improved leader-follower outcomes. The three leadership styles (transformational, transactional, and passive/avoidant) were significantly influenced by the main effects or interactions of role, age, gender, or ethnicity. Previous literature would suggest that gender (as an exclusive IV) would influence transformational leadership style scores (Bass et al., 1996), however, in this study the interaction of role, age, and gender influenced outcomes. Therefore, this study would suggest that when assessing leadership styles, one must consider role and age in addition to gender when drawing characteristic conclusions of transformational leaders. Figure 4-3 illustrates the greatest difference among the SLfSD sample between formal traditional-age males and formal adult learner males, indicating that programming geared toward formal male leaders may be needed to “optimize individual, group and organizational development” (Avolio & Bass, 2004, p. 101).

Hsieh (2010) indicated that culture (ethnicity and organization) might be one of the most important variables that influence transformational leadership style and perception. According to this study, ethnicity was found to be most influential on transactional leadership scores, particularly amongst aspiring and formal leaders. This suggests that minorities in formal leadership roles are more likely to lead in an approach where expectations are defined and performance is promoted and rewarded (Avolio & Bass, 2004). Programming may assist the minority population, in particular, to move beyond contingent reward and management-by-exception (active) leadership techniques to those that are more transformational and supportive of others’ growth and needs through individualized consideration (for example).

SLfSD possess low levels of passive/avoidance. These low passive/avoidant levels are not surprising because the sample in this study were taking action for SD by attending the AASHE annual conference. Individuals who possess high levels of passive/avoidant characteristics would avoid addressing or acknowledging such SD issues in higher education and would not take action to address issues or concerns. All SLfSD passive/avoidant scores were low (compared to transformational and transactional leadership scores; see table 3-7), but aspiring leaders and males indicated a greater

likelihood to possess passive/avoidant characteristics (see table 4-6). Because aspiring SLfSD may be more likely to act in a passive/avoidant nature, programming may be developed to assist aspiring (and male) leaders to identify and manage conflict and build confidence regarding decision-making and responsibility.

It has been determined that most leaders have a profile of the full range of leadership that includes characteristics of all leadership styles (Bass & Steidlmeier, 1999). Based on the findings from research question 1, it may be inferred that SLfSD are more transformational (particularly male adult learners in formal leadership roles) than transactional and passive/avoidant. This is not to say or label SLfSD as transformational, transactional, or passive/avoidant, because leaders possess all styles depending upon the context of the leadership situation.

### **Personal Practices**

Literature supports personal practices to enhance an individual's (intrinsic and extrinsic; psychological and physical; mind, body, and spirit) development (Baan et al., 2011; Wheatley, 1999). This study built on the work of Baan, Long, and Pearlman (2011) that identified specific practices that SSD experts exercise to cultivate individual personal capacities. However, it was unknown if and to what extent SLfSD exercised the proposed personal practices.

**Practice vs. preference.** Comparing table 4-7 to 4-8, mean frequencies of personal practices may be contrasted to preferred personal practice ranks to determine how preference and action of personal practices align (or not). For example the group of traditional-aged minority females (practice of checking-in) and traditional-aged white/Caucasian males (practice of music) exercise their preferred practices. However, the remaining sample groups' preferred personal practices did not align with their frequently exercised practices (i.e. SLfSD are not currently exercising the practices that they would prefer). This misalignment of preferred versus exercised personal practices for the majority of SLfSD is thought provoking because therein lies the question of "why." Why are SLfSD not exercising the personal practices that they prefer? The highest-ranking personal practice was spending time in nature (receiving top-3 rankings in 4 out of 18 ranking possibilities). However,

spending time in nature ranked eighth overall among mean scores for currently exercised personal practices. What might be inhibiting SLfSD from exercising this personal practice? May this lack of spending time in nature be due to varying factors such as power and access to resources, geographical location, transportation to/from nature, or possibly even definition of spending time in nature (e.g. one individual may consider walking around the neighborhood as spending time in nature, while another individual may consider spending time in nature as a weekend camping at a national park). It may be interesting to explore SLfSD definitions of time and nature and personal capacity expectations for spending time in nature. Additionally, high rankings of spending time in nature identified by SLfSD for preferred practice may be biased. This bias of preference may be due to the constructed ideals that as SLfSD they should respect and spend time in nature. The AASHE conference setting may have encouraged meaning formation (i.e. symbolic interactionism) for this personal practice preference. Furthermore, the differences between preferred and exercised personal practices may serve as a starting point to explore and identify larger, broader differences (beyond demographic distinctions) such as resource availability.

**Dynamics of personal practices.** Research question 4 asked how the association of role influences personal practice frequency outcomes. Multivariate regression indicated that all personal practices (except for self-inquiry) were significantly influenced by the main effects of role, age, gender, or ethnicity or the interaction of the demographic variables. As numerous personal practices were found to be significant through multivariate analysis, only the top three significant personal practices (through overall mean score comparisons, see table 4-7) will be discussed. These three personal practices are: 1) check-in (e.g. managing time, creating lists, and setting goals;  $M=3.85$ ), 2) music (e.g. listening to music, singing, or playing an instrument;  $M=3.77$ ), and 3) relaxation exercises (e.g. paying attention to breath, stress decreasing exercises;  $M=3.38$ ).

Check-in personal practice frequency scores were influenced by the interaction of role and age. Upon further examination of figure 4-19 it may be inferred that aspiring leaders exercise check-in practices more frequently than formal leaders, however it is unclear why this practice would

increase with age for aspiring leaders but decrease by age for formal leaders. It could be assumed that the process of setting goals, managing time, and making lists are practices that would remain constant regardless of role or age.

The personal practice of music frequency scores were influenced by the 3-way interaction of role, gender, and age. The high mean scores for music frequency may be attributed to availability of technology that increases access to and portability of music (i.e. music downloads or streaming, data phones, portable music devices).

The main effects of role and ethnicity indicated that aspiring leaders and minorities practice relaxation exercises more frequently than formal leaders and whites/Caucasians. Based on the mean scores for each parameter (see table 4-7), it may be suggested that relaxation techniques may be emphasized in culturally diverse upbringings and therefore practiced frequently present-day.

Findings from this study indicate need for identification of demographic differences (dynamics) of informal and formal group members to effectively develop SLfSD programming. Table 4-8 is suggested for use to identify which practices could be integrated into programming for formal and informal settings. For example, a student organization advisor may be looking to develop a program to address the SLfSD personal capacity of Confidence: Perseverance to increase self-confidence and perseverance levels for a student organization comprised of white/Caucasian, female, adult learners. The advisor would use the SLfSD personal practice-ranking table to identify preferred practice for this parameter and see that white/Caucasian, female, adult learners would prefer to engage in yoga, self-inquiry exercises, and ask for help. The advisor may find that for program development to build Confidence: Perseverance levels, attending a resource fair and visiting with resource professionals may be most effective for this student group. Whereas, for example, asking for help activities would not be suitable for traditional-age minority males. It is noteworthy to identify that students may lead and organize these educational opportunities (SD programs) in addition to advisors and other professional educators as indicated in the work by Helferty & Clarke (2009).

It is also important to note that Transformative Sustainability Learning (TSL) framework provides a good model for program development to cultivate leadership personal capacities and leadership styles for SLfSD and group collaboration. The TSL framework aims to educate with the intention of transforming knowledge, attitudes, and behaviors (i.e. leadership component characteristics) of individuals with a particular frame of reference (i.e. sustainable development) by engaging cognitive, psychomotor, and affective learning domains (i.e. personal practices).

### **Recommendation for Future Research**

A section for future research pertaining to comparisons of SLfSD with undeclared student leaders (i.e. student leaders who do not specifically identify as one who acts on behalf of sustainable development; non-SLfSD) is not specifically outlined below. However, it may be suggested that all data gathered from future SLfSD studies be compared to data of non-SLfSD.

#### **Leadership Component Future Research**

**SLfSD leadership personal capacity scale.** Further research is needed to validate the SLfSD leadership personal capacities that emerged through factor analysis. Although the Seven personal leadership capacities to facilitate co-learning and co-creation in SSD was supported by the SLfSD leadership personal capacities, it is necessary to conduct additional research to validate these capacities. As noted earlier, a revised leadership personal capacity scale may yield more reliable findings, but this scale would need to be developed and extensively tested prior to making concrete conclusions regarding SLfSD or other SSD experts. It is suggested that further research to validate the leadership personal capacity scale be conducted with student AASHE attendees or with SLfSD on collegiate campuses.

In addition to validating the SLfSD leadership personal capacity scale, Baan, Long, and Pearlman (2011) conceptualized two additional personal capacities (sense of wonder and dealing with paradoxes) that were identified through extended expert interviews. These additional personal capacities may be worth exploring with the SLfSD population and incorporated into the recommended revised scale.

**Qualitative approaches to SLfSD research.** Qualitative work by Baan et al. (2011) involved interviewing facilitative sustainability experts in industry. Experts were asked specific questions for reflection regarding: the capacities that were useful in work, the definition of capacities under review, the exercise used to develop the capacity themselves, and the capacities that were missing from the conceptual model. Qualitative research to further identify leadership personal capacities and underlying factors may be achieved through in-depth interviews structured similarly to Baan, Long, and Pearlman (2011). Exploration of *The Lotus – A Practice Guide for Authentic Leadership in SSD*, is suggested for qualitative (interview) structure assistance.

Qualitative SLfSD research may be approached by case study methodology as in the research conducted by Armstrong and LeHew (2013). Armstrong and LeHew examined the perceived impact of a course (formal education) that was reframed for sustainability using the ESD framework. A case study approach similar to Armstrong and LeHew (2013) may be a viable option for formal education analysis of SD from a student leadership influence perspective. Qualitative SLfSD research, in conjunction with quantitative SLfSD research, may additionally contribute to collegiate SD literacy.

**Personality and leadership.** Terminology discrepancies exist when attempting to clearly explain personal capacities and leadership styles, as common underlying themes exist. Further research is needed to explore the relationship between personality type/traits and leadership personal capacities of SLfSD.

Many studies have been conducted that sought to identify leader personality traits and the relationship of personality variables to leadership, but these findings are inconsistent (Judge, Bono, Ilies, & Gerhardt, 2002). A dilemma that challenges leadership research (leadership personal capacity and leadership style research) is the inconsistent labeling or terminology use to describe personality characteristics/traits. This terminology dilemma indicates the lack of structure in describing personality, leading to a wide range of traits being investigated under different labels. Upon identifying SLfSD personality traits (e.g. via *Big Five* personality test), it would be reasonable to seek relationships between the personality traits and leadership styles. Continuing use of the MLQ to

identify SLfSD leadership style would be suited for comparison with the present study. It would also be beneficial to expand MLQ leadership style analysis to consider ‘emergence’ and ‘effectiveness’ of the leader, as the *Big Five* considers these two points as qualifying leadership criteria.

Bass and Stogdill (1990) noted, any personality trait’s effect on leadership behavior will depend upon the situation. Symbolic Interactionism identity theorist, Stryker (2007), also pointed out the discrepancy in terminology between role and personality stating, “to ignore either (role/identity or personality) is to limit the potential for understanding and explaining human behavior” (p. 1095). Research is needed to identify relationships between leadership components (personal capacities and styles) and identity-as-role and identity-as-traits.

### **Personal Practice Future Research**

**Personal practice categories.** Research supports practice for personal capacity development (Baan et al., 2011; Wheatley, 1999). Further exploration and identification of personal practices used by SLfSD will assist in the specific linkage of leadership personal capacity to personal practice for developmental programming. Facilitative SSD experts identified the practice(s) exercised specifically for cultivation of an individual personal capacity (Baan et al., 2011). Additional SLfSD personal practice research is warranted, possibly through qualitative methodology, to identify relationships between leadership personal capacities and personal practices.

In order to analyze relational possibilities, it may be beneficial to condense individual personal practices into practice areas (based upon underlying themes). One example of a combined theme may be Energy Practices, which may include the personal practices of martial arts, sports, and energy work (statistical support for practice theme inclusion would need to be initially determined).

Upon clarification of underlying descriptions (i.e. the terminology dilemma) of the leadership styles, relational research that explores the connections between leadership personal capacities, leadership styles, and personal practices may be meaningful.



## **Concluding Remarks**

The increasing complex global sustainability challenge that society is facing today calls for leaders that are skilled in collaborative SD change. It is not easily predicted how social, environmental, and economic modifications will affect the global system. Research has contended that for group change, leaders that possess the capacities to encourage collaboration will be more effective dealing with complex challenges (Brown & Hamburger, 2012) and therefore in helping move society toward sustainability (Baan et al., 2011). Leaders equipped with mastery of personal capacities possess the abilities to intensely engage group members with a holistic understanding of self, others and society (Baan et al., 2011). Therefore, personal capacity and leadership development is vital.

In an attempt to develop or enhance leadership skills and competencies, educators and scholars of student leadership have suggested focused leadership training programs (Ingleton, 2013). Ingleton (2013) proposed that a leadership development program, rooted in the theoretical concept of transformational leadership, may not only develop the leadership capacities of students but also equip students with the skills to bring about positive change in local, national, and international contexts. The current research suggests that SLfSD possess dynamic capacities and preferences that can impact the necessity for and effectiveness of programming.

It is important to reiterate that the ability to connect with one's self and to others takes time (i.e. identifying and cultivating personal capacities within the human dimension of engagement). Continuous practice, and ultimately mastery, of personal capacities improves leadership performance of the leader as well as group leadership performance. Literature highlights the importance of self-mastery in leaders and through "increased self-awareness, self-regulation, and positive modeling, leaders foster the development of authenticity (i.e. the true self) in followers" (Avolio & Gardner, 2005, p. 317). Leaders, specifically SLfSD, are in positions where they may model awareness, attitudes, and behaviors and invite followers to do likewise (Avolio & Gardner, 2005). Upon proper leader 'inner work' (personal mastery, personal practice) preparation, a leader will be better equipped

to help followers conduct their own ‘inner work’ so that meaningful and lasting SD change may be achieved (Baan et al., 2011; Bass & Avolio, 1993; Chemers, 2000).

This study contributed to the literature regarding education for sustainable development, transformative student leadership, and overall SLfSD characteristics. Developing SLfSD leadership personal capacities and leadership style techniques may increase levels of self-consciousness and awareness of needs within followers to cultivate SD change. The results of this study may be of interest to SD educators of formal education and advisors of student leadership of informal educational experiences. The design and findings of this study may serve as a model for institutions of higher education and/or student organizations to explore and comparatively assess SLfSD on campus. This study gathered SLfSD leadership component information that will assist in program development and guide future SLfSD research.

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## APPENDICES

### **Appendix A. AASHE Conference Schedule**

Sunday:

**7:00am - 4:00pm** Onsite Registration Open

**8:30am - 4:15pm** Student Summit

7:00-8:00am - Registration and packet pickup opens

8:30-9:00am - Opening welcome

9:00-11:00am - Workshops (led by partner organizations)

11:15-12:15pm - Keynote

12:15-1:15pm - Lunch and networking

1:30-3:30pm - Workshops (led by partner organizations)

3:45-4:15pm - Closing ceremony

Break

5:00-6:30pm - Main conference welcome and Keynote

6:30-8pm - Expo Hall opens

**8:30am - 12:00pm** Morning Pre-Conference Workshops

**1:00pm - 4:30pm** Afternoon Pre-Conference Workshops

**5:00pm - 6:30pm** Welcome and Keynote

**6:30pm - 8:30pm** EXPO Hall Grand Opening Reception

Monday:

**7:00am - 4:00pm** Onsite Registration Open

**7:00am - 9:00am** Breakfast

**8:00am - 9:00am** Concurrent Session A

**9:30am - 10:45am** Parallel Plenary

**11:00am - 12:00pm** Concurrent Session B

**12:00pm - 1:30pm** Lunch

**12:15pm - 1:15pm** Lunch Meetings

**1:30pm - 2:30pm** Concurrent Session C

**2:50pm - 3:50pm** Concurrent Session D

Tuesday:

**7:00am - 12:00pm** Onsite Registration Open

**7:00am - 9:00am** Breakfast

**8:00am - 9:00am** Concurrent Session E

**9:20am - 10:40am** Keynote Address

**11:00am - 12:00pm** Concurrent Session F

**12:00pm - 1:30pm** Lunch

**12:15pm - 1:15pm** Lunch Meetings

**1:30pm - 2:30pm** Concurrent Session G

**2:50pm - 3:50pm** Concurrent Session H

**4:00pm - 4:45pm** Closing Ceremony

**4:45pm - 6:00pm** Networking Meet-Ups

Wednesday:

**8:30am - 4:30pm** Post Conference Workshops and Tours

## Appendix B. Survey Instrument: SLfSD Questionnaire

### Student Leaders for Sustainable Development (SLfSD) Questionnaire

This SLfSD questionnaire has 6 sections and to gather demographic information, leadership role(s) information, your personal capacities and practices, your leadership style, and your personal ability to affect sustainability, as you perceive it. Please answer all items. **If an item is irrelevant, or if you are unsure or do not know the answer, leave the answer blank.**

#### Section A. Demographic Information

Section A consists of 10 general demographic questions. Select from the following list, or write in, as it best describes you:

1. Student Classification
  - a. Freshman
  - b. Sophomore
  - c. Junior
  - d. Senior
  - e. Graduate Student
2. College or University that you currently attend (please write entire name, i.e. South Dakota State University – *NOT*: SDSU)
  - a. Write in
3. Major/Degree path
  - a. Write in
4. Age
  - a. Write in
5. Gender
  - a. Male
  - b. Female
6. Current Cumulative GPA
  - a. Write in
7. Cultural/Ethnic Background (check only one)
  - a. Caucasian/White (i.e. a person having origins in any of the original people of Europe (except Spain and Portugal), North Africa or the Middle East
  - b. Indian Sub-continent (i.e. Afghanistan, Bangladesh, Ceylon, India, Nepal, Pakistan or Sri Lanka)
  - c. Portuguese
  - d. Puerto Rican
  - e. Spanish, Mexican, Cuban, Central or South American
  - f. African American/Black
  - g. Asian (i.e. Chinese, Japanese, Korean, or Philippine)
  - h. Hawaiian (i.e. Hawaiian, Part-Hawaiian, or Samoan)
  - i. American Indian or Alaskan Native, (i.e. persons having origins in any of the original peoples of North America, and who maintain cultural identification through tribal affiliation or community recognition).

8. Religion (check only one)
  - a. Catholic
  - b. Baptist
  - c. Mainline Christian (i.e. Methodist, Lutheran, Presbyterian, Episcopalian/Anglican, United Church of Christ)
  - d. Christian Generic (i.e. Christian unspecified, Non-denominational Christian, Protestant Unspecified, Evangelical/Born Again)
  - e. Pentecostal/Charismatic (i.e. Pentecostal Unspecified, Assemblies of God, Church of God)
  - f. Protestant Denominations (i.e. Churches of Christ, Jehovah's Witness, Seventh Day Adventist)
  - g. Mormon/Latter Day Saints
  - h. Jewish
  - i. Eastern Religions (i.e. Buddhist)
  - j. Muslim
  - k. Other
  - l. None/No Religion (i.e. Agnostic, Atheist)
9. Yearly Income – Your personal income (write in)
  - a. Write in
10. Yearly Income – Family of Origin (i.e. household before attending college)
  - a. Write in

## **Section B. Student Organization Activity and Leadership Role(s)**

Section B consists of one question where you identify the student organization(s) or club(s) that you are involved with and your role within each of these organizations.

1. List all student organization that you are involved with and select your role within each of these organizations.
  - a. Write in & Choose from following Role list
    - i. President
    - ii. Vice President
    - iii. Other Elected Officer Position
    - iv. Chairperson of Committee
    - v. Club representative to student government (at-large)
    - vi. Member (Nominated by other)
    - vii. Member (Self-Volunteer)
    - viii. Member (Specifically advocating for SD)

### Section C. Leadership Personal Capacities

Descriptive statements are listed in Section C. Judge how frequently each statement fits you. The word “others” may mean your friends, peers, student organization members, advisors, and/or all of these individuals.

Use the following rating scale:

Not at all	Once in a while	Sometimes	Fairly often	Frequently, if not always
0	1	2	3	4

1. I put differences aside so that I can attend to the situation at hand
2. I act upon my first instinct with little reflection
3. I usually play it safe and avoid risks
4. When working, my mind is “in flow”
5. I try to put a positive “light” on negative situations
6. I dedicate my time to working with others to build their personal capabilities
7. I commit to making my dreams a reality
8. The person I am today, is the same person I will be in 20 years
9. I happily devote my time to group functions/activities
10. I research and ask questions before acting
11. I realize that some things are out of my control
12. Before taking action, I tend to weigh options and possible outcomes
13. I’m often afraid that my opinions aren’t worth sharing
14. I am conscious of my goals and have developed a plan to achieve them
15. I have a vision of a better future
16. I work through my thoughts by discussing them with others
17. I enjoy working by myself rather than with a group
18. I tend to bring others’ perspectives into discussions
19. I consider myself a generous person
20. I let the collective opinion of the group affect my own decisions
21. I admit when I make a mistake, and I take actions to correct my wrong
22. I genuinely wish to know the opinions and thoughts of others
23. I support and inspire others
24. I give up too easily when I hit roadblocks
25. I accept that my relationships (personal and professional) will change over time
26. I’m good at helping others realize their potential
27. I accept my personal strengths and weaknesses
28. I struggle conveying the value of my ideas to others
29. I put my interests first, and others’ interests second
30. I am effective in promoting change within my group
31. I welcome new experiences
32. I have difficulty accomplishing tasks on time
33. I think of myself as an intuitive person
34. I consciously put myself in challenging situations to push my limits
35. I am easily distracted
36. When my plans don’t work out as I hoped, I view it as a learning opportunity and try again

**Section D. Personal Practices**

Please select all of the practices you have engaged in during the time that you have been involved with your student organization(s). These practices may be to advance or “hone” your personal capacities or help you to focus your “inner state.” Also, please rate the frequency of use for each selected practice.

<b>Not at all</b>	<b>Once in a while</b>	<b>Sometimes</b>	<b>Fairly often</b>	<b>Frequently, if not always</b>
0	1	2	3	4

- a. Meditation/ Mindfulness/ Silence
- b. Relaxation exercises/ Attention to Breath
- c. Yoga or Tai Chi
- d. Martial arts
- e. Chanting
- f. Spending time in nature (by self or with others)
- g. Energy work (i.e. gardening, construction, yard work, etc.)
- h. Visualization/Guided imagery
- i. Sport (individual or team sports)
- j. Artistic expression
- k. Reflective journaling
- l. Self-inquiry (awareness of personal thoughts, emotions, and values)
- m. Therapy or counseling
- n. Retreat/Workshop/Excursion
- o. Exercise (i.e. lifting weights, aerobics, group fitness classes)
- p. Games (i.e. board games, crossword puzzles, Sudoku, video games, etc.)
- q. Check-in (i.e. managing time, creating lists, goal setting)
- r. Dance/ Body Movement
- s. Music (i.e. listening to music, singing, playing instrument)
- t. Asking for help, having a mentor or coach, collaborator, dialogue circle, or others that help you develop your personal capacities

Please rank your top 3 preferences of practice for developing your personal capabilities. 1 = top practice preference.

- a. Meditation/ Mindfulness/ Silence
- b. Relaxation exercises/ Attention to Breath
- c. Yoga or Tai Chi
- d. Martial arts
- e. Chanting
- f. Spending time in nature (by self or with others)
- g. Energy work (i.e. gardening, construction, yard work, etc.)
- h. Visualization/Guided imagery
- i. Sport (individual or team sports)
- j. Artistic expression
- k. Reflective journaling
- l. Self-inquiry (awareness of personal thoughts, emotions, and values)
- m. Therapy or counseling
- n. Retreat/Workshop/Excursion
- o. Exercise (i.e. lifting weights, aerobics, group fitness classes)
- p. Games (i.e. board games, crossword puzzles, Sudoku, video games, etc.)
- q. Check-in (i.e. managing time, creating lists, goal setting)
- r. Dance/ Body Movement
- s. Music (i.e. listening to music, singing, playing instrument)
- t. Asking for help, having a mentor or coach, collaborator, dialogue circle, or others that help you develop your personal capacities



## Section E. Leadership Styles

Forty-five descriptive statements are listed in Section E. Judge how frequently each statement fits you. The word “others” may mean your peers, clients, direct reports, supervisors, and/or all of these individuals. Use the following rating scale: (Is this an established scale? Some of the statements are not clear.)

Not at all	Once in a while	Sometimes	Fairly often	Frequently, if not always
0	1	2	3	4

1. I provide others with assistance in exchange for their efforts
2. I re-examine critical assumptions to question whether they are appropriate
3. I fail to interfere until problems become serious
4. I focus attention on irregularities, mistakes, exceptions, and deviations from standards
5. I avoid getting involved when important issues arise
6. I talk about my most important values and beliefs
7. I am absent when needed
8. I seek differing perspectives when solving problems
9. I talk optimistically about the future
10. I instill pride in others for being associated with me
11. I discuss in specific terms who is responsible for achieving performance targets
12. I wait for things to go wrong before taking action
13. I talk enthusiastically about what needs to be accomplished
14. I specify the importance of having a strong sense of purpose
15. I spend time teaching and coaching
16. I make clear what one can expect to receive when performance goals are achieved
17. I show that I am a firm believer in “If it ain’t broke, don’t fix it.”
18. I go beyond self-interest for the good of the group
19. I treat others as individuals rather than just as a member of a group
20. I demonstrate that problems must become chronic before I take action
21. I act in ways that build others’ respect for me
22. I concentrate my full attention on dealing with mistakes, complaints, and failures
23. I consider the moral and ethical consequences of decisions
24. I keep track of all mistakes
25. I display a sense of power and confidence
26. I articulate a compelling vision of the future
27. I direct my attention toward failures to meet standards
28. I avoid making decisions
29. I consider an individual as having different needs, abilities, and aspirations from others
30. I get others to look at problems from many different angles
31. I help others to develop their strengths
32. I suggest new ways of looking at how to complete assignments
33. I delay responding to urgent questions
34. I emphasize the importance of having a collective sense of mission
35. I express satisfaction when others meet expectations
36. I express confidence that goals will be achieved
37. I am effective in meeting others’ job-related needs
38. I use methods of leadership that are satisfying
39. I get others to do more than they expected to do
40. I am effective in representing others to higher authority
41. I work with others in a satisfactory way
42. I heighten others’ desire to succeed
43. I am effective in meeting organizational requirements
44. I increase others’ willingness to try harder
45. I lead a group that is effective

## Appendix C. SLfSD Demographic Characteristics

### *SLfSD Demographics*

	Frequency	% of Responses	Condensed Categories
<b>Age (N = 300)</b>			
18	12	4.0 %	
19	32	10.6 %	
20	49	16.3 %	Traditional Learners n = 23 79.3 %
21	62	20.6 %	
22	38	12.6 %	
23	30	10.0 %	
24	15	5.0 %	
25-26	30	10.0 %	Adult Learners n = 62 20.7 %
27-30	19	3.6 %	
31+	13	4.3 %	
<b>Gender (N = 301)</b>			
Male	138	45.8 %	
Female	163	54.2 %	
<b>Classification (N = 301)</b>			
Freshman	18	6.0 %	Under-classmen n = 72 23.9 %
Sophomore	54	18.0 %	
Junior	65	21.6 %	Upper-classmen n = 171 56.8 %
Senior	106	35.2 %	
Graduate Student	58	19.3 %	Graduate Students
<b>Ethnicity (N = 294)</b>			
Caucasian/White	197	67.0 %	Caucasian/White n = 197 67.0 %
American Indian/Alaskan/Hawaiian	24	8.2 %	
Hispanic, Caribbean, Central & South American	21	7.1 %	
African American/Black	20	6.8 %	Minority n = 97 33.0 %
Asian	16	5.4 %	
Indian (sub-continent)	11	3.7 %	
Other	5	1.7 %	
<b>Religious Affiliation (N = 301)</b>			
Christian (Generic/Mainline)	66	21.9 %	Christian based n = 158 52.5 %
Catholic	63	20.9 %	
Baptist	10	3.3 %	
Mormon/Latter Day Saints	9	3.0 %	
Pentecostal	5	1.7 %	
Protestant Denominations	5	1.7 %	
Jewish	11	3.7 %	Non-Christian based n = 43 14.3 %
Eastern Religions (Buddhist)	8	2.7 %	
Muslim	4	1.3 %	
Other	20	6.6 %	
None/No Religion	100	33.2 %	None n = 100 33.2 %

*SLfSD Income Status*

	Frequency	% of Responses	
<b>Self (N = 249)</b>			
\$0 – 5,000	66	21.9%	n = 104
\$6,000 – 9,000	38	12.6%	41.8%
\$10,000 – 19,000	89	29.6%	n = 89 29.6%
\$20,000 – 29,000	36	12.0%	n = 56
\$30,000 +	20	6.6%	22.5%
<b>Family of Origin (N=274)</b>			
\$0 – 24,000	12	4.0%	n = 73
\$25,000 – 49,000	31	10.3%	24.3%
\$50,000 – 69,000	30	10.0%	
\$70,000 – 99,000	77	25.6%	
\$100,000 – 149,000	73	24.3%	
\$150,000 +	51	16.9%	

*SLfSD Collegiate Representation*

	Frequency	% of Responses	
<b>Collegiate Institution (N=301)</b>			
Other	1	0.3%	n = 63
Community College	11	3.7%	20.9%
Technology Institute	6	2.0%	
4-year Baccalaureate Institutions	45	15.0%	
Institutions Granting Graduate Degrees	238	79.1%	n = 238 79.1%
<b>Degree Path (N=301)</b>			
Arts & Sciences	135	44.9%	n = 135 44.9%
Agriculture Sciences & Natural Resources	18	6.0%	
Business	53	17.6%	
Education	22	7.3%	n = 166
Engineering, Architecture, & Technology	23	7.6%	55.1%
Human Sciences	23	7.6%	
Other	27	9.0%	
<b>GPA (N=301)</b>			
4.0+	97	32.2%	n = 270
3.6-3.99	89	29.6%	89.7%
3.0-3.59	84	27.9%	
2.0-2.99	18	16.0%	n = 18 16.0%
<1.9	1	0.3%	n = 1 0.3%
Not Identified	12	4.0%	n = 12 4.0%

*Note: Degree path information was determined by participant degree declared (written-in) information and compared to Oklahoma State University course catalog (2013-2014) for degree to college association.*

*SLfSD Leadership Roles & Organization Involvement*

	Frequency	% of Responses		
<b>Leadership Role (N=301)</b>				
President	30	10.0%		
Vice President	12	4.0%		
Other Elected Officer Position	37	12.3%	Officer	
Chairperson of Committee	10	3.3%	n = 89	
Club representative to Student Government (at large)	1	0.3%	29.6%	<b>Formal Leader n = 143 47.5%</b>
Member (nominated or volunteer)	54	17.9%	Member n = 54 17.9%	
Aspiring Leader	157	52.2%	Aspiring 52.2%	<b>Aspiring Leader n = 157 52.2%</b>
<b>Organization (N=363)</b>				
Interest Club	179	49.3%		
Degree/Work Specific	111	30.6%		
Greek (Sorority/Fraternity)	34	9.4%		
Sport	22	6.1%		
Other	17	4.7%		

*Note: Participants were able to identify up to three student organizations for involvement (thus the increased N value) along with their corresponding roles within each group; the highest ranking role was selected for analysis*

## Appendix D. Leadership Personal Capacity Descriptive Statements

### *Overview of Pilot Personal Capacities Scale Statements and Sources*

<b>Developmental Path Disciplines</b> (Jenkins & Jenkins, 2006)	<b>Personal Capacities</b> (Baan et al., 2011)	<b>Personal Capacities Questions</b>
Detachment: Stepping Back	(Merged with Suspension)	<ol style="list-style-type: none"> <li>1. I am able to suspend my personal opinions and judgments so that I can attend to the situation at hand (Claus Otto Scharmer, 2009, p. 494)</li> <li>2. I know that how things are now, is not how they always will be – I accept that myself, my relationships, and my roles will change over time (Jenkins &amp; Jenkins, 2006, p. 80).</li> <li>3. I realize and accept that some things are out of my control (Jenkins &amp; Jenkins, 2006, p. 81).</li> </ol>
Focus: Willing One Thing	(Merged with Being Present)	<ol style="list-style-type: none"> <li>1. I am someone who “lives in the now” (Jenkins &amp; Jenkins, 2006, p. 129)</li> <li>2. When working, my mind is “in flow” and I am able to accomplish tasks on time (Baan et al., 2011; Csikszentmihalyi, 2008)</li> <li>3. I have a personal vision of a significantly better future for myself and for my organization, but I am brutally honest about the present situation (P. M. Senge, 2006)</li> </ol>
Engagement: Committing to the Group	Compassion	<ol style="list-style-type: none"> <li>1. I easily empathize (sympathize) with others (Baan, Long, &amp; Pearlman, 2011, p. 83).</li> <li>2. No matter the outcome, and I care about others and consider myself a generous person (Jenkins &amp; Jenkins, 2006)</li> <li>3. I am open with my thoughts, emotions, and feelings within my organization or place of work (Jaworski, 2011)</li> </ol>
Interior Council: Choosing Advisors Wisely	Self-Awareness	<ol style="list-style-type: none"> <li>1. I am aware and accept my personal strengths, weakness, core values, beliefs, and desires (B. J. Avolio &amp; Gardner, 2005, p. 324)</li> <li>2. I am intuitive, mindful, and conscious of others thoughts and emotions (Baan et al., 2011)</li> <li>3. I reflect upon my thoughts, emotions, and actions (Schley &amp; Laur, 2000)</li> </ol>
Sense of Wonder: Maintaining the Capacity to Be Surprised	Suspension	<ol style="list-style-type: none"> <li>1. I am open to new ways of thinking or performing a task (Claus Otto Scharmer, 2009, p. 493)</li> <li>2. I often wonder (imagine) what my future will look like (Scharmer, 2009, p. 133-134)</li> <li>3. I consider myself someone who is open to new experiences (Baan et al., 2011, p. 82).</li> </ol>
Intentionality: Aligning the Will to Succeed	Intention Aligned with Higher Purpose	<ol style="list-style-type: none"> <li>1. I consider myself someone who is “selfless” and one that enjoys philanthropic (service) activities (Baan et al., 2011, p. 82).</li> <li>2. Before taking action, I tend to weigh options and possible outcomes or consequences (Jenkins &amp; Jenkins, 2006, p. 171).</li> <li>3. I am motivated by helping others so as to better the world (Barrett, 2009, p. 50)</li> </ol>
Awareness: Knowing What is Really Going On	Whole System Awareness	<ol style="list-style-type: none"> <li>1. I put the interest of the group (organization) above the interest of my own (Claus Otto Scharmer, 2001)</li> <li>2. I tend to bring others’ perspectives to the discussion; detecting something “invisible” – making it “visible” for others to see and understand (Baan et al., 2011). <i>May be viewed as “playing devil’s advocate”</i></li> <li>3. I believe I have a part to play in the change of worldly things (Jaworski, 2011, p. 19)</li> </ol>
Presence: Inspiring and Evoking Spirit in Others	Being Present	<ol style="list-style-type: none"> <li>1. I tend to focus my awareness to the present moment (Baan et al., 2011).</li> <li>2. I use my senses (mind, body, spirit) to connect with the current situation (Baan et al., 2011).</li> <li>3. I devote and dedicate time to working with others (my organization officers and/or members) (Baan et al., 2011)</li> </ol>
Action: Stepping Back	(Merged with Suspension)	<ol style="list-style-type: none"> <li>1. I am someone who “gets the job done” – I am driven to achieve a purpose and grow</li> <li>2. I am someone who perseveres (doesn’t give up) when things get difficult</li> <li>3. I am a genuine person; I am my true-self all of the time</li> </ol>

*Overview of Leadership Personal Capacities Scale Statements and Sources – Revised for study*

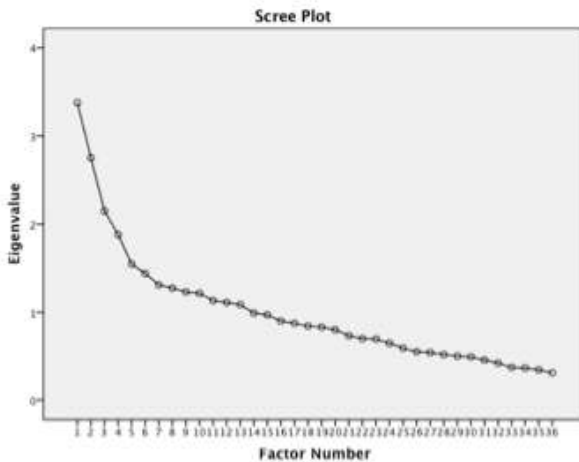
	<b>Developmental Path Disciplines</b> (Jenkins & Jenkins, 2006)	<b>Personal Capacities</b> (Baan et al., 2011)	<b>Personal Capacities Questions</b>
Regarding Others	Detachment: Stepping Back	(Merged with Suspension)	<ol style="list-style-type: none"> <li>1. I put differences aside so that I can attend to the situation at hand.</li> <li>2. The person I am today is the same person I will be in 20 years. → Reverse</li> <li>3. I realize that some things are out of my control.</li> <li>4. I accept that my relationships (personal and professional) will change over time.</li> </ol>
	Focus: Willing One Thing	(Merged with Being Present)	<ol style="list-style-type: none"> <li>1. When working, my mind is “in flow.”</li> <li>2. I have a vision of a better future.</li> <li>3. I have difficulty accomplishing tasks on time. → Reverse</li> <li>4. I am not easily distracted.</li> </ol>
	Engagement: Committing to the Group	Compassion	<ol style="list-style-type: none"> <li>1. I happily devote my time to group functions/activities.</li> <li>2. I enjoy working by myself rather than with a group. → Reverse</li> <li>3. I consider myself a generous person.</li> <li>4. I put my interests first, and others’ interests second. → Reverse</li> </ol>
Regarding Myself	Interior Council: Choosing Advisors Wisely	Self-Awareness	<ol style="list-style-type: none"> <li>1. I act upon my first instinct with little reflection. → Reverse</li> <li>2. I work through my thoughts by discussing them with others.</li> <li>3. I accept my personal strengths and weaknesses.</li> <li>4. I think of myself as an intuitive person.</li> </ol>
	Sense of Wonder: Maintaining the Capacity to Be Surprised	Suspension	<ol style="list-style-type: none"> <li>1. I try to put a positive “light” on negative situations.</li> <li>2. I’m often afraid that my opinions aren’t worth sharing. → Reverse</li> <li>3. I admit when I make a mistake, and I take actions to correct my wrong.</li> <li>4. I welcome new experiences.</li> </ol>
	Intentionality: Aligning the Will to Succeed	Intention Aligned with Higher Purpose	<ol style="list-style-type: none"> <li>1. I commit to making my dreams a reality.</li> <li>2. Before taking action, I tend to weigh options and possible outcomes.</li> <li>3. I give up too easily when I hit roadblocks. → Reverse</li> <li>4. When my plans don’t work out as I hoped, I view it as a learning opportunity and try again.</li> </ol>
Regarding Life	Awareness: Knowing What is Really Going On	Whole System Awareness	<ol style="list-style-type: none"> <li>1. I research and ask questions before acting.</li> <li>2. I tend to bring others’ perspectives into discussions.</li> <li>3. I let the collective opinion of the group affect my own decisions. → Reverse</li> <li>4. I genuinely wish to know the opinions and thoughts of others.</li> </ol>
	Presence: Inspiring and Evoking Spirit in Others	Being Present	<ol style="list-style-type: none"> <li>1. I dedicate my time to working with others to build their personal capabilities.</li> <li>2. I support and inspire others.</li> <li>3. I’m good at helping others realize their potential.</li> <li>4. I struggle conveying the value of my ideas to others. → Reverse</li> </ol>
	Action: Stepping Back	(Merged with Suspension)	<ol style="list-style-type: none"> <li>1. I usually play it safe and avoid risks. → Reverse</li> <li>2. I am conscious of my goals and have developed a plan to achieve them.</li> <li>3. I am effective in promoting change within my group.</li> <li>4. I consciously put myself in challenging situations to push my limits.</li> </ol>

**Appendix E. Leadership Personal Capacity Developmental Process**

*Summary of pilot study alpha scores for Personal Capacities Scale*

Developmental Path & Disciplines	Stage 1: DHM Student Pilot N=112	Stage 2: Psychology Student Pilot N = 93	SLfSD Study N = 301
	Overall alpha ( $\alpha$ )		
	<i>Cronbach's Alpha</i>		<i>Cronbach's Alpha based on Standardized items</i>
<b><i>Regarding Others</i></b>	.657	.604	.338
Detachment	.455	.209	.221
Focus	.384	.295	.001
Engagement	.578	.361	.124
<b><i>Regarding Myself</i></b>	.714	.621	.414
Interior Council	.527	.354	.241
Sense of Wonder	.481	.334	.148
Intentionality	.507	.374	.160
<b><i>Regarding Life</i></b>	.767	.721	.375
Awareness	.576	.293	.272
Presence	.446	.543	.207
Action	.606	.467	.011

A factor analysis and scree plot analysis were performed on the revised thirty-six descriptive statements. To identify the factors that empirically exist amongst SLfSD a maximum likelihood exploratory factor analysis was performed to extract a specific number of factors. Six factors specific to SLfSD were identified. These six factors were identified by interpreting the structure matrix (i.e. loadings or structure coefficients) from the extracted factor analysis - detecting statements that achieved a minimum correlational score of .30 (Kim & Mueller, 1978). See structure matrix data and table for SLfSD emerged factors (following scree plot).



Student leaders for sustainable development scree plot

**Factor Matrix<sup>a</sup>**

Descriptive Statements	Factor					
	1	2	3	4	5	6
ROD1 - I put differences aside so that I can attend to the situation at hand	.007	.191	.322	.291	-.081	.089
ROF1 - When working, my mind is “in flow”	.673	-.015	-.008	.066	-.159	.013
RMSoW1 - I try to put a positive “light” on negative situations	.672	.147	-.090	.086	-.062	-.208
RLP1 - I dedicate my time to working with others to build their personal capabilities	.394	-.036	.152	.007	.023	.172
RMIInt1 - I commit to making my dreams a reality	.296	.109	.104	-.123	-.034	.073
ROE1 - I happily devote my time to group functions/activities	-.158	.216	.212	-.020	.115	.055
RLA1 - I research and ask questions before acting	.352	.182	.004	-.003	.039	.019
ROD3 - I realize that some things are out of my control	.096	-.044	.226	.236	.178	.099
RMIInt2 - Before taking action, I tend to weigh options and possible outcomes	.264	-.068	.322	-.105	.092	-.086
RLAct2 - I am conscious of my goals and have developed a plan to achieve them	-.017	.355	-.020	.122	-.217	-.165
ROF2 - I have a vision of a better future	.177	.221	-.008	-.124	-.164	.053
RMIC2 - I work through my thoughts by discussing them with others	.242	.346	-.012	.041	-.085	-.475
RLA2 - I tend to bring others’ perspectives into discussions	.150	.222	.066	.065	-.112	-.008
ROE3 - I consider myself a generous person	.183	.275	.063	-.280	-.087	.166
RMSow3 - I admit when I make a mistake, and I take actions to correct my wrong	-.541	.502	.052	-.100	.019	-.167
RLA4 - I genuinely wish to know the opinions and thoughts of others	.156	.336	.240	-.325	-.015	-.012
RLP2 - I support and inspire others	-.218	.108	.456	.124	.052	.057
ROD4 - I accept that my relationships (personal and professional) will change over time	.252	.096	.263	-.167	.296	.045
RLP3 - I’m good at helping others realize their potential	.202	.214	.158	.489	-.141	.049
RMIC3 - I accept my personal strengths and weaknesses	-.039	.220	.250	.105	.030	-.048
RLAct3 - I am effective in promoting change within my group	.117	-.011	.077	.303	.133	.096
RMSow4 - I welcome new experiences	.072	.311	.316	-.409	-.121	.083



RMIC4 - I think of myself as an intuitive person	-.178	.303	.289	.165	.061	.088
RLAct4 - I consciously put myself in challenging situations to push my limits	-.163	.071	.188	.199	.077	-.023
ROF4 - I am not easily distracted	-.292	.338	-.130	.288	-.111	.148
RMInt4 - When my plans don't work out as I hoped, I view it as a learning opportunity and try again	.254	.098	.085	.165	.017	-.132
RMIC1REV - I act upon my first instinct with little reflection	.005	.199	-.092	-.040	.050	-.046
RLAct1REV - I usually play it safe and avoid risks	.075	.106	-.044	.085	.122	.180
ROD2REV - The person I am today, is the same person I will be in 20 years	.404	.096	.014	-.126	.229	.062
RMSow2REV - I'm often afraid that my opinions aren't worth sharing	.048	.477	-.298	-.058	-.242	.298
ROE2REV - I enjoy working by myself rather than with a group	-.063	.126	.126	.149	.022	.073
RLA3REV - I let the collective opinion of the group affect my own decisions	.120	.256	-.068	-.121	.149	.082
RMInt3REV - I give up too easily when I hit roadblocks	-.158	.343	-.238	.051	-.043	.129
RLP4REV - I struggle conveying the value of my ideas to others	.378	.281	-.298	.072	.312	.159
ROE4REV - I put my interests first, and others' interests second	.254	.068	.153	.026	.195	.031
ROF3REV - I have difficulty accomplishing tasks on time	-.118	.387	-.274	.053	.427	-.142

Extraction Method: Maximum Likelihood.

a. 6 factors extracted. 11 iterations required.

### Coding

ROD = Regarding Others – Detachment

ROE = Regarding Others – Engagement

ROF = Regarding Others – Focus

RMIC = Regarding Myself – Interior Council

RMSow = Regarding Myself – Sense of Wonder

RMInt = Regarding Myself – Intentionality

RLA = Regarding Life – Awareness

RLP = Regarding Life – Presence

RLAct = Regarding Life - Action

*Emerged SLfSD Personal Capacity Factors*

<b>Factor 1 Optimism</b>	<b>Factor 2 Confidence: Perseverance</b>	<b>Factor 3 Being Present</b>	<b>Factor 4 Compassion</b>	<b>Factor 5 Intrinsic Confidence</b>	<b>Factor 6 Continual Improvement</b>
When working, my mind is “in flow” – ROF1 .637	I’m confident that my opinions are worth sharing RMSOW2 [REV] .527	I support and inspire others - RLP2 .493	I welcome new experiences - RMSOW4 .585	I easily convey the value of my ideas to others – RLP4 [REV] .605	I work through my thoughts by discussing them with others – RMIC2 .571
I try to put a positive light on negative situations – RMSOW1 .621	I am not easily distracted - ROF4 .506	I think of myself as an intuitive person - RMIC4 .479	I genuinely wish to know the opinions and thoughts of others - RLA4 .507	I easily accomplish tasks on time - ROF3 [REV] .534	I admit when I make a mistake, and I take actions to correct my wrong – RMSOW3 .437
I’m good at helping others realize their potential – RLP3 .457	I persevere when I hit roadblocks - RMInt3 [REV] .418	I put differences aside so I can attend to the situation at hand – ROD1 .439	I consider myself a generous person - ROE3 .466	I will change over time – ROD2 [REV] .346	I am conscious of my goals and have developed a plan to achieve them – RLAct2 .373
I dedicate my time to working with others to build their personal capabilities - RLP1 .354		I accept my personal strengths and weaknesses - RMIC3 .326	I have a vision of a better future – ROF2 .31	I believe in my thoughts and don’t let the collective opinion of the group affect my own decisions - RLA3 [REV] .321	
I research and ask questions before acting - RLA1 .308		I consciously put myself in challenging situations to push my limits - RLAct4 .307			
Range: 5-25	Range: 3-15	Range: 5-25	Range: 4-20	Range: 4-20	Range: 3-15

*Note:* Values specified for each descriptive statement indicate the loading value determined through structural matrix analysis

*Note:* Range specifies possible score values assigned by participants

Six factors specific to SLfSD were identified. Each factor was labeled as the following SLfSD Leadership Personal Capacities: Factor 1 = Optimism, Factor 2 = Confidence: Perseverance, Factor 3 = Being Present, Factor 4 = Compassion, Factor 5 = Intrinsic Confidence, and Factor 6 = Continual Improvement. The emerged leadership personal capacities were labeled according to the underlying theme of the corresponding descriptive statements and related to the seven personal leadership capacities to facilitate co-learning and co-creation in SSD, as similarities existed between the two personal capacity lists. The table below provides brief descriptions of the personal capacities outlined by Baan et al. (2011) compared to the emerged factors (SLfSD leadership personal capacities) in this study.

*Personal capacity comparison table*

SSD Seven Personal Capacities			SLfSD Leadership Personal Capacities	
Capacity	Brief Description	Comparison Comments	Description	Personal Capacity
Personal Power	The ability to manifest wise actions in the world for the greater good; ability to face fears with courage.	<i>Personal abilities to overcome obstacles; courageous; focused on the greater good for all.</i>	Confident that opinions are worth sharing; ability to persevere when faced with difficult situations; ability to focus.	Confidence: Perseverance
Whole System Awareness	The capacity to see the big picture; understanding that everything is interconnected within a system.	<i>Awareness of personal values and opinions, but acceptance of growth and change that will occur over time; awareness of outside factors that may influence this evolution.</i>	Belief in personal thoughts; adherence to personal opinions during group interactions; ability to accomplish tasks in a timely manner; acknowledgement and acceptance that self will change over time.	Intrinsic Confidence
Self-Awareness	Paying attention to knowing oneself; involves intentionally observing various self-dimensions.			
Intention Aligned with Higher Purpose	Aligning one's authentic nature with the natural order in the world; opportunistic; ability to embrace the unknown with profound trust.	<i>Ability to see the opportunity that lies within individuals and situations; cultivates passion and trust in others</i>	Ability to help others realize their potential and willing to dedicate time to help others build capabilities; ability to put a positive light on a negative situation and keep work "in flow."	Optimism
Compassion	Continual act of unconditional acceptance and kindness toward all, regardless of circumstance.	<i>Open heart towards others; kind, genuine, and visionary to see good and potential in others.</i>	One who welcomes new friendships and experiences; genuinely desires to know others thoughts and opinions; visionary.	Compassion
Suspension & Letting Go	The ability to actively experience personal thoughts, and then refraining from immediately reacting or responding to the situation.	<i>Ethical standard to "the right thing" and correct mistakes; thoughtfully takes action when necessary.</i>	The ability to admit when mistakes are made and takes action to correct wrongs; conscious of personal and group goals; action orientated.	Continual Improvement
Being Present	Being fully aware and awake in the present moment; includes connecting oneself to others, the environment, and circumstances.	<i>Awareness of self, others, environment, and situation; aware of changes and challenges of future based on present</i>	Ability to put differences aside to attend to current situation; supportive, inspirational, and intuitive; ability to accept self and group; conscious of future challenges.	Being Present

Upon identifying the emerged SLfSD Leadership Personal Capacities, it was necessary to again determine internal consistency using Cronbach’s alpha. The table below compares the SLfSD alpha scores according to the developmental paths and disciplines (Jenkins & Jenkins, 2006) and the SLfSD leadership personal capacities that emerged through factor analysis in this study.

*Comparison of Developmental Paths and SLfSD Personal Capacities – alpha scores*

SLfSD Study N = 301			
Developmental Path & Disciplines (Jenkins & Jenkins)	<i>Cronbach’s Alpha based on Standardized items</i>		SLfSD Leadership Personal Capacities (Eike)
<b>Regarding Others</b>	.338	.602	<b>Optimism</b>
<b>Regarding Myself</b>	.414	.494	<b>Confidence: Perseverance</b>
<b>Regarding Life</b>	.375	.493	<b>Being Present</b>
		.511	<b>Compassion</b>
		.477	<b>Intrinsic Confidence</b>
		.382	<b>Continual Improvement</b>

Cronbach alpha scores generated in the post-factor analysis indicate lower than recommended minimum alpha for an exploratory study of .6 (Hassad, 2010). The low reliability of this scale/measure is a limitation to this study. The SLfSD leadership personal capacity of Optimism achieved this minimum alpha, while the remaining personal capacities did not. However, due to the inferential process of the pilot, the empirical data identified in these analyses will be used for research question analysis and implications in this study. See section titled “Future Studies” in chapter five for more information regarding the future development and testing of the SLfSD leadership personal capacity scale.

**Appendix F. Outcome Correlations**

*Leadership Personal Capacities and Leadership Styles Correlation Matrix*

<b>Leadership Component Outcomes</b>	<b>Optimism</b>	<b>Confidence: Perseverance</b>	<b>Being Present</b>	<b>Compassion</b>	<b>Intrinsic Confidence</b>	<b>Continual Improvement</b>	<b>Transformational</b>	<b>Transactional</b>	<b>Passive/Avoidant</b>
Optimism	1.000								
Confidence: Perseverance	-0.052	1.000							
Being Present	0.377	0.094	1.000						
Compassion	0.550	0.107	0.061	1.000					
Intrinsic Confidence	0.177	0.018	0.298	0.138	1.000				
Continual Improvement	0.002	0.006	0.600	0.018	0.092	1.000			
Transformational	-0.066	0.316	0.227	0.200	0.117	-0.100	1.000		
Transactional	0.264	0.000	0.000	0.001	0.784	0.089	0.380	1.000	
Passive/Avoidant	0.070	-0.045	-0.240	-0.082	-0.016	0.168	0.004	0.090	1.000
	0.234	0.443	0.000	0.164	0.724	0.004	0.000	0.124	
	-0.231	0.207	0.010	-0.108	0.153	-0.199	0.487	0.090	1.000
	0.000	0.000	0.861	0.065	0.009	0.001	0.000	0.124	
	0.215	0.050	-0.304	-0.097	0.153	-0.199	0.487	0.090	1.000
	0.000	0.394	0.000	0.096	0.009	0.001	0.000	0.124	

*Personal Practices Correlation Matrix*

<b>Personal Practice Outcomes</b>	Mediation	Relaxation	Yoga	Martial Arts	Chanting	Nature	Energy Work	Visualization	Sport	Artistic	Journaling	Self-Inquiry	Therapy	Retreat	Exercise	Games	Check-In	Dance	Music	Help
Meditation	1.000																			
Relaxation	0.491	1.000																		
Yoga	0.000	0.000	1.000																	
Martial Arts	0.512	0.511	0.470	1.000																
Chanting	0.000	0.000	0.000	0.000	1.000															
Nature	0.433	0.332	0.444	0.718	0.208	1.000														
Energy Work	0.000	0.001	0.000	0.054	0.000	0.293	-0.198	0.248	0.113	0.208	1.000									
Visualization	0.319	-0.095	0.256	0.189	0.290	0.681	1.000													
Sport	0.000	0.106	0.000	0.001	0.000	0.000	0.000	1.000												
Artistic	0.444	0.529	0.443	0.490	0.536	0.036	0.164	0.000	0.444	0.529	0.443	0.490	0.536	0.036	0.164	1.000				
Journaling	0.000	0.000	0.000	0.000	0.000	0.534	0.005	0.000	0.000	0.000	0.000	0.534	0.005	0.000	0.000	0.000	1.000			
Self-Inquiry	0.051	0.383	0.183	0.321	0.163	-0.227	-0.212	0.347	1.000											
Therapy	0.388	0.000	0.002	0.000	0.005	0.000	0.000	0.000	0.000	1.000										
Retreat	0.291	0.611	0.280	0.303	0.285	-0.241	-0.112	0.477	0.458	0.000	1.000									
Exercise	0.000	0.000	0.000	0.000	0.000	0.000	0.055	0.000	0.000	0.000	0.000	1.000								
Games	0.383	0.566	0.410	0.495	0.440	-0.015	0.063	0.537	0.265	0.550	0.000	0.000	1.000							
Check-In	0.000	0.000	0.000	0.000	0.000	0.792	0.282	0.000	0.000	0.000	0.000	0.000	0.000	1.000						
Dance	0.460	0.249	0.273	0.154	0.189	0.333	0.245	0.263	-0.072	0.208	0.379	1.000								
Music	0.000	0.000	0.000	0.009	0.001	0.000	0.000	0.000	0.217	0.000	0.000	0.000	1.000							
Help	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1.000					

Therapy	0.412	0.309	0.387	0.614	0.606	0.193	0.210	0.418	0.133	0.181	0.353	0.156	1.000	0.000	0.000	0.000	0.000	0.000	0.001	0.000	0.000	0.023	0.002	0.000	0.007														
Retreat	0.385	0.096	0.338	0.486	0.588	0.385	0.392	0.423	0.030	0.107	0.261	0.162	0.570	1.000	0.000	0.102	0.000	0.000	0.000	0.000	0.000	0.000	0.613	0.067	0.000	0.005	0.000												
Exercise	0.205	0.123	0.320	0.270	0.201	0.247	0.195	0.175	0.445	0.093	0.038	0.102	0.193	0.198	1.000	0.000	0.036	0.000	0.000	0.001	0.000	0.001	0.003	0.000	0.112	0.521	0.082	0.001	0.001										
Games	0.145	0.341	0.236	0.393	0.228	-0.132	-0.082	0.293	0.463	0.450	0.308	0.016	0.251	0.130	0.252	1.000	0.013	0.000	0.000	0.000	0.000	0.024	0.161	0.000	0.000	0.000	0.000	0.781	0.000	0.026	0.000								
Check-In	0.251	0.255	0.211	0.236	0.204	0.120	0.074	0.323	0.156	0.283	0.346	0.396	0.168	0.213	0.142	0.232	1.000	0.000	0.000	0.000	0.000	0.000	0.041	0.208	0.000	0.008	0.000	0.000	0.000	0.004	0.000	0.015	0.000						
Dance	0.375	0.525	0.435	0.384	0.368	-0.024	0.021	0.495	0.520	0.564	0.494	0.338	0.228	0.213	0.307	0.360	0.456	1.000	0.000	0.000	0.000	0.000	0.000	0.680	0.723	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000				
Music	0.360	0.087	0.280	0.089	0.172	0.349	0.230	0.178	0.080	0.169	0.113	0.357	0.130	0.263	0.290	0.181	0.306	0.427	1.000	0.000	0.136	0.000	0.128	0.003	0.000	0.000	0.002	0.170	0.004	0.053	0.000	0.027	0.000	0.000	0.002	0.000	0.000		
Help	0.351	0.034	0.186	0.223	0.310	0.404	0.337	0.217	-0.013	-0.018	0.103	0.310	0.322	0.468	0.249	-0.003	0.235	0.150	0.247	1.000	0.000	0.558	0.001	0.000	0.000	0.000	0.000	0.000	0.821	0.755	0.078	0.000	0.000	0.000	0.000	0.961	0.000	0.010	0.000

## **Appendix G. Multivariate Regression**

### *Multivariate Regression for Leadership Personal Capacities & Leadership Roles*

	<b>Correlation Coefficient (<math>\beta</math>)</b>	<b>Standard Error</b>	<b>p-value</b>
<b>Optimism</b>			
Role	-3.17	0.74	0.00
Ethnicity	-0.80	0.44	0.07
Age	-3.84	0.64	0.00
Gender	-0.98	0.48	0.04
Role x Ethnicity	0.584	0.75	0.43
Role x Age	4.46	1.10	0.00
Role x Gender	1.44	0.71	0.04
Age x Gender	2.15	0.94	0.02
Role x Age x Gender	-3.45	1.47	0.02
Intercept	21.24	0.32	
<b>Confidence: Perseverance</b>			
Role	1.60	0.88	0.07
Ethnicity	0.76	0.52	0.14
Age	1.67	0.76	0.03
Gender	1.42	0.57	0.01
Role x Ethnicity	-0.58	0.88	0.51
Role x Age	-2.64	1.30	0.04
Role x Gender	-0.85	0.84	0.31
Age x Gender	-1.70	1.11	0.13
Role x Age x Gender	0.89	1.74	0.61
Intercept	7.01	0.37	
<b>Being Present</b>			
Role	0.43	0.67	0.52
Ethnicity	0.02	0.40	0.97
Age	-0.16	0.58	0.78
Gender	0.46	0.43	0.29
Role x Ethnicity	1.05	0.68	0.12
Role x Age	0.71	1.00	0.48
Role x Gender	-0.46	0.64	0.47
Age x Gender	1.10	0.85	0.20
Role x Age x Gender	-2.54	1.33	0.06
Intercept	16.95	0.29	



<b>Compassion</b>			
Role	-0.49	0.58	0.40
Ethnicity	0.72	0.34	0.04
Age	-1.15	0.50	0.02
Gender	-0.20	0.37	0.60
Role x Ethnicity	-0.26	0.58	0.66
Role x Age	1.68	0.85	0.05
Role x Gender	0.82	0.55	0.14
Age x Gender	1.31	0.73	0.07
Role x Age x Gender	-2.14	1.14	0.06
Intercept	14.35	0.25	
<b>Intrinsic Confidence</b>			
Role	-0.91	0.94	0.33
Ethnicity	-0.34	0.55	0.54
Age	0.56	0.81	0.49
Gender	-1.24	0.60	0.04
Role x Ethnicity	0.64	0.94	0.50
Role x Age	-2.23	1.38	0.11
Role x Gender	1.22	0.89	0.17
Age x Gender	0.05	1.18	0.97
Role x Age x Gender	1.71	1.85	0.36
Intercept	13.11	0.40	
<b>Continual Improvement</b>			
Role	1.44	0.52	0.01
Ethnicity	0.23	0.31	0.46
Age	1.02	0.45	0.02
Gender	0.01	0.33	0.99
Role x Ethnicity	-0.27	0.52	0.61
Role x Age	-0.63	0.77	0.41
Role x Gender	0.47	0.49	0.35
Age x Gender	0.50	0.66	0.45
Role x Age x Gender	-1.40	1.03	0.18
Intercept	9.22	0.22	

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<b>Transformational Leadership</b>			
Role	-5.98	2.16	0.01
Ethnicity	-0.86	1.27	0.50
Age	0.28	1.87	0.88
Gender	-1.79	1.39	0.20
Role x Ethnicity	-0.56	2.17	0.80
Role x Age	7.60	3.19	0.02
Role x Gender	5.57	2.05	0.01
Age x Gender	-0.34	2.72	0.90
Role x Age x Gender	-9.04	4.27	0.04
Intercept	72.98	0.92	
<b>Transactional Leadership</b>			
Role	5.84	1.18	0.00
Ethnicity	1.65	0.69	0.02
Age	3.96	1.02	0.00
Gender	1.16	0.76	0.13
Role x Ethnicity	-3.46	1.18	0.00
Role x Age	-0.41	1.74	0.81
Role x Gender	-1.02	1.12	0.37
Age x Gender	-1.93	1.48	0.19
Role x Age x Gender	-4.53	2.33	0.05
Intercept	23.25	0.50	
<b>Passive/Avoidant</b>			
Role	-7.34	1.70	0.00
Ethnicity	-1.51	1.00	0.13
Age	0.19	1.47	0.90
Gender	-3.13	1.09	0.00
Role x Ethnicity	1.18	1.71	0.49
Role x Age	3.29	2.51	0.19
Role x Gender	2.73	1.62	0.09
Age x Gender	-2.35	2.14	0.27
Role x Age x Gender	-1.39	3.36	0.68
Intercept	28.06	0.72	

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*Multivariate Regression for Personal Practices*

<b>Personal Practices</b>	<b>Correlation Coefficient</b>	<b>Standard Error</b>	<b>p-value</b>
<b>Meditation</b>			
Role	0.59	0.35	0.09
Ethnicity	0.06	0.20	0.77
Age	1.35	0.30	0.00
Gender	0.09	0.22	0.67
Role x Ethnicity	-0.36	0.35	0.30
Role x Age	-1.62	0.51	0.00
Role x Gender	-0.13	0.33	0.69
Age x Gender	-0.30	0.44	0.50
Role x Age x Gender	1.34	0.69	0.05
Intercept	2.55	0.15	0.00
<b>Relaxation</b>			
Role	-1.28	0.35	0.00
Ethnicity	-0.47	0.21	0.02
Age	0.08	0.30	0.80
Gender	-0.37	0.23	0.10
Role x Ethnicity	0.18	0.35	0.62
Role x Age	-0.01	0.52	0.98
Role x Gender	0.28	0.33	0.40
Age x Gender	-0.35	0.44	0.43
Role x Age x Gender	1.27	0.69	0.07
Intercept	4.18	0.15	0.00
<b>Yoga</b>			
Role	-0.43	0.36	0.24
Ethnicity	0.13	0.21	0.54
Age	0.77	0.31	0.01
Gender	-0.14	0.23	0.55
Role x Ethnicity	-0.13	0.36	0.73
Role x Age	-0.30	0.53	0.57
Role x Gender	0.52	0.34	0.13
Age x Gender	0.02	0.45	0.96
Role x Age x Gender	0.70	0.71	0.33
Intercept	2.36	0.15	0.00

**Martial Arts**

Role	-0.21	0.31	0.50
Ethnicity	0.30	0.18	0.10
Age	1.52	0.27	0.00
Gender	-0.35	0.20	0.08
Role x Ethnicity	-0.34	0.31	0.28
Role x Age	-1.87	0.46	0.00
Role x Gender	0.00	0.30	0.99
Age x Gender	-1.04	0.39	0.01
Role x Age x Gender	1.48	0.62	0.02
Intercept	1.79	0.13	0.00

**Chanting**

Role	0.44	0.29	0.13
Ethnicity	0.44	0.17	0.01
Age	1.72	0.25	0.00
Gender	-0.15	0.18	0.42
Role x Ethnicity	-0.82	0.29	0.01
Role x Age	-1.74	0.42	0.00
Role x Gender	-0.12	0.27	0.66
Age x Gender	-0.94	0.36	0.01
Role x Age x Gender	1.40	0.57	0.02
Intercept	1.43	0.12	0.00

**Nature**

Role	1.72	0.30	0.00
Ethnicity	0.70	0.18	0.00
Age	1.55	0.26	0.00
Gender	0.53	0.19	0.01
Role x Ethnicity	-0.48	0.30	0.11
Role x Age	-1.52	0.44	0.00
Role x Gender	-0.53	0.28	0.06
Age x Gender	-0.82	0.38	0.03
Role x Age x Gender	0.96	0.59	0.10
Intercept	1.75	0.13	0.00

**Energy Work**

Role	0.85	0.31	0.01
Ethnicity	0.44	0.18	0.02
Age	1.32	0.27	0.00
Gender	0.25	0.20	0.21
Role x Ethnicity	-0.02	0.32	0.96
Role x Age	-0.72	0.46	0.12
Role x Gender	-0.43	0.30	0.16
Age x Gender	-0.30	0.40	0.45
Role x Age x Gender	-0.08	0.62	0.90
Intercept	1.97	0.13	0.00

**Visualization**

Role	0.06	0.34	0.86
Ethnicity	-0.15	0.20	0.46
Age	1.11	0.29	0.00
Gender	-0.17	0.22	0.45
Role x Ethnicity	-0.58	0.34	0.09
Role x Age	-0.99	0.50	0.05
Role x Gender	0.16	0.32	0.62
Age x Gender	-0.91	0.43	0.04
Role x Age x Gender	0.69	0.67	0.31
Intercept	2.78	0.14	0.00

**Sport**

Role	-1.09	0.40	0.01
Ethnicity	-0.64	0.23	0.01
Age	-0.03	0.35	0.92
Gender	-0.55	0.26	0.04
Role x Ethnicity	0.60	0.40	0.14
Role x Age	-1.48	0.59	0.01
Role x Gender	-0.22	0.38	0.56
Age x Gender	-0.90	0.50	0.08
Role x Age x Gender	2.26	0.79	0.00
Intercept	4.53	0.17	0.00

**Artistic**

Role	-1.47	0.36	0.00
Ethnicity	-0.69	0.21	0.00
Age	-0.17	0.31	0.59
Gender	-0.44	0.23	0.06
Role x Ethnicity	0.47	0.36	0.20
Role x Age	0.06	0.53	0.91
Role x Gender	0.28	0.34	0.42
Age x Gender	0.21	0.45	0.65
Role x Age x Gender	0.23	0.71	0.75
Intercept	4.38	0.15	0.00

**Journaling**

Role	-1.30	0.36	0.00
Ethnicity	-0.27	0.21	0.20
Age	0.32	0.31	0.30
Gender	-0.36	0.23	0.12
Role x Ethnicity	0.17	0.36	0.64
Role x Age	-0.42	0.53	0.44
Role x Gender	0.86	0.34	0.01
Age x Gender	0.27	0.46	0.56
Role x Age x Gender	-0.44	0.72	0.54
Intercept	3.38	0.15	0.00

**Self Inquiry**

Role	0.44	0.34	0.19
Ethnicity	0.03	0.20	0.88
Age	0.80	0.29	0.01
Gender	0.17	0.22	0.44
Role x Ethnicity	0.03	0.34	0.93
Role x Age	-1.16	0.49	0.02
Role x Gender	-0.18	0.32	0.58
Age x Gender	-0.39	0.42	0.36
Role x Age x Gender	0.99	0.66	0.14
Intercept	3.27	0.14	0.00

**Therapy**

Role	0.23	0.30	0.44
Ethnicity	0.26	0.18	0.14
Age	1.59	0.26	0.00
Gender	-0.06	0.19	0.77
Role x Ethnicity	-0.53	0.30	0.08
Role x Age	-1.79	0.44	0.00
Role x Gender	0.00	0.28	0.99
Age x Gender	-0.79	0.38	0.04
Role x Age x Gender	0.87	0.59	0.14
Intercept	1.71	0.13	0.00

**Retreat**

Role	0.94	0.32	0.00
Ethnicity	0.24	0.19	0.19
Age	1.95	0.27	0.00
Gender	0.18	0.20	0.37
Role x Ethnicity	-0.57	0.32	0.07
Role x Age	-1.90	0.47	0.00
Role x Gender	-0.14	0.30	0.63
Age x Gender	-1.04	0.40	0.01
Role x Age x Gender	0.84	0.63	0.18
Intercept	1.51	0.13	0.00

**Exercise**

Role	0.45	0.32	0.16
Ethnicity	0.15	0.19	0.41
Age	0.71	0.27	0.01
Gender	0.10	0.20	0.64
Role x Ethnicity	-0.24	0.32	0.44
Role x Age	-1.59	0.47	0.00
Role x Gender	-0.30	0.30	0.31
Age x Gender	-0.11	0.40	0.78
Role x Age x Gender	0.95	0.63	0.13
Intercept	3.11	0.13	0.00

**Games**

Role	-0.83	0.32	0.01
Ethnicity	-0.22	0.19	0.25
Age	0.38	0.28	0.17
Gender	-0.12	0.21	0.56
Role x Ethnicity	0.51	0.32	0.11
Role x Age	-0.53	0.47	0.26
Role x Gender	-0.25	0.30	0.41
Age x Gender	-0.31	0.40	0.44
Role x Age x Gender	0.11	0.63	0.86
Intercept	3.62	0.14	0.00

**Check-in**

Role	-0.38	0.33	0.25
Ethnicity	-0.11	0.19	0.57
Age	0.54	0.28	0.06
Gender	-0.10	0.21	0.64
Role x Ethnicity	0.06	0.33	0.85
Role x Age	-1.21	0.48	0.01
Role x Gender	0.54	0.31	0.09
Age x Gender	0.17	0.41	0.67
Role x Age x Gender	0.05	0.65	0.94
Intercept	3.80	0.14	0.00

**Dance**

Role	-0.80	0.37	0.03
Ethnicity	-0.16	0.22	0.47
Age	0.44	0.32	0.17
Gender	-0.23	0.24	0.33
Role x Ethnicity	-0.15	0.37	0.68
Role x Age	-1.26	0.55	0.02
Role x Gender	0.42	0.35	0.24
Age x Gender	-0.76	0.47	0.11
Role x Age x Gender	2.15	0.74	0.00
Intercept	3.51	0.16	0.00



<b>Music</b>			
Role	1.00	0.32	0.00
Ethnicity	0.25	0.19	0.18
Age	0.60	0.27	0.03
Gender	0.19	0.20	0.36
Role x Ethnicity	-0.38	0.32	0.24
Role x Age	-1.67	0.47	0.00
Role x Gender	-0.28	0.30	0.36
Age x Gender	-0.35	0.40	0.38
Role x Age x Gender	1.35	0.63	0.03
Intercept	3.28	0.13	0.00
<b>Help</b>			
Role	1.47	0.34	0.00
Ethnicity	0.14	0.20	0.48
Age	1.80	0.29	0.00
Gender	0.32	0.22	0.14
Role x Ethnicity	-0.88	0.34	0.01
Role x Age	-1.32	0.50	0.01
Role x Gender	-0.13	0.32	0.70
Age x Gender	-0.94	0.43	0.03
Role x Age x Gender	0.00	0.67	1.00
Intercept	2.31	0.14	0.00

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## **Appendix H. Multifactor Leadership Questionnaire (MLQ) Leadership Characteristics**

### **I. TRANSFORMATIONAL LEADERSHIP (THE “5 I’S”)**

Transformational leadership is a process of influencing in which leaders change their associates’ awareness of what is important, and move them to see themselves and the opportunities and challenges of their environment in a new way. Transformational leaders are proactive: they seek to optimize individual, group and organizational development and innovation, not just achieve performance "at expectations." They convince their associates to strive for higher levels of potential as well as higher levels of moral and ethical standards.

#### **A. Idealized Influence (Attributes and Behaviors)**

These leaders are admired, respected, and trusted. Followers identify with and want to emulate their leaders. Among the things the leader does to earn credit with followers is to consider followers' needs over his or her own needs. The leader shares risks with followers and is consistent in conduct with underlying ethics, principles, and values.

##### **1. Idealized Attributes (IA)**

- Instill pride in others for being associated with me
- Go beyond self-interest for the good of the group
- Act in ways that build others' respect for me
- Display a sense of power and confidence

##### **2. Idealized Behaviors (IB)**

- Talk about my most important values and beliefs
- Specify the importance of having a strong sense of purpose
- Consider the moral and ethical consequences of decisions
- Emphasize the importance of having a collective sense of mission

#### **B. Inspirational Motivation (IM)**

These leaders behave in ways that motivate those around them by providing meaning and challenge to their followers' work. Individual and team spirit is aroused. Enthusiasm and optimism are displayed. The leader encourages followers to envision attractive future states, which they can ultimately envision for themselves.

- Talk optimistically about the future
- Talk enthusiastically about what needs to be accomplished
- Articulate a compelling vision of the future
- Express confidence that goals will be achieved

### **C. Intellectual Stimulation (IS)**

These leaders stimulate their followers' effort to be innovative and creative by questioning assumptions, reframing problems, and approaching old situations in new ways. There is no ridicule or public criticism of individual members' mistakes. New ideas and creative solutions to problems are solicited from followers, who are included in the process of addressing problems and finding solutions.

- Re-examine critical assumptions to question whether they are appropriate
- Seek differing perspectives when solving problems
- Get others to look at problems from many different angles
- Suggest new ways of looking at how to complete assignments

### **D. Individual Consideration (IC)**

These leaders pay attention to each individual's need for achievement and growth by acting as a coach or mentor. Followers are developed to successively higher levels of potential. New learning opportunities are created along with a supportive climate in which to grow. Individual differences in terms of needs and desires are recognized.

- Spend time teaching and coaching
- Treat others as individuals rather than just as a member of the group
- Consider each individual as having different needs, abilities and aspirations from others
- Help others to develop their strengths

## **II. TRANSACTIONAL LEADERSHIP**

Transactional leaders display behaviors associated with constructive and corrective transactions. The constructive style is labeled contingent reward and the corrective style is labeled management-by-exception. Transactional leadership defines expectations and promotes performance to achieve these levels. Contingent reward and management-by-exception are two core behaviors associated with 'management' functions in organizations. Full range leaders do this and more.

### **A. Contingent Reward (CR)**

Transactional contingent reward leadership clarifies expectations and offers recognition when goals are achieved. The clarification of goals and objectives and providing of recognition once goals are achieved should result in individuals and groups achieving expected levels of performance.

- Provide others with assistance in exchange for their efforts
- Discuss in specific terms who is responsible for achieving performance targets
- Make clear what one can expect to receive when performance goals are achieved
- Express satisfaction when others meet expectations

#### **B. Management-by-Exception: Active (MBEA)**

The leader specifies the standards for compliance, as well as what constitutes ineffective performance, and may punish followers for being out of compliance with those standards. This style of leadership implies closely monitoring for deviances, mistakes, and errors and then taking corrective action as quickly as possible when they occur.

- Focus attention on irregularities, mistakes, exceptions, and deviations from standards.
- Concentrate my full attention on dealing with mistakes, complaints and failures
- Keep track of all mistakes
- Direct my attention toward failures to meet standards.

### **III. PASSIVE/AVOIDANT BEHAVIOR**

Another form of management-by-exception leadership is more passive and "reactive": it does not respond to situations and problems systematically. Passive leaders avoid specifying agreements, clarifying expectations, and providing goals and standards to be achieved by followers. This style has a negative effect on desired outcomes—opposite to what is intended by the leader-manager. In this regard, it is similar to laissez-faire styles—or "no leadership." both types of behavior have negative impacts on followers and associates. Accordingly, both styles can be grouped together as 'passive-avoidant leadership'.

#### **A. Management-by-Exception: Passive (MBEP)**

- Fail to interfere until problems become serious
- Wait for things to go wrong before taking action
- Show a firm belief in "if it ain't broke, don't fix it."
- Demonstrate that problems must become chronic before I take action

#### **B. Laissez-Faire (LF)**

- Avoid getting involved when important issues arise
- Am absent when needed
- Avoid making decisions
- Delay responding to urgent questions

## Appendix I. IRB approval letter and application

### Oklahoma State University Institutional Review Board

Date: Tuesday, October 29, 2013 Protocol Expires: 10/2/2016

IRB Application No: HE1359

Proposal Title: Exploring Personal Capacities of Student Leaders for Sustainable Development: Paths and Practices

Reviewed and Processed as: Exempt  
**Modification**

Status Recommended by Reviewer(s) **Approved**

Principal Investigator(s):

Rachel Eike  
431 Human Sciences  
Stillwater, OK 74078

Sissy R. Osteen  
233 HS  
Stillwater, OK 74078

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The requested modification to this IRB protocol has been approved. Please note that the original expiration date of the protocol has not changed. The IRB office MUST be notified in writing when a project is complete. All approved projects are subject to monitoring by the IRB.

- The final versions of any printed recruitment, consent and assent documents bearing the IRB approval stamp are attached to this letter. These are the versions that must be used during the study.

The reviewer(s) had these comments:

1. Increase number of participants by 360
2. Add Kassey Steele as a Co-PI who will recruit the OSU Subjects
3. Add recruitment on OSU campus of AASHE & OSU leaders
4. Post information including recruitment on AASHE website and facebook page
5. Recruit via the AASHE conference attendee list
6. Participants will complete the survey electronically
7. Remove Eco-Prize pack information from AASHE questionnaire

Signature :



Shelia Kennison, Chair, Institutional Review Board

Tuesday, October 29, 2013  
Date

Application for Review of Human Subjects Research <b>Submitted to the</b> <b>Oklahoma State University Institutional Review Board</b> Pursuant to 45 CFR 46	HE 1359 IRB Number  FOR OFFICE USE ONLY
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Title of Project: Exploring Personal Capacities of Student Leaders for Sustainable Development: Paths and Practices

Is the Project externally funded?  Yes  No If yes, complete the following:  Private  State  Federal

Agency: Grant No: OSU Routing No:

Type of Review Requested:  [Exempt](#)  [Expedited](#)  [Full Board](#)

**Principal Investigator(s):** *I acknowledge that this represents an accurate and complete description of my research. If there are additional PIs, provide information on the additional PIs form.*

Rachel J. Eike		October 24, 2013
<b>Name of Primary PI (typed)</b>	Signature of PI	Date
Design Housing and Merchandising	Human Sciences	
Department	College	
201N Whitehurst	744-5330	<a href="mailto:rachel.eike@okstate.edu">rachel.eike@okstate.edu</a>
PI's Address	Phone	E-Mail

[Required IRB Training Complete:](#)  Yes  No  
 (Training must be completed before application can be reviewed)

<b>Name of Co-PI (typed)</b>	Signature of Co-PI	Date
Department	College	
PI's Address	Phone	E-Mail

[Required IRB Training Complete:](#)  Yes  No  
 (Training must be completed before application can be reviewed)

**Adviser (complete if PI is a student):** *I agree to provide the proper surveillance of this project to ensure that the rights and welfare of the human subjects are properly protected.*

Sissy Osteen		October 24, 2013
<b>Adviser's Name (typed)</b>	Signature of Adviser	Date
Human Development and Family Sciences	Human Sciences	
Department	College	
233 Human Sciences	744-8029	<a href="mailto:sissy.osteen@okstate.edu">sissy.osteen@okstate.edu</a>
Adviser's Address	Phone	E-Mail

[Required IRB Training Complete:](#)  Yes  No  
 (Training must be completed before application can be reviewed)

## VITA

Rachel Jean Eike

Candidate for the Degree of

Doctor of Philosophy

Thesis: EXPLORING STUDENT LEADERS FOR SUSTAINABLE DEVELOPMENT:  
LEADERSHIP COMPONENTS & PERSONAL PRACTICES

Major Field: Human Sciences

Biographical:

Academic Background:

Completed the requirements for the Doctor of Philosophy in Human Sciences at Oklahoma State University, Stillwater, Oklahoma in May 2014.

Completed the requirements for the Master of Science in Design Housing and Merchandising at Oklahoma State University, Stillwater, Oklahoma in December 2009.

Completed the requirements for the Bachelor of Science in Apparel Merchandising Design and Production at Iowa State University, Ames, Iowa in May 2007.

Professional Qualifications:

Completed the requirements for the Endorsement in Program Assessment, awarded by University Assessment at Oklahoma State University in May 2014.

Completed requirements of the University Faculty Preparation Certification program, awarded by Graduate College at Oklahoma State University in May 2013.

Professional Memberships:

International Textile and Apparel Association (ITAA)

Association for the Advancement of Sustainability in Higher Education (AASHE)

American Association of Family & Consumer Sciences (AAFCS)