

A COMPARATIVE STUDY OF THE DEGREE OF SELF-DIRECTEDNESS IN HIGH
SCHOOL CAREER AND TECHNICAL STUDENT ORGANIZATIONS WITHIN A
SOUTHEAST REGIONAL EDUCATIONAL SERVICE AGENCY

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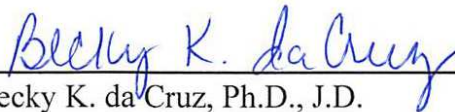
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ABSTRACT

Career and Technical Student Organizations and Career and Technical Education programs in secondary education claim to prepare its students and members for post-secondary success. However, these claims are inherently difficult to study and quantify. By using a synthesis of the literature on emerging adulthood, self-directed learning, and self-leadership, this study explores the relationships between the presence of learner choice and readiness to engage in self-direction. Learners' readiness to self-direct in learning was assessed using the SDLRS and analyzed using a comparative quantitative methods design based on involvement in a Career and Technical Student Organization or completion of a Career and Technical Education pathway. This study also explores the roles that student leadership and gender may play in self-directedness. The results of this study are intended to bring about a deeper understanding of the relationship between self-directed learning practices in CTE and CTSOs to aid advisors and leaders in optimizing the organization's operation and implementation of opportunities toward postsecondary success.

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DEDICATION

This work signifies the concluding chapter of a journey wrought with challenges, celebrations, disappointments, and excitement, even sometimes all at once. As with any good thing, this work would never have been possible without my faith in the Lord.

To my amazing wife, Heather, as I write this on the day of our 15th anniversary, I am so thankful for your support. You have been an immense source of strength, encouragement, and voice of reason in some very tough times through this process. They are not giving out awards or degrees for that, but I want you to know the impossibility of going through this without you. I love you very much and look forward to this next phase of our lives!

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Chapter I

INTRODUCTION

Introduction to Study

Career and Technical Student Organizations (CTSO's) have long been an integral part of Career and Technical Education (CTE) programs in public education. These extracurricular organizations are content-specific yet generally hold similar beliefs, goals, and structures. The self-claims of CTSOs and the long-standing support through federal and state funding tout that involvement leads to better chances of postsecondary success and preparedness for high school students. CTSOs are a voluntary extracurricular option for high schoolers and are offered to emerging young adults when they are at a pivotal stage of development.

A progression toward becoming more self-directed often accompanies the typical high school experience for these young adults. Loeng suggested that the “tendency for self-direction to be a fundamental difference between children and adults in a learning situation” (2020, p. 45). The literature on self-directed learning (SDL) found that the presence of learner choice is the starting point for self-directedness with regard to learner individuality, context, and social capital (Garrison, 1997; Loeng, 2020; Schwartz, 2004).

CTSOs have been prevalent at the local, state and national levels in varying levels of representation and have been growing since Public Law 740 (Gordon, 2014, p. 273). A small number of more recent studies have been undertaken to determine CTSO/CTE efficacy upon postsecondary successes at a multi-state level (Alfeld et al., 2007), for

minority groups (Hinojosa et al., 2016), or for STEM/STEAM-specific interests (Borman et al., 2017).

The history around CTSOs is rich in the time in which each was founded. However, the research has not progressed at the same rate as the current environment in which they operate. The initial directive of federal expenditures towards chartering vocational student organizations is approaching its seventy-five-year anniversary, with only sparse and niche supporting studies in recent years. Likewise, the claims of CTSO remain empirically unchecked in those same studies. Finally, while the term “preparedness” remains subjective in definition only, several studies have shown connections between measured performance indicators in high school and levels of post-secondary college and career readiness. As a result, the following factors should be considered to understand fully the environment in which this study is undertaken.

Factors

Expenditures. In the state plan for Perkins V: Strengthening CTE for the 21st Century Act 2021 Plan, the State of Georgia projects its total allocations for FY21 at over \$19 million (Georgia Department of Education, 2020). Though not all this funding is reserved for CTSOs alone, funding for CTE programs remains a large portion of the state and federal budget. Each of the eight recognized CTSOs also has a funding stream at state and federal levels. When one also considers further local, community, advisor, student, and parental expenses, a considerable amount of expenditures occur for CTSO programs to exist, operate, and to involve students.

CTSO Claims. A review of several key CTSOs reveals very similar goals and structuring of events and activities that revolve around employability skills, structured

competitions, leadership, networking, career development, and job opportunities (Family, Career and Community Leaders of America, n.d.; Future Farmers of America, n.d.; Technology Student Association, n.d.). Each CTSO claims success in meeting its goals and justifies its historical and current existence by little more than non-empirical data or membership numbers. Given the long-standing presence of CTSOs and commonality of claims between each organization, “little research exists to support the claims of career and technical student organizations of the benefits to their members” (Zirkle & Connors, 2003, p. 15).

CTE Stigma. Possible connections between involvement in high school CTSOs and CTE and self-directedness could further aid in reducing the negative stigma associated with career and vocational education. Parents remain a primary facilitator of this stigma (Gauthier, 2020), and so the potential value of CTSO involvement as a complement to academic courses is often unrealized. Higher degrees of self-directedness leading to postsecondary success would be further realized by parents, community stakeholders, and administration. While the \$19 million of Perkins V funding may also justify the need for this study, it also could serve as a springboard for additional funding if connections to CTSO and CTE involvement and academic performance could be discovered. A study into this relationship could also bring localized findings to rural implementation of nationally recognized organizations to further guide efforts in refining and improving the efficacy of these organizations.

Statement of the Problem

The general acceptance by secondary educational institutions of CTSOs within public education continues with primarily self-purported claims of increased

opportunities for success and preparedness. Existing studies of the benefits of participation in CTSOs center around academic skills and application, employability, and entry into post-secondary education outcomes (Alfeld et al., 2007; Borman et al., 2017; Hinojosa et al., 2016). However, little is known about the relationship between self-directedness and participants in CTSOs.

Choice is the central and preemptive factor involved in self-directed learning and exists as a matter of degree to high schoolers in the form of CTE and CTSO involvement. Competitions are a primary activity in each of the eight nationally recognized CTSOs and prior research shows that the “more important competitive events and winning become to students, the more likely the student is to direct his or her own learning” (Kosloski, 2008, p. 22). Each CTSO offers numerous opportunities for students to learn in a structured, self-directed environment with the option to compete as an additional incentive.

Although the birth of CTSOs was a revolutionary effort at the time, little current research exists that continues to justify CTSOs’ expenditures nearly seventy-five years later. The changing educational environment, social contexts, and new theories of development mandate that even those long-accepted institutions be continually challenged. This current secondary educational environment that this study will analyze is crucial to understand the phenomenon of CTSO participation and extend those understandings beyond only those outward outcomes to those underlying and internal self-direction factors.

For many students, high school is also a time to mature and transition into adulthood as they explore their path in life. Arguably, part of this process is increased decision-making levels, more specifically, that of self-directedness and self-leadership.

The nature of CTSOs as an optional value-added component to one's high school career also necessitates an exploration of differences in self-directedness among CTSO student leaders. Student leadership as the outward manifestation of a developed self-leadership tendency could aid in making further connections to post-secondary success in emerging adults.

Purpose of the Study

The purpose of this study is to examine the differences in SDL readiness among participants in CTSOs and those involved in a CTE. By examining these differences in SDL readiness, the goal of the study is to build an understanding of relationships between the presence of learner choice as a primary CTSO/CTE characteristic and readiness to engage in self-direction. Post-secondary readiness and success are common claims of CTSOs yet are notably challenging to study and quantify. Therefore, readiness to self-direct is one key factor that is antecedent to lifelong learning, employability, academic engagement, and self-efficacy (Alfed et al., 2007).

The outcomes of this study will inform policy and decision-makers at all levels, from local CTSO chapter advisors, CTE teachers, and school and district administration to State CTSO advisors and policymakers. Additionally, the results of this study could be used to increase the effectiveness of and to refocus CTSOs' efforts towards their purported claims of postsecondary readiness and success. Finally, the information discovered will aid upcoming high schoolers, their parents, and guidance counselors in planning the students' high school career and realization of the potential of CTSO and CTE involvement.

Research Questions

This study will address the following questions:

1. To what degree, if any, is there a difference in readiness to self-direct between seniors who were involved in a CTSO (TSA, FFA, FBLA), those who completed a related CTE pathway, (Agriculture, Engineering, Business), and those who were not involved in either?
2. To what degree, if any, is there a difference in readiness to self-direct between gender within CTSO members, CTE pathway completers, and non-participants?
3. To what degree, if any, is there a difference in readiness to self-direct between CTSO student leaders and general CTSO members?

Theoretical Framework

Choice in Learning

Research Question 1 is tied to the degree of students' choice in their learning which is one of the first requirements for learners to begin the precursory steps towards the “entering/task phase” as outlined by Garrison’s 1997 proposed comprehensive SDL model (1997, p. 28). The characteristics of groups considered by this question, by design, follow the progressive nature of self-directed learning in terms of the degree of choice over learning tasks, strategies, and analysis of outcomes. Based on the self-directed learning theories of Garrison, Grow, Knowles, and Schwartz, as the degree of choice available in learning environments expands, the tendency and readiness to self-direct should also grow. The tenet of learner choice within the context of self-directed learning theory is best suited to frame the underlying factors in a decision to become more

involved as a response to a maturing mindset. CTE pathways and CTSOs are prevalent with progressive choice opportunities and merit research into a possible connection between involvement and readiness to self-direct in learning.

Pedagogical methods often provide little room for learner choice; however, high school is a period of time that may be thought of as a transition between childhood and adulthood. As such, this period is inundated with decisions about direction in life based on interests, influences, and motivators. Following Knowles (1975) proposition, learners become more self-directed as they mature, and part of that maturation process is making decisions. Self-directed learning (SDL), generally thought of in terms of adult education, was best described by Knowles (1975):

In its broadest meaning, SDL describes a process in which individuals take the initiative, with or without the help of others, in diagnosing their learning needs, formulating learning goals, identifying resources for learning, choosing, and implementing appropriate learning strategies, and evaluating learning outcomes.

(p. 18)

Just as complete autonomy in learning is not the purpose or goal of SDL, leaving learners with complete control, or choice, about their learning can also be detrimental. Schwartz (2004) best captured this in *The Paradox of Choice*, “the fact that *some* choice is good doesn’t mean that *more* choice is even better” (p. 3). His findings were consistent with previous work and gives pause that taking SDL methodologies to their extreme applications could lead to isolation, “*tyranny* of choice” (p. 80), demotivation, and choice overload (Adenuga, 1989; Brookfield, 1985; Grow, 1991; Loeng, 2020; Schwartz, 2000).

The very nature of making decisions, or choosing, must also consider that choices do not happen in a vacuum. That is, choice carries good, bad, and sometimes inconsequential consequences. From a humanistic perspective, this is simple trial and error, conditioning through punishment and reward. From a sociological perspective, choice consequences relate to societal norms, group acceptance, or rejection. However, choice as a construct within SDL and formal learning environments exists within the parameters of collaboration (Garrison, 1992), shared control (Garrison, 1997), and with appropriate levels of teacher support (Grow, 1991). Likewise, this may connect a more self-directed mindset to those who seek to become successful during and after high school through available opportunities.

High schoolers first have a choice in what electives they take. Most high schools offer up to the seventeen career clusters defined by the State Department of Education, with many pathways available within those clusters. A pathway is comprised of three related and progressive courses, the completion of which classifies the high schooler as a *pathway completer*.

Beyond the decision to complete a CTAE pathway, learners have the option to participate in Career and Technical Student Organizations (CTSOs). These organizations are completely voluntary and are not mandated by state graduation requirements. They are extracurricular and considered a “value-added” component to learning within a Career and Technical Education (CTE) program. CTSOs are modeled closely after self-directed learning methods and provide the environment for responsibility and control, two major tenets of sustained self-direction. Participants who have chosen to become

active members of a CTSO for two years during their high school career will represent a second participant group.

High schoolers may complete all minimum items required to graduate and choose not to participate in either of the previous groups. While they would have completed the minimum required elective hours, they have chosen not to participate in any additional opportunities for self-directedness. In this study, these learners represented a control group during the examination as non-participants.

Gender Imbalance in CTE

Research Question 2 is tied to ongoing gendered stigmas and gender imbalances within career and technical education and possible relationship to progression towards self-direction in learning. There is some evidence in prior studies that self-directed learning readiness may be different between genders (Long, 1989; Reio & Davis, 2005). Additionally, prior research indicates there continues to be gender underrepresentation in high school CTE environments (Lufkin et al., 2014; Hamilton et al., 2015). Based on these factors, it is important to determine whether these differences between males and females exist and a relationship in their readiness to self-direct in learning opportunities.

Leadership and Self-Direction

Research Question 3 is tied to the principle of self-leadership as a precursory step in leading others by Neck and Houghton and Neck and Manz's theory connecting self-leadership and self-direction (Neck & Houghton, 2006; Neck & Manz, 2004). Neck and Manz linked self-direction to self-leadership when they wrote: "Self-leadership is a self-influence process through which people achieve the self-direction and self-motivation necessary to perform" (2004, p. 271). This question explores potential differences in

readiness to self-direct between CTSO student leaders and their general member peers. As self-leadership is identified as an initial step towards leading others (Neck & Houghton, 2006), identifying a relationship in self-direction and leadership in high school seniors may contribute to a more robust understanding of self-leadership and implications for post-secondary preparedness. In addition to general preparedness and increased postsecondary success claims, student leadership skills through opportunity are succinctly tied to every recognized CTSO. The connection of student leadership and measures of post-secondary success in CTSOs has also been studied by several researchers (Brannon et al., 1989; Dormoody & Seevers, 1994; Wingenback & Kaahler, 1997).

Justification of Theory Application

Many terms may describe the central purpose of the quintessential high school experience, but arguably, preparedness is the common thread running through the concerted efforts of administration, staff, parents, and stakeholders. Becoming an adult involves many choices. Foremost among them is "What do I do when I graduate?" While state and federal mandates articulate set of base graduation requirements, there is a large degree of autonomy for young maturing adults in selecting courses and extracurricular involvement. Knowles posited that an adult learner's self-concept "moves from one of being a dependent personality towards being a self-directed human being" (Knowles, 1980, p. 19). As students are given autonomy over their learning direction and focus in a supportive environment, their self-efficacy is increased, creating more of a sense of postsecondary preparedness. As students and their parents make decisions about secondary and postsecondary paths, the choices for opportunities to grow and mature can be characterized by the key tenets of SDL and personal responsibility. The lens of Neck

and Manz's (2004) work in self-leadership will be used to theoretically frame factors of leadership opportunities and their role in postsecondary preparedness.

CTSO Scope

Clarifying the relationship between levels of CTSO and CTE involvement and SDL will involve investigation into three offered CTSOs: Future Farmers of America (FFA), Future Business Leaders of America (FBLA), and Technology Student Association (TSA) as well as their connected content pathway completers in Agriculture, Business, and Engineering. These CTSOs have been chosen for research as they are offered in the middle school feeder schools, and students have become familiar with them by the time they reach the high school level. The associated pathway completers are also categorically included as a third comparison group as many of the benefits of CTSOs are mandated by Georgia Standards of Excellence for inclusion in these CTE courses (Georgia Standards.org, n.d.a). While meeting the common state standards of CTSO as a part of the course content, the Agricultural pathways include FFA as the related CTSO, the Business pathways include FBLA as the related CTSO, and the Engineering pathways include TSA as the related CTSO.

Self-Directed Learning Readiness Scale

The self-directed learning readiness scale (Guglielmino, 1977) is a commonly used instrument for measuring learners' perception of their readiness for self-directed learning. The scale is structured around eight attitudinal and personality factors linked to self-directedness. Guglielmino, in the development of this instrument, described the existence of SDL "along a continuum" and as a set of "personal characteristics of the learner-including his attitudes, his values and his abilities" (Guglielmino, 1977, p. 34).

The development of the instrument also derived a description of a highly self-directed learner:

A highly self-directed learner, based on the survey results, is one who exhibits initiative, independence, and persistence in learning; one who accepts responsibility for his or her own learning and views problems as challenges, not obstacles; one who is capable of self-discipline and has a high degree of curiosity; one who has a strong desire to learn or change and is self-confident; one who is able to use basic study skills, organize his or her time and set an appropriate pace for learning, and to develop a plan for completing work; one who enjoys learning and has a tendency to be goal-oriented. (p. 73)

This description of the highly self-directed learner shares many of the characteristics of lifelong learners and is the epitome of preparedness for emerging adults.

Significance of the Study

As discussed in the opening statement of the problem, CTSOs continue to remain a central part of CTE programs within the public high school setting, with tremendous funding and effort behind them. The literature around the efficacy of CTSOs showed that they can play a role in academic engagement, grades, and transition to post-secondary institutions (Alfeld et al., 2007). The literature is full of self-purported benefits of each CTSO, including claims about how they could prepare members for careers, leadership, and build self-esteem (Family, Career and Community Leaders of America, n.d.; Future Farmers of America, n.d.; Technology Student Association, n.d.).

Scholars of SDL theory also suggested that the tenets of self-directedness, such as independence, control, and responsibility, are progressive and vary greatly depending on

context and motivation (Garrison, 1992; Garrison, 1997; Grow, 1991; Knowles, 1975). Learner choice is a prerequisite for self-direction and was crucial to understanding and monitoring a structured learning institution, especially one focused on preparing students for a variety of post-secondary options (Brockett, 2006; Schwartz, 2004; Stone, & Aliaga, 2007). Scholars also theorized connections between self-leadership as an attribute of SDL, and leading peers in learning tasks and outcomes (Neck & Houghton, 2006; Neck & Manz, 2004; Thompson, 2010).

Close examination of the literature about CTSO and CTE structure, operation, and environments showed that there were strong resemblance markers of SDL as a practice, valence and expectancy connections, and intentional opportunities for learner choice (Schimpf, 2011; Zirkle, & Connors, 2003). However, there is little research that examines the degree of learner readiness for self-directedness within CTSO environments and any possible influence on post-secondary preparedness.

As such, the significance of this study is two-fold. First, the results of this study may bring about a deeper understanding of the relationship between those secondary environments aligned to SDL practices and the degree of learner readiness to self-direct within its members. This study also explores the roles that student leadership and gender may play on SDL readiness. This study of differences between CTSO and CTE participants, male and female, and leader and general members, may also justify additional longitudinal studies of students in their high school career.

Secondly, the examinations of potential differences in SDL readiness between groups will provide implications to CTSO and CTE advisors and leaders to be able to optimize the organization's operation and implementation, to better prepare students to

live out their purported goals. Post-secondary preparedness carries many connotations, yet significant literature supported the unique developmental period of young adults as they exit secondary education (Arnett, 2000; Arnett & Tanner, 2006; Hogan & Astone, 1986). As such, the results of this study will aid CTSO/CTE staff and policymakers in constructing recruitment efforts which could help students begin the entering motivation step and “persist in learning activities and goals” (Corno, 1989, pp. 114-115).

Summary

The need for additional and localized research into the efficacy of CTSOs and CTE towards post-secondary preparedness begins with examining possible connections between personal indicators of readiness for self-directedness. However, given the reach of the two primary theoretical models into self-directed learning and self-leadership, the results of this study could impact policy and decision-makers tasked with advising and managing CTSO's. As the opportunity for far-reaching benefits, both in self-directedness and preparedness, become known, so could the opportunities for increased and refocused efforts of CTSOs towards their purported claims of postsecondary success.

Definitions of Terms

The following terms used in this study are defined to help the reader.

CTSO Advisor: An advisor is an educator tasked with managing the efforts, membership, recruitment, resources, fund-raising, and general administration of a local or state-level CTSO. Typically, this educator teaches in the associated CTE pathway of that organization, but it is not a requirement (Applied Educational Systems, n.d.; Family, Career and Community Leaders of America, n.d.; Future Farmers of America, n.d.; Future Business Leaders of America, n.d.; Technology Student Association, n.d.).

Career and Technical Education programs: CTE programs are a specific course sequence, or pathway, to ensure students across the state learn the same information for the same career, no matter which school or district they're in. Georgia has 17 defined career clusters with standards, although each school may not offer all 17 (Association for Career and Technical Education, n.d.; Georgia Department of Education, n.d.).

Career and Technical Student Organizations: CTSOs are an extracurricular group for students, typically those in CTE pathways, to further their knowledge and skills by participating in activities, events, and competitions (Applied Educational Systems, n.d.; Career and Technical Student Organizations, n.d.; Family, Career and Community Leaders of America, n.d.; Future Business Leaders of America, n.d.; Future Farmers of America, n.d.; Technology Student Association, n.d.).

Career and Technical Student Organization student leader or officer: A CTSO officer is a student in a position or office of leadership that a member may voluntarily hold within the confines of the "student-led" nature of the organization. These officer positions are similar across the eight nationally recognized organizations and exist at the local school, state, and national levels (Family, Career and Community Leaders of America, n.d.; Future Business Leaders of America, n.d.; Future Farmers of America, n.d.; Technology Student Association, n.d.).

Family, Career, and Community Leaders of America: FCCLA is a national student-led organization for young men and women in Family and Consumer Sciences education in public and private school through grade 12 offering intra-curricular resources and opportunities for students to pursue careers that support families (Family, Career and Community Leaders of America, n.d.).

Future Business Leaders of America: FBLA is a national student-led organization focused on helping students become community-minded business leaders in a global society through relevant career preparation and leadership experiences through the ideals of service, education, and progress. One noted difference is that this organization is also offered collegiately (Future Business Leaders of America, n.d.).

Future Farmers of America: FFA is a national student-led organization for those interested in agriculture and leadership, combining the strengths of classroom education, work-based experiential learning and career preparation and leadership through competition and leadership opportunities (Future Farmers of America, n.d.).

Pathway Completer: A CTE pathway completer is a student who earns three or more course credits in one sequenced CTE pathway cluster and successfully passes the associated End of Pathway Assessment (Georgia Standards.org, n.d.a; Hummel, 2023).

Perkins V: Perkins V is a piece of legislation called Strengthening Career and Technical Education for the 21st Century Act of 2018 designed to improve and expand high-quality Career and Technical Education (CTE) programs that meet both student and employer needs (Georgia Department of Education, n.d.).

Self-Directed Learning: SDL is a process in which individuals take the initiative, with or without the help of others, in diagnosing their learning needs, formulating learning goals, identifying resources for learning, choosing, and implementing appropriate learning strategies, and evaluating learning outcomes (Garrison, 1997; Knowles, 1975).

Technology Student Association: TSA is a national student-led organization devoted exclusively to the needs of middle and high school students interested in science,

technology, engineering, and mathematics (STEM) by partnering with universities, organizations, and industries to provide and promote a variety of STEM competitions and leadership opportunities for students (Technology Student Association, n.d.).

Chapter II

LITERATURE REVIEW

Introduction

This chapter serves as a literature base for the central components of this study. This study remains focused on exploring potential differences in levels of readiness to self-direct found across two groups offering progressive degrees of learner choice in CTSOs and CTE pathways. Given the long-standing integration of both CTE and CTSOs in state and national educational efforts, it is important to gain an understanding of the historical and present factors upon which the study is built. This review will cover what is currently known about CTE and CTSO and their links to SDL and the availability of learner choice in learning. What is not known, gaps within the literature, and potential discrepancies of key studies will also be discussed. An in-depth review of the primary theoretical framework for this study, self-directed learning, is covered within the context of high schoolers. Self-leadership, leadership, and related studies involving CTSOs' claims to this aspect of preparedness will be addressed.

Career and Technical Education

The roots of career and technical education (CTE) can be traced to before the formal establishment of public education, in the early portion of the twentieth century (Gordon, 2014). Other historians contend that sixteenth-century apprenticeship practices led the way to formal CTE (Association for Career and Technical Education, n.d.). Booker T. Washington, W.E.B. Du Bois, David Snedden, Charles Prosser, and John

Dewey are each credited with the advancement of particular CTE educational reforms and the eventual integration of CTE into public education. One common thread of agreement, however, is that CTE programs as a whole are designed to help students apply academic knowledge and skills in contextual engagements (Achieve, Inc., 2004; Gordon, 2014; Stone et al., 2006; Stone et al., 2007).

With this understanding, CTE and academic achievement have been the subject of studies which ask questions about the depth, breadth, and individuals involved in CTE. The eventual integration of CTE into academia, sparked by the Carl D. Perkins Vocational and Applied Technology Education Act of 1984 (McCaslin & Parks, 2002), was a slow process but was the focus of several key studies which attempted to measure the implications of CTE involvement on academic achievement. Castellano et al. found that CTE-integrated high school students “fared better on many measures of mathematics coursework than their counterparts at the control schools” (2003, p.231). The importance of learning engagement and application-based environments has been well-validated (Berns & Erickson, 2001; Bransford, et al., 2000) and has been a central thrust of CTE courses. Additional studies also contended that CTE involvement could be attributed to a lower likelihood of high school students dropping out (Plank et al., 2005; Schimpf, 2011).

Over the last thirty years other studies have seemingly contradicted the findings that there were any direct connections between CTE and academic achievement. In particular, research found non-significant differences when examining participants and non-participants (Mulcahy, 2007; Rasinski & Pedlow, 1994). Mulcahy’s work might be questioned due to the use of a single measurement of academic performance, the

American College Test (ACT). Yet, other studies which also used the ACT as a measure of academic achievement found significant differences, even among CTE concentrations (Michaels & Liu, 2020).

Given the historical foundations of CTE, strong leaders who believed in and pushed for CTE integration, and educational reforms that have kept CTE the focus of numerous studies throughout the years, there is significant literature about this topic. A Georgia Library Learning Online (GALILEO) search limited to peer-reviewed journals using the following Boolean search operators readily yields 11,428 results: *career and technical education OR cte OR vocational education OR occupational training AND academic achievement AND secondary school OR high school OR secondary education*). Yet there appears to be a discrepancy in results both in significant and non-significant findings; the literature also shows temporal trend swings over the years. The results also show differences between local and national studies.

Career and Technical Student Organizations

The unique establishment of CTSOs began with the passing of Public Law 740 in 1950 which chartered the beginning of Future Farmers of America (FFA) and, as Gordon (2014) noted, “was the only act to federally charter a vocational student organization” (p. 273). This act would also establish the pattern for the development and support of the remaining seven CTSOs that are federally recognized, although many have changed names since their inception as the following: Business Professionals of America (BPA), Distributive Education Clubs of America (DECA), Future Business Leaders of America - Phi Beta Lambda (FBLA-PBL), Family, Career and Community Leaders of America

(FCCLA), Health Occupational Students of America (HOSA), SkillsUSA, and Technology Student Association (TSA).

While the State of Georgia loosely requires credits in Career, Technical, and Agricultural Education (CTAE) (CTAE is generally synonymous with CTE), and/or Modern Language/Latin, and/or Fine Arts for graduation (Georgia Department of Education, 2011), participation in CTSOs are optional in most public high schools that offer them. Alfred et al. (2007) posited that CTSOs can be considered a “more intense involvement in a particular field” by helping students explore career paths, prepare youth to become productive citizens, and assume leadership roles in their communities (Reese, 2003).

In a National Research Center for Career and Technical Education 2007 quasi-experimental study titled *Looking Inside the Black Box: The Value Added by CTSOs to Students' High School Experience*, Alfred et al. found that CTSO involvement was associated with increased academic engagement, career self-efficacy, and employability skills. This multi-state and multi-element study was cited by several other subsequent works as evidence of the efficacy of CTSOs concerning employability skills, achievement, and post-secondary success. Even in this well-funded and in-depth national study, the authors suggested further research into the effect of CTSOs on academic achievement, factors of race, gender, and family income as well as post-graduation activities was needed (Alfred et al., 2007).

Literature Gap

Refined literature searches were conducted to identify studies on the direct effects of CTSOs on academic achievement. These searches which focused on academic

achievement indicators that have been determined to predict certain post-secondary successes, yielded few returns. A GALILEO search of peer-reviewed articles using the following Boolean search terms yields only three articles: *Career and Technical Student Organizations AND predictors OR indicators AND academic achievement or academic performance or academic success*. Similar searches with the following terms yield zero results: *Career and Technical Student Organizations AND predictors OR indicators AND post secondary success OR post-secondary success*. While one may argue that CTE and CTSO are synonymous, and therefore should be considered equally beneficial for students, there exists few studies that compare the differences between participation in CTSOs by multiple measures of academic success. Additionally, when one incorporated Scott and Sarkees-Wircenski's argument that participation should be viewed as a choice continuum (1996) from a non-participant, to CTE pathway completer, to CTSO member, no literature was found.

Self-Directed Learning

Self-Directed Learning Among High Schoolers

The concept of self-directed learning (SDL) dates at least as far back as the publishing of Houle's book *The Inquiring Mind* in 1961, although he did not often use the term itself (Loeng, 2020). SDL was further popularized by the often cited works of Knowles and Tough and launched what Brookfield referred to as "the period of self-directed learning characterization" through the 1970s (1985, p. 8). One of Knowles's assumptions about adult learners was often the starting place for conversations about SDL. He stated that each adult learner's self-concept "moves from one of being a dependent personality towards being a self-directed human being" (1980, p. 19). This

review of literature will be focused upon SDL among high school students and identified thematic elements that led to a synthesis statement regarding public high school as an environment for the progressive and situational nature of self-directedness.

Themes Surrounding SDL

Width of SDL Approaches. Given the saturation of research, studies, and theories on self-directed learning as an adult learning concept, there was still debate about the manner in which adults learn. Brookfield (1985) was especially critical of prior SDL research and cautioned against the contradictions, assumptions of generalizability, and ambiguities that were present in SDL literature. Brookfield arrived at the problematic conclusion that much of SDL research unequivocally declared self-directedness as the goal of adult education or that all adults are by nature self-directed. His critical review questioned the conjoined views of SDL as both the goal and method of adult education.

Long (1989) delineated SDL along three dimensions: sociological, pedagogical, and psychological and he implied social independence in learning, procedural freedoms in learning, and learner abilities and skills, respectively. This multifaceted approach is more sensitive to the complexities of defining adult learning and the high variance found in formal and informal learning contexts. Long was critical of the trend he witnessed in SDL discussions that focused primarily on sociological and procedural views to the exclusion of the psychological view of learners and their degree of willingness to gain and maintain control of their learning process.

As the breadth of SDL theory approaches gained interest and criticism, Garrison's work sought to unify the fragmented and wide array of concepts and issues in the field of adult education. His first task was to bring about unified view of two dominant

theoretical frameworks in adult education: critical thinking and self-directed learning (Garrison, 1992). His approach posited that both “internal processing of information (i.e., responsibility for constructing meaning) and the external management of the educational process (i.e., control)” are to be considered viable components of educational settings (1992, p.137).

Five years later, Garrison (1997) elaborated further upon a conjoined theoretical approach. He acknowledges the complexities and problems of defining an all-inclusive model that maintained isolated dimensions of self-directed learning. In response, Garrison proposed a comprehensive model containing three intimately connected dimensions: self-management, self-monitoring, and motivation. These three components were connected and must also be thought of as concurrently integrating “contextual, cognitive, and motivational dimensions of the educational experience” (1997, p. 29). It is this comprehensive model that will serve as this literature review’s foundation for understanding SDL.

SDL and Andragogy. Adult learning is characterized by Knowles’s four principles of andragogy and is inherently different from that of pedagogy (Knowles, 1984). Adult learners typically have more amassed life experiences than their younger counterparts and, therefore, are more readily poised to connect new avenues of learning in a constructivist manner. Real experiences provide the medium for learners to connect new learning to existing meanings within the context of their respective environments. Immediate parallels between andragogy and SDL become obvious as Knowles (1984) suggested that adults need to be involved in the planning and evaluation of their learning and are most interested in learning subjects that have immediate relevance and impact.

Knowles also concluded that adults established a readiness to learn when their life situation creates the need to know (1984).

SDL as a Conundrum and Continuum. Since Knowles's early work, *The Modern Practice of Adult Education* in 1970, and the follow-up in 1990, he has argued adults have an innate and deep psychological need to be perceived by others as being self-directed. As addressed earlier, Knowles also stated that an adult's self-concept "moves from one of being a dependent personality towards being a self-directed human being" (1980, p. 19). This directional language was the first indication of theorizing SDL as a continuum or, at a minimum, a progression towards a goal or arriving at a state of self-direction. The conundrum that lies in the idea of an ultimate goal is best captured in Brookfield's statement: "if self-direction is held to mean that the learner has complete control over the choice of learning content, purposes, evaluative criteria and methods, then the educator ceases to be an educator in any meaningful sense" (1988, p. 35).

Grow (1991) also argued the progressive nature of SDL occurs in sequential stages as learners move towards self-direction. He stated the "teacher's purpose is to match the learner's stage of self-direction and prepare the learner to advance to higher stages" (1991, p. 129). Learners progress through four steps of the staged self-directed learning (SSDL) model: dependent, interested, involved, and self-directed. Teachers serve differing roles of authority coach, motivator-guide, facilitator, and consultant-delegator, respective of each of the aforementioned stages. While Grow's SSDL model provided a structure for visualizing the progression of SDL, he believed and cautioned that mismatches of teaching methods to learner stage could hinder progression. Thus, he

drew attention to implications of SDL being an informant to learning environment planning.

SDL as Situational. Self-directed learning has garnered criticism around incorrect assumptions that gird many theoretical claims and what Brookfield called a “too ready acceptance of the idea that a drive towards self-direction is an innate characteristic of adulthood, readily apparent in all teaching-learning transactions” (1985, p. 121). Loeng (2020) added that “self-direction cannot be perceived as a universal characteristic of being an adult but rather a situational characteristic” (p. 8). This statement is in keeping with Knowles’s findings that the “ability to self-direct is independent of age but dependent of situation” (Loeng, 2020, p. 8).

The reexamination of Grow’s stages within his SSDL model also contributed to the idea of SDL as a situational construct. “What is ‘good teaching’ for one student ... may not be ‘good teaching’ for another...” (Grow, 1991, p. 140). The SSDL model also includes andragogical assumptions at each level, further contributing to the previous thematic element of SDL as a continuum. By Grow’s standard, formal educators must also consider situationality at the student level and that a single class may contain learners at varying degrees of self-direction. Adenuga (1989) agreed and posited that assessment of a student’s learning styles was crucial to understanding a learner’s readiness for SDL and indicated to the educator that individual adaptation to the level of readiness was needed.

SDL and Choice. Most pedagogical methods provide little room for learner choice. But the presence of choice is one of the first requirements for learners to begin the precursory steps towards the “entering/task phase,” as outlined by Garrison’s 1997

proposed comprehensive SDL model (1997, p. 28). Just as complete autonomy in learning is not the purpose or goal of SDL, leaving learners with complete control, or choice, of their learning direction can also be detrimental. Schwartz (2004) best captured this in *The Paradox of Choice*, “the fact that *some* choice is good doesn’t mean that *more* choice is even better” (p. 3). His findings were consistent with previous work and cautioned against taking SDL methodologies to their extreme applications, which could lead to isolation, “*tyranny* of choice” (p. 80), demotivation, and choice overload (Adenuga, 1989; Brookfield, 1985; Grow, 1991; Loeng, 2020; Schwartz, 2000).

The very nature of making decisions, or choosing, in life must also consider that choices do not happen in a vacuum. That is, choice carries good, bad, and sometimes inconsequential consequences. From a humanistic perspective, this is simple trial and error, conditioning through punishment and reward. From a sociological perspective, choice consequences relate to societal norms, and group acceptance or rejection. However, choice as a construct within SDL and formal learning environments exists within the parameters of collaboration (Garrison, 1992), shared control (Garrison, 1997), and appropriate levels of teacher support (Grow, 1991).

High School as a Transition Period. High school is a period that may be considered as the preliminary transition between childhood and adulthood. As such, this period is inundated with decisions about direction in life, based on interests, influences, and motivators. While age is the primary criterion for enrollment in high school formal learning institutions, the characteristics of what constitutes an adult learner are not defined by simply by age. Loeng suggested the “tendency for self-direction to be a fundamental difference between children and adults in a learning situation” (2020, p. 45).

Following Pratt's (1988) work, the relationship between pedagogy and andragogy was defined using a quadrant of two learning needs: direction and support. Independence in learning increases as learners become less dependent on a teacher for direction and support. Subsequently, Pratt suggested that progression from dependent to independent learners should be matched with a transition from pedagogical methods to andragogical practices.

Knowles further differentiated pedagogical and andragogical theories by stating that "pedagogy is traditionally considered as a transfer of information and that outer influences determine the learning outcome" (Merriam, 2001, p. 83). Conversely, andragogy emphasizes the progression of learners towards independence, where educators are encouraged to serve in a facilitator role. Merriam also combined the nearly simultaneous emergence of andragogy and SDL as early efforts to establish a new definition of adult learning that is uniquely different from pedagogy and general learning theory.

Educational reforms at the high school level have resulted in increased efforts and focused standards that are congruent with the principles of self-directed learning. A quick review of current Georgia state standards in academic courses reveals language synonymous with core SDL theory (Georgia Standards.org., n.d.a). Project collaboration, critical thinking skills, structured problem-solving, and student choice centered around core objectives are included in nearly every course area regardless of whether it is an academic or career and technical education (CTE) course. This trend in the guiding documents of the field establishes the general acceptance of a key tenet of SDL that

Loeng defines as “a collaborative process between the teacher and the learner’ (2020, p. 2).

Conditions of formal high school institutions also inherently position educators to become a critical component in the transitory phases of becoming an adult. Garrison, citing the work of Prawat (1992) and Resnick (1991), stated that “while it is possible for some mature learners to rise above a learning context where they have little control, a collaborative environment ... is more conducive to constructing meaningful knowledge” (1997, p. 23). Common educational objectives set forth by state and national standards provide the balancing weight on the scale opposing the extreme of full autonomy in learning direction. This measure of structure provides learners the environment in which to “test and confirm understanding collaboratively” which demonstrates *interdependence*, a term used by Garrison to reflect the needed inclusion of institutional or subject norms while maintaining learner choice (1997, p. 23).

One sociological perspective on the transition to adulthood suggest that one indicator of adulthood is the exit from the role of full-time student (Marini, 1984). Additionally, interpretations of Piaget’s definition of adolescence as a cognitive task indicate that young people move toward adulthood through the achievement of operational reasoning (Hogan & Astone, 1986; Keating & Clark, 1980). As one merges these two sociological markers, formal education at a high school level are the closing chapters of pedagogical practices for most young people. High school students’ age is also the last years of education that fall under compulsory education laws, at least through age sixteen in most states, with only a few exceptions (Compulsory Education Laws, 2016). This milestone may also be considered a marker in the transition to

adulthood, or at the very least, it should emphasize the need to prepare students with SDL skills during their high school years. As such, policymakers in formal education have and continue to pursue the establishment of an environment that best prepares its constituents for a successful transition into adulthood.

SDL Synthesis

Thus far, the literature supporting self-directed learning among high school students falls into several thematic categories. The heavy prevalence, popularity, and paradigms of SDL as a thought and practice establishes this as an orthodoxical trend in adult education. SDL and andragogical tenets share many assumptions about adult learners. Caution is acknowledged when certain aspects of SDL are carried to extremes, creating at least a conundrum, and at times a contradiction, of self-directedness. The literature also uncovered a trend of SDL as a degree where learners progress along a continuum towards higher states of self-direction. Situationality is another key literary theme of SDL and brings attention to the individuality of learner needs and the variance in self-direction ability across time, context, subject, and institutional norms. The vitality of choice is also commonplace in SDL literature, with specificity as to structuring the degree of choice in alignment with the level of self-directedness. The final theme positions the application of prior themes upon the population of interest for this literature review, high school students as learners transitioning into adulthood.

Given a thorough literature examination and processing of thematic elements, three conclusions are provided that encompass self-directed learning among high school students: SDL as a practice, SDL as a process, and formal high school institutions as appropriate support mechanisms.

SDL as an Andragogical Practice. The nearly simultaneous appearance of andragogy and self-directed learning in the world of adult education theory begs attention from educators and educational researchers alike, especially for those working with young adult learners. Local implementation based on previously identified themes of situationality and individuality of SDL becomes important. Schmertzing reiterated with his statement: “It is my position that if schools are to be reformed in a way that allows quality teaching and learning appropriate for local contexts (communities), it must be driven more from the grass roots (ground up) than from the top down (one best system)” (2008, pp. 11-12).

Educators as research practitioners, even informally, who understand SDL and seek to deeply incorporate its tenets into the fabric of their methodology, environment, and levels of support, could be the most efficient and responsive way to react to the constantly changing learning environment. The resiliency of many educational institutions during the pandemic have been studied for their correlation with measures of self-determination, and self-directedness in students. Many other psychological, social, and economic disparities complicate that premature conclusion, yet it does merit consideration and possibly a retooling of the presence and condition of Garrison’s precursors to motivation. As motivation is presented as the launch platform for self-directedness, educators must forgo the misconception that self-direction is innate or simply a product of age, and work to create the environment that allows expectancy and valence (Garrison, 1997).

SDL as a Process of Maturation. It is perhaps even more important for high school educators to understand the impact, evidence, and implementational aspects of

self-directed learning, more so than purely adult-only educators. Learning is contextual upon content, prior experiences of learners, existing self-confidence, self-efficacy, and self-management factors. High school students often have fewer life experiences than adult learners, so educators must be adept at evaluating maturation in learners and maintaining a constant pulse on degrees of control, responsibility, level of learner choice, and even allowing for failure in learning tasks and projects. This is a monumental task for educators, an intentional moving target that, at its core, is designed with the expected change of teaching methods to match the level of self-directedness in constant progression towards a more independent and confident lifelong learner.

High School Institutions as SDL Support Mechanisms. Educators and policymakers at formal high school institutions are in a pivotal position to guide and support transitioning young adults. High school years are the crux of so many life-altering decisions about post-secondary paths. As the last level of compulsory education in most states, the goal must be to aid and support the progression of learner's self-concept, responsibility, and self-efficacy in decision-making prior to exit. With the introduction of more crossover programs like work-based-learning, dual-enrollment, apprenticeship programs, and more like these, major decisions come earlier and at a faster rate for many students.

Choice, as addressed in earlier portions of this literature review, is the single most important feature of SDL. Fortunately, the current high school experience includes many systems of choice. In state-mandated core academic course lineups, there is less room for freedom of choice, though educators may build some flexibility around common standards. Aside from those state and national course units in English, mathematics,

science, and social studies, students have the freedom to explore and choose what courses to use to fill an additional thirteen elective unit slots. Most public high schools in Georgia offer nearly all these seventeen career clusters in Career, Technical, and Agriculture Education (CTAE), as well as Band, Art, Theater, and other Fine Arts. As indicated by Georgia Standards.org (n.d.a), the purpose of these clusters and pathways is to show students the relevance of what they are learning in the classroom, to explore interests and build confidence in skills; both those related to applying academic knowledge to real world situations and those non-academic factors of collaboration, tangible skills, and problem solving.

Extracurricular activities, organizations, clubs, athletics, and a myriad of other “non-academic supports” that Hoffman and Miller (2020) addressed, deepen the multiple layers of choice, and enrich the combinations of contextual, cognitive, and motivational dimensions of the educational experience (Garrison, 1997). Each of these organizations offered student leadership opportunities where they begin the transformative process of moving from self-efficacy and self-leadership to leading others, a connection explored in more depth in the subsequent leadership section. School-level policies and decision-making show evidence of SDL support and the process of exercising responsibility and control. For example, student advisory teams give transitioning adults a seat at the boardroom table with adult administration and leadership.

The existing structure of the public high school can encourage andragogy and SDL methodologies at the crucial pre-staging of transitioning adults, who are beginning to take key first steps in life-altering decisions. However, surface-only understanding of SDL leads to what Brookfield (1985) fervently cautioned his readers against, the

assumption that adults will become by nature alone fully self-directed human beings. Self-directedness occurs with the precise implementation of learning environments by educators who understand that SDL is a learned and practiced skill aimed at what adults “ought to be,” not what they are as a simple byproduct of nature.

Leadership

As Bennis stated about leadership theory, “probably more has been written and less is known about leadership than about any other topic in the behavioral sciences” (1959, p. 259). While this statement may be true, that need not dissuade researchers from clarifying the tenets of leadership as seen from within the context of which it is to be applied. Leadership is a lifelong process consisting of both internal and external influences and is shaped by experiences at each phase of maturity progression. Early childhood and adult experiences shape each individual and can begin to develop emotional intelligence, an internal compass, and self-leadership.

Supporting Theoretical Approaches

Social Cognitive Theory and Self-Leadership. Bandura’s (1977) theory of social cognition is used in many arenas including education, psychology, and curriculum development. Its relevance to leadership theory is best explained by Neck and Houghton (2006) in terms of self-leadership. The premise is that individuals have a degree of control over the goals of their own performance. This control is also directly influenced by their level of self-efficacy, which, as Bandura suggests, is a relationship among internal and external influences and behavior in general. When considering this theory and its implications, it is also important to distinguish between self-leadership and self-management. As Plöbst interpreted the work of Neck and Houghton, self-management

“consists of a set of strategies, which are designed for individuals to manage their behavior ‘with respect to reducing discrepancies from immediate externally set standards’” (2013, p. 5). Additionally, Plöbst defined self-leadership as an approach that “puts a much stronger focus on the self-influence in terms of what should be done and why” (2013, p. 6). This reflects the understanding that self-management is a temporal, immediate, and controlling behavioral response to external influences. Self-leadership, however, does contain self-management markers but also consists of how one develops lasting internal standards. This series of experiences contribute to the development of behavioral response and builds a collection of ever-increasing and predetermined criteria of response to new experiences.

Behavioral Approach. Leadership is typically immediately associated with leader-follower relationships in a structured organizational context. Though this section will travel full circle back to self-leadership, it is important to address this typical assumption of the context of leadership. Northouse (2018) describes the behavioral approach and cites the work of Blake and McCauley at Ohio State University (1991) as the combining of two kinds of behavior. Their leadership grid shows the relationship of *task* and *relationship* behaviors with continuums of concern for people and concern for results.

One identified strength of the behavioral approach is its heuristic nature. As leaders progress through experiences in which they can assess their behavioral responses, self-leadership influences their reflection about how they may want to change or improve in the future. As the leader develops an understanding of how their behaviors may fall into task-related or relationship behaviors, it forces consideration of what Plöbst (2013)

described earlier as *what should be done* (task) and *why* (relationship). Although the behavior approach alone is far too limited in its consideration of leadership's complexities, it can serve as a key connector to how one relates central organizational goals and the people-factor of those who will accomplish them.

Skills Approach. Often leadership studies take one of two subconscious underpinnings: nature versus nurture. Put in question format, are leaders born or can leadership be learned and practiced? The skills approach purports that leadership may be defined as a “set of developable skills” (Northouse, 2018, p. 43). This approach appears to answer the problems of trait-only leadership approaches. As such, this approach answers the previous question in that leadership can be learned and practiced.

The early work of Katz set the stage for this approach by analyzing three administrative skills: technical, human, and conceptual (1955). However, more weight is now given to the more recent work of Mumford et al. (2000) and their development of a more comprehensive skills model. The additional consideration of experiences, both career and environmental, add to the growing philosophy of this paper defining leadership in relation to experiences and internal influences. Crystallized cognitive ability is a key term that addresses the ideas and mental abilities people learn through experiences and that remain stable over time (Northouse, 2018). These experience-driven learned individual abilities encompass problem-solving, conceptual ability, and social judgment skills. Another important facet researchers and educators must extract from this approach is the influence of internal environmental factors. Northouse indicated that a leader’s performance is directly affected by their followers’ competencies. Once again and just as in the behavioral approach, the skills approach cannot be considered in

isolation when addressing the intricacies of a leadership analysis. This approach's greatest strength lies in its structure to learned skills vital to a leader's success. This structure is important for leaders to consider and reflect upon in determining needed improvement opportunities in problem-solving, conflict resolution, listening, and teamwork, among other skills.

Emotional Intelligence. In his book *The Stress Effect*, Thompson (2010) made important contributions to the understanding of leadership from a very unique perspective. Since leaders are tasked with decision-making as a primary role of the position, Thompson used a scientific explanatory approach to study the effects of stress upon facets of effective decision-making in leadership roles. Of most importance for this paper is the exploration of emotional intelligence and its influence on effective decision-making.

Emotional intelligence is defined by Thompson as “a person’s innate ability to perceive and manage his/her own emotions in a manner that results in successful interactions with the environment, and if others are present, to also perceive and manage their emotions in a manner that results in successful interpersonal interactions” (2010, p. 91). Human emotions are complex and varied, and different. People’s emotional responses can also be linked cognitively to the way that humans perceive each other’s personalities. In this way of thinking, human personality is the perception of another’s display of emotional response to an input or event. Plutchik’s multidimensional model of emotions was an impressive attempt at visualizing the blending of emotions along with ranges of intensity and types (2002).

With the intended emphasis upon relationships within leadership, emotional intelligence theory cannot be ignored, to be replaced by leadership philosophy. As individuals grow from infancy to adulthood, Thompson divided their emotional development into three critical time periods. The first six months see the emergence of primary emotions like joy, happiness, sadness, and disgust. Self-conscious emotional development follows, with emotions such as embarrassment, empathy, and envy emerging. The final developmental stage of emotions typically occurs just prior to turning three years of age. Pride, shame, and guilt indicate the self-conscious evaluation stage and the emergence of the cognitive ability to compare one's behavior to a socially acceptable standard. These stages of emotional development outlined by Thompson also coincide with earlier mentions of Bandura's self-leadership development of standards-based behavioral responses which are learned and practiced with previous and current experiences.

Servant Leadership. Though the central theme of this leadership literature review follows the tenets of Plato's "The Art of Leading Others Comes Through the Art of Leading Oneself" (Plato n.d., cited in Daudi, 2013), leadership is not typically thought of as existing in a vacuum. Inevitably, successful leadership transcends the individual and attracts followers. This phenomenon forces consideration of how leaders must then relate to and approach their followers in whatever group or organizational context both exist. Servant leadership, as paradoxical as it may seem in definition, provides the final supporting theory on which a concluding leadership philosophy can be built.

The most basic understanding of servant leadership is positional posturing of the leader's feelings towards the follower. The choice of servanthood places the needs and

well-being of followers as a higher priority over one's own self-interests. Additionally, "they demonstrate strong moral behavior toward followers, the organization, and other stakeholders" (Northouse, 2018, p. 226).

Servant leadership theory also defines the resultant behaviors of leaders who enact this leadership approach. Spears (2010) identified ten characteristics critical to the development of servant-leaders: listening, empathy, healing, awareness, persuasion, conceptualization, foresight, stewardship, commitment to the growth of people, and building community. These characteristics are constructed in the leader through previous experiences and contexts of culture, existing leader attributes, and follower receptivity (Liden et al., 2014). If one considers Spear's ten characteristics as behaviors based on previous experiences, the subsequent assumption of potential outcomes follows closely to those of the earlier experiences.

Northouse categorized three potential outcomes: follower performance and growth, organizational performance, and positive societal impact. Each of these three desired outcomes of servant leadership may be considered as sequential or at a minimum, closely related. As the needs and goals of followers are met, individual performances increase as the followers realize their own self-leadership control. Followers' performance related to organizational goals in turn also can lead to growth in the group's or organization's performance.

Finally, a more long-term anticipated outcome of this leadership theory is an extended impact on the society in which the group or organization exists. The primary strength, albeit a counterintuitive mentality, of servant leadership is in the unobtrusive manner in which leadership is acquired or assigned by peers. When individuals follow

willingly, while sharing mutual control, respect, and recognition, can also provide opportunities for success in many organizations. The most valid argument against this approach to leadership is made for those situations or conditions in which a more direct and intrusive leadership approach is needed for transformational change or quick outcomes.

Synthesis

Internal Compass. Maturity of mind comes with first understanding one's core beliefs, motivators, and goals and how they all fit within one's place and purpose in life. One of the key tenets of self-leadership is the commitment and independence of a leader's tasks and goals. These tasks and goals chosen and prioritized by an individual must be decided as a first step. Although the complexities and phases of life will determine the prioritization and development of goals and motivations, core beliefs remain the primary lens through which an individual view their importance. These core beliefs are a person's most central ideas about oneself, others, and the world.

Core beliefs tend to be rigid as they are developed early in childhood and often are further shaped by stressful and traumatic experiences. The rigidity of these beliefs and the positional lens through which an individual sees themselves can act as an "internal compass" guiding behavior, self-control, and learned emotional intelligence. This internal compass is a strong guide at the core of a person's identity. Strong leaders are often a source of stability in others and therefore must have internal stability of mind as well.

Self-Leadership

Leading One's Self. Perhaps the best description of what it truly means to "lead one's self" is found in the earlier mention of Plato's understanding of education. "A

leader should align the realms of respecting oneself with the respect of others and should therefore create a balance between those two” (Daudi, 2013). Merriam-Webster defines respect as a feeling of deep admiration for someone or something elicited by their abilities, qualities, or achievements (2020). A quick synthesis of these two definitions would indicate that leading oneself is the internal and external actions of balancing admiration and regard for others’ abilities, personalities, qualities, and achievements with consideration for the person’s own abilities and qualities. This process is constantly evolving, evaluating one’s place and purpose as relational to their internal compass and aligned with core beliefs.

Guiding Principles. Although one should be hesitant to make connections to his larger body of work, namely the hierarchy of needs, Maslow made an interesting point when he stated that “musicians must make music, artists must paint, poets must write if they are to ultimately be at peace with themselves. What humans can be, they must be. They must be true to their own nature” (1970, p. 22). The point of understanding is that the outward display of leadership is a direct result of the internal nature of a leader. To practice outward leadership behaviors that are not congruent with a solid internal foundation built upon one’s core beliefs likely will cause problems. Authenticity and trust are the vital pillars upon which lifelong leadership rests.

This study entailed an exploration of the presence of leadership qualities and effects upon academic achievement indicators in relation to their general member counterparts. It will allow for further expansion into the literature base for self-leadership. One aspect of this study’s theoretical framework is that of Neck and Manz’s work which linked self-direction and self-leadership: “Self-leadership is a self-influence

process through which people achieve the self-direction and self-motivation necessary to perform” (2004, p. 271). Neck and Houghton expanded upon this link later (2006) with the premise that individuals have a degree of control over their own performance goals. This control is also directly influenced by their level of self-efficacy which, as Bandura suggested (1986), is a relationship among internal and external influences and behavior in general. When considering this theory and its implications, it is also vital to distinguish between self-leadership and self-management. As Plöbst interpreted the work of Neck and Houghton, self-management “consists of a set of strategies, which are designed for individuals to manage their behavior ‘with respect to reducing discrepancies from immediate externally set standards’” (2013, p. 5). Additionally, Plöbst defined self-leadership as an approach that “puts a much stronger focus on the self-influence in terms of what should be done and why” (p. 6). This gives way to understanding that self-management is a temporal, immediate, and controlling behavioral response to external influences. Self-leadership, however, does contain self-management markers but also consists of how one develops lasting internal standards. This series of experiences contribute to the development of behavioral response and builds a collection of ever-increasing and predetermined standards of response to new experiences.

Alternative Theory

An alternative theoretical framework for this study is resilience and protective factors in young people in education. High school and the general process of maturing and growing up can be a tumultuous and challenging time for many students. Resiliency research has focused over the years on student success despite obstacles that students may be facing in obtaining that education. Benard (2004) identified three main factors,

referred to as *protective factors*, that support success in challenging situations: caring relationships, high expectations, and opportunities for participation and contribution. This theoretical approach closely aligns with Albert Bandura's work in self-efficacy as he connects the involvement of parents, teachers, and peers and their development of resilience to adversity (Bandura, 1986). One could easily make comparisons between the claims of CTSO and CTE involvement and Benard's three protective factors and resilience. It may be argued that CTSOs perpetuate caring relationships, high expectations through content-related competitions, and opportunities for participation as a part of their core purpose.

Chapter III

METHODOLOGY

Introduction

This chapter outlines the research methodology design and subsequent procedures used in this study. The selected research method, the population of the study, data collection, and analysis performed are specifically addressed and connected to the theoretical framework and research questions. The study examined differences in readiness to self-direct in learning between Career and Technical Student Organizations (CTSO) and Career and Technical Education (CTE) participants for possible trends that may assist students, parents, and policymakers in decisions regarding participation in a CTSO.

Research Questions

1. To what degree, if any, is there a difference in readiness to self-direct between seniors who were involved in a CTSO (TSA, FFA, FBLA), those who completed a related CTE pathway, (Agriculture, Engineering, Business), and those who were not involved in either?
2. To what degree, if any, is there a difference in readiness to self-direct between gender within CTSO members, and CTE pathway completers and non-participants?
3. To what degree, if any, is there a difference in readiness to self-direct between CTSO student leaders, and general CTSO members?

One key tenet that self-directed learning theorists agree upon is that the presence of choice in learning is necessary for self-directed learning to begin. Though factors of control, self-efficacy, and personal responsibility in learning are also at play, the presence of choice creates the opportunity for decisions and the environment for initiating self-directed learning behaviors. Self-directed learning can also be defined as a progressive tendency that addresses how adults tend to learn (Grow, 1991). A theory of development, emerging adulthood (Arnett, 2000), also stated that post-graduation is a volatile time of decision-making, exploratory behaviors, and settling on a *path* in life.

Research question 1 was tied to the presence of progressive choice and any possible relationship to self-directed learning tendencies, and if those varied by degree chosen. This question specified the independent variable as participation in a CTSO or completion of a CTE pathway and included non-participants as a control group. The dependent variable was readiness for self-direction in learning as scored by the Self Directed Learning Readiness Scale (SDLRS). The environment under study has been examined closely to assess the context in which choice exists and is available to high schoolers. State-mandated graduation requirements, which require a rigid plan and pacing for each grade level, leave little freedom to choose academic courses. However, there are no requirements for what electives must be taken aside from the number of total credits needed to satisfy graduation requirements.

Research question 2 was tied to prior research and theory in observed gender imbalances and gendered stigmas present within career and technical education (Hamilton, Malin, & Hackmann, 2015; Long, 2000a; Lufkin et al., 2014; Reio & Choi,

2004). This question also explored possible gender underrepresentation in CTE environments and whether or not there was an effect on a student's degree of self-direction in learning opportunities.

Research question 3 was posed to explore self-leadership theory (Brannon et al., 1989; Dormoody & Seevers, 1994; Wingenback & Kaahler, 1997) in the context of the study, implications of student leadership, and possible relationships to self-directedness. Previously discussed theories on leadership (Neck & Houghton, 2006; Neck & Manz, 2004) connected the concepts of self-leadership and self-directed learning. Self-leadership was presented as a precursor to leading others and reflected a degree of emotional intelligence, self-reflection, and internal compass. CTSOs offer opportunities for leadership at local, state, and national levels that embody the paradigm of leadership in transitioning adults.

Research Design

This quantitative study used a causal-comparative research design which is a variation of, or sometimes synonymously referred to within the context, of ex post facto research. Ary et al. specified that this research design is suitable “in situations that do not permit the randomization and manipulation of variables characteristic of experimental research” (2018, p. 276). The appropriateness of causal-comparative research in this study lies in the fact that the assignment of participants into three groups making up the independent variable was one of student choice, which has been identified as a key factor in the theoretical underpinnings of the study. Likewise, readiness for self-direction in learning data was collected from a single point in their senior year and did not undergo experimental manipulation of variables.

Population and Samples

The population of interest for this study was high school students who were seniors during the 2021-2022 school year. The population was drawn from qualifying high schools within a South Georgia region which was chosen based on its accessibility and special interest to the researcher. One defining characteristic of CTSOs is the connection to industry and community; geographical similarities of the population ensure reduced generalizability errors during the interpretation of results. Within the state of Georgia, the Georgia Department of Education has created sixteen regional educational service agencies (RESA) that serve to improve the effectiveness of educational programs by “informing systems of innovation” and “assisting the State Department of Education in promoting its initiatives” (Georgia Standards.Org, n.d.b). The Coastal Plains RESA serves twelve contiguous school districts in South Central Georgia and served as the geographical population container.

Accessible Population

All twelve schools within the Coastal Plains RESA were accessible and considered for inclusion in this study. Of the twelve schools, only five met the criteria for this study. Each school within the RESA that met the criteria for this study, which were that both CTSOs and CTE pathways were offered, was included to yield an acceptable sample size for quantitative data analysis. The combined reported Full Time Equivalent (FTE) Enrollment of these five schools was 6,843 students on March 4, 2022. The reported enrollment of seniors polled for survey at these five schools was 1,616.

Of these 1,616 seniors, 1,215 were CTE pathway completers. The number of seniors who completed an Agricultural, Business, or Engineering Pathway were 152, 259,

and 73, respectively, bringing the total in all three pathways being studied to 484. FFA, FBLA, and TSA advisors reported a total of 69 seniors who had been a member for at least two years, and 67 seniors who had served as a local, state, or national officer.

CTSO Accessible Population

Three CTSOs were specifically chosen because they have been familiar to all students, have been offered and publicized since their sixth-grade year, and each have been established for at least twenty years. As noted earlier, this study's central motivation and purpose centered around student choice as available in CTE pathways and CTSOs. By choosing well-established and familiar programs that held similar goals, opportunities, and close ties to the community which were representative of each CTSO, this study assessed the potential impacts they may have had upon their members' progression towards self-directedness.

The following factors were also important to clarify in terms of the classification of participants and non-participants. First, the similarities of each CTSO chosen were also important, as there may have been participants who participated in two organizations for a year each. Second, similar goals and opportunities extend across organizational boundaries. Albeit in different content or focus areas, levels of competition, leadership structures, and membership expectations were nearly identical and justified the classification of students who may have been in two or more CTSOs. The three CTSOs chosen for study were FFA, FBLA, and TSA.

Leadership criteria for inclined students in each of these organizations were all the same and required their candidates to have been actively involved for at least a year prior to taking a leadership position. Therefore, as research question three examined

differences in CTSO leaders and general members, all leaders from each organization were classified together. As there existed three other CTSOs not within the scope of this study because of short-establishment, or slight dissimilarities in goals or opportunities, those members were excluded from the non-participant control group. The assumption was that participation in one of these other CTSOs could confound interpretations on the impact of involvement.

Categorical Data Collection

Due to limitations in the online interface of the SDLRS survey, an initial Qualtrics survey was the vetting process to only collect data from consenting students who were 18 years of age or older. Participants were presented with a research statement, an informed consent clause, and an opt-out. The following questions were included in the Qualtrics survey and required an affirmative answer prior to continuing:

1. Are you currently 18 years of age or older?
2. The research project and my role in it are clear to me, and my questions have been answered to my satisfaction.
3. Do you wish to continue to the survey?

Upon an affirmative answer to each of the questions on the Qualtrics survey, participants were provided with a link to the primary data collection instrument, the self-directed learning readiness scale (SDLRS).

The primary data collection instrument for this study was the self-directed learning readiness scale, a self-report questionnaire designed to “measure the complex of attitudes, skills, and characteristics that comprise an individual's current level of readiness to manage his or her own learning” (Guglielmino, 1977, p. 4). This instrument was

available for online administration; scoring compilation was a part of the service. By default, some demographic data was collected including gender, age, country, the highest level of education completed, and occupation.

The online administration allowed for the inclusion of ten additional questions in the demographic data collection section following the SDLRS survey questions. The following were the additional questions that provided the categorical data necessary for analyzing the differences between groups:

1. Are you currently a senior in high school?
2. By graduation, will you have participated in a Career and Technical Student Organization for at least two years?
3. By graduation, will you have participated in one of the following Career and Technical Student Associations for at least two years? (FFA, TSA, FBLA)
4. During high school, have you served as a chapter officer in a Career and Technical Student Organization?
5. By graduation, will you have completed a Career and Technical Education pathway?
6. By graduation, will you have completed one of the following Career and Technical Education pathways? (Agriculture, Engineering, Business)
7. What is your current Grade Point Average? (Likert-scale)

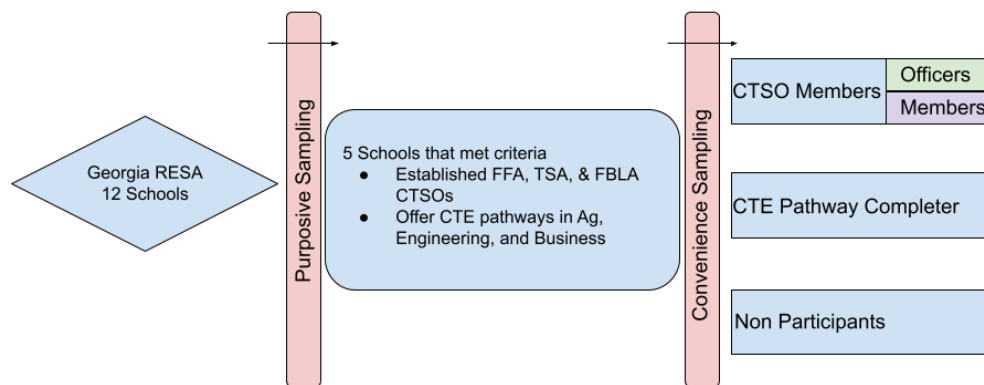
Sample

The sampling procedure that was used in this study was in a multi-tiered format and included purposive, stratified, and convenience sampling methods, as seen in Figure

1. While true random samples are the best way to represent the generalizable population accurately, this study began using purposive sampling based on criteria developed in the scope of this study. The scope was intentionally narrowed to provide the most accurate results for the population of interest. Stratified sampling was then utilized to create suitable strata based on the degree of choice within CTSOs and CTE, according to the underlying theories of SDL. Finally, a convenience sampling method was used to generate a representative sample for quantitative analysis that also met the assumptions of the selected data analysis methods.

Figure 1

Flowchart of Sampling Decision Procedure



Purposive Sampling

Given the unique characteristics of this study involving CTSOs specifically within a geographically defined RESA, purposive sampling was used to determine which of those twelve districts were best suited for further sampling. Ary et al. (2018) defined purposive sampling as taking those sample elements judged to be typical, or

representative of the general population. In keeping with the purpose statement, only those public high schools that met both criteria were considered for sample selection.

The first criterion was that the school must have an established and active FFA, TSA, and FBLA program offered. With student choice in learning as a central tenet of this study, it was crucial to choose well-established and familiar CTSO programs that had similar goals and opportunities available to students. Additionally, each of these CTSOs shared a nearly identical format in their levels of competition, leadership structures, and membership expectations.

The second criterion was that those schools sampled must also offer the three CTE pathways (Agriculture, Engineering, and Business) related to the chosen CTSOs. These pathways are standardized in their content and the introduction to the offering of related CTSOs are mandated by Georgia Standards of Excellence for inclusion in these CTE courses (Georgia Standards.Org, n.d.a). While it is unlikely that a school would have an established CTSO without offering its related CTE pathway, it is possible that some schools offer the CTE pathway but have no established CTSO.

Given that progression of student choice in self-directedness was central to the theoretical structure of this study, this sampling method was appropriate to ensure that each school sampled had similar and well-known opportunities available to its students. Of the twelve school district high schools within the RESA, five met the criteria of this study.

Stratified Sampling

Once suitable high schools were selected using purposive sampling techniques, a stratified sampling method was used to generate strata from the population that aligned

with the theoretical framework. Three primary subgroups were identified: CTSO participants, CTE pathway completers, and non-participants as a control group. Additionally, differences between those in leadership made necessary a stratified sampling to ensure appropriate representation and analysis of effect size for each subgroup. It was estimated that the smallest group would be the CTSO participants. Since a causal-comparative research design does not allow for random assignment into subgroups, this sampling method also served to alleviate major disparities between group sizes, which is an accepted assumption of quantitative data analysis techniques for this type of research design. Participants were not excluded based on other identifiers such as ethnicity, socioeconomic status, gifted or special education status, or being English Language Learners.

Sample Size

The following statistical procedures were proposed to address three research questions: RQ1 - one-way ANOVA, RQ2 -independent-samples t-test or two-way ANOVA, and RQ3 - independent-samples t-test. G*Power was used as a guide to determine the appropriate sample size. Table 1 demonstrates the estimated maximum number of participants who were needed for each research question. For each procedure, the following were assumed: (a) Medium Effect Size $f = 0.5$, (b) 95% Confidence Interval, and (c) $p < 0.05$ Significance level.

Since the SDLRS instrument was a paid service through Guglielmino & Associates, cost constraints dictated an initial cap of two-hundred and fifty test administrations across five criteria-determined schools within the Coastal Plains RESA. A special effort was made to reach the smallest anticipated group under study by asking

CTSO advisors to assist; they ensured the opportunity to participate was presented to the local and state CTSO officers.

Table 1

*G*Power Estimated Power and Sample Size for Statistical Procedures*

Factors	Statistical Procedure		
	1W ANOVA	2W ANOVA	IS t-test
Groups	3	6	2
Min Sample Size	66	66	176
Denominator df	63	60	174
Power	.95	.95	.95

Data Collection

Introduction

Descriptive data was required to make purposive sampling decisions given the previously identified study criterion for school selection. This was the first data collection step and involved a RESA contact to establish a connection to each of the represented district high schools. A letter was then composed to the district's superintendent (see Appendix A) requesting permission to collect data and poll for contact information for the registrar and CTSO advisors.

Procedures

The following were the procedures for data collection for each of the research questions. These procedures began at the completion of purposive sampling of which

high schools for data collection. Given the quantitative methodology of this study, an overall dataset was compiled for processing using statistical software.

On day one, letters to school superintendents were emailed to schools within the RESA that met the criterion for study (see Appendix A). After gaining permission from the school faculty to collect data, an email was sent to the high school registrars asking them to send an email to all seniors with a link to a Qualtrics survey (see Appendix B). Simultaneously, a letter was sent via email to FFA, FBLA, and TSA CTSO advisors (see Appendix C) at sampled and approved schools to ensure assistance in reaching senior CTSO officers, who were anticipated to be the smallest size sample subgroup. These advisors worked with the senior homeroom teachers to administer the survey. Directions on administering the survey were sent to these advisors with explicit instructions to ensure continuity of survey administration across schools.

The SDLRS required a unique user identifier for each administration. Each advisor was sent an initial set of anonymized and sequential survey tickets (see Appendix D) with instructions (see Appendix E) to request more if needed. Copies of the survey were priced and purchased per item. Each school received an initial 50 copies of the survey and additional survey tickets would be purchased if needed but capped at 300 total surveys purchased due to financial limitations of survey. The survey window remained open for six weeks. One week from the end of the survey window, a follow-up letter was emailed to the CTSO advisors as a reminder and prompted them to finalize survey opportunities for participants.

At the conclusion of the survey window, the remaining ticket identification numbers were collected from CTSO advisors who administered the survey. The survey

data collected and compiled on the SDLRS online portal and the Qualtrics portal were then downloaded and saved on a secure local storage device by the researcher. The unused survey tickets were cross-examined with the used identifiers on the SDLRS data to ensure there were no duplicated identifiers.

Instrumentation

The primary instrument of data collection was the SDLRS or Learning Preference Assessment (LPA). The SDLRS instrument included 58 items with a 5-point Likert scale for responses, ranging from almost always true to almost never true. The test uses 41 positively phrased questions and 17 negatively phrased. Eight factors in self-direction in learning were revealed through factor analysis to include: openness to learning opportunities, self-concept as an effective learner, initiative and independence in learning, informed acceptance of responsibility for one's own learning, love of learning, creativity, future orientation, and ability to use basic study skills and problem-solving skills (Guglielmino, 1977; Long, 1989).

Although there have been criticisms of the instrument (Brockett, 1987; Field, 1989; Straka & Hinz, 1996), the reliability and validity of the SDLRS is largely supported (Delahaye & Smith, 1995; Durr, 1992; Finestone, 1984; Graeve, 1987; Hassan, 1981; Long & Agyekum, 1984; McCune & Guglielmino, 1991; Posner, 1990; Russell, 1988). The SLDRS has reported an internal reliability coefficient of .72 to .96, and has scored test-retest reliability of 0.82 and .79 (Finestone, 1984; Wiley, 1981). A comparison of the instrument with other literature on self-directed learning instruments has showed strong content validity. Correlation of the SLDRS with other self-directed learning instruments is reported as follows – Student's orientation questionnaire 0.35,

Preference for challenge 0.81, Curiosity of Learning 0.79, Perceived scholastic competence 0.69, Use of internal criteria for evaluation 0.64, Independent mastery 0.56, and Independent judgment 0.54 (Posner, 1990).

Data Analysis

Statistical Analyses

Research Question 1: The chosen statistical analysis technique for this research question is the one-way analysis of variance (ANOVA). A one-way ANOVA determines whether there were any statistically significant differences between the means of two or more independent groups. The independent variable was CTSO/CTE Involvement and had three groups, CTSO members, CTE Pathway Completers, and non-participants as a control group. A post hoc test or planned contrasts were run to determine where any differences between groups might lie.

Research Question 2: While the research question was phrased to look at differences in readiness to self-direct among males and females in each of the three groups, there was a concern about a disproportionate number of participants of one gender when using a 2x3 comparison of groups. An independent samples t-test was best suited to interpret any difference in means on a continuous variable of readiness to self-direct scores between males and females of all groups. The independent variable is CTSO/CTE Involvement and has three groups, CTSO members, CTE Pathway Completers, and non-participants as a control group.

After collection and initial coding of data were completed, if there was a proportional number of participants, then a two-way ANOVA would be utilized to provide a more comprehensive analysis of potential differences among males and females

for each of the three groups. This analysis was appropriate for determining if any statistically significant two-way interaction existed. Post-hoc follow-up tests of simple main effects, main effects, and interaction contrasts were used to further interpret the results.

Research Question 3: An independent sample t-test was best suited to determine any statistically significant difference in means on a continuous variable of readiness to self-direct score between CTSO leadership and general members.

Chapter IV

FINDINGS

The purpose of this study is to examine the differences in SDL readiness among participants in Career and Technical Student Organizations (CTSOs), Career and Technical Education (CTE) participation, and student leadership. By examining the differences in SDL readiness, the goal of the study is to build an understanding of relationships between the presence of learner choice as a primary CTSO/CTE characteristic and readiness to engage in self-direction. Post-secondary readiness and success are the common claims made by CTSOs, yet are notably difficult to study and quantify. Therefore, readiness to self-direct is one key factor that is an antecedent to lifelong learning, employability, academic engagement, and self-efficacy (Alfed et al., 2007). The purpose of this chapter is to present the data findings of the study to determine if there was a difference in the learner's readiness to engage in self-directed learning within the confines of CTE participation, CTSO membership, and student leadership.

Receipt of and Coding of Data

Upon completion of the four-week SDLRS survey window, the raw dataset was exported to begin coding and processing for analysis. Although the survey was administered through anonymized test tickets distributed through senior homeroom teachers at each location, some participants placed a real name in a blank field on the

survey. The dataset was stripped of this column with identifying information before backing up and storing the dataset.

In addition to basic demographic data questions of gender, age, country, education level, and occupation, the instrument (See Appendix F) provided the option for inclusion of additional survey questions. These seven categorical questions, discussed in Chapter 3 and found in the Appendix G, consisted of five “Yes” or “No” questions and one five-point Likert scale question regarding self-reported GPA range. The SDLRS survey interface, by default, concatenated each of these additional responses into a single cell column for each participant's response.

An additional column to indicate a categorical variable was created to indicate into which group the participant fell. Additional questions A through F were formulated to ensure that students were correctly categorized into one of the four groups being studied, either the CTE pathway completers in Agriculture, Business, or Engineering, CTSO members in FFA, FBLA, or TSA for at least two years, CTSO chapter or state officer in FFA, FBLA, or TSA, or a final group for a student who has not completed a pathway, participated in any CTSO, or served as an officer. These responses were coded as follows to indicate their classification:

“0” - Participants who do not meet the study criteria

“1” - Non CTE or CTSO members/Control Group

“2” - CTE pathway completer in Agriculture, Business, or Engineering

“3” - CTSO member for 2+ years in FFA, FBLA, or TSA

“4” - CTSO local, state, or national officer in FFA, FBLA, or TSA

Some participants who took the survey and were, in fact, a pathway completer or a CTSO member/officer were coded as a “0”. The rationale for this coding decision was based upon the participant responding positively to question B regarding participation in a CTSO, but negatively to question C regarding participation in only those CTSOs being studied. Likewise, students may have completed another pathway besides those being studied. In this case, students would have responded positively to question E, but negatively to question F. There is more detailed discussion around limiting the scope of the study to these CTSOs and pathways in Chapter 1.

Participant Demographics

Twelve schools within a Georgia Regional Educational Service Agency were examined for qualifying criteria to be studied as outlined in previous chapters. Of these twelve, five schools met the criteria for study and were approved to collect participant data from seniors 18 years and older. The combined reported Full Time Equivalent (FTE) Enrollment of these five schools was 6,843 students on March 4, 2022. The reported enrollment of seniors polled for survey at these five schools was 1,616 of these students.

After running a G*Power analysis for a large effect size ($f = 0.5$) for the proposed statistical analyses to be used, it was determined that a minimum sample size of 176 was required. After processing the 222 surveys returned for missing, incomplete, and erroneous responses, the data used for analysis included 211 senior participants, yielding a survey response rate of 13.06%. There were 11 responses not included in the study for several reasons. The reasons for the elimination of these responses included records where students did not complete the full survey, were missing items, did not complete the

additional survey items need for participant grouping, or contained blatant erroneous information (responses with answers that were not even options on the survey).

Participant categories of the study group consisted of 51 CTE pathway completers in Agriculture, Business, or Engineering, 63 CTSO members in FFA, FBLA, or TSA, 45 CTSO student officers in FFA, FBLA, or TSA, and 52 participants who were not in any of those groups. There were 117 male and 94 female participants. Table 2 details the percentages and breakdown of each participant category in tabular format.

Table 2

Number of Participants by Group and Gender

Gender	Control		CTE Pathway Completer		CTSO Member		CTSO Officer	
	<i>n</i>	%	<i>n</i>	%	<i>n</i>	%	<i>n</i>	%
Male	27	51.9	31	60.8	36	57.1	23	51.1
Female	25	48.1	20	39.2	27	42.9	22	48.9
Total	52	24.6	51	24.2	63	29.9	45	21.3

Data and Statistical Results

The research questions were analyzed using the application software Statistical Package for Social Sciences (SPSS) Version 29. All data have been anonymized and only survey results from seniors 18 years or older during their final senior semester were analyzed. The results are detailed below by research question.

Research Question 1

The first research question was, “To what degree, if any, is there a difference in readiness to self-direct between seniors who were involved in a CTSO (TSA, FFA,

FBLA), those who completed a related CTE pathway (Agriculture, Engineering, Business), and those who were not involved in either?" The statistical test that was used for the analysis of Research Question 1 is the One-Way ANOVA. One-Way ANOVA is used to determine whether there are any statistically significant differences between the means of two or more independent groups. Since this analysis is an omnibus test statistic and cannot determine which specific groups were significantly different from each other, a follow-up post hoc test was run to identify which groups differed from each other.

Assumptions of data fitting to the one-way ANOVA model were also tested and reported to include: (a) no significant outliers in the independent variable, (b) the dependent variable should be normally distributed for each group of the independent variable, and (c) homogeneity of variances in the independent variable. Levene's test for equality of variances tests the null hypothesis that the population variances are equal or stated another way, that the group samples are drawn from populations with the same variance.

$$H_0: \sigma_1^2 = \sigma_2^2 = \sigma_3^2$$

There was homogeneity of variances, as assessed by Levene's test for equality of variances ($p = .059$). There were no outliers, as assessed by boxplot and data were normally distributed for each group, as assessed by Shapiro-Wilk test ($p > .05$).

The descriptive statistical output from SPSS is summarized in Table 3 and showed that the mean SDLRS score for the entire sample population was 213, which is aligned with the adult average of 214, as reported in the SDLRS score interpretation guidelines (Learning Preference Assessment, n.d.). The mean SDLRS score of each group, control, CTE pathway completer, and CTSO member were 187, 204, and 230,

respectively. CTSO general members and CTSO officers were combined into one group for the analysis of this research question as all CTSO officers are also CTSO members. Analysis of student's readiness to engage in self-direction (SDLRS score) increased from the control ($n = 52, M = 186.73, SD = 30.39$), to the CTE pathway completer ($n = 51, M = 203.75, SD = 26.63$), to CTSO member ($n = 108, M = 230.05, SD = 23.25$) student groups, in that order.

Table 3

SDLRS Score Descriptives

Group	N	Mean	Std. Dev.	Std. Error	95% Confidence Interval for Mean		Min.	Max.
					Lower Bound	Upper Bound		
Control	52	186.73	30.3888	4.214	178.27	195.19	108	254
CTE Pathway Completer	51	203.75	26.628	3.729	211.23	211.23	145	255
CTSO Member	108	230.11	23.245	2.237	225.68	234.55	173	274
Sample Total	211	213.05	31.791	2.189	208.73	217.36	108	274

The test statistic, F , in the one-way ANOVA is the ratio indicating the variation between sample means relative to the variation within the samples. The ANOVA statistics are shown in Table 4. Participants' readiness to engage in self-direction (SDLRS score) was statistically significantly different for different student groups, $F(2, 208) = 53.253, p < .001, \omega^2 = 0.198$.

A Tukey-Kramer post hoc analysis revealed that there was a mean increase in SDLRS score from control ($M = 186.73$, $SD = 30.39$) to CTE pathway completers ($M = 203.75$, $SD = 26.63$), an increase of 17.01, 95% CI [4.93, 29.10], was statistically significant ($p < .001$). Likewise, the mean increase from CTE pathway completers ($M = 203.75$, $SD = 26.63$) to CTSO members ($M = 230.11$, $SD = 23.25$) was statistically significant (26.37, 95% CI [15.95, 36.78], $p < .001$). The most significant increase in SDLRS score was found between control ($M = 186.73$, $SD = 30.39$) to CTSO members ($M = 230.11$, $SD = 23.25$) and was statistically significant (43.38, 95% CI [33.03, 53.73], $p < .001$).

Table 4

Ratio of Between-Group to Within-Group Variation

Comparison	ANOVA Statistics				
	Sum of Squares	<i>df</i>	Mean Square	<i>F</i>	Sig.
Between- Groups	71,872.942	2	35,936.471	53.253	< .001
Within- Groups	140,362.584	208	674.820		
Total	212,235.526	210			

While direct causation was not implied from these results, confidence was established that students' choice to complete a CTE pathway or become involved in a CTSO was directly related to a significant increase in their self-directed learning readiness. The ANOVA showed that there was a significant joint effect between higher degrees of self-directed tendencies and exercising choice to participate in either group beyond simply completing the core requirements for graduation. The progression of

choice and opportunity characterized in moving from minimum graduation requirements to CTE pathway completion to active involvement in a CTSO, matched the theory of self-directed learning as a progressive practice.

Research Question 2

The second research question was, “To what degree, if any, is there a difference in readiness to self-direct between gender within CTSO members, and CTE pathway completers and non-participants?” The methodology proposed in Chapter 3 for this research question was an independent sample t-test analyzing the difference in means on a continuous variable of readiness to self-direct between males and females. Clarification of research question 2 and an acceptable proportion of male and female participants required a statistical method change to allow for more granularity across multiple groups within the independent variable. The decision to run a 2x3 factorial analysis instead of an independent samples t-test was made to achieve a more detailed examination of differences among gender for each group.

Therefore, the statistical analysis appropriate for this research question is the two-way ANOVA. The two-way ANOVA is used to determine whether there is a two-way interaction effect between two independent variables on a continuous dependent variable (George & Mallery, 2003). This test was set up as a 2 x 3 ANOVA with gender (male/female) and group membership (control/CTE pathway completer/CTSO member) as the independent variables, with the SDLRS score remaining as the dependent variable. Table 5 shows the means of the SDLRS score in a crossed design to be analyzed for: (a) a main effect of gender, (b) a main effect of group membership, and (c) an interaction effect between gender and group membership.

Table 5

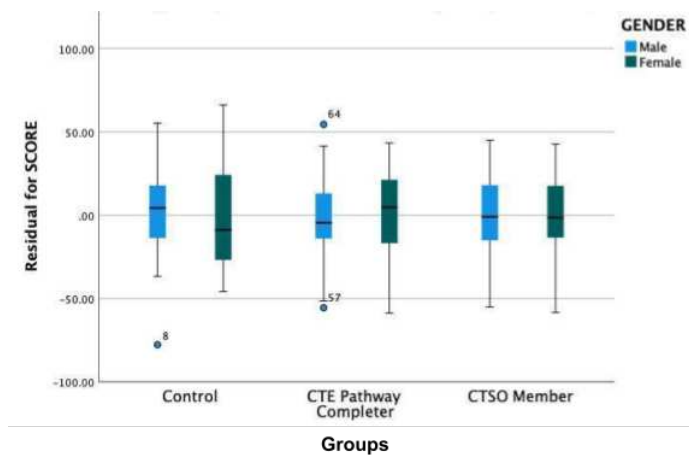
Cross Tabular of Group Means of SDLRS Score

	Control	CTE Pathway Completer	CTSO Member
Male	185.70	200.52	229.03
Female	187.84	208.75	231.41

A residual analysis was performed to test for an assumption of the two-way ANOVA stating that there should be no significant outliers in any cell of the design. There were three outliers, as assessed by being greater than 3 box-lengths from the edge of the box in a boxplot. The first was a lower outlier in the male-control group. Two other outliers, one upper and one lower, were in the male-CTE pathway completer group. The boxplot of residuals for SDLRS score by group and gender in Figure 2 shows a graphical representation of each outlier.

Figure 2

Boxplot of Residuals by Gender and Group with Outliers



The SDLRS survey is a self-reported score on readiness to self-direct so consideration was made that a participant may have randomly filled in questions or misunderstood the direction of positively or negatively posed questions. This might have yielded an unusually high or low SDLRS score. Removing outlying data points from inclusion in the analysis should not be a decision made lightly (Draper & Smith, 1998; Faraway, 2015). Instead, a parallel analysis of significant interaction was conducted after removing the outliers and was compared to an identical analysis whilst keeping the outliers.

A visual comparison of the two analyses plot of marginal means in Figure 3 and Figure 4 showed minimal trend variations. There was no statistically significant interaction between gender and group membership for the SDLRS scores with all outliers removed, $F(2, 202) = .413, p = .662, \text{partial } \eta^2 = .004$. Given that the removal of outliers did not change the statistical significance of any interaction effect, all further two-way ANOVA analyses were performed on the original dataset with all outliers remaining in the dataset.

Figure 3

Visual of Estimated Marginal Means by Gender Outliers Removed

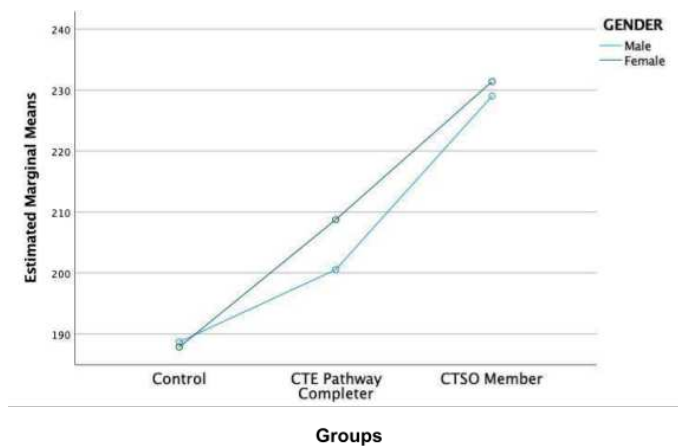
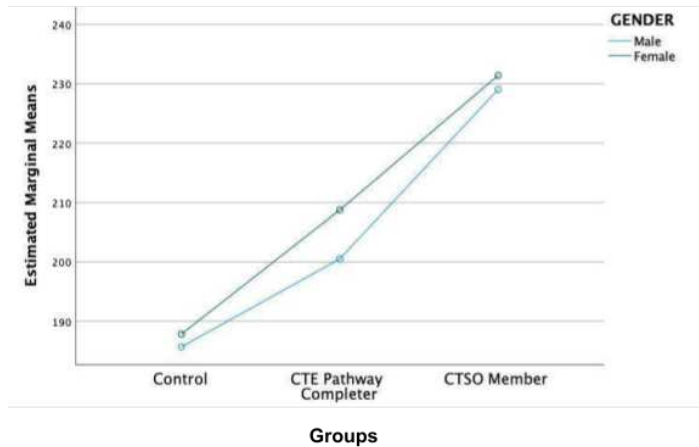


Figure 4

Visual of Estimated Marginal Means by Gender Outliers Intact



Data was normally distributed for each cell of the design, as assessed by Shapiro-Wilk's test ($p > .05$). There was homogeneity of variances, as assessed by Levene's test for homogeneity of variances, $p = .142$. There was no statistically significant interaction between gender and group membership for the SDLRS score, $F(2, 205) = .242, p = .785$, partial $\eta^2 = .002$. In a similar manner, there was no statistically significant effect for gender on SDLRS score, $F(1,205) = 1.215, p = .272$, partial $\eta^2 = .006$. Therefore, an analysis of the main effect for student groups was performed, which indicated that the main effect was statistically significant, $F(2, 205) = 52.122, p < .001$, partial $\eta^2 = .337$. Interpretation of these results indicated that there was no significant relationship between males' and females' choice to complete a CTE pathway or become actively involved in a CTSO. Additionally, there was no significant difference between what males and females scored on the SDLRS instrument. However, completing a CTE pathway and CTSO involvement was confirmed to be related to self-directedness and was practically significant, with a large effect size.

Although a statistically significant interaction effect was not found, some statisticians recommend keeping the term in the model (Maxwell & Delaney, 2004) to report main effects and follow up with a Type III sums of squares analysis (Fox, 2008; Howell, 2010; Jaccard, 1998; Kutner et al., 2005; Maxwell & Delaney, 2004; Stevens, 2009). All pairwise comparisons run reported 95% confidence intervals and p -values were Bonferroni-adjusted. The unweighted marginal means of SDLRS scores for control, CTE pathway completer, and CTSO member males and females were 186.77 ($SE = 3.618$), 204.63 ($SE = 3.739$), and 230.22 ($SE = 2.519$), respectively.

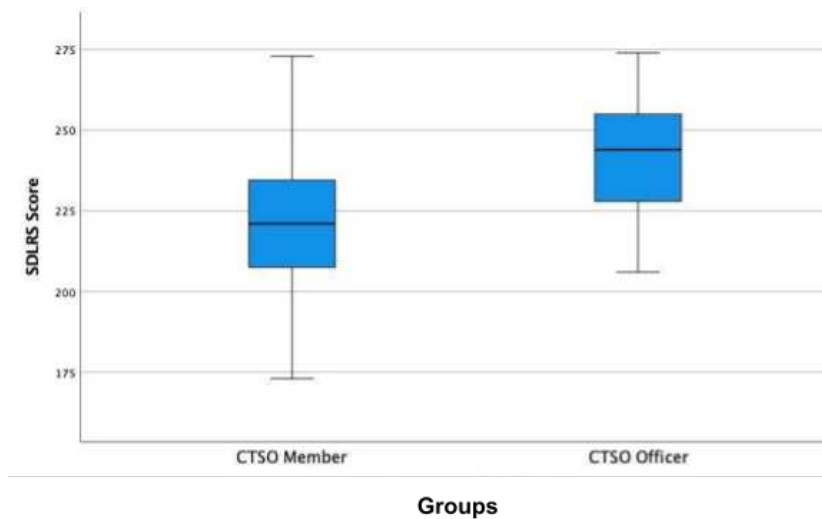
Students completing a CTE pathway were associated with a mean SDLRS score of 17.86, 95% CI [5.30, 30.419] higher than those in the control group, a statistically significant difference, $p = .002$. Similarly, students involved in a CTSO were associated with a mean SDLRS score of 25.59, 95% CI [14.71, 36.47] higher than those in the control group, a statistically significant difference, $p < .001$. Those involved in a CTSO were also associated with a mean SDLRS score of 43.45, 95% CI [32.81, 54.10] higher than those in the control group, yielding a statistically significant difference, $p < .001$.

Research Question 3

The third research question was, “To what degree, if any, is there a difference in readiness to self-direct between CTSO student leaders, and general CTSO members?” An independent samples t-test was run to determine if there were differences in readiness to self-direct in learning between CTSO members ($N = 63$) and CTSO student leadership ($N = 45$). There were no outliers in the data, as assessed by inspection of a boxplot in Figure 5.

Figure 5

t-test Group Statistics Boxplot



SDLRS scores for each group were normally distributed, as assessed by Shapiro-Wilk's test ($p > .05$), and there was homogeneity of variances, as assessed by Levene's test for equality of variances ($p = .652$). The readiness to self-direct in learning was higher among CTSO student officers ($M = 241.44$, $SD = 19.27$) than CTSO members ($M = 222.02$, $SD = 22.57$), a statistically significant difference, $M = 19.43$, 95% CI [27.66, 11.20], $t(106) = 4.682$, $p < .001$, $d = .91$. The practical significance of this effect was determined to be a large effect as calculated by Cohen's d (Cohen, 1988).

Summary of Findings

For Research Question 1 it was found that, yes, there was a significant difference in readiness to self-direct in learning between the control group and CTE pathway completers, and again between CTE pathway completers and CTSO members. Seniors who completed at least one Agricultural, Business, or Engineering CTE pathway were determined to have a significantly higher score than those students who only met the minimum requirements to graduate and who also did not participate in a content-related

CTSO. Student involvement in FFA, FBLA, or TSA for at least two years was also positively associated with a higher level of readiness to self-direct in their learning over their peers who completed the related pathway. A one-way ANOVA revealed a significant progression of students' readiness to self-direct in their learning that follows the same trend of choice in learning within each opportunity.

For Research Question 2, the finding of differences among males and females in regard to the choice of whether to complete a pathway or to become involved in a CTSO was not statistically significant. However, there were 21.6% more males than females who completed a CTE pathway, and 16.9% more males than females who were involved in a CTSO. The analysis of the effect of gender on SDLRS score also did not yield a statistically significant relationship. This indicated that males and females were in close alignment with each other in regard to their readiness to self-direct at each level of involvement. It is important to note that females did score higher at each level of involvement than their male counterparts did. Although there was no significant main effect of gender on choice of involvement or SDLRS score, post hoc analysis of main effects did strengthen the comparison of both CTE and CTSO involvement and higher levels of self-directedness.

For Research Question 3, it was found that, yes, there was a statistically significant relationship between becoming a CTSO officer and an increase in readiness to self-direct in learning over their general member counterparts. The importance of self-leadership is a crucial facet of self-directed learning, emerging adulthood, and post-secondary success. A strong relationship between FFA, FBLA, and TSA student leaders and high levels of self-direction was revealed. CTSO officers scored, on average, 19

points higher in readiness to self-direct than the CTSO members who they lead.

Additionally, these student leaders averaged well above the reported SDLRS adult average of 214, scoring in the top 16%.

Overall, the results of the data analysis of the research questions indicate that a strong relationship exists between readiness to self-direct and the progressive nature of choice in self-directed opportunities in CTE pathways, CTSO involvement, and CTSO student leadership. Chapter Five will provide implications and conclusions for the value and merit of these programs and opportunities upon students' self-direction.

Chapter V

DISCUSSION

This chapter includes a discussion of the major findings of this study in the context of the literature on self-directed learning, self-directedness, leadership, and emerging adulthood. The implications of these findings might be valuable to administration, advisors, and stakeholders. Their understanding of the findings could help to strengthen their support of Career and Technical Education and Career and Technical Student Organizations. Finally, the limitations of this study and recommendations for future research will be discussed.

Overview

Career and Technical Student Organizations (CTSOs) and Career and Technical Education programs (CTEs) have long been present within public education. The efforts and funding of these programs are primarily based on self-claims of increased postsecondary success and preparedness of its members. Choice is the central and preemptive factor involved in self-directed learning (SDL) and exists as a matter of degree for high schoolers in the form of CTE and CTSO involvement. This causal-comparative research study aimed to examine the differences in self-directed learning readiness among participants in CTSOs and those involved in a CTE. By examining these differences in SDL readiness, the goal of the study was to build an understanding of relationships between the presence of learner choice as a primary CTSO/CTE characteristic and the learner's readiness to engage in self-direction.

Data were collected for this study using an online survey instrument which measured learners' perception of their readiness to engage in self-directed learning.

Twelve schools within a southeastern state's Regional Education Service Agency (RESA) were examined for qualifying criteria of CTSO and CTE offerings. Only five of the twelve schools met the criteria and were sampled. Only seniors who were 18 years of age and older were prompted to participate in the survey after providing informed consent and verifying their age. To be included, participants needed to have responded "Yes" to all three screening questions providing consent, establishing that they were at least 18, and agreement to participate in the study.

All seniors at the five criterion-based schools were polled via email and based on reported Full Time Equivalent (FTE), the population consisted of 1,616 students. Of those possible respondents, there were 240 initial responses to the survey screening questions. Of those, 222 provided consent, established their age, and continued through to the survey. Further processing of data required the elimination of 11 respondents due to not completing the survey, or having missing items required for grouping, or which contained blatant erroneous information. These 211 participants comprised the sample used for quantitative analysis.

Findings

This study was planned and designed to examine three research questions. The first question was: "To what degree, if any, is there a difference in readiness to self-direct between seniors who were involved in a CTSO (TSA, FFA, FBLA), those who completed a related CTE pathway, (Agriculture, Engineering, Business), and those who were not involved in either?" A one-way ANOVA was used to analyze the participants' score on each group's self-directed learning readiness scale. The analysis of the survey results indicated that there were statistically significant mean increases between the

progression of each group from the control group of non-participants to CTE pathway completers, and finally to CTSO members. A high F value indicated a significant degree of variation between the groups as compared to the variance within each of the sampled groups. The standard deviation grew smaller with each step away from the control group, to CTE pathway completers, and then CTSO members. Of special note was the large effect size ($\omega^2 = 0.198$) which indicated a strong practical significance in the interpretation of the results.

The second research question was: “To what degree, if any, is there a difference in readiness to self-direct between gender within CTSO members, and CTE pathway completers and non-participants?” The sample analyzed was similar in proportion to the population in terms of the distribution of males and females. Within the 211 respondents, there were 94 female (44.55%) and 117 males (55.45%). The population was comprised of 1,616 seniors, with 801 females (49.57%) and 815 males (50.43%). The balance of females to males was male-dominated in most of the study groups. The control group had 25 females (48.1%) and 27 males (51.9%). The CTE pathway group had the largest disparity, with 20 females (39.2%) and 31 males (60.8%). The CTSO member group had 49 females (45.37%) and 36 males (54.63%).

When the analysis of the data for a main effect was conducted, it revealed no significant interaction between gender and group membership. Likewise, there was no significant effect for gender on what each group scored on their readiness to self-direct. Though no significant interaction effects of gender on group membership or Self Directed Learning Readiness Score (SDLRS) score were found, the follow-up analysis

reconfirmed the significant relationship between completing a CTE pathway or being involved with a CTSO and a higher degree of readiness to self-direct.

The third question was: “To what degree, if any, is there a difference in readiness to self-direct between CTSO student leaders and general CTSO members?” There was a significant relationship between higher degrees of readiness to self-direct and students leading their peers within a CTSO compared to general CTSO members. The connection between leading others as a manifestation of self-leadership and self-direction has already been established in previous literature (Neck & Houghton, 2006; Neck & Manz, 2004). CTSO officers scored, on average, 19 points higher in readiness to self-direct than the CTSO members whom they led. Additionally, these student leaders scored in the top 16% and averaged well above the reported SDLRS adult average ($M = 214$, $SD = 25.59$) who have completed the SDLRS-A survey (Learning Preference Assessment, n.d.).

Discussion

The connection between self-directedness and Arnett's (2000) theory of emerging adulthood is clear; after all, one of the defining characteristics of this stage in life is a focus on autonomy and choice. Emerging adults must take ownership of decisions regarding education, career paths, relationships, and lifestyle choices. Those who can develop their own sense of self-direction will be better equipped to make these challenging decisions without relying too heavily on external influences or sources for guidance. Higher degrees of self-direction play a major role in successful transitions into adulthood. Self-direction has been linked with higher levels of autonomy in learning, better job satisfaction, and overall life satisfaction (Kim et al., 2018).

In the setting of this study, the choice to complete a pathway was an important aspect of this process, as it involved taking responsibility for one's own learning and development within the context of each student's own interests and perceived capabilities. Content-related CTSOs were introduced during each CTE pathway course. These organizations provided the next level of choices available to students as they progressed towards self-direction in their learning. This study showed that a strong relationship existed between higher degrees of self-direction and those environments steeped in opportunities for choice in learning.

The social perspective of emerging adulthood and educational theory in self-directed learning (Garrison, 1997; Grow, 1991) are related in that they both emphasize the importance of autonomy and personal responsibility during the transition from childhood to adolescence to adulthood. Arnett's theory (2000) of emerging adulthood suggested that this period of life is characterized by a sense of exploration and identity development, as well as a desire for greater independence and self-direction. During this time, young adults are often navigating new experiences and responsibilities.

In the context of these two theories, each progression within the groups examined in this study required an increasing amount of autonomy, personal responsibility, and offered new experiences of independence. Completing a CTE pathway is not a mandated requirement for high school. Therefore, the decision to complete a pathway is a choice preceded by interest in, and willingness to complete a course of study. The reward for completing a pathway successfully also involved receiving a passing score on the End of Pathway Assessment (EOPA). This certificate was a perceived reward for some students

since building a resume and gaining tangible career and technical experiences was a priority for some students.

Involvement in a CTSO, especially for at least two years as a criterion for this study, requires even more personal commitment, responsibility, and autonomy. CTE courses may be completed during a typical school day, whereas CTSOs are an extracurricular activity requiring not only more time, but organizational responsibilities, along with representation in local, state, and national events and competitions. Every CTSO offers a multitude of contextual opportunities for its members to choose from, with a very wide range of areas and events to explore and with which to develop an identity. Local CTSO advisors reported that FFA offered 30 separate competition events in the agricultural arena, TSA offered 35 competitive events in engineering and technical related fields, and FBLA members could choose from 80 business-related activities.

There was evidence that gender underrepresentation (Hamilton, et al., 2015; Lufkin et al., 2014; Tandrayen-Ragoobur & Gokulsing, 2022) still may be present, as indicated by the balance of males to females in each group. Males were dominant in each group and far exceeded the overall population gender balance in two specific areas. There were 21.6% more males among CTE pathway completers and 14.2% more males among CTSO members. This may have been in part due to the fact that two out of the three CTSOs considered for this study were content-related to agriculture and engineering, which might still be considered masculine fields. The control group was nearly identical to the population gender split, with only 1.47% more males represented in that group. CTSO officer participants were the closest to a gender balance match, with only 0.67% more males represented than in the sampled population.

Despite existing literature that indicated that self-directed learning readiness may differ between genders, the results of this study established that the tendency towards self-directed learning was not statistically different within the studied population. However, it is important to note that females outperformed males in all three groups. Females scored 2.14 points higher in the control group, 8.23 points above males in CTE pathway completers, and 2.38 points above males among CTSO members. This observation was consistent with previous research (Reio & Davis, 2005) suggesting that males might be less likely to engage in self-directed activities than females and this could be attributed to cognitive novelty-seeking variables (Reio & Choi, 2004).

Leadership is a critical life skill that emerging adults need to develop in order to succeed both personally and professionally (Brannon et al., 1989; Dormoody & Seevers, 1994; Wingenback & Kaahler, 1997). Self-direction plays an important role in emerging adults' capacity for leadership. Self-direction enables emerging adults to take the initiative, recognize opportunities, set goals, and motivate others toward achieving those objectives. It is important for emerging adults to foster their self-direction skills in order to increase their capacity for leading others. Previous research (Neck & Houghton, 2006; Neck & Manz, 2004) identified self-leadership as the precursory step toward leading others. This study showed a significant increase in self-direction readiness in those who engaged in CTSO student leadership opportunities over those who were only involved as a general member. The strong practical significance of the statistical analysis suggests that a relationship between self-direction and self-leadership could be manifested through leading others.

Implications

One purpose of this study was to inform CTSO advisors and CTE program administrators of methods to refocus efforts toward the purported claims of postsecondary readiness and success. Advisors and administration will be armed with new information about the relationship between self-direction and these organizations, so that they could distribute, advertise, and inform eligible students of those options of interest to them. The presence of choice in learning objectives, direction, and outcomes has been well established for its benefits for students who moved beyond the minimum state requirements for graduation (Garrison, 1992, Garrison, 1997; Grow, 1991; Knowles, 1975; Schwartz, 2004). This study has now linked other key factors of postsecondary success and readiness to a remarkable increase in self-directed tendencies for those seniors who acted on the choices available to them and became involved in CTE and CTSO.

Students who completed a CTE pathway scored 9% higher in self-directed tendencies than those who only completed the minimum requirements for graduation. While this accomplishment may be the most attainable and available option, it still requires a level of commitment and determination to progress through increasingly more challenging courses in a related pathway and then successfully passing a cumulative end-of-pathway assessment.

Students who chose to become actively involved in a CTSO for at least two years scored 13% higher in readiness to demonstrate self-directed behaviors than those who only completed a CTE pathway and 23% higher than those who only completed the minimum requirements. While not a requirement of CTE programs, CTSOs are a natural

extension and supplement to the content within those related CTE pathways and offer applicable opportunities in learning. However, the degree of commitment required also increases since CTSOs primary activities occur outside typical high school instructional hours. The self-purported claims of CTSOs did appear to be supported by this study, at least in regard to a general readiness to self-direct and, subsequently, to take ownership of learning opportunities, explore career paths, and prepare youth to become productive citizens.

Students who participated in student leadership opportunities through a CTSO scored 8% higher on the SDLRS than their general member counterparts. This observation suggests a confirmation of previous connections of high degrees of self-direction to self-leadership and then leading others. Once again, the progression of choice is also subsequent to the progression of commitment. Leadership requires accountability towards those they led, and created an added responsibility of choice to pursue, campaign, and secure a local, state, or national leadership position.

Additionally, it is important to note that on average, senior CTSO officers ($M = 241.44$, $SD = 19.27$) scored much higher than the reported average for all adults ($M=214$, $SD=25.59$) who have completed the SDLRS-A survey (Learning Preference Assessment, n.d.). While the design of this study did not extend the statistical analysis to the general population of everyone who has taken the SDLRS questionnaire, the comparison does suggest that CTSO officers were more likely to engage in self-directed learning opportunities than the average adult was.

While this study cannot conclusively declare that involving oneself in CTE pathways or a CTSO will always subsequently, and without thought to other variables,

lead to higher degrees of self-direction, it can establish a relationship between being proactive in choice in learning opportunities and a higher readiness to engage in self-direction. Regardless of the order in which those factors may define this relationship, it is crucial that advisors and administration understand that it exists and seek opportunities to increase the awareness of and foster interest in exploring what CTE and CTSOs have to offer.

Opportunities to engage in self-direction could be developed through various interventions such as increasing autonomy support, fostering self-determination, and enhancing problem-solving skills. By helping emerging adults to become more self-directed, they could navigate their adulthood with greater ease and success. Developing self-directedness during secondary education could contribute to a greater sense of autonomy and self-efficacy, which could help young adults successfully navigate the challenges and transitions of later life stages. By taking the initiative and developing the skills and habits of self-directedness, emerging adults could build a strong foundation for ongoing personal, professional, and academic growth.

Limitations to Study

Geographics and demographics were the primary limitations of this study. The sample population was limited to one geographical region in South Georgia and further limited to five schools that fit the criterion under the scope of this study. Additionally, the study only focused on seniors during a single semester. No other longitudinal data or other groups of students were studied, making it difficult to establish generalizability beyond the sample population. Comparisons across different semesters, different years,

or across multiple survey measurements of the same student group prior to their senior year were not possible with the data collected.

Given the self-reporting nature of the survey instrument, another limitation of this study was present in the form of measurement bias. Social desirability is one such form of bias and may occur when participants are asked a question they feel may have a more desirable response rather than answering truthfully. For example, one survey question asked participants to rate their agreement with this statement: “I like to think about the future.” All respondents in this study were high school seniors, and planning for their immediate future is a common theme from many influences in secondary educational settings and might make them feel that it was socially desirable to say that they, in fact, did “like to think about the future.” This effect was minimized by assuring and ensuring that participants’ information would be anonymized and private.

The bias involved in extreme responses might have also been present as the survey instrument utilized a Likert scale for each question. This type of bias typically occurs when participants tend to choose either the extremely positive or negative response to a question (Jeon & De Boeck, 2019). Sensitive questions that offer blame may also invoke extreme responses rather than an accurate assessment of how one felt about the question. By choosing an instrument with established credibility and reliability processes that had a mix of positively and negatively phrased questions, this study attempted to minimize this type of bias.

Due to insufficient response rate, especially from those students who might have been in the control or pathway completers group, there might be a degree of response bias present. The combined reported control group from all five schools was a possible 401

students, yet only 52 of them responded. The combined reported pathway completers from the three areas studied was 484 students, yet only 51 participated in the survey. It is interesting to note that the two groups with the lowest response percentages were also the groups that scored the lowest on the SDLRS. However, the low rate limited the possibility that the respondents were truly representative of the population.

Primary characteristics of self-direction imply actions of self-responsibility, individuality, and initiative. All these characteristics may also disproportionately elicit responses from those who are more self-directed and more readily choose to participate. Participation bias occurs when the very nature of what is being studied may influence willingness to share their opinion through a survey (Keeble et al., 2013). In an effort to minimize this risk, the survey was shared through multiple available channels to reach the most diverse group possible. All seniors were emailed information about the study and were prompted to participate. Senior homeroom teachers and CTSO advisors also administered the survey and prompted for participation.

One further limitation to be considered in this study is that of researcher bias. The researcher's career has been directly involved with secondary students, primarily in career and technical education, as well as serving as an advisor to a CTSO for more than six years. While that involvement provided great motivation and gave personal meaning to this research, it might also introduce bias as a factor. Taking this into consideration, the choice was made to utilize an existing and established survey instrument for primary data collection. The researcher, by intention, was not directly involved in the administration of the surveys so as not to subliminally solicit responses from known participants or who might have been currently taught or under the advisorship of the researcher. Despite the

care taken to standardize the administration of the survey and collection of data and attempts to overcome any researcher biasing, this still must be considered a limitation of the study.

The use of the SDLRS instrument in this study also presented another limitation. Early literature on the development of the SDLRS included eight factors in self-direction (Guglielmino, 1977; Long & Agyekum, 1984). After securing permission to conduct the study using the SDLRS and establishing the sample population, the researcher was informed of one major factor analysis study of the SDLRS. The conclusion was that “although there is a definite underlying factor structure in the SDLRS, the factors are highly correlated. Therefore, the overall score is by far the most interpretable measure and the one that should be used” (West & Bentley, 1990, p. 169). Furthermore, Guglielmino stated that “that the only way one could safely use subscores derived from factor analysis results would be if the factor analysis were performed on the sample for which the subscores were to be derived” and “most samples are too small to qualify for this procedure” (L.M. Guglielmino, personal communication, November 9, 2021).

The inability to dissect overall scores into subfactors did limit the original proposed data analysis into the factors of independence of learning, openness to learning opportunities, and future orientation. The inclusion of these factors may have shed some insight into factors related to post-secondary success and tie them to theories in emerging adults as well as characteristics of CTSO cultures.

Recommendations for Future Research

The responsibility of ensuring post-secondary success and preparedness continues to concerneducators and their associated educational institutions and programs. CTSOs

and CTE were born in the early 1950s out of a refined focus on vocational education and related student organizations. They were to provide opportunities for students to further engage in more specialized study and practice. Seven decades later, these programs and organizations still exist and thrive in most public educational institutions. In light of research, literature, and theory around self-directed learning and emerging adulthood, this study focused on one aspect of high school that may prove beneficial for post-secondary success. However, there are many other areas and factors that could be studied to discover additional relationships between CTSOs, CTE, self-directedness, and post-secondary success. It is recommended that the following areas and methods for further study in this field be implemented.

1. Access to a meaningful sample size of participants under the age of 18 was a limiting factor due to parental permission and the hesitation of schools to facilitate data collection from minors. A study that replicates this particular one but as a longitudinal study over participant's high school career might provide additional insights. There could be tremendous value in a repeated measures analysis of self-directedness using the same groups but at multiple data points, tracking their progression towards self-direction. This type of analysis might greatly strengthen the promising relationships discovered in this study between students' readiness to self-direct and their completion of a CTE pathway, involvement in a CTSO, or engagement in student leadership opportunities.
2. While a small number of studies cited in this study did attempt to cross-analyze academic performance data from participants while in high school with their performance post-secondarily, no studies were found that were based on the

theoretical perspectives of self-direction, emerging adulthood, or leadership. A replicated study that analyzed self-direction data from students two years post-graduation and compared to their scale of self-directedness as a high school senior could strengthen existing connections and causal relationships to post-secondary success. This suggested study into CTSOs in particular, could provide great confidence in their efforts toward post-secondary preparedness.

3. While relevant literature exist which shows connections between self-directed behaviors and academic performance, additional studies are warranted into the direct impact of academic performance indicators as predictors of postsecondary success. Such studies could be vital to understanding and making possible connections to those student organizations purporting to increase student achievement and engagement.
4. A replicated study that expands to more diverse school districts and would be inclusive of more CTSOs could lend credence to the theory that there is value in CTE and CTSO programs, regardless of the school district. Extending the study to different demographics could greatly increase the generalizability of the results to a wider population.

Conclusion

The results of this study highlighted promising connections between existing literature in self-direction, emerging adulthood, and the secondary CTE programs and related student organizations that provide opportunities for students to exercise choice and exploration in learning. While the limitations of the study did not allow the freedom to make a direct causal connection, there is, without a doubt, confirmation that the

presence of opportunities to begin engagement in self-directed learning behaviors is crucial to emerging adults. Given these results, advisors and high school administrators should endorse the benefits of moving beyond the minimum graduation requirements to encourage greater postsecondary success.

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APPENDIX A - Superintendent Letter

Mar 6, 2022

Dear Superintendent,

As a graduate student in Adult and Career Education program at Valdosta State University, Valdosta, Georgia, I am working under the direction of Dr. Kenneth Ott and Dr. Gwendolyn Ruttencutter on research about self-directed learning opportunities in career and technical education and career and technical student organizations. The purpose of the research is to determine what differences in degree of self-direction readiness may exist between CTSO and CTE participants and those who have not participated.

I am also an Engineering Instructor at Lowndes High School in Valdosta and a Technology Student Association advisor. My research interests are focused into points of efficacy of CTSOs and I wish apply my research findings to our South Central Georgia public high schools. With the permission of Assistant Superintendent Rodney Green, Lowndes High School is also included in the studied population. Your school system has been selected for inclusion in this study as you are a part of our Coastal Plains Regional Educational Service Agency (RESA) and share similar demographics that are conducive to this research.

I am requesting permission to send an anonymous survey to your seniors that are 18 years of age or older on Jan 1, 2022. A copy of this survey is attached to this email for your approval. Your students will not be identified in any way on the survey or in the research results. Additionally, in this multi-school research study, participants will not be asked to reveal what school they attend and data will not reveal geographical or any user-specific and identifiable information. The survey is voluntary and participants may opt out at any time.

The possible benefits of this research may result in improvement of current methods and opportunities present in both CTE and CTSO environments. As an incentive for your system's participation, at the conclusion of the research, I would be excited to share with your administration the findings and implications of this study through in-person or virtual conferencing.

Questions regarding the purpose or procedures of this research should be directed to Matthew North at mpnorth@valdosta.edu. This study has been approved by the Valdosta State University Institutional Review Board (IRB) for the Protection of Human Research Participants. The IRB, a university committee established by Federal law, is responsible for protecting the rights and welfare of research participants. If you have concerns or questions about your rights as a research participant, you may contact the VSU IRB Administrator at 229-253-2947 or irb@valdosta.edu.

Thank you for your consideration of participation in this exciting and meaningful research. I look forward to working with you and your CTE/CTSO faculty. Please do not hesitate to contact me with any additional questions or concerns. Also, feel free to speak with Lowndes Assistant Superintendent Mr. Rodney Green regarding any questions or assistance you may need concerning this research endeavor.

Sincerely,

Matthew North

APPENDIX B - Qualtrics Survey

Opening Information Page:

You are being asked to participate in a survey research project entitled A COMPARATIVE STUDY OF THE DEGREE OF SELF-DIRECTEDNESS IN HIGH SCHOOL CAREER AND TECHNICAL STUDENT ORGANIZATIONS, which is being conducted by Matthew North, a doctoral candidate at Valdosta State University. The purpose of the research is to determine what differences in self-direction readiness may exist between CTSO and CTE participants and those who have not participated. You will receive no direct benefits from participating in this research study. However, your responses may help us learn more about the impact of Career and Technical Education and Career and Technical Student Organizations and learner self-direction. There are no foreseeable risks involved in participating in this study other than those encountered in day-to-day life. Participation should take approximately twenty minutes to complete. This survey is anonymous. No one, including the researcher, will be able to associate your responses with your identity. Your participation is voluntary. You may choose not to take the survey, to stop responding at any time, or to skip any questions that you do not want to answer. Participants must be at least 18 years of age to participate in this study. Your completion of the survey serves as your voluntary agreement to participate in this research project and your certification that you are 18 or older. You may print a copy of this statement for your records.

Questions regarding the purpose or procedures of this research should be directed to Matthew North at mpnorth@valdosta.edu. This study has been approved by the Valdosta State University Institutional Review Board (IRB) for the Protection of Human Research Participants. The IRB, a university committee established by Federal law, is responsible for protecting the rights and welfare of research participants. If you have concerns or questions about your rights as a research participant, you may contact the VSU IRB Administrator at 229-253-2947 or irb@valdosta.edu.

Questions:

1. Are you 18 years of age or older?
 - a. Yes/No
2. Do you consent to participation in this anonymous survey?
 - a. Yes/No
3. Continue to survey site?
 - a. Yes/No

*Link to SDLRS survey provided upon affirmative answer for each of the above questions.

APPENDIX C - CTSO Advisor Letter 1

Mar 6, 2022

Dear CTSO Advisor,

As a graduate student in Adult and Career Education program at Valdosta State University, Valdosta, Georgia, I am working under the direction of Dr. Kenneth Ott and Dr. Gwendolyn Ruttencutter on research about self-directed learning opportunities in career and technical education and career and technical student organizations. The purpose of the research is to determine what differences in degree of self-direction readiness may exist between CTSO and CTE participants and those who have not participated.

With the permission of your superintendent, I am sending an anonymous survey to seniors 18 years and older. Your students, school, and program will not be identified in any way on the survey or in the research results. The survey is voluntary and participants may opt out at any time. The possible benefits of this research may result in improvement of current methods and opportunities present in both CTE and CTSO environments. As an incentive for your system's participation, at the conclusion of the research, I would be excited to share with your administration the findings and implications of this study through in-person or virtual conferencing.

Of special interest are those seniors who have served, or are currently serving, as a local or state CTSO officer during their high school career. Your assistance is needed to ensure this survey reaches those students. Your registrar has sent the link for the survey to those eligible students. Self-direction, self-leadership, and leading others is a crucial component of this research, and reaching those who are serving, or have served, as officers is very important.

Questions regarding the purpose or procedures of this research should be directed to Matthew North at mpnorth@valdosta.edu. This study has been approved by the Valdosta State University Institutional Review Board (IRB) for the Protection of Human Research Participants. The IRB, a university committee established by Federal law, is responsible for protecting the rights and welfare of research participants. If you have concerns or questions about your rights as a research participant, you may contact the VSU IRB Administrator at 229-253-2947 or irb@valdosta.edu.

Thank you for your assistance in reaching this important group of seniors. Please do not hesitate to contact me with any additional questions or concerns.

Sincerely,

Matthew North
Engineering Instructor, TSA/VEX/EV Advisor
Lowndes County High School

APPENDIX D - Survey Ticket

Please read these instructions entirely and carefully before proceeding in order to successfully complete the survey and record your responses. Thank you for your time!

1. Follow the link below (also in your email) to preliminary questions. After answering 3 questions, you will be given the link to the survey. Your USER ID and Password are listed below.

Link: https://valdosta.co1.qualtrics.com/jfe/form/SV_eDjTqC3BioNCUqq

USER ID: 1001

Password: 22767

2. After completing and submitting your primary survey questions, you will be asked for demographic information.
3. There is an ADDITIONAL QUESTIONS section that is very important to complete in order to finalize your survey submission. Please refer to the following section for those questions and record your answers in the corresponding response.

- a. QUESTION A: Are you currently a senior in high school?

0 = NO 1 = YES

- b. QUESTION B: By graduation, will you have participated in a Career and Technical Student Organization for at least two years? (FFA, FBLA, HOSA, DECA, TSA, SkillsUSA, FCCLA)

0 = NO 1 = YES

- c. QUESTION C: By graduation, will you have participated in one of these following Career and Technical Student Associations for at least two years? (FFA, TSA, FBLA)

0 = NO 1 = YES

- d. QUESTION D: During high school, have you served as a chapter officer in any Career and Technical Student Organization? (FFA, FBLA, HOSA, DECA, TSA, SkillsUSA, FCCLA)

0 = NO 1 = YES

- e. QUESTION E: By graduation, will you have completed a Career and Technical Education pathway?

0 = NO 1 = YES

- f. QUESTION F: By graduation, will you have completed one of the following Career and Technical Education pathways? (Agriculture, Engineering, Business)

0 = NO 1 = YES

- g. QUESTION G: What is your current Grade Point Average?

0	1	2	3	4
< 1.9	2.0 - 2.5	2.6 - 2.9	3.0 - 3.5	3.6-4.0

APPENDIX E - CTSO Advisor Letter 2

Mar 6, 2022

Dear CTSO Advisor,

I greatly appreciate your assistance in conducting this survey for a study on CTSOs. Attached are an initial 50 survey tickets with unique IDs. These tickets also contain detailed instructions as well as additional printed questions they will need to complete additional categorical questions at the end of the survey. These additional questions are very important! If you see that need additional tickets, please let me know as soon as possible and I will generate more.

The link to the survey is listed here but has also been emailed to each senior. You may also need to communicate with your IT department to have the following site cleared on your internet filtering system so that students may access the survey (this was being filtered for our system).

Survey link: https://valdosta.co1.qualtrics.com/jfe/form/SV_eDjTqC3BioNCUqq

Site to unblock: <http://lpasdlrs.com>

Although I am surveying students in three areas, I am sending these tickets only to you so as not to end up with duplicate printed copies. Could you correspond with your senior homeroom teachers to find a conducive time to administer the survey. The directions on the survey tickets should be read aloud and only given to those students who have completed the initial vetting questions and are waiting at the user id and password screen. Additionally, could you correspond with your fellow CTSO advisors in TSA, FFA and FBLA to ensure that officers are aware of the opportunity to participate in the survey?

If you have any questions please call or text me at anytime.

Sincerely,

Matthew North
Engineering Instructor, TSA/VEX/EV Advisor
Lowndes County High School

APPENDIX F - SDLRS Survey Questions:

1. I'm looking forward to learning as long as I'm living.
2. I know what I want to learn.
3. When I see something that I don't understand, I stay away from it.
4. If there is something I want to learn, I can figure out a way to learn it.
5. I love to learn.
6. It takes me a while to get started on new projects.
7. In a classroom, I expect the teacher to tell all class members exactly what to do at all times.
8. I believe that thinking about who you are, where you are, and where you are going should be a major part of every person's education.
9. I don't work very well on my own.
10. If I discover a need for information that I don't have, I know where to go to get it.
11. I can learn things on my own better than most people.
12. Even if I have a great idea, I can't seem to develop a plan for making it work.
13. In a learning experience, I prefer to take part in deciding what will be learned and how.
14. Difficult study doesn't bother me if I'm interested in something.
15. No one but me is truly responsible for what I learn.
16. I can tell whether I'm learning something well or not.
17. There are so many things I want to learn that I wish that there were more hours in a day.
18. If there is something I have decided to learn, I can find time for it, no matter how busy I am.
19. Understanding what I read is a problem for me.
20. If I don't learn, it's not my fault.
21. I know when I need to learn more about something.
22. If I can understand something well enough to get a good grade on a test, it doesn't bother me if I still have questions about it.
23. I think libraries are boring places.
24. The people I admire most are always learning new things.
25. I can think of many different ways to learn about a new topic.
26. I try to relate what I am learning to my long-term goals.
27. I am capable of learning for myself almost anything I might need to know.
28. I really enjoy tracking down the answer to a question.
29. I don't like dealing with questions where there is not one right answer.
30. I have a lot of curiosity about things.
31. I'll be glad when I'm finished learning.
32. I'm not as interested in learning as some other people seem to be.
33. I don't have any problem with basic study skills.
34. I like to try new things, even if I'm not sure how they will turn out.
35. I don't like it when people who really know what they're doing point out mistakes that I am making.
36. I'm good at thinking of unusual ways to do things.
37. I like to think about the future.
38. I'm better than most people are at trying to find out the things I need to know.
39. I think of problems as challenges, not stop signs.

40. I can make myself do what I think I should.
41. I'm happy with the way I investigate problems.
42. I become a leader in group learning situations.
43. I enjoy discussing ideas.
44. I don't like challenging learning situations.
45. I have a strong desire to learn new things.
46. The more I learn, the more exciting the world becomes.
47. Learning is fun.
48. It's better to stick with the learning methods that we know will work instead of always trying new ones.
49. I want to learn more so that I can keep growing as a person.
50. I am responsible for my learning - no one else is.
51. Learning how to learn is important to me.
52. I will never be too old to learn.
53. Constant learning is a bore.
54. Learning is a tool for life.
55. I learn several new things on my own each year.
56. Learning doesn't make any difference in my life.
57. I am an effective learner in a classroom situation and on my own.
58. Learners are leaders.

APPENDIX G - Added Focus and Categorical Questions:

1. Are you currently a senior in high school?
2. By graduation, will you have participated in a Career and Technical Student Organization for at least two years?
3. By graduation, will you have participated in one of the following Career and Technical Student Associations for at least two years? (FFA, TSA, FBLA)
4. During high school, have you served as a chapter officer in a Career and Technical Student Organization?
5. By graduation, will you have completed a Career and Technical Education pathway?
6. By graduation, will you have completed one of the following Career and Technical Education pathways? (Agriculture, Engineering, Business)
7. What is your current Grade Point Average? (Likert-scale)