Examining the Grit, Optimism, Locus of Control, and Self-Efficacy of Student Leaders in Idaho's Career and Technical Student Organizations

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Authorization to Submit Thesis

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Abstract

Career and technical education (CTE) is supported through federal funding and requires these programs to provide students with opportunities to engage in career and technical education student organizations. These organizations provide students with opportunities to engage in leadership through formal and non-formal roles and develop deeper understand for the course content through competitive events. This study is descriptive-relational in nature and examines four non-cognitive factors in a population of CTSO student leaders. In this study, grit, optimism, locus of control, and self-efficacy are described for the population and these factors are examined for differences based on the population's demographics. The results indicate differences between grit and organization, locus of control and gender, and self-efficacy and gender. The authors make recommendations for future research and practice as it relates to CTSO student leaders and non-cognitive factors.

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Dedication

This thesis is dedicated to all first-generation students. There are moments when you feel ill-equipped to be successful in college. But through constant perseverance you too can succeed! It is not always easy, but it is often worth it. Work hard, strive to be great, and never feel less than those who surround you.

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CHAPTER I

Introduction

Background

Career and Technical Education (CTE) has a strong history and legislative support in preparing students to transition from school to the work place (Castellano, Springfield & Stone, 2003). As an integral component in developing the nation's workforce (Dortch, 2014), CTE programs are designed to meet the needs of local industries through curriculum, assist students in developing leadership and non-cognitive skills through student organizations, and use input from community stakeholders and industry representatives to ensure a program's relevance and quality (Gordon, 2008). These programs help develop student's skills in subjects such as agriculture, business, family and consumer sciences, health occupations, engineering and technology (Gordon, 2008). Courses can be centered around teaching specific skills related to an occupation or focused on developing skills that can be beneficial in many occupations (Dortch, 2014).

Gordon (2008) explained "career and technical education's allegiance with the workplace becomes evident when one examines it's historical roots" (p. 2). This alignment can be seen in the preparation of CTE teachers as they are likely to have more industry experience than other secondary teachers (Gordon, 2008). As industries continue to evolve, these teachers' experience may help CTE programs remain relevant. He encourages industry representatives to take an active role in CTE programs in order to demonstrate their importance to students and administrators. Furthermore, he suggests involvement in CTE advisory committees to help ensure that industries are represented in local program decisions (Gordon, 2008).

While CTE curriculum often focuses on teaching industry-relevant content, many secondary educators are focused on building students' personal characteristics, which may be predictors of academic success (Berg & Pietrasz, 2017). To help prepare competent employees, CTE is designed to develop well-rounded individuals with the inclusion of student organizations (Gordon, 2008). Students engaged in CTE gain opportunities through involvement with Career and Technical Student Organization (CTSOs) as noted by Dortch (2014). These organizations, such as Business Professionals of America (BPA), help build leadership, teamwork, and communication skills through local and state-wide events (Dortch, 2014). CTSO activities can be incorporated into regular classroom curriculum and instruction or they can support experiential learning by attending state programs or competitions (Gordon, 2008).

State programs can include leadership conferences for all CTSO members with additional training for chapter, district and state elected officers. For example, after a state program a student may feel excited, motived and hopeful in their future CTSO roles. In addition, CTSO competitions provide students opportunities to test their CTE content knowledge, ability and resilience. Therefore, state programs and CTSO competitions can also prepare students to develop non-cognitive factors.

Grit, optimism, locus of control and self-efficacy, are examples of these non-cognitive factors. These factors have been found to play a role in success and achievement in national spelling bee competitors (Duckworth, Kirby, Tsukayama, Berstein, & Ericsson, 2011) adolescents (Polirstok, 2017), 12- 14-year-old students (Boman, & Yates, 2001), and at-risk youth (Miller, 2003). Further examination of these traits lays the foundation for this study.

Grit is defined as “perseverance and passion for a long-term goal,” (Duckworth, Peterson, Matthews, & Kelly, 2007, p. 1087). While furthering the explanation of grit, Duckworth (2016) notes that passion is a curiosity that cannot be satisfied, but perseverance continues to try to satisfy the curiosity. For example, short term goals might shift, but a “gritty” individual’s long-term goals will remain the same over time (Duckworth, 2016).

Optimism is defined as a positive expectation for the future (Scheier & Carver, 1985). Optimism is the tendency to believe that effort will contribute to a positive result, therefore an optimistic person might take more chances because of their belief in positive results (Scheier & Carver, 1985).

Locus of control refers to whether an individual attribute reward to personal actions or external factors (Rotter, 1966). Individuals who exhibit an internal locus of control attribute success or failure to personal factors, whereas individuals who exhibit an external locus of control attribute success or failure to external factors such as luck, fate, or chance (Rotter, 1966).

Self-Efficacy as defined by Bandura (1994) is, “people's beliefs related to their capabilities to produce designated levels of performance that exercise influence over events that affect their lives” (p. 1). Personal well-being and human accomplishments can be improved through a strong sense of self-efficacy (Bandera, 1994).

Significance

Skills, habits, and attitudes may help individuals be successful in a profession (Egalite, Mill, & Greene, 2016). As CTE programs and teachers focus on building well rounded, employable students (Gordon, 2008), teaching non-cognitive traits, such as grit, optimism, locus of control and self-efficacy, may help contribute to student aptitude and success (Duening, 2010; Egalite, Mill, & Greene, 2016; Usher & Pajares, 2008). One way

that CTE programs support student non-cognitive and leadership development is through CTSO opportunities (Alfeld, Hansen, Aragon, & Stone, 2006; Zirkle & Connors, 2003). CTSO involvement can provide students with leadership opportunities to grow professionally and build relationships with their peers and gain non-cognitive skills through leadership roles and competitions (Alfeld, et al., 2006; Zirkle et al., 2003).

CTE programs are financially supported by federal funding and designed to prepare students for the work force by providing them with opportunities to learn career relevant skills, participant in leadership, and build soft skills. The authors of previous studies indicated that grit, optimism, locus of control and self-efficacy are non-cognitive traits that may play a role in an individual's success (Duckworth, Peterson, Matthews, & Kelly, 2007; Aspinwall et al. 1992; Carden, Bryant, Moss, 2004; Chemers, Hu, Garcia, 2001; & Zimmerman, 2000). Idaho CTE programs are designed to prepared students with the "skills, knowledge, attitudes and habits" needed to be successful in a career (Idaho State Board, 2017, p. 2). Despite the focus on preparing well rounded individuals (Gordon, 2008), non-cognitive traits are not included in the skills assessments. Because each of these non-cognitive traits have manifested as important factors in student aptitude and because the mission of CTE and CTSOs is to build students aptitude, it is important to understand the current state of students' non-cognitive abilities. Identifying the current abilities of CTSO students will allow CTSOs to critically evaluate the current opportunities being offered during student leadership training and make changes where they are needed.

Purpose and Objectives

The purpose of this study was to examine the grit, optimism, locus of control and self-efficacy of Idaho CTSO student leaders who attended a state-wide leadership training. To meet this purpose, the study was guided by the following objectives:

1) Describe the grit of CTSO leaders attending a state-wide training;
2) Describe the optimism of CTSO leaders attending a state-wide training;
3) Describe the locus of control of CTSO leaders attending a state-wide training;
4) Describe the self-efficacy of CTSO leaders attending a state-wide training;
5) Examine differences between grit and CTSO student leader characteristics (location, gender, year in school, size of high school, organization).
6) Examine differences between optimism and CTSO student leader characteristics (location, gender, year in school, size of high school, organization).
7) Examine differences between locus of control and CTSO student leader characteristics (location, gender, year in school, size of high school, organization).
8) Examine differences between self-efficacy and CTSO student leader characteristics (location, gender, year in school, size of high school, organization).

Operational Definitions

Definitions in this research study include terms related to career and technical education and factors outside of student's cognitive ability. For the purposes of this study it is important to operationally define the following terms as they relate to the research being conducted.

Career and Technical Education (CTE*)* – Education programs funded by the Carl D. Perkins Career and Technical Education Act designed to prepare students for a specific occupation and/or higher education (Carl D. Perkins, 2006).

Career and Technical Student Organization (CTSO) – A co-curricular student organization that directly aligns with a Career and Technical Education program (Idaho State Board, 2017).

Grit – Passion and perseverance toward long-term goals (Duckworth, Peterson, Matthews, & Kelly, 2007).

Locus of Control – A person's belief that a specific outcome is in part caused by their action (internal) or environmental factors (external) as defined by Rotter (1966).

Non-Cognitive Trait – A personality trait that can be described as a person's thoughts, feelings, or believes (Borghans, Duckworth, Heckman & Ter Weel, 2008).

Optimism – A generalized expectation for a positive outcome not related to an individual's ability to perform (Scheier & Carver, 1985).

Self – Efficacy – Ones belief in their own abilities to accomplish a specific task at defined standard (Bandura, 1994).

Student Leader – A student who attended a state-wide leadership training

CHAPTER II

Literature Review

Non-cognitive traits, like grit optimism, locus of control and self-efficacy, have been linked to the student academic and personal success of student (Duckworth, Kirby, Tsukayama, Berstein, & Ericsson, 2011; Polirstok, 2017; Boman, & Yates, 2001; Miller, 2003). One objective of CTE educators' and administrators' is to prepare and promote students' success (ICTE Strategic Plan, 2016), hence the need to describe the current non-cognitive traits of CTE students. Throughout this literature review we discuss the history and current dynamics of CTE in the United States and Idaho, describes CTSOs in the U.S. and Idaho, and reviews research of the aforementioned non-cognitive traits. Previous research regarding CTE, CTSOs, and non-cognitive traits provides a foundation for this study.

CTE in the U.S.

Career and technical education, formally known as vocational education, is training and instruction that prepares students with industry skill (Gordon, 2008). Prior to vocational education, individuals would have learned a trade through a formal apprenticeship program, from their mother or father, or by the "pick-up" method (p. 3) methods; the pick-up method references individuals who would learn through observation and imitation (Wonacott, 2003). Formal apprenticeship programs began to decline after the industrial revolution and the development of free public education (Gordon, 2008). By the turn of the 20th century students were not prepared with the technical skills needed for the time period; in today's standards, 90% of the population would have been considered high school drop outs; educational advocates in the early 20th century thought the education system to be inclusive of individuals who sought skills and those seeking higher education (Miller, 1984). It was noted by Miller (1984) that vocational education would not only make school more

meaningful to most students, but “education for employment would help extend the years of education, thus increasing the level of citizenship for those persons” (p. 29). Policymakers agreed that vocational education was important to prepare American youth with the skills they needed to be productive citizens and successful in the trades; the Smith-Hughes National Vocational Education Act of 1917 was passed, which provided federal funding to support vocation education thereafter.

The act provided federal funding for agriculture, trades and industry, and homemaking education (Castellano & Stringfield, 2003). Historically, vocational education was explained by Lynch (2000) as: “a collective term in high schools to identify curriculum programs designed to prepare students to acquire an education and job skills, enabling them to enter employment immediately upon high school graduation.” (p. 155). However, as skill requirements changed, employers were demanding more advanced skills by students (Kautz, Heckman, Diris, Weel, Borghans, 2014), therefore organizations and legislation evolved to reflect this change. The American Vocational Association (AVA), was founded to (1) maintain an active national leadership, (2) provide service to state or local communities while the community stabilized their program, (3) provide a national open forum to discuss of all questions related to vocational education, and (4) unite all the vocational education interest groups through membership. The AVA moved to change their name to Association for Career and Technical Education (ACTE) in 1998 (Lynch, 2000). The motion passed and ACTE became one of the first organizations to acknowledge the switch from vocational education to career and technical education.

In 2006, the Bush administration passed the Carl D. Perkins Career and Technical Education Act of 2006. This bill changed the name from “vocational education” to “career and technical education” in federal legislation. Senator Edward Kennedy’s address to

Congress in 2006 said, “[Vocational Education] has evolved from shop classes into courses that use cutting-edge technology and focus on emerging and growing fields that will become the jobs of the future. That is why we now call it career and technical education” (S. 250, 2006). He continued by saying, “One of our highest priorities in Congress is to expand educational opportunities for every American” (S. 250, 2006). Vocational education evolved and a high emphasis was placed on teaching career-related and academic-related competencies, which is why the name changed to career and technical education. The evolution of CTE, “challenged vocational educators to teach beyond the confines of specific occupations and, instead, to prepare students for a more demanding world of work” (p. 244) and the authors note that legislation also began to incorporate funding for leadership trainings (Castellano, Stringfield, Stone, 2003, p. 244). The name change embodied a shift from preparing students for the workforce to preparing all students for their future in higher education or high skilled careers (Threeton, 2007). This was summarized by Friedel (2011) by stating, “The [new] definition of CTE reflects the continued evolution of the integration of academics and CTE, and the emphasis on articulation and program linkage between high school and post-secondary programs” (p. 49). Although the name changed, CTE programs still prepare students for higher education and in-demand careers through content knowledge, the development of skills, and leadership experiences (Castellano, Stringfield, Stone, 2003).

The purpose of the Carl D. Perkins Act of 2006 is to develop student academic, career, and technical skills in enrolled students. The bill outlines seven areas by which federal legislation is designed to support. These areas are: (1) creating challenging standards and assisting students in reaching the standards, (2) integrating academic and career and technical instruction to prepare students for postsecondary education, (3) increasing local control of programs, (4) researching and reporting information on best practices of a career

and technical education programs, (5) providing assistance in promoting leadership and student professional development and improving the quality of career and technical education, (6) supporting partnerships with higher education and the local workforce, and (7) providing individuals with opportunities to gain the knowledge and skills needed to keep the United States competitive (Carl D. Perkins, 2006). The legislation which guides CTE is designed to increase its rigor in developing students' academic and leadership skills, preparing students for careers or postsecondary education, and to build relationships between students and industry to keep the United States thriving (Carl D. Perkins, 2006). This legislation also outlines accountability criteria to ensure that local programs are maximizing the value of the federal funding used to support CTE programs (Carl D. Perkins, 2006).

For the purpose of this study the Carl D. Perkins Career and Technical Education Act of 2006 was used as the formal legislative document that governs CTE through the 2018-2019 school year. In July 2018, the Trump administration reauthorized the Carl D. Perkins Career and Technical Education Act of 2006 also called *Strengthening Career and Technical Education for the 21st Century Act*. The new bill slightly modifies the 2006 bill and is active beginning in July 2019 (Carl D. Perkins, 2019).

Understanding the legislative purpose of CTE programs can help guide the day-to-day actions of CTE educators, as Thessin, Scully-Russ, & Lieberman (2018) stated, "It is critical that state and district leaders have a clear understanding of the factors that contribute to CTE program success" (p. 52). Successful programs include a positive learning environment, a helpful community, available student support, real work experience, and a professional culture (Thessin et al., 2018). These factors are implemented in a CTE program via classroom instruction, student organizations, and realistic experiences (Gordon, 2008).

Lynch (2000) synthesized CTE research and concluded that, as teachers continue striving to prepare students the courses, they teach include rigorous content, which prepares students with the technical and leadership skills they need to be successful (Lynch, 2000). These CTE courses can be an occupational class which, focuses on a specific career of field of interest. The course might also be non-occupational, which would refer to a class that teachers general employability skills that are fitting for multiple careers or skills that an individual might find useful outside the labor market (Dortch, 2014). For example, a botany course would be classified as occupational because the content would directly to plant sciences. On the other hand, a nutrition and foods course would teach content that students can use throughout their life to live healthy.

Occupational CTE is often organized into 16 career clusters at the local, state and federal levels. Each career cluster includes several occupational areas group by content (Dortch, 2014). For example, agriculture and natural resources is a career cluster that encompasses occupations related to plant science, animal science, welding and fabrication. Due to the wide variety of occupations within a career cluster, CTE career clusters are further organized into pathways as described by Dortch (2014). To explain pathways, Dortch (2014) said,

> Career pathways generally refer to a series of connected education and trainings . . . that enable individuals to secure industry-recognized credentials and obtain employment within an occupational area and to advance to higher levels of future education and employment in that area" (Summary, para. 2).

As an example, in Idaho within the agriculture and natural resources career cluster, one pathway is plant systems. This pathway was designed specially to prepare students for an occupation or postsecondary education career in plant science. At the end of a pathway,

students should be prepared for an occupation or towards advancement in higher education in the content area (Dortch, 2014).

In addition to courses content, CTE teachers are required by federal legislation to provide leadership development opportunities to students (Carl D. Perkins, 2006). The Perkins Act defines a CTSO as: "an organization for individuals enrolled in a career and technical education program that engages in career and technical education activities as an integral part of the instructional program" (Carl D. Perkins, 2006, p. 4). CTSOs are one of the best ways to provide students with leadership development opportunities, as they are co-curricular organizations embedded in CTE classes (Carl D. Perkins, 2006; Gordon, 2008; McNally & Harvey, 2001). There are currently 11 CTSOs recognized by the United States Department of Education, nine that involve secondary students. The organizations for secondary students include: (1) Business Professionals of America (BPA), (2) DECA**,** (3) Educators Rising, (4) Family, Career and Community Leaders of America (FCCLA), (5) Future Business Leaders of America (FBLA) – Phi Beta Lambda, (6) Health Occupation Students of America (HOSA), (7) National FFA Organization (FFA), (8) SkillsUSA, and (9) Technology Students Association (TSA). CTSO organizations are designed to supplement classroom education in four areas leadership, professional development, competitions, and community services (Alfeld, et al., 2006). Alfeld et al., (2006) examined the effect that CTSO participation has on students' academic motivation, academic engagement, grades, career self-efficacy, college aspirations, and employability skills. The authors found that students with more CTSO participation were higher on average on all factors (above) and noted "CTSO participation does make a difference", the more the better (Alfeld et al., 2006, p. 141). Participation in CTSOs are an integral part of a CTE program and adds value to students' post-secondary preparation (Alfeld, et al., 2006).

Since 1917 the federal government has given monetary support to career and technical education as it provides students with opportunities to learn technical skill and develop leadership through experience (Alfeld et al., 2006; Carl D. Perkins, 2006; Gordon, 2008). Current federal legislation outlines criterion that supports an effective CTE program. CTE programs are designed to provide students an opportunity to learn occupational or non-occupational skills, develop professionally through CTSOs, gain real-world experience in a given occupation, and become prepared for their chosen future. As stated in federal legislation, integrating these programs into high school and outlining criterion for success is one strategy to help the United States be competitive in a global economy (Dortch, 2014; Carl D. Perkins, 2006).

CTE and CTSOs in Idaho

Federal legislation authorizes broad control over CTE programs to individual states. This allows each state to administer CTE in a manner that best suits their citizens. In Idaho, CTE is guided by the State of Idaho Division of Career and Technical Education mission, which is "to prepare Idaho youth and adults for high skill, in-demand careers" (ICTE Strategic Plan, 2016). This mission is accompanied by Idaho Career Technical Education's eight initiatives. The initiatives are as follows: (1) advise students to plan for high school and post high school, (2) align program standards with industry requirements, (3) expand CTEs online and/or distant learning model, (4) assure workplace readiness skills are integrated into a CTE program, (5) identify how the division can promote and support limited occupational specialists, (6) identify factors that define a quality program, (7) improve statewide perceptions so CTE is valued by students, parents, and educators, and (8) provide leadership and collaboration between agencies, education and workforce partners to benefit the state's economy (ICTE Strategic Plan, 2016). In sum, the Idaho State Division of CTE has outlined

initiatives to expand CTE throughout the state by ensuring a quality education for all students in order to meet Idaho's industry needs and expanding the relationships between stakeholders and Idaho CTE to advance CTE programs.

Idaho CTE includes seven career clusters: (1) Agriculture, Food, and Natural Resources, (2) Business Management and Marketing (3) Engineering and Technology, (4) Family and Consumer Sciences, (5) Health Sciences, (6) Individualized Occupational Training, and (7) Skilled and Technical Sciences. Each career cluster is designed to educate students in career opportunities and develop career skills related to each content topic (Dortch, 2014). After completion of a pathway in one of the career clusters, students should be prepared to take an entry-level position or continue in higher education within the content area (Dortch, 2014). Idaho CTE student's success can be assisted by CTSOs (Zirkle et al. 2003). Idaho recognizes seven CTSOs at the state level: (1) Business Professionals of America (BPA), (2) DECA, (3) Family, Career and Community Leaders of America (FCCLA), (4) National FFA Organization (FFA), (5) HOSA-Future Health Professionals (HOSA), (6) SkillsUSA, (7) Technology Student Association (TSA). All seven CTSO are aligned to a career cluster in the state as show in Table 2.1.

Table 2.1

Idaho Career Cluster and Student Organization Alignment

Student Organization	Career Cluster	Total course enrollment
National FFA Organization (FFA)	Agriculture, Food, and Natural Resources	13,470
Business Professionals of America (BPA) and DECA	Business Management and Marketing	29,247
Technology Student Association (TSA)	Engineering & Technology	13,901
Family, Career, and Community Leaders of America (FCCLA)	Family & Consumer Sciences	14,871
Future Health Professionals (HOSA)	Health Sciences	7,053
	Individualized Occupational Training	1,108
SkillsUSA	Skilled and Technical Sciences	7,087
Total Enrollment		86,737

For many students, the integration of CTSOs into CTE programs helps expand teaching and learning through local, state, and national competitive events, leadership opportunities and mentoring other CTSO members (Gordon, 2008).

In 2017, the seven career clusters were delivered in 718 programs, 115 school districts, and 17 specialized CTE schools (CTE in Review, 2017). A total of 86,737 student course enrollment were measured for 2017 (CTE in Review, 2017). When controlling for duplicated students, there were N = 59,575 unique students enrolled in CTE (CTE in Review, 2017). From the total number of CTE students, 18.23% (n = 10,858) participated in CTSOs (CTE in Review, 2017). The ICTE in Review document explained further, juniors or seniors who completed a culmination course are known as CTE concentrators. Of the 7,783 CTE concentrators, 96% found jobs, continued their education, or joined the military upon graduation (ICTE in Review, 2017).

The Idaho State Board of Education Governing Policies and Procedures require CTE programs to "incorporate an active Career Technical Student Organization into the program" (p. 3-4). After a review of literature, Zirkle et al (2003) noted that CTE programs should include CTSO chapters to allow opportunities for students to engage in community service and content related competitions.

CTSOs provide leadership development opportunities to students (Gordon, 2008). These opportunities include leadership conferences at the state and national level, officer positions in each organization, and state events that build leadership and teamwork. Most of Idaho CTSOs (BPA, FCCLA, FFA, HOSA, SkillsUSA, & TSA) have a statewide leadership conference to build student leadership and non-cognitive skills. When attending a state leadership conference, students may have the opportunity to engage in workshops, listen to keynote speakers, compete in events, and in some organization participate in community service. These conferences may also provide opportunities for students begin building relationship with fellow members. Individual organizations can provide other leadership opportunities to students throughout the year. This might include an officer training hosted by the local chapter. Local organizations might provide leadership development for members during chapter or regional meetings through workshops or local speakers. Most organizations offer leadership roles and officer positions at the local, regional and state level (Gordon, 2008).

Students in all organizations have the opportunity to develop leaderships through participation and service in a leadership role at the chapter, regional, state or national level. As outlined by each organizations' bylaws, each officer team selection process varies based on the organization, and level of office (local, regional, state or national) (BPA, 2018; DECA, 2017; FCCLA, 2015; FFA, 2015; HOSA, 2015; SkillsUSA, 2018; TSA, 2015).

Organization bylaws also outline officer duties and responsibilities after being elected. In sum, the organizations by-laws outline officer conduct which is professional and in the best interest of the organization. Student officers are both high school and college students who meet the minimum requirements, which may include GPA requirements and other specific organizational accolades (BPA, 2018; DECA, 2017; FCCLA, 2015; FFA, 2015; HOSA, 2015; SkillsUSA, 2018; TSA, 2015).

After meeting the minimum requirements for officer and being selected to serve, it is common for officers to participate in leadership training to help prepare each officer. At the state level, Idaho CTE provides training for all CTSO state officers at *Joint Student Leadership* (JSL) conference. This conference is aimed at teaching state officers, from all seven CTSOs, the skills they need for their year of service as a state officer within their organization. Idaho CTE also hosts a leadership conference *Building and Achieving Success in Idaho Chapter* (BASIC). This conference gives student leaders in all CTSOs an opportunity to gain leadership skills and to collaborate with teammates and other student leaders. The programming is delivered by a professional facilitator, who guides students through decision making and planning for the following year. One of the main goals of the BASIC training is leadership development for each attendee (ICTE BASIC, 2018). The BASIC and JLS training invitations are extended to chapter and state officers of Idaho CTSO organizations each year.

The Idaho CTE's strategic plan and initiatives are to advance the opportunities provided to students and to prepare students with the skills needed for Idaho's in-demand careers. Students who participate in career and work-orientated education are more likely to enter careers and earn a higher wage (Griffith and Wade, 2001). Recent research studies have noted non-cognitive traits including grit, optimism, locus of control and self-efficacy as a

driver for lifetime success (Anderson, Turner, Heath, Payne, 2006). CTE strives to prepare students for successful futures, and with non-cognitive traits are drivers for success, it is important to examine the non-cognitive traits of CTSO student leaders as potential influencers for gaining leadership skills. This study examined grit, optimism, locus of control and self-efficacy of CTSO student leaders. While CTE and CTSOs have been explained, it is also important to understand each non-cognitive trait, the role it plays for an individual and its relation to student aptitude.

Non-Cognitive Traits in Students

SAT scores and IQ tests have been used to measure students' academic ability, while these tests serve an important function, they are limited in their ability to measure a student's non-cognitive ability (Bashant, 2014). Grade Point Average (GPA) is another factor that may be used in an attempt to measure academic success (Fortin, Oreopoulos, Phipps, 2015). GPA does not account for the variation in type or difficulty of classes that students may in enroll in. Previous studies have shown that measures like SAT, IQ, GPA, and other measures of cognitive ability may not predict student success as well as non-cognitive traits (Duckworth, 2014; Kautz et al., 2015). Research analyzing expectations has influenced other non-cognitive traits including locus of control and self-efficacy (Rotter, 1966; Bandura, 1977). Grit and self-discipline were identified as two non-cognitive factors that more accurately predicted academic success in college (Duckworth, et al. 2007; Duckworth & Seligman, 2005), therefore preparing students with non-cognitive traits might be important for their success (Kautz et al, 2014). Helping students develop non-cognitive traits, such as grit, is not often the focus primary focus of public education (Bashant, 2014; Kautz et al., 2014). However, some administrators and education professionals are aware of the importance of

these non-cognitive traits and encourage teachers to incorporate them into their classroom (Bashant, 2014; Egalite, 2008).

Research has not described grit, optimism, locus of control and self-efficacy concurrently in a group of CTSO student leaders. Therefore, this study will allow researchers to examine multiple non-cognitive traits of Idaho CTSO student leaders to support the current research gap. As CTE educators work to enhance students' skills to help them be successful, it is may be helpful to teach non-cognitive traits. Due to a current lack of data, educators may not be able to make informed changes to adequately teach the non-cognitive skills. This study will allow the educational community to gain the knowledge of CTSO students' current non-cognitive ability and make recommendations for the future.

Grit. Grit is defined by Duckworth et al. (2007) as a "passion and perseverance toward a long-term goal." They elaborate by stating, "Grit entails working strenuously toward challenges, maintaining effort and interest over years despite failure, adversity, and plateaus in progress. The gritty individual approaches achievement as a marathon; his or her advantage is stamina" (Duckworth et al., 2007, p. 1087-1088). Duckworth, Kirby, Tsukayama, Berstein and Ericsson (2011) examined national spelling bee contestants grit and deliberate practice as it related to the competitors' performance. In this study, students who spent more time deliberately practicing generally had higher grit scores. The authors note that because people with grit are likely to also have stamina, they may be more willing to put in the deliberate practice and which was one predictor of final performance (Duckworth et al., 2011). Due to its challenging nature, deliberate practice can diminish enjoyment temporarily (Ericsson & Charness, 1994), therefore grit is needed to persevere.

In addition to the national spelling bee, grit has also been found to be a predictor of success in educational attainment, career change, military retention, and novice teacher

retention (Duckworth et al. 2007; Estireis-Winkler, Shulman, Beal, & Duckworth, 2014; Robertson-Kraft and Duckworth, 2014). In a 2007 study, Duckworth et al., (2007) examined educational attainment and career change in relation to grit and the big 5 inventory. In this sample (n = 690), grit had more predictive power for education attainment than the big five inventory, and participants who had a high grit score (one standard deviation above mean) were 35% less likely to change careers frequently (Duckworth et al., 2007). Another study examining grit, self-control, retention, and GPA in West Point cadets (n = 1,218) found that grit predicted retention in summer training, while self-control predicted GPA (Duckworth et al., 2007). The authors note that this difference could be because the nature of each task and the difference between enduring summer training and continually managing distractions.

Estireis-Winkler et al., (2014) discuss four studies examining grit in different population: military, school, workplace and marriage. An examination of participants (n = 677) enrolled in an Army Operations Special Forces courses revealed that grit could predict retention in the course. The work of Estireis-Winkler et al. (2014) enriched the grit literature by showing that grit can predict retention in not only high-achieving military participants but also under represented populations as well. Research examining high school graduation rates and grit in Chicago Public School students (n = 4,813) found that grit could predict high school graduation in this sample (Estireis-Winkler et al., 2014). Lastly, grit predicted men's commitment to marriage and salespersons retention (Estireis-Winkler et al., 2014).

It may prove to be a difficult task; however, Duening (2010) suggests that high school teachers might find it beneficial to incorporate teaching strategies and lessons that provide students with opportunities to take risks and overcome failures in order to teach resiliency. Duening (2010) cited resiliency as one of the hardest characteristics to teach by saying: "[resiliency] may be the most difficult to teach in the classroom, as successful entrepreneurs

develop resilience only through multiple real-world failures" (p. 17). According to Duening (2010) teaching resiliency requires instructors to stimulate an emotion of failure and help students process the emotion or overcome the failure they experienced. Characteristics like grit and growth mindset have been found to significantly effect adolescents' future (Polirstok, 2017). Students involved in a CTSO may have the opportunity to spend time practicing for competitions, learning material related to the industry, and working with other students', which fosters cooperation skills, leadership experience, and the development of non-cognitive traits (Dortch, 2014; Duening, 2010; Zirkle et al., 2003). Highly competitive situations are another tool to help teach resiliency (Duening 2010). CTSOs are one way to incorporate a competitive spirit into the classroom and to reinforce grit into student learning.

Grit is a non-cognitive factor used to predict success and retention in many different populations (Duckworth et al. 2001: Estireis-Winkler et al. 2014). Students involved in CTSOs have opportunities to gain non-cognitive skills through professional development, leadership, and competitive experience (Duening, 2010; Alfeld et al., 2006), however their non-cognitive traits are unknown. It is important to understand the current non-cognitive traits of CTSO students as ICTE continues to build curriculum and leadership opportunities for CTSO students. As outlined in objective one of this study, we described the grit of current Idaho CTSO student leaders. This description provides a foundation for further research, and information that can be used by individuals who are developing opportunities within CTSO organizations in order to meet student needs.

Optimism. Scheier and Carver (1985) define optimism as the tendency to believe in a positive outcome from life experiences. The authors concluded that an optimistic person is more likely to overcome challenging tasks than someone with a pessimistic tendency (Scheier & Carver, 1985). The root of research into optimism can be traced to expectation

theories and theories surrounding life outlook (Scheier & Carver, 1985; Alarcon, Bowling, & Khazon, 2013)

It is important to note that optimism is grounded in expectation theory (Scheier et al., 1985). Self-efficacy can lead someone to believe they are capable of a given task (Bandura, 1994). Because of this enhanced belief, people with higher self-efficacy expect a good result from their effort, which is defined as optimism (Scheier et al. 1985).

Many studies were conducted to analyze optimism in relation to other characteristics, including socioeconomic status, gender, adjustment to college, academic stress, leadership, careers decisions, and success. Heinonen et al. (2006) studied the relationship between socioeconomic status and optimism concluding that low childhood socioeconomic status predicted low levels of optimism in young adults even when socioeconomic status of the young adults was statistically controlled. Additionally, they found that adults, who were raised with lower socioeconomic status have lower levels of optimism, regardless of their socioeconomic status as an adult. Puskar et al., (2010) examined differences in optimism based on gender in an adolescent population and noted that rural adolescent men in Pennsylvania exhibit higher optimism versus females.

Aspinwall and Taylor (1992) examined college students' optimism, coping strategies and overall adjustment to college life. Their study suggested that an optimistic nature helped people cope effectively; participants with high optimism were less likely to use avoidant coping, and "avoidant coping, in turn, predicted less successful adjustment to college" (Aspinwall et al., 1992 p. 995). Optimistic people were more likely to use a problem-solving technique to cope while pessimistic people used denial to cope; research suggests that coping with denial can lead to mental and behavioral disengagement from goals associated with a stressor, even if something can be done to solve the problem (Scheier & Carver 1994). The

influence of optimism and academic stress of secondary school students in Singapore was examined by Huan, Yeo, Ang, and Chong (2006). Their results concluded there was a negative correlation between academic stress and optimism. Optimistic adolescents reported lower levels of stress while pessimistic adolescents reported higher levels of academic stress (Huan et al., 2006).

Chemers, Watson, and May's (2000) study comparing self-esteem, optimism and leadership efficacy, showed that self-esteem failed to independently predict leadership potential of military cadets. In addition, they stated, "cadets with stronger beliefs in their leadership capability, or who were optimistic, were rated as having greater potential for successful leadership by their military science professors" (p. 272). Chemers, et al. (2000) highlight a correlation between leadership efficacy, optimism and leadership potential.

Creed, Patton, and Bartrum (2002) reported a strong correlation between optimism, career planning, exploration and confident career decisions, and career goals by examining optimism and career characteristics in Australian high school students. Their results demonstrated; "those with high levels of optimism demonstrated higher levels of career planning and exploration, were more decided about their career decisions, and had more career-related goals" (Creed, et al., 2002, p. 57). They found that students with high levels of pessimism had lower levels of career and decisions-making knowledge, school achievement, and also reported indecisive career choices. Finally, Creed and his colleges (2002) concluded by stating; "These findings also indicate that optimism and pessimism may have a key role to play in adolescent career development and orientation" (p.57).

In Crane and Crane's (2007) review of literature over a 25-year window examining entrepreneurial success, they identified successful entrepreneurs possess optimism, goal-orientation, and persistence. The study yielded information to note that successful individuals

do not suffer from unrealistic or destructive expectations that beyond reason. Successful entrepreneurs have realistic expectations related to their ventures; these entrepreneurs are not distracted by wishful thinking and instead continue to develop sound plans for the future (Crane et al., 2007).

As CTE teachers aim to prepare students for life after high school, factors such as better adjustment to college, positive career outlook and more leadership potential as they relate to optimism might be worth integrating into curriculum and opportunities provided to students. “Optimism training, it seems, may just be what the doctor ordered to improve the success rates of entrepreneurial ventures and to ensure the future” (Crane, et al., 2007, p. 24)

Optimism may be an important trait to college adjustment, leadership potential, and career decisions (Aspinwall & Taylor, 1992; Chemers et al. 2000; Creed et al. 2002). CTEs mission is to educate students and prepare them for a career and/or higher education. Optimism can help students be fully prepared with the habits and attitudes for a successful career (Crane et al., 2007). Studying levels of optimism in CTSO student leaders could help educators and administration make decisions about how to increase this trait in CTE students.

Locus of Control. Rotter (1966) described locus of control as the perspective individuals use when determining how his or her life is influenced. External control is a belief that other powerful factors like luck, chance, or fate, determine the outcome of an events rather than the actions of an individual; whereas, internal control is a belief that outcome of an event is contingent upon the individual behavior of the person (Rotter, 1966). Rotter (1966) explained that a persons’ perception of control is not completely internal or external but often varies between the two. He also suggested there is a relationship between an individuals’ motivation for success and an internal locus of control (Rotter, 1966).

Locus of control was examined in relation to student leadership by Anderson & Schneier (1978). In their study, participates (n = 125) were enrolled in an introductory business course, randomly divided into sub groups within the course for a 15-week period, and at the end of the term each group was asked to identify a leader. Anderson, et al. (1978) stated that leadership outcomes are often determined by differences in personality; their findings concluded that students with an internal locus of control were more likely to emerge or by chosen by their peers as a leader in the group. In another study examining high schoolers, student leaders, as defined by the school guidance counselor, were found to have an internal locus of control and prestigious career aspirations (McCullough, Ashbridge, Pegg, 1994). This is consistent with previous studies. People with an internal locus of control may be more likely to achieve success because they are more likely to select tasks carefully instead of acting emotionally (Anderson & Schneier, 1978).

Miller, Fitch, and Marshall (2003) reported that students in an alternative school had a higher external locus of control. They suggested that counselors and teachers could help by teaching students to identify situations they can or cannot control. School dissatisfaction influences student aptitude, dropout rates, and behavior problems, prompting Huebner, Ash, and Laughlin (2001) to examine locus of control and school satisfaction. They found that locus of control mediated the relationship between negative life experience and school satisfaction, concluding that intrapersonal characteristics, such as locus of control, should be included when examining adolescent school satisfaction. Lastly, a study by Carden, Bryand, and Moss (2004) examined locus of control in undergraduate students and the authors conclude that students who had an internal locus of control reported less test anxiety, less academic procrastination, and a higher GPA.

As we stated above, research was used to examine locus of control and leadership, school performance and school satisfaction and found that individuals who were more internal oriented faced less anxiety, emerged as leaders, and were more satisfied at school. As CTE teachers, advisors, and administrators work to retain students into CTE programs and provide opportunities to engage in leadership, baseline data describing CTSO students' locus of control could be beneficial. This study was designed to describe the locus of control levels of CTSO students who participate in a state-wide leadership training.

Self-Efficacy. Bandura (1994) defined self-efficacy as "people's beliefs about their capabilities to produce designated levels of performance that exercise influence over events that affect their lives" (p. 1). Self-efficacy is sensitive to variation in the performance context (Zimmerman, 2000). Experts suggest that the most accurate measures of self-efficacy are based on performance compared to mastery criterion. Zimmerman (2000) said, "students rate their certainty about solving a crossword puzzle of a particular difficulty level, not how well they expect to do on the puzzle in comparison to other students" (p. 84). Because self-efficacy is specific to a task and a designated level, this study focused on self-efficacy as it related to student's ability to perform officer duties as outline in organization by-laws.

Previous studies were used to observe self-efficacy in student population and concluded that student self-efficacy increases from problem-based teaching strategies, college students adjust better when they have high self-efficacy, self-efficacy mediates students' academic achievement, and self-efficacy changes over time and between genders (Chemers, Hu, Garcia, 2001; Dunlap, 2005; Huang, 2011, Pajares, 2002; Zimmerman, 2000). As demonstrated in the mission statement, Idaho CTE is designed to provide students opportunities to learn skills that will help them integrate into the work force upon graduation. Dunlap (2005) identified problem-solving as one characteristic that students might need as

they transition into the work place. His study into undergraduate students in a software development program had higher self-efficacy to perform the tasks required in the workplace after completion of a capstone problem-based learning course (Dunlap, 2005). This might suggest that students who have completed a capstone course in CTE may have high self-efficacy to perform tasks required in the workforce. Students who entered college with confidence in their ability, perform better than those students who are less confident in their abilities (Chemers, Hu, Garcia, 2001).

Self-efficacy has shown more predictive power than objective tests like previous academic performance (Chemers, Hu, Garcia, 2001). Self-efficacy predicted performance with more accuracy than prior experience, self-concept, and perceived usefulness, because students who had a higher sense of academic self-efficacy were more likely to be motivated to learn, practice better studying habits, and thus perform better academically that those with lower self-efficacy (Zimmerman, 2000). Self-efficacy has the potential to change over time and could be affected by gender differences. A study examining self-efficacy in elementary children revealed similar self-efficacy in language arts and math for both genders, but as the students moved into middle school language arts self-efficacy remained equal for both genders; on the other hand, male students showed higher math self-efficacy even though female students demonstrated better performance on knowledge assessments (Pajares, 2002).

Self-efficacy has been studied in conjunction with academic success, and in its relationship to leadership. Those who self-reported higher self-efficacy on a leadership self-efficacy questionnaire tended to assume leadership roles more often, when given the opportunity. More leadership experience correlated with higher leadership self-efficacy (McCormick, Tanguma, Lope-Forment, 2002). McCormick, et al. (2002) results supported

previous findings suggesting that successfully accomplishing a challenging task can increase self-efficacy (Bandura, 1994).

The role of self-efficacy in leadership development was examined by Machida and Schaubroeck (2011) in a review of the literature. They investigated self-efficacy in four different contexts and its relationship to leadership development, because self-efficacy is dependent on context and performance criteria. Therefore, in order to change self-efficacy a task must exhibit a high chance of failure as an individuals' leadership self-efficacy is more likely to increase when a difficult leadership related task is successfully accomplished and decrease when the individual fails to accomplish a difficult leadership task (Machida & Schaubroeck, 2011). As students enrolled in CTE courses are successful in the classroom, at CTSO competitions, or in leaderships roles they may begin to develop self-efficacy regarding their abilities to perform in an entry-level job or postsecondary education.

Because self-efficacy is context and performance specific, the current investigation examined students' self-efficacy related to their leadership capabilities in their CTSO officer position. After examination of the literature, investigation into self-efficacy in CTSO student leaders was not found. The literature suggests that self-efficacy might be related to and play a role in one's leadership ability. Therefore, it is imperative that we examine the non-cognitive trait of self-efficacy in Idaho CTSO student leaders. This will allow research to compare students' non-cognitive traits to demographic characteristics and fill the current research gap.

Grit, Optimism, Locus of Control, and Self-efficacy. Throughout the literature there are examples of how grit, optimism, locus of control and self-efficacy are related and different. Scheier et al. (1992) explained an optimistic person believes a positive outcome is at least partially contingent on continued effort and their drive to continue working could be described as grit. Optimism has been compared to self-efficacy. Scheier et al. (1992)

explained optimism and self-efficacy both describe an individual's expectation, however optimism is a general expectation, while self-efficacy is a domain specific expectancy based on believed abilities. Like optimism, locus of control is a "general expectancy about whether outcomes are controlled by one's behavior or by external forces" (Zimmerman, 2000).

More connections between grit, optimism, locus of control and self-efficacy can be found in Bandura's description of self-efficacy. Bandura (1994) said people with high self-efficacy have a "strong commitment to challenging goals" (p.1), which is followed by a quick recovery when faced with setbacks or failure, which is grit. Self-efficacy is rooted in one's belief of his/her capabilities. A strong belief in capability or high self-efficacy could lead to an expectation for a positive result, which is optimism (Scheier & Carver, 1985). Finally, people with high self-efficacy, attribute failure to "insufficient effort or deficient knowledge" (p.1) and they face threatening situations knowing they can "exercise control over them" (Bandura, 1994, p.1), or in other words, locus of control.

The following statement is an example showing a relationship between each non-cognitive trait as it relates to Idaho CTSO student officers. Example: A student believes in his/her capability to successfully perform his/her officer duties (self-efficacy), which they believe will result in a productive year for the CTSO chapter (optimism). If something goes wrong in the chapter, he/she believes that they will be able to makes the change that are needed to solve the problem (locus of control) and will work hard until the appropriate solution is found (grit). The purpose of the current study to examine the relationship between the four non-cognitive variables as they are related to student leadership.

Summary

This literature review has examined CTE in the U.S., explored CTE and CTSOs in Idaho, and discusses the non-cognitive traits grit, optimism, locus of control and self-

efficacy. CTE is rooted in the United States federal legislation and is designed to provide educational opportunities for individuals to become prepared for careers (Carl D. Perkins, 2006). This legislation stems from a belief in the importance of increasing an individual's aptitude. The mission of CTE is to prepare high school students for an occupational career or to enter higher education (Carl D. Perkins, 2006). In Idaho, CTE is designed to prepare students with the habits and attitudes needed for a career as outlined by the state board of education governing policies (Idaho State Board, 2017). CTSOs provide students with professional development opportunities to enhance the content knowledge of the CTE courses (Gordon, 2008). As per Idaho policy, all CTE career clusters are accompanied by a CTSO to give every student the opportunity to gain the skills that a CTSO can provide (Idaho State Board, 2017).

Grit, optimism, locus of control and self-efficacy all play a role in an individual's behavior and worldview (Duckworth et al. 2007; Scheier et al. 1992; Rotter, 1966; Bandura, 1994). Grit is one's passion and perseverance toward long-term goals. People who exhibit a gritty personality won't give up easily. Optimism is an expectation for a positive outcome from effort expensed on a task (Scheier et al. 1992). People who are optimistic are more likely to confidently pick a career and possess more leadership potential (Creed et al. 2002). Locus of control is the individual's perception of causality (Rotter, 1966). An individual with an internal locus of control believes their own actions and abilities are related to the outcome of an event, while an individual with an external locus of control believes luck, fate or change have more control over the outcome then their personal actions (Rotter, 1966). Self-efficacy is an individual's belief in his/her own capability to perform a specific task to meet a criterion (Bandura, 1994). Individuals with higher self-efficacy toward a task are more likely to perform better at that task (Bandura, 1994).

Grit, optimism, locus of control and self-efficacy have a relationship to student aptitude (Estireis-Winkler et al. 2014; Aspinwall et al. 1992; Carden et al. 2004; & Chemers et al. 2001). There is currently no research to support or describe the non-cognitive characteristics of Idaho CTSO students, and research has yet to describe grit, optimism, locus of control and self-efficacy concurrently in a group of student leaders. Therefore, this study allowed researchers to examine multiple non-cognitive traits of Idaho CTSO student leaders to support the current research gap. As CTE educators help prepare students, it is imperative to teach non-cognitive traits. Due to a current lack of data, educators may not be able to make changes to help students develop the non-cognitive skills that students need for their future. This study will allow the educational community to gain the knowledge of CTSO students' current non-cognitive ability and make recommendations for the future. In addition, Idaho can improve the current leadership trainings to provide more opportunities for students to enhance their non-cognitive skills once the student's current abilities are known.

Conceptual Framework

Previous research-based models were used to describe why some students have more aptitude than others (McIlrath & Huitt, 1995). Several of the most commonly cited models have been incorporated into the model that guides this research. Carroll's (1989) model of school learning explained that students' ability to learn is influenced by the amount of time a student needs to learn and the time given to learn. Research conducted by Proctor (1984) helped develop a model that credited school improvement to teacher expectations. Teacher expectations, teacher clarity toward students and the students' perception of this clarity in success, is described in the model developed by Hines, Cruickshank, and Kennedy (1985). Two of Hines et al. (1985) model's factors are incorporated into the conceptual framework for this study.

Additionally, Huitt's (2003) model of the teaching and learning process also influenced the framework for our current investigation. He explained that two major factors are involved in student achievement (1) teacher behavior and characteristics and, (2) student behavior and characteristics. Regarding school climate Huitt (2003) said, "there are a variety of other classroom factors which have been related to student achievement such as the classroom climate and the opportunity for students to engage in leadership roles" (p.13), and CTSOs provide such leadership opportunities as he described (Alfeld, et al. 2006; Zirkle, et al., 2003). Therefore, the population used in the study will be CTSO student leaders, that attend a state-wide CTSO leadership training.

Studies have shown student aptitude is likely affected by socioeconomic status (Saifi & Mehmood, 2011; Perry & McConney, 2010), parental education (Stephens, Hamedani & Destin, 2014), parental expectations (Stull, 2013), personal characteristics (Pomerantz, Altermatt & Saxon, 2002; Johnson, Crosnoe & Elder, 2001), cognitive ability (Baker & Czarnocha, 2002) and non-cognitive traits (Komarraju, Ramsey & Rinella, 2013; West, Kraft, Finn, Martin, Duckworth, Gabrieli, & Gabrieli, 2016). Socioeconomic status, educational history, parental education, and parental expectations are represented as environmental factors in the conceptual model guiding this investigation. Environmental factors were shown to affect student aptitude but are outside the scope of this study.

In the conceptual model guiding this investigation grit, optimism, locus of control and self-efficacy are represented as non-cognitive traits, with age, gender and ethnicity represented as personal characteristics. Non-cognitive traits and personal characteristics have been shown to affect student aptitude (Komarraju, Ramsey & Rinella, 2013; West et al. 2016; Pomerantz, Altermatt & Saxon, 2002; Johnson, Crosnoe & Elder, 2001). While previous research has shown that non-cognitive traits, personal characteristics, and school

climate may have an impact on student aptitude, little research has been conducted regarding the relationship between these factors in the CTSO student leader population in Idaho. Therefore, study will focus on the relationship between non-cognitive traits, personal characteristics, and school climate in CTSO students attending a state-wide leadership training.

Student success has been attributed to factors within the school, outside of the school and individual personality characteristics (Hines, Cruickshank, & Kennedy, 1985; McIlrath & Huitt, 1995; Huitt, 2003; Kautz, et al., 2014). A foundation of factors that help explain why some students are more successful provides a foundation for the current investigation. The following model (Figure 2.1) is a visual representation of two groups of factors that contribute to student aptitude. These factors revolve around the student. One group includes personal characteristics, environmental, cognitive ability, and non-cognitive traits. The other group includes school climate, school size, teacher quality, and student opportunities. As the model demonstrates, student and school factors combine to impact student aptitude. All of these factors work together to help explain why some students have more aptitude than others.

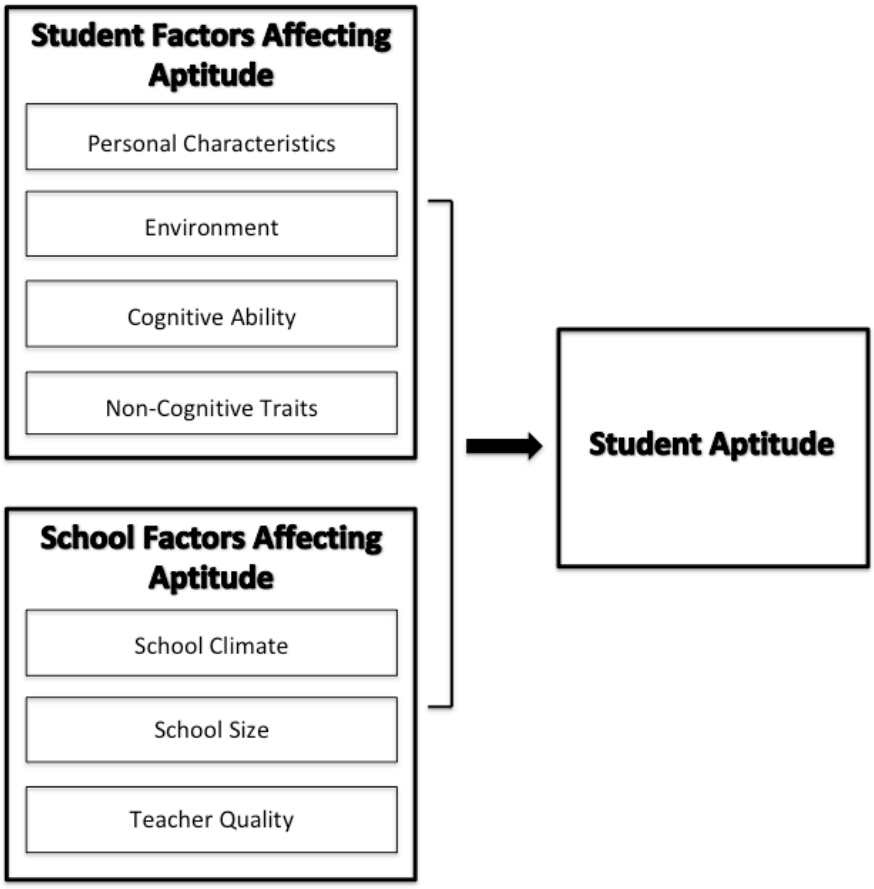

Figure 2.1: Conceptual model: Factors Contributing to Student Aptitude

Chapter III: Methods

This study was descriptive-relational in nature. The non-cognitive traits of CTSO student leaders were unknown. Therefore, to collect data related to the non-cognitive traits of CTSO student leaders four instruments were used. A general demographic questionnaire was also included into the questionnaire. In addition, the study examined differences between non-cognitive traits (grit, optimism, locus of control, and self-efficacy) and student characteristics (location, gender, year in school, size of high school, organization) to address the research objectives. This section includes a purpose, description of the population, an outline of the instruments, a measure of reliability, distribution, analysis and participants' characteristics.

Purpose

The purpose of this study was to describe the grit, optimism, locus of control, and self-efficacy of Idaho CTSOs student leaders and to examine differences between these non-cognitive traits and student characteristics. This research was guided by the following objectives:

1) Describe the grit of CTSO leaders;
2) Describe the optimism of CTSO leaders;
3) Describe the locus of control of CTSO leaders;
4) Describe the self-efficacy of CTSO leaders;
5) Examine differences between grit and CTSO student leaders' characteristics (location, gender, year in school, size of high school, organization).
6) Examine differences between optimism and CTSO student leaders' characteristics (location, gender, year in school, size of high school, organization).

7) Examine differences between locus of control and CTSO student leaders' characteristics (location, gender, year in school, size of high school, organization).
8) Examine differences between self-efficacy and CTSO student leaders' characteristics (location, gender, year in school, size of high school, organization).

Population

The study was a census of students ($N = 443$) attending the *Building and Achieving Success in Idaho Chapters* (BASIC) Conference in the Fall of 2018. University of Idaho Agriculture and Extension Education graduate students were contracted to facilitate the conference, thereby giving our team access to attendees for research purposes. The BASIC Conferences was held at four locations across Idaho as shown in Table 3.1. Conferences were in Pocatello on September 16th and 17th, Twin Falls on September 23rd and 24th, Nampa on September 30th and October 1st, and Lewiston October 14th and 15th.

Table 3.1

BASIC Conference by Date

Location	Date
Pocatello BASIC	September 16 – 17
Twin Falls BASIC	September 23 – 24
Nampa BASIC	September 30 – October 1
Lewiston BASIC	October 14 – October 15

Multiple locations provided students from different geographical regions opportunities to attend the conferences. The BASIC conferences were advertised to CTE teachers though email and the Idaho CTE website. The registration information was on the Idaho CTE website for students, parents, and teachers. The registration packet included an opt-out informed consent that was to be signed by parents and students, prior to the students' attendance to BASIC. This study was certified exempt under category one by the University of Idaho Institutional Review Board. Parental consent was given through the BASIC conference registration form, see Appendix A.

Students who were leaders in their local CTSO chapter were invited to attend BASIC. According to Idaho Division of Career and Technical Education, the Idaho CTSOs were Business Professionals of America (BPA), DECA, Family, Career and Community Leaders of America (FCCLA), National FFA Organization (FFA), HOSA-Future Health Professionals (HOSA), SkillsUSA, Technology Student Association (TSA). Caution should be taken in generalizing results to a population outside of the respondents because a selected population is used.

Instrumentation

Data was collected using a general demographic questionnaire together with four instruments (Appendix B). The Short Grit Scale (Grit-S; Duckworth & Quinn, 2009), the revised Life Orientation Test (LOT-R; Scheier, Carver & Bridges, 1994), the General Self-Efficacy Scale (GSE; Schwarzer & Jerusalem, 1995), and the Locus of Control Questionnaire (LOCQ; Rotter, 1966) were used to examine the non-cognitive traits being studied.

General Demographic Questionnaire

This questionnaire was developed to collect demographic data such as: age, gender, ethnicity, size of school, GPA, officer position and organization affiliation. The demographic questions allowed researchers to examine differences between each non-cognitive trait (grit, optimism, locus of control, and self-efficacy) and students' demographic characteristics, which supported the study objectives.

Grit Scale

The Grit Short Form (Grit-S; Duckworth & Quinn, 2009) is a 10-item questionnaire. There are two subscales; passion and perseverance each with five items. Each of the items per subscale are rated on a 5-point scale from 1 (*not at all like me*) to 5 (*very much like me*). Duckworth and Quinn (2009) used confirmatory factor analysis to support the two-factor

structure of the Grit-S ($r = .59$, $p < .001$). One limitation for the Grit-S scale is that it is a self-reporting method, however Grit-S had a previous estimate of reliability $\alpha = 0.82$ (Duckworth et al., 2009).

Revised Life Orientation Test

The Revised Life Orientation Test (LOT-R; Scheier, Carver & Bridges, 1994) is a 10-item questionnaire. There are three positively oriented questions, three negatively oriented questions, as well as four unscored questions to disguise the purpose of the test. Each of the items in the test are rated on a 5-point Likert scale, from 1 (*I disagree a lot*) to 5 (*I agree a lot*). Prior to administering the LOT-R, Scheier et al. (1985) suggested briefing individuals. Instructions to participants included the following 3 statements, (1) answer questions as honest as possible, (2) do not let answers to one question influence answers of another question, and (3) this questionnaire has no correct or incorrect answers (Scheier & Carver, 1985). LOT-R was chosen as the optimism instrument in part because the previously reported reliability at $\alpha = 0.88$. All negatively worded questions were reverse coded prior to scoring.

Locus of Control

The Locus of Control Questionnaire (LOCQ; Rotter 1966) contains 29 dichotomous items. Rotter explained that locus of control should be dichotomous forced-choice questions, therefore participants were forced to choose between two statements for each item. One statement indicated an internal belief and the other an external belief. To score this section, each internal statement selected resulted in one point. As a result, higher scores indicated a more internal belief and lower scores indicated a more external belief. See table 3.2 for an instrumentation summary.

General Self-Efficacy Scale

The General Self-Efficacy Scale (GSE; Schwarzer & Jerusalem, 1995) is a 10-item scale. The items were modified to me rated on a 10-point Likert scale from 1 (not confident) to 10 (confident) as suggested by Bandura (1994). The GSE had a previously reported internal Cronbach's alpha between .76 and .90. Self-efficacy norms for adolescents 12 – 17 years old were reported by Schwarzer & Jerusalem (1995) and these norms are applicable in this study. Bandura (1994) states that self-efficacy should be contextualized to a specific task. The instrument will be contextualized with the following statement prior to the GSE questions: "Answer the following questions as they pertain to your abilities as a CTSO officer."

Reliability

As Streiner (2003) discuses, reliability is a measure of the internal consistency of an instrument. He states that an instrument cannot be tested once and deemed reliable because "reliability is a characteristic of the test scores, not of the test itself" (Streiner, 2003, p.101). While reliability estimates were calculated previously, a post hoc analysis was conducted in order to confirm reliability of the instruments used in this study. A Cronbach's Alpha was used to calculate the reliability of the Grit-S ($\alpha = 0.76$), LOT-R ($\alpha = 0.75$) and the GSE ($\alpha = 0.87$). A KR-20 was used to calculate the reliability of the locus of control instrument ($\alpha = 0.62$). According to Nunnally (1994), alpha levels at 0.70 or above are acceptable. Levels below that are not detrimental but may measure multiple attributes. The locus of control scale was a dichotomous instrument, therefore an alpha level of 0.60 and above is considered acceptable (Allen, Abdulwadud, Jones, Abramson, & Walters, 2000).

Table 3.2

Instrument Summary

Instrument	Number of Items	Scale	*Pre-existing Alpha*	*Post-Hoc*

Grit (GRIT-S)	10	1-5	0.82	0.76
Optimism (LOT-R)	10	1-5	0.88	0.75
Locus of Control (LOCQ)	29	1-23		0.62
Self-Efficacy (modified – GSE)	10	1-10	0.76 - 0.96	0.87

Instrument Pilot

The instruments were piloted in early September 2018. The pilot group were college freshmen enrolled in University of Idaho AGED 180 (n = 37), which was an introductory to agriculture education course. The AGED 180 course was chosen because it included many students who participated in CTE and CTSOs in high school. These students were also not far removed from the high school setting; therefore, they were an adjacent population to the high school CTSO students in the study population. A post hoc analysis of reliability was conducted for all four data collection instruments following the pilot. A Cronbach's alpha was used for Short Grit Scale, the Revised Life Orientation Test and the General Self-Efficacy. A KR-20 was used for the Locus of Control Questionnaire. The results indicated acceptable reliability on all four instruments, so no changes were made to the instrument prior to data collection.

Data Collection

The instruments were distributed to students at the four Idaho 2018 BASIC conferences. The recruitment materials for BASIC outlined a schedule including a three-hour section with a professional leadership facilitator (Appendix C). The researchers worked with the facilitator to collect data during the leadership training. It is common for leadership trainings, like BASIC, to use personality assessments. Grit, optimism, locus of control and self-efficacy are specific to an individual's characteristics and beliefs. The instruments were used as a personality assessment and training material for the program facilitator. BASIC participants responded anonymously to the five-part questionnaire. The students were then given a separate scoring guide to self-score the instrument, and the researchers collected only

the anonymous questionnaire. Additionally, the program facilitator helped students identify their personality characteristics based on scoring guide.

Data Analysis

The questionnaires were hand scored by the primary researcher and a team. The data was then entered into a MS excel spreadsheet. Ten percent of the questionnaires were randomly selected, and a third party was used to verify data entry. SPSS version 26 was used to analyze the data. First, the mean and standard deviation was calculated and reported for students' grit score to meet objective one. Second, to meet objective two, the mean and standard deviation of students' optimism was calculated and reported. Third, the mean and standard deviation were calculated and reported for locus of control and self-efficacy to meet objectives three and four. An examination of variance (ANOVA) was used to examine for differences between student demographics (location, gender, GPA, year in school, size of high school, organization) and non-cognitive traits (grit, optimism, locus of control and self-efficacy) to meet objectives five, six, seven, and eight. The significance levels were set at $\alpha < .05$ with a confidence interval of 95%.

Subject Characteristics

Data were collected from students attending the BASIC conference in four different locations: Pocatello, Twin Falls, Nampa, and Lewiston. Participants were not necessarily from these locations. Of the total students (n = 443), 21.9% participated in Pocatello, 18.51% were in Twin Falls, 42.44% were in Nampa, and 17.16% participated in Lewiston (Table 3.3). Conference locations served as a gathering point. Many students traveled from other towns in the state to attend the conferences. Location data was used to describe the population in this study.

Table 3.3

Demographic Variables. Selected Student Characteristics (n = 443)

Location	*f*	%
Pocatello	97	21.90
Twin Falls	82	18.51
Nampa	188	42.44
Lewiston	76	17.16

There were more female participants than males in the population. Data collected on gender indicated that 65.2% were female and 0.2% preferred not to respond (n = 1). In comparison, the state of Idaho has 51.3% male students and 48.7% female students enrolled in secondary high school (Table 3.4). Because previous research indicates that female students might have higher GPAs (Fortin et al., 2015), we conducted an examination of variance between gender and GPA. The test indicated a statically significant difference between males and females self-reported GPA. Table 3.5 shows the descriptive statistics of GPA by gender and Table 3.6 shows the difference was indicated by a p-value of 0.01 with a power of 0.79. GPA fails to account for the type of courses students were enrolled in and/or the difficulty level of each course. York, Gibson and Rankin (2015) noted at GPA is a measure of a students ability perform not necessary the knowledge he/she gained, therefore GPA is limited in its ability to measure true academic success. In this study, GPA provided some information regarding a student's past performance in classes he/she had taken.

Table 3.4

Demographic Variables. Selected Student Characteristics (n = 443)

	Idaho HS Students		BASIC Attendees	
Gender	*f*	%	*f*	%
Male	45,394	51.18	151	34.09
Female	43,124	48.62	291	65.69
Prefer Not to Respond	--	--	1	0.23

Table 3.5

Descriptive Statistics for GPA Based on Gender

	n	*M*	*SD*	Min	Max
Male	139	3.54	0.51	1.00	4.00

Female	273	3.67	0.37	1.90	4.00
Total	412	3.62	0.42	1.00	4.00

Note: Due to low respondent numbers, one case was excluded for the difference test.

Table 3. 6

Comparative Analysis of GPA Scores Based on Gender

	SS	*df*	*MS*	*F*	*p*	η_p^2	1-β
Between Groups	1.35	1	1.35	7.65	0.01	0.02	0.79
Within Groups	72.55	410	0.12				
Total	73.91	411					

The results showed that 337 participants indicated their race as White. The breakdown is as follows: 76.08% White, 9.48% Hispanic/Latino, 7.90% Multiracial, 2.03% Asian, 1.81% Black/African American, 1.13% American Indian/Alaska Native, 0.45% Native Hawaiian/Pacific Islander, and 1.13% preferred not to respond. In comparison, the Idaho high school demographic data is reported as White (75.57%), Hispanic/Latino (17.58%), Asian (1.40%), Black/African American (1.24%), American Indian/Alaska Native (1.13%), Multiracial (2.52%) and Native Hawaiian/Pacific Islander (0.36%) see Table 3.5.

Table 3.7

Demographic Variables. Selected Student Characteristics (n = 443)

	Idaho HS Students		BASIC Attendees	
Race	*f*	*%*	*f*	*%*
Hispanic/Latino	15,594	17.58	42	9.48
White	67,030	75.57	337	76.08
Black/African American	1,097	1.24	8	1.81
Asian	1,240	1.40	9	2.03
American Indian/Alaska Native	1,003	1.13	5	1.13
Native Hawaiian/Pacific Islander	315	0.36	2	0.45
Multiracial	2,239	2.52	35	7.90
Prefer Not to Respond	--	--	5	1.13

Participants were high school students aged 14-years-old to 18-years-old. Of the participants 4.74% were 14, 15.58% were 15, 32.51% were 16, 39.95% were 17 and 7.22% were 18 (Table 3.6). A majority of students (n = 352, 79.46%) were 16 years old or older.

Table 3.8

Demographic Variables. Selected Student Characteristics (n = 443)

Age	*f*	*%*
14	21	4.74
15	69	15.58
16	144	32.51
17	177	39.95
18	32	7.22

The participants year-in-school results indicated that 5.26% were freshman, 17.85% were sophomore, 34.78% were juniors and 42.11% were seniors (Table 3.7). A majority (*n* = 336, 76.89%) of the study population in this study were juniors and seniors.

Table 3. 9

Demographic Variables. Selected Student Characteristics (n = 437)

Year in School	*f*	*%*
Freshman	23	5.26
Sophomore	78	17.85
Junior	152	34.78
Senior	184	42.11

Study participants attended schools of varying sizes. In Idaho, schools are classified by the following enrollment numbers: “1A” 0 – 159 students, “2A” 160 – 319 students, “3A” 320 – 639, “4A” 640 – 1279 and “5A” has 1280-plus students that are eligible to play high school sports. For school size, results indicated the following: 13.59% attended 1A, 9.68% attended 2A, 17.28% attended 3A, 35.94% attended 4A and 23.50% attended 5A (Table 3.8).

Table 3.10

Demographic Variables. Selected Student Characteristics (n = 434)

Size of High School	*f*	*%*
1A	59	13.59
2A	42	9.68
3A	75	17.28
4A	156	35.94
5A	102	23.50

Participants also indicated their primary organization affiliation. Primary member affiliation is defined as the organization which students represented while attending BASIC

Training. In this population, 21.8% of participants were members of BPA, 10.07% members of DECA, 12.5% members of FCCLA, 15.6% members of FFA, 21.3% members of HOSA, 13.2% members of SkillsUSA, and 5.0% members of TSA (Table 3.9). These results indicate the primary organization for the participant and do not include students who may have been members of multiple organizations.

Table 3. 11

Demographic Variables. Selected Student Characteristics (n = 441)

Organization	*f*	*%*
BPA	96	21.77
DECA	47	10.66
FCCLA	55	12.47
FFA	69	15.65
HOSA	94	21.32
SkillsUSA	58	13.15
TSA	22	4.99

Chapter IV: Results and Findings

The purpose of this study was to describe the grit, optimism, and self-efficacy of student leaders in Idaho CTSOs and examine relationships between the non-cognitive traits and student characteristics. Demographic data was collected from individuals who attended the state-wide leadership training. The results of this research will allow the state division of CTE, secondary CTE educators, and CTSO advisors to be better informed when making decisions the effect Idaho CTE students. In additional, the state division of CTE can use the data when developing curriculum and programing for CTSO leadership trainings.

These eight objectives were identified to accomplish the purpose of this study. The objectives were:

1) Describe the grit of CTSO leaders;
2) Describe the optimism of CTSO leaders;
3) Describe the locus of control of CTSO leaders;
4) Describe the self-efficacy of CTSO leaders;
5) Examine differences between grit and CTSO student leaders' characteristics (location, gender, year in school, size of high school, organization).
6) Examine differences between optimism and CTSO student leaders' characteristics (location, gender, year in school, size of high school, organization).
7) Examine differences between locus of control and CTSO student leaders' characteristics (location, gender, year in school, size of high school, organization).
8) Examine differences between self-efficacy and CTSO student leaders' characteristics (location, gender, year in school, size of high school, organization).

Objective One: Describe the Grit of CTSO Students'

Objective one was aimed to describe grit, as defined by Duckworth et al. (2009), in CTSO student leaders. Participants reported grit scores ranged from 2.1 to 5.0 (M = 3.59, SD = 0.54). Normative average grit score for adolescents was reported as 3.40 on the five-point scale (Duckworth et al., 2007). A majority (65.69%) of participants reported gender was female (n = 291). Grit scores were reported by gender: females (M = 3.61, sd = 0.53), and males (M = 3.54, sd = 0.55), and prefer not to answer (n = 1, M = 3.33, sd = 0). Participants most commonly indicated their race as White (n = 337). The population breakdown by race is Hispanic or Latino (n = 42), Black or African American (n = 8), Asian (n = 9), American Indian or Alaska Native (n = 5), Native Hawaiian or Other Pacific Island (n = 2), and Multiracial (n = 35), and Prefer not to respond (n = 5). In addition, grit scores were reported by race, Hispanic or Latino (M = 3.63, sd = 0.61), Black or African American (M = 3.81, sd = 0.52), Asian (M = 3.61, sd = 0.80), American Indian or Alaska Native (M = 3.49, sd = 0.39), Native Hawaiian or Other Pacific Island (M = 3.40, sd = 0.42), Multiracial (M = 3.52, sd = 0.55) and prefer not to respond (M = 3.90, sd = 0.63). A majority of participants were 16 and 17-year-olds, with participants reported age being 14-years-old (n = 21), 15-years-old (n = 69), 16-year-olds (n = 144), 17-year-olds (n = 177) and 18-year-olds (n = 32). Grit scores reported based on age: 14-years-old (M = 3.74, sd = 0.60), 15-years-old (M = 3.64, sd = 0.49), 16-year-olds (M = 3.57, sd = 0.54), 17-year-olds (M = 3.58, sd = 0.54) and 18-year-olds (M = 3.51, sd = 0.53). Results are displayed in Table 4.1.

Table 4.1

Demographic Variables. Selected Student Characteristics (n = 443)

Grit	*n*	*M*	*SD*
Gender			
Male	151	3.54	0.55
Female	291	3.61	0.53
Prefer Not to Respond	1	3.33	
Total	443	3.59	0.53
Race			
Hispanic or Latino	42	3.63	0.61
White	337	3.58	0.52
Black or African American	8	3.81	0.52
Asian	9	3.61	0.80
American Indian or Alaska Native	5	3.49	0.39
Native Hawaiian or Other Pacific Island	2	3.40	0.42
Multiracial	35	3.52	0.55
Prefer not to respond	5	3.90	0.63
Total	443	3.59	0.53
Age			
14	21	3.74	0.60
15	69	3.64	0.49
16	144	3.57	0.54
17	177	3.58	0.54
18	32	3.51	0.53
Total	433	3.59	0.53

Note: Grit is measured on a scale from 1 (not at all like me) to 5 (very much like me).

Objective Two: Describe the Optimism of CTSO Students'

Objective two was designed to describe the optimism of CTSO students. Participants reported optimism scores ranged from 1 – 5 ($M = 3.29$, $sd = 0.85$). The reported adolescent average for optimism was 3.70 on a scale scored from one to five scale (Scheier, Carver & Bridges, 1994). In this population, 34.09% (n = 151) reported gender was male and 65.46% (n = 290) were female; optimism reported by gender with males ($M = 3.21$, $sd = 0.76$) and females ($M = 3.34$, $sd = 0.74$). One participant indicated prefer not to respond and reported optimism was $M = 3.00$. A majority of participants indicated their race as White ($n = 337$) followed by Hispanic or Latino ($n = 41$), Black or African American ($n = 8$), Asian ($n = 9$), American Indian or Alaska Native ($n = 5$), Native Hawaiian or Other Pacific Island ($n = 2$),

Multiracial (n = 35), and Prefer not to respond (n = 5). The reported optimism scores are broken down based on race, the breakdown is: White (M = 3.32, sd = 0.75), Hispanic or Latino (M = 3.29, sd = 0.68), Black or African American (M = 3.27, sd = 1.00), Asian (M = 2.76, sd = 0.89), American Indian or Alaska Native (M = 3.20, sd = 0.78), Native Hawaiian or Other Pacific Island (M = 2.92, sd = 0.59), Multiracial (M = 3.28, sd = 0.74), and Prefer not to respond (M = 3.20, sd = 0.59).

Participants' age ranged from 14 to 18 years with participants reported age as 14-year-olds (n = 21), 15-year-olds (n = 69), 16-year-olds (n = 144), 17-year-olds (n = 176), and 18-year-olds (n = 32). Optimism scores were highest in participants who were 16 years old; the breakdown of optimism scores is as follows 14-year-olds (M = 3.33, sd = 0.75), 15-year-olds (M = 3.25, sd = 0.79), 16-year-olds (M = 3.42, sd = 0.65), 17-year-olds (M = 3.21, sd = 0.79), and 18-year-olds (M = 3.28, sd = 0.77) as shown in Table 4.2.

Table 4.2

Demographic Variables. Selected Student Characteristics (n = 442)

Optimism	*n*	*M*	*SD*
Gender			
Male	151	3.21	0.76
Female	290	3.34	0.74
Prefer not to Respond	1	3.00	
Total	442	3.29	0.75
Race			
Hispanic or Latino	41	3.29	0.68
White	337	3.32	0.75
Black or African American	8	3.27	1.00
Asian	9	2.76	0.89
American Indian or Alaska Native	5	3.20	0.78
Native Hawaiian or Other Pacific Island	2	2.92	0.59
Multiracial	35	3.28	0.74
Prefer not to respond	5	3.20	0.59
Total	442	3.29	0.75
Age			
14	21	3.33	0.75
15	69	3.25	0.79
16	144	3.42	0.65
17	176	3.21	0.79
18	32	3.28	0.77
Total	442	3.29	0.75

Note: Optimism is measured on a scale from 1 (I disagree a lot) to 5 (I agree a lot).

Objective Three: Describe the Locus of Control of CTSO Students'

Summated Locus of Control scores range from 1 to 23. Higher scores indicate a more internal locus of control. Due to non-response error some responses were excluded from analysis in the locus of control construct (n = 16). Locus of control summated scores ranged from 0 - 23 (M = 12.00, sd = 4.09) with a reported adolescent average of M = 9.03 (Rotter, 1966). Males (n = 146) in the population mean locus of control was 12.98(3.74) and females (n = 280) mean scores were 12.21(3.21). One participant chose not the identify their gender, his/her locus of control score was reported as 5.00. Race was a demographic used to describe locus of control. Participants identified as Hispanic or Latino (n = 40), White (n = 324), Black or African American (n = 8), Asian (n = 9), American Indian or Alaska Native (n = 5),

Native Hawaiian or Other Pacific Islander (*n* = 2), Multiracial (*n* = 34), and Prefer not to respond (*n* = 5). Locus of control scores are reported based: Hispanic or Latino (*M* = 12.45, *sd* = 2.88), White (*M* = 12.40, *sd* = 3.52), Black or African American (*M* = 11.38, *sd* = 2.45), Asian (*M* = 14.00, *sd* = 2.74), American Indian or Alaska Native (*M* = 12.60, *sd* = 2.88), Native Hawaiian or Other Pacific Islander (*M* = 13.50, *SD* = 6.36), Multiracial (*M* = 12.71, *sd* = 3.23), and prefer not to respond (*M* = 12.80, *sd* = 5.85). A majority of participants in this population indicated their age as 17-years-old (*n* = 170, *M* = 12.26, *sd* = 3.41) followed by 16-year-olds (*n* = 142), 15-year-olds (*n* = 67), 18-year-olds (*n* = 28) and 14-year-olds (*n* = 20). The locus of control scores is reported based on participants age; 17-years-old (*M* = 12.26, *sd* = 3.41), 16-year-olds (*M* = 12.39, *sd* = 3.32), 15-year-olds (*M* = 12.82, *sd* = 3.82), 18-year-olds (*M* = 12.61, *sd* = 3.07) and 14-year-olds (*M* = 13.05, *sd* = 3.63). The results for objective three are outlined in Table 4.3.

Table 4.3

Demographic Variables. Selected Student Characteristics (n = 427)

Locus of Control	*n*	*M*	*SD*
Gender			
Male	146	12.98	3.74
Female	280	12.21	3.21
Prefer not to Respond	1	5.00	
Total	427	12.45	3.43
Race			
Hispanic or Latino	40	12.45	2.88
White	324	12.40	3.52
Black or African American	8	11.38	2.45
Asian	9	14.00	2.74
American Indian or Alaska Native	5	12.60	2.88
Native Hawaiian or Other Pacific Islander	2	13.50	6.36
Multiracial	34	12.71	3.23
Prefer not to respond	5	12.80	5.85
Total	427	12.45	3.43
Age			
14	20	13.05	3.63
15	67	12.82	3.82
16	142	12.39	3.32
17	170	12.26	3.41
18	28	12.61	3.07
Total	427	12.45	3.43

Note: Locus of Control is measured using dictums measures scores can range from 1 to 23.

Objective Four: Describe the Self-Efficacy of CTSO Students'

Objective four was used to describe the self-efficacy of the population. Self-efficacy instrument used in this study could range from 1 to 10. The population self-efficacy mean was $M = 7.64(1.22)$. The reported average score for adolescents for the *General Self-Efficacy Scale (GSE)* was $M = 7.00$ (Schwarzer & Jerusalem, 1995). In this population, self-efficacy scores were reported for males ($n = 151$, $M = 7.81$, $sd = 1.24$), females ($n = 291$, $M = 7.5$, $sd = 1.21$) and for those who preferred not to respond ($n = 1$, $M = 7.50$). Participants reported their race the break down in White ($n = 337$), Hispanic or Latino ($n = 42$), Black or African American ($n = 8$), Asian ($n = 9$), American Indian or Alaska Native ($n = 5$), Native Hawaiian or Other Pacific Island ($n = 2$), Multiracial ($n = 35$) and Prefer not to respond ($n = 5$). The

reported self-efficacy based on gender is White (*M* = 7.66, *sd* = 1.19), Hispanic or Latino (*M* = 7.38, *sd* = 1.54), Black or African American (*M* = 8.16, *sd* = 0.95), Asian (*M* = 7.22, *sd* = 0.89), American Indian or Alaska Native (*M* = 8.16, *sd* = 1.10), Native Hawaiian or Other Pacific Island (*M* = 7.00, *sd* = 2.69), Multiracial (*M* = 7.65, *sd* = 1.21) and prefer not to respond (*M* = 8.08, *sd* = 1.01).

Age was used to describe the population. Participants ages ranged from 14-18 with a majority of participants being 16-years-old (*n* = 144) and 17-years-old (*n* = 177). Participants' age was also reported as 14-years old (n = 21), 15-years-old (n = 69), and 18-years-old (n = 32). In this population, 15-year-olds reported the highest self-efficacy scores (M = 7.79, sd = 1.13), followed by 16-year-olds (*M* = 7.72, *SD* = 1.16), 17-year-olds (*M* = 7.60, *SD* = 1.22), 14-year-olds (M = 7.40, sd = 1.74) and 18-year-olds (M = 7.33, sd = 1.31). Demographics and locus of control as described above is outlined in Table 4.4.

Table 4.4

Demographic Variables. Selected Student Characteristics (n = 443)

Self-Efficacy	*n*	*M*	*SD*
Gender			
Male	151	7.81	1.24
Female	291	7.55	1.21
Prefer not to Respond	1	7.50	
Total	443	7.64	1.22
Race			
Hispanic or Latino	42	7.38	1.54
White	337	7.66	1.19
Black or African American	8	8.16	0.95
Asian	9	7.22	0.89
American Indian or Alaska Native	5	8.16	1.10
Native Hawaiian or Other Pacific Island	2	7.00	2.69
Multiracial	35	7.65	1.21
Prefer not to respond	5	8.08	1.01
Total	443	7.64	1.22
Age			
14	21	7.40	1.74
15	69	7.79	1.13
16	144	7.72	1.16
17	177	7.60	1.22
18	32	7.33	1.31
Total	443	7.64	1.22

Note: Self-Efficacy is measured on a scale from 1 (not confident) to 10 (confident).

Objective Five: Differences Between Grit and Students Characteristics

Demographic characteristics were compared to students' grit scores. Grit is measured on a five-point scale, ranging from 1 to 5. The adolescent average was reported as $M = 3.40$ (Duckworth & Quinn, 2009). In this study, mean and standard deviation for grit is reported for the following participant characteristics: location, gender, year in school, size of high school, organization. To determine if any differences exist between participants grit score and location, gender, year in school, size of high school and organization a one-way difference test was employed. A significant difference between grit and demographic characteristics is indicated by a p value less than 0.05 at a 95% confidence interval.

Location

Students completed the instrument from different regions of the state. Participants from the Pocatello BASIC training had grit scores that ranged from 2.20 to 4.90 (n = 97, M = 3.53, sd = 0.50), Twin Falls ranged from 2.40 to 4.80 (n = 82, M = 3.64, sd = 0.53), Nampa ranged from 2.10 to 5.00 (n = 188, M = 3.59, sd = 0.56), and finally Lewiston ranged from 2.40 to 4.90 (n = 76, M = 3.60, sd = 0.52) as shown in Tables 4.5. An ANOVA was used to identify differences between participants grit score and the BASIC conference location. No differences were identified between participants grit scores and the location of the BASIC training they attended (F (3, 439) = 0.62, p = 0.60, η_p^2 = 0.00) and the observed power was 0.18 (Table 4.6).

Table 4.5

Descriptive Statistics for Grit Based on BASIC Location

	n	*M*	*SD*	Min	Max
Pocatello	97	3.53	0.50	2.20	4.90
Twin Falls	82	3.64	0.53	2.40	4.80
Nampa	188	3.59	0.56	2.10	5.00
Lewiston	76	3.60	0.52	2.40	4.90
Total	443	3.59	0.53	2.10	5.00

Note: Grit is measured on a scale from 1 (not at all like me) to 5 (very much like me).

Table 4.6

Comparative Analysis of Grit Scores Based on BASIC Location

	SS	*df*	*MS*	*F*	*p*	η_p^2	1-β
Between Groups	0.53	3	0.18	0.62	0.60	0.00	0.18
Within Groups	125.72	439	0.29				
Total	5834.54	443					

Gender

Only one participant responded, “prefer not to respond”. The case “prefer not to respond” was excluded from the examination of differences. An ANOVA was used to compare Male and Female grit scores. Male participants scores ranged from 2.20 to 5.00 (n =

151, $M = 3.54$, $sd = 0.55$) and female scores ranged from 2.10 to 4.90 ($n = 291$, $M = 3.62$, $sd = 0.53$), as show in Tables 4.7. The ANOVA indicated no difference between male and female participants grit scores (F (1, 440) = 2.14, $p = 0.14$, $\eta_p^2 = 0.01$) with a power of 0.31. Results shown in Table 4.8.

Table 4.7

Descriptive Statistics for Grit Based on Gender

	n	*M*	*SD*	Min	Max
Male	151	3.54	0.55	2.20	5.00
Female	291	3.62	0.53	2.10	4.90
Total	442	3.59	0.53	2.10	5.00

Note: Grit is measured on a scale from 1 (not at all like me) to 5 (very much like me). Due to low respondent numbers, one case was excluded for the difference test.

Table 4.8

Comparative Analysis of Grit Scores Based on Gender

	SS	*df*	*MS*	*F*	*p*	η_p^2	1-β
Between Groups	0.61	1	0.61	2.14	0.14	0.01	0.31
Within Groups	125.56	440	0.29				
Total	126.17	441					

Year in School

Grit was examined for difference based on participants year in school. Underclassman were freshmen and sophomores in high school. Participants who were Underclassman reported grit scores ranged from 2.40 to 4.80 ($n = 101$, $M = 3.65$, $sd = 0.54$), Juniors reported grit scores ranged from 2.40 to 5.00 ($n = 152$, $M = 3.62$, $sd = 0.52$) and Seniors reported grit scores ranged from 2.10 to 4.90 ($n = 184$, $M = 3.54$, $sd = 0.54$) as shown in Table 4.9. Examination of the ANOVA indicated no differences between groups ($F(2, 434) = 1.76$, $p = 0.17$, $\eta_p^2 = 0.01$) with a power of 0.37, as shown in Table 4.10.

Table 4.9

Descriptive Statistics for Grit Based Year in School

	n	*M*	*SD*	Min	Max
Underclassman	101	3.65	0.54	2.40	4.80
Juniors	152	3.62	0.52	2.40	5.00
Seniors	184	3.54	0.54	2.10	4.90
Total	437	3.59	0.53	2.10	5.00

Note: Grit is measured on a scale from 1 (not at all like me) to 5 (very much like me).

Table 4.10

Comparative Analysis of Grit Scores Based on Year in School

	SS	*df*	*MS*	*F*	*p*	η_p^2	1-β
Between Groups	1.00	2	0.50	1.76	0.17	0.01	0.37
Within Groups	123.58	434	0.29				
Total	5771.63	437					

Size of High School

High school sizes ranges from 1A (159 students or less) to 5A (1280 students or more). Grit was examined for difference between participants who attend different sizes of high schools. Participants who attended a 1A high school reported grit score ranged from 2.40 to 4.90 ($n = 59$, $M = 3.56$, $sd = 0.54$), 2A high school participants reported grit score ranged from 2.50 to 4.40 ($n = 42$, $M = 3.52$, $sd = 0.47$), 3A high school participants reported grit score ranged from 2.30 to 4.80 ($n = 75$, $M = 3.53$, $sd = 0.52$), 4A high school participants reported grit score ranged from 2.20 to 5.00 ($n = 156$, $M = 3.65$, $sd = 0.56$), and 5A high school participants reported grit score ranged from 2.10 to 5.00 ($n = 102$, $M = 3.57$, $sd = 0.53$) as shown in Table 4.11. A one-way test for variances indicated a power of 0.28 and showed no differences between participants grit score and size of high school which participants attended ($F(4, 429) = 0.88$, $p = 0.46$ $\eta_p^2 = 0.01$). The ANOVA test is outlined in Table 4.12.

Table 4.11

Descriptive Statistics for Grit Based on Size of High School

	n	*M*	*SD*	Min	Max
1A	59	3.56	0.54	2.40	4.90
2A	42	3.52	0.47	2.50	4.40
3A	75	3.53	0.52	2.30	4.80
4A	156	3.65	0.56	2.20	5.00
5A	102	3.57	0.51	2.10	4.80
Total	434	3.59	0.53	2.10	5.00

Note: Grit is measured on a scale from 1 (not at all like me) to 5 (very much like me).

Table 4.12

Comparative Analysis of Grit Scores Based on Size of High School

	SS	*df*	*MS*	*F*	*p*	η_p^2	1-β
Between Groups	1.00	4	0.25	0.88	0.46	0.01	0.28
Within Groups	121.64	429	0.28				
Total	5704.24	434					

Organization

Each CTSO in Idaho was represented at the BASIC training. Only organization that had 31 or more members represented in the data set were included in the one-way examination for differences. BPA members reported grit ranged from 2.20 to 4.90 (n = 96, M = 3.46, sd = 0.58), DECA ranged from 2.60 to 5.00 (n = 47, M = 3.56, sd = 0.53), FCCLA ranged from 2.50 to 4.80 (n = 55, M = 3.58, sd = 0.52), FFA ranged from 2.40 to 4.60 (n = 69, M = 3.60, sd = 0.49), HOSA ranged from 2.10 to 4.90 (n = 94, M = 3.73, sd = 0.53) and SkillsUSA ranged from 2.70 to 4.50 (n = 58, M = 3.61, sd = 0.45) as shown in Table 4.13. The one-way ANOVA test indicated differences between organizations ($F(5, 429) = 2.48$, $p = 0.03$, $\eta_p^2 = 0.03$) with a power of 0.78. A Ryan, Einot, Gabriel, Welsch Post hoc examination showed differences between BPA (M = 3.46, SD = 0.58) and HOSA (M = 3.73, SD = 0.53). Table 4.14 shows the one-way variance test.

Table 4.13

Descriptive Statistics for Grit Based on CTSO Organization

	n	*M*	*SD*	Min	Max
BPA	96	3.46	0.58	2.20	4.90
DECA	47	3.56	0.53	2.60	5.00
FCCLA	55	3.58	0.52	2.50	4.80
FFA	69	3.60	0.49	2.40	4.60
HOSA	94	3.73	0.53	2.10	4.90
SkillsUSA	58	3.61	0.45	2.70	4.50
Total	419	3.59	0.53	2.10	5.00

Note: Grit is measured on a scale from 1 (not at all like me) to 5 (very much like me). Due to low respondent numbers, one case was excluded for the difference test.

Table 4.14

Comparative Analysis of Grit Scores Based on CTSO Organization

	SS	*df*	*MS*	*F*	*p*	η_p^2	1-β
Between Groups	3.43	5	0.69	2.48	0.03	0.03	0.78
Within Groups	121.64	429	0.28				
Total	5704.24	434					

Objective Six: Differences Between Optimism and Student Characteristics

Optimism was examined by demographic characteristics. An ANOVA was used to examine differences between participants' optimism and each demographic (location, gender, year in school, size of high school and organization). Optimism is a summated score on a scale from 1 to 5 with 5 being the most optimistic. The average optimism scores on the LOT-R for adolescents was 3.7 on a scale scored from one to five scale (Scheier, Carver & Bridges, 1994).

Location

Differences were examined between the location were participants attended the BASIC training and optimism. Tables 4.15 and 4.16 include the descriptive statistics and the AVOVA results. Participants in this population from Pocatello had scores that ranged from 1.00 to 5.00 ($n = 97$, $M = 3.23$, $sd = 0.76$), Twin Falls ranged from 1.33 to 5.00 ($n = 82$, $M = 3.43$, $sd = 0.74$), Nampa ranged from 1.50 to 5.00 ($n = 187$, $M = 3.27$, $sd = 0.69$), and

Lewiston ranged from 1.00 to 5.00 (n = 76, M = 3.30, sd = 0.84). After examination of the one-way AVOVA, no differences were identified between location and optimism (F(3, 438) = 1.20, p = 0.31, η_p^2 = 0.01) with an observed power of 0.32.

Table 4.15

Descriptive Statistics for Optimism Based on BASIC Location

	n	*M*	*SD*	Min	Max
Pocatello	97	3.23	0.76	1.00	5.00
Twin Falls	82	3.43	0.74	1.33	5.00
Nampa	187	3.27	0.69	1.50	5.00
Lewiston	76	3.30	0.84	1.00	5.00
Total	442	3.29	0.75	1.00	5.00

Note: Optimism is measured on a scale from 1 (I disagree a lot) to 5 (I agree a lot).

Table 4.16

Comparative Analysis of Optimism Scores Based on BASIC Location

	SS	*df*	*MS*	*F*	*p*	η_p^2	1-β
Between Groups	2.00	3	0.67	1.20	0.31	0.01	0.32
Within Groups	243.06	438	0.56				
Total	5043.55	442					

Gender

Gender was another demographic characteristic that was examined. Males reported optimism scores ranged from 1.00 to 5.00 (n = 151, M = 3.21, sd = 0.76) and females ranged from 1.00 to 5.00 (n = 290, M = 3.34, sd = 0.74) as shown in Table 4.17. Only groups that included 31 participants or more were included in the one-way difference test. After examination of the one-way ANOVA test, no differences were identified between optimism and gender (F(1, 439) = 2.80, p = 0.10, η_p^2 = 0.01) and the reported power was 0.39. Variance test results are outlined in Table 4.18.

Table 4.17

Descriptive Statistics for Optimism Based on BASIC Gender

	n	*M*	*SD*	Min	Max
Male	151	3.21	0.76	1.00	5.00
Female	290	3.34	0.74	1.00	5.00
Total	441	3.30	0.75	1.00	5.00

Note: Optimism is measured on a scale from 1 (I disagree a lot) to 5 (I agree a lot). Due to low respondent numbers, one case was excluded for the difference test.

Table 4.18

Comparative Analysis of Optimism Scores Based on Gender

	SS	*df*	*MS*	*F*	*p*	η_p^2	1-β
Between Groups	1.55	1	1.55	2.80	0.10	0.01	0.39
Within Groups	243.43	439	0.55				
Total	5034.55	441					

Year in School

Each participant indicated their year in school. Underclassman included 9th and 10th grade students. Most participants were seniors in high school. Participants categorized as underclassmen reported optimism scores ranged from 1.33 to 5.00 (n = 101, M 3.33, sd = 0.74), juniors ranged from 1.00 to 5.00 (n = 152, M = 3.38, sd = 0.70) and seniors optimism scores ranged from 1.00 to 5.00 (n = 182, M = 3.22, sd = 0.78) as shown in Table 4.19. Optimism scores were examined for difference based on participants year in school. Examination of the ANOVA indicated no difference between participants year in school and their optimism scores ($F(2, 432) = 2.13$, $p = 0.12$, $\eta_p^2 = 0.01$) with an observed power of 0.44, as show in Tables 4.20.

Table 4.19

Descriptive Statistics for Optimism Based Year in School

	n	*M*	*SD*	Min	Max
Underclassman	101	3.33	0.74	1.33	5.00
Juniors	152	3.38	0.70	1.00	5.00
Seniors	182	3.22	0.78	1.00	5.00
Total	435	3.30	0.75	1.00	5.00

Note: Optimism is measured on a scale from 1 (I disagree a lot) to 5 (I agree a lot).

Table 4.20

Comparative Analysis of Optimism Scores Based on Year in School

	SS	*df*	*MS*	*F*	*p*	η_p^2	1-β
Between Groups	2.37	2	1.18	2.13	0.12	0.01	0.44
Within Groups	240.19	432	0.56				
Total	4978.66	435					

Size of High School

Idaho's classification of high school sizes ranges from 1A schools (159 students or less) to 5A (1280 students or more). In this population participants who attended a high school classified as 1A reported optimism scores ranged from 1.50 to 5.00 (n = 59, M = 3.14, sd = 80), 2A reported optimism scores ranged from 1.83 to 5.00 (n = 74, M = 3.21, sd = 0.64), 3A reported optimism scores ranged from 1.00 to 4.83 (n = 74, M = 3.20, sd = 0.64), 4A reported optimism scores ranged from 1.00 and 5.00 (n = 156, M = 3.42, sd = 0.77) and 5A reported optimism scores ranged from 1.00 to 5.00 (n = 102, M = 3.29, sd = 0.73). Descriptive statics are shown in Table 4.21. No difference where identified between the size of high school that participants attended and his/her summated optimism score. An examination of variance indicated no difference between groups (F(4, 428) = 2.13, p = 0.08, η_p^2 = 0.02) and the observed power is reported as 0.63, as shown in Table 4.22.

Table 4.21

Descriptive Statistics for Optimism Based on Size of High School

	n	*M*	*SD*	Min	Max
1A	59	3.14	0.80	1.50	5.00
2A	42	3.21	0.78	1.83	5.00
3A	74	3.20	0.64	1.00	4.83
4A	156	3.42	0.77	1.00	5.00
5A	102	3.29	0.73	1.00	5.00
Total	433	3.29	0.75	1.00	5.00

Note: Optimism is measured on a scale from 1 (I disagree a lot) to 5 (I agree a lot).

Table 4.22

Comparative Analysis of Optimism Scores Based on Size of High School

	SS	*df*	*MS*	*F*	*p*	η_p^2	1-β
Between Groups	4.76	4	1.19	2.13	0.08	0.02	0.63
Within Groups	238.51	428	0.56				
Total	4938.47	433					

Organization

Optimism was examined based on participants primary organization. Primary organization is defined as the organization that the participant represented at the conference. Participants may be members of more than one CTSO. Participants who indicated their primary organization as BPA reported optimism score ranged from 1.50 to 5.00 ($n = 96$, $M = 3.18$, $sd = 0.79$), DECA's reported optimism scores ranged from 2.33 to 4.50 ($n = 47$, $M = 3.26$, $sd = 0.53$), FCCLA reported optimism scores ranged from 1.00 to 5.00 ($n = 55$, $M = 3.31$, $sd = 0.83$), FFA reported optimism scores ranged from 1.33 to 4.67 ($n = 69$, $M = 3.37$, $sd = 0.76$), HOSA reported optimism scores ranged from 2.00 to 5.00 ($n = 93$, $M = 3.45$, $sd = 0.68$) and SkillsUSA reported optimism scores ranged from 1.00 to 4.67 ($n = 58$, $M = 3.18$, $sd = 0.74$). Table 4.23 includes the descriptive statistics for optimism. Organization with 31 or more members were included in the one-way examination of variance. Examination of the ANOVA indicated no difference between participants primary organization membership and his/her optimism score ($F(5, 412) = 1.77$, $p = 0.12$, $\eta_p^2 = 0.02$). The results also indicated the power as 0.61. Table 4.24 shows the comparative analysis of optimism scores based on CTSO organization.

Table 4.23

Descriptive Statistics for Optimism Based on CTSO Organization

	n	*M*	*SD*	Min	Max
BPA	96	3.18	0.79	1.50	5.00
DECA	47	3.26	0.53	2.33	4.50
FCCLA	55	3.31	0.83	1.00	5.00
FFA	69	3.37	0.76	1.33	4.67
HOSA	93	3.45	0.68	2.00	5.00
SkillsUSA	58	3.18	0.74	1.00	4.67
Total	418	3.30	0.74	1.00	5.00

Note: Optimism is measured on a scale from 1 (I disagree a lot) to 5 (I agree a lot).Due to low respondent numbers, one case was excluded for the difference test.

Table 4.24

Comparative Analysis of Optimism Scores Based on CTSO Organization

	SS	*df*	*MS*	*F*	*p*	η_p^2	1-β
Between Groups	4.79	5	0.96	1.77	0.12	0.02	0.61
Within Groups	222.84	412	0.54				
Total	4772.66	418					

Objective Seven: Differences Between Locus of Control and Students Characteristics

The locus of control instrument included 23-items each have two dichotomous statements. Participants selected one of the two statements they most strongly agreed with. Locus of control can range between 1 and 23. A higher score indicates a more internal locus of control score. The reported average score for adolescents for Rotter's (1966) scale was M = 9.03. Locus of control was examined for differences based on demographic characteristics of participants (location, gender, year in school, size of high school, and organization). A significant difference between locus of control and demographic characteristics was identified by a p-value ≤ 0.05 with a confidence interval of 95%.

Location

Participants locus of control scores were examined by BASIC location to identify potential difference between participants regionally. Participants who attended BASIC in Pocatello reported locus of control scores ranged from 5 to 22 ($n = 97$, $M = 11.83$, $sd = 3.36$),

Twin Falls reported locus of control scores ranged from 1 to 18 (n = 77, M = 12.32, sd = 3.26), Nampa reported locus of control scores ranged from 3 to 19 (n = 178, M = 12.54, sd = 3.35) and Lewiston reported locus of control scores ranged from 4 to 23 (n = 75, M = 13,20, sd = 3.74). Table 4.25 displays the descriptive statistics for locus of control based on location of BASIC training. A one-way ANOVA was used to examine for difference between participants locus of control and locations of the BASIC conference. With a power of 0.59, no differences between groups were identified after examination of the difference test (F(3, 423) = 2.37, p = 0.07, η_p^2 = 0.02). A comparative analysis of locus of control and BASIC location is described in Table 4.26.

Table 4.25

Descriptive Statistics for Locus of Control Based on BASIC Location

	n	*M*	*SD*	Min	Max
Pocatello	97	11.82	3.36	5	22
Twin Falls	77	12.32	3.26	1	18
Nampa	178	12.54	3.35	3	19
Lewiston	75	13.20	3.74	4	23
Total	427	12.45	3.43	1	23

Note: Locus of Control is measured using dictums measures scores can range from 1 to 23.

Table 4.26

Comparative Analysis of Locus of Control Scores Based on BASIC Location

	SS	*df*	*MS*	*F*	*p*	η_p^2	1-β
Between Groups	82.73	3	27.58	2.37	0.07	0.02	0.59
Within Groups	4925.13	423	11.64				
Total	71240.00	427					

Gender

Male locus of control ranged from 5 to 23 (n = 146, M = 12.98, sd = 3.74) and females were from 1 to 21 (n = 280, M = 12.21, sd = 3.21) as shown in Table 4.27. A one-way ANOVA was used to examine difference between locus of control and gender. Analysis of the one-way test of variance revealed a difference (F(1, 424) = 4.96, p = 0.03, η_p^2 = 0.01),

with a power of 0.60. Male participants have a statically significant higher locus of control (Table 4.28).

Table 4.27

Descriptive Statistics for Locus of Control Based on BASIC Gender

	n	*M*	*SD*	Min	Max
Male	146	12.98	3.74	5	23
Female	280	12.21	3.21	1	21
Total	426	12.47	3.41	1	23

Note: Locus of Control is measured using dictums measures scores can range from 1 to 23. Due to low respondent numbers, one case was excluded for the difference test.

Table 4.28

Comparative Analysis of Locus of Control Scores Based on Gender

	SS	*df*	*MS*	*F*	*p*	η_p^2	1-β
Between Groups	57.24	1	57.24	4.96	0.03	0.01	0.60
Within Groups	4894.92	424	11.55				
Total	71215.00	426					

Year in School

For data analysis 9th and 10th graders were classified as "underclassman." Underclassman locus of control scores ranged from 1 to 23 ($n = 98$, $M = 13.05$, $sd = 3.70$), with juniors ranging from 5 to 21 ($n = 149$, $M = 12.43$, $sd = 3.27$) and seniors from 3 to 19 ($n = 174$, $M = 12.19$, $sd = 3.42$). Table 4.29 describes the statistics for locus of control based on participants years in school. A one-way examination of variance was used to examine for difference between participants locus of control and the size of the high school he/she attends. After analyzing the one-way ANOVA, no differences between the groups were identified ($F(2, 418) = 2.00$, $p = 0.14$, $\eta_p^2 = 0.01$) with a power of 0.41, as shown in Table 4.30.

Table 4.29

Descriptive Statistics for Locus of Control Based Year in School

	n	*M*	*SD*	Min	Max
Underclassman	98	13.05	3.70	1	23
Juniors	149	12.43	3.27	5	21
Seniors	174	12.19	3.42	3	19
Total	421	12.48	3.44	1	23

Note: Locus of Control is measured using dictums measures scores can range from 1 to 23.

Table 4.30

Comparative Analysis of Locus of Control Scores Based on Year in School

	SS	*df*	*MS*	*F*	*p*	η_p^2	1-β
Between Groups	47.00	2	23.50	2.00	0.14	0.01	0.41
Within Groups	4932.00	418	11.80				
Total	70498.00	421					

Size of High School

Participants attended high schools throughout Idaho that range in size from 1A (159 students or less) to 5A (1280 students or more). Participants who attended a 1A school reported average locus of control score ranged from 1 to 23 (n = 57, M = 12,46, sd = 3.15), participants from a 2A school ranged from 6 to 19 (n = 41, M = 12.24, sd = 3.59), participants from a 3A school ranged from 5 to 19 (n = 71, M = 12.76, sd = 2.96), participants from a 4A school ranged from 3 to 10 (n = 152, M = 12.67, sd = 3.41) and participants from a 5A school ranged from 4 to 22 (n = 98, M = 11.99, sd = 3.45) as shown in Table 4.31. Locus of control was examined for difference based on size of high school which study participants attended. A one-way best for variance was employed. Table 4.32 explains the compassion between locus of control and the size of high school that participants attended. An examination of the one-way ANOVA did not yield a significant difference between participants locus of control and size of high school they attended ($F(4, 414) = 0.77$, $p = 0.55$, $\eta_p^2 = 0.01$) with a power of 0.25 (Table 4.32).

Table 4.31

Descriptive Statistics for Locus of Control Based on Size of High School

	n	*M*	*SD*	Min	Max
1A	57	12.46	3.51	1	23
2A	41	12.24	3.59	6	19
3A	71	12.76	2.96	5	19
4A	152	12.67	3.41	3	20
5A	98	11.99	3.75	4	22
Total	419	12.46	3.45	1	23

Note: Locus of Control is measured using dictums measures scores can range from 1 to 23.

Table 4.32

Comparative Analysis of Locus of Control Scores Based on Size of High School

	SS	*df*	*MS*	*F*	*p*	η_p^2	1-β
Between Groups	36.76	4	9.19	0.77	0.55	0.01	0.25
Within Groups	4935.17	414	11.92				
Total	69979.00	419					

Organization

The students who attended the BASIC training represented different CTSO organizations. Participants whose primary membership was BPA reported locus of control scores ranged from 5 to 23 ($n = 94$, $M = 12.54$, $sd = 3.78$), DECA reported locus of control scores ranged from 4 to 18 ($n = 44$, $M = 12.18$, $sd = 3.51$), FCCLA reported locus of control scores ranged from 7 to 20 ($n = 54$, $M = 12.43$, $sd = 2.81$), FFA reported locus of control scores ranged from 1 to 19 ($n = 65$, $M = 11.89$, $sd = 3.54$), HOSA reported locus of control scores ranged from 6 to 21 ($n = 93$, $M = 12.88$, $sd = 3.03$), and SkillsUSA reported locus of control scores ranged from 6 to 21 ($n = 56$, $M = 12.64$, $sd = 3.67$). Tables 4.33 displays the descriptive statistics for locus of control by CTSO organization. Organizations that had a minimum of 31 participants were included in an examination for difference. Participants locus of control was examined for differences based on participants primary organization affiliation. After an examination of the ANOVA, we conclude there are no differences

between participants locus of control and organization affiliation in this population ($F(5, 400) = 0.75$, $p = 0.59$, $\eta_p^2 = 0.01$), and the observed power is 0.27 (Table 4.34).

Table 4.33

Descriptive Statistics for Locus of Control Based on CTSO Organization

	n	*M*	*SD*	Min	Max
BPA	94	12.54	3.78	5	23
DECA	44	12.18	3.51	4	18
FCCLA	54	12.43	2.81	7	20
FFA	65	11.89	3.54	1	19
HOSA	93	12.88	3.03	6	21
SkillsUSA	56	12.64	3.67	6	19
Total	406	12.48	3.41	1	23

Note: Locus of Control is measured using dictums measures scores can range from 1 to 23. Due to low respondent numbers, one case was excluded for the difference test.

Table 4.34

Comparative Analysis of Locus of Control Scores Based on CTSO Organization

	SS	*df*	*MS*	*F*	*p*	η_p^2	1-β
Between Groups	43.37	5	8.68	0.75	0.59	0.01	0.27
Within Groups	4651.88	400	11.63				
Total	67883.00	406					

Objective Eight: Differences Between Self-Efficacy and Students Characteristics

The eighth objective of this study was to examine difference between self-efficacy and demographic characteristics of CTSO students. Self-efficacy ranged between 1 and 10. The reported average for adolescents is $M = 7.40$ (Schwarzer & Jerusalem, 1995). A one-way examination of variance was used to examine difference between groups. A significant difference was identified by a p-value ≤ 0.05 at a 95% confidence interval. This section will examine each demographic characteristic (location, gender, year in school, and organization) and participants self-efficacy scores for differences.

Location

Location includes the four locations of the BASIC conference (Pocatello, Twin Falls, Nampa, and Lewiston). Pocatello participants reported self-efficacy scores ranged from 4.10

to 9.80 (n = 97, M = 7.48, sd = 1.29), Twin Falls ranged from 5.20 to 10.00 (n = 82, M = 7.71, sd = 1.13), Nampa ranged from 3.30 to 10.00 (n = 188, M = 7.67, sd = 1.20) and Lewiston ranged from 4.60 to 10.00 (n = 76, M = 7.71, sd = 1.28). Descriptive statistics are outlined in Table 4.35. An ANOVA was used to examine for difference in the population based on location. No regional difference was identified based on participants self-efficacy scores ($F(3, 439) = 0.81$, $p = 0.49$, $\eta_p^2 = 0.01$) as shown in Table 4.36. The power of this variance test is 0.22.

Table 4.35

Descriptive Statistics for Self-Efficacy Based on BASIC Location

	n	*M*	*SD*	Min	Max
Pocatello	97	7.48	1.29	4.10	9.80
Twin Falls	82	7.71	1.13	5.20	10.00
Nampa	188	7.67	1.20	3.30	10.00
Lewiston	76	7.71	1.28	4.60	10.00
Total	443	7.64	1.22	3.30	10.00

Note: Self-Efficacy is measured on a scale from 1 (not confident) to 10 (confident).

Table 4.36

Comparative Analysis of Self-Efficacy Scores Based on BASIC Location

	SS	*df*	*MS*	*F*	*p*	η_p^2	1-β
Between Groups	3.616[a]	3	1.21	0.81	0.49	.01	0.22
Within Groups	656.877	439	1.50				
Total	26531.802	443					

Gender

An ANOVA was used to examine for difference between gender. Cases which did not include 31 participants, or more were excluded from the examination. The one-way test of variance indicated a statically significant difference ($F(1, 440) = 4.52$, p = 0.03, $\eta_p^2 = 0.01$) between males (n = 151, M = 7.81, SD = 1.24) and females (n = 291, M = 7.55, SD = 1.21) with a power of 0.56 (Tables 4.37 and 4.38). On average male participants had higher self-efficacy than their female counter parts.

Table 4.37

Descriptive Statistics for Self-Efficacy Based on Gender

	n	*M*	*SD*	Min	Max
Male	151	7.81	1.24	3.30	10.00
Female	291	7.55	1.21	3.40	10.00
Total	442	7.64	1.22	3.30	10.00

Note: Self-Efficacy is measured on a scale from 1 (not confident) to 10 (confident). Due to low respondent numbers, one case was excluded for the difference test.

Table 4.38

Comparative Analysis of Self-Efficacy Scores Based on Gender

	SS	*df*	*MS*	*F*	*p*	η_p^2	1-β
Between Groups	6.72	1	6.72	4.52	0.03	0.01	0.56
Within Groups	653.76	440	1.49				
Total	26475.55	442					

Year in School

Participants self-efficacy was examined for differences based on their current academic year. Underclassman include 9th and 10th grade students. The reported self-efficacy scores for underclassman ranged from 3.30 to 10.00 (n = 98, M = 7.73, sd = 1.28), juniors ranged from 5.10 to 10.00 (n = 152, M = 7.76, sd = 1.17) and seniors ranged from 3.40 to 10.00 (n = 184, M = 7.52, sd = 1.24) as shown in Table 4.39. A one-way comparative analysis of variance between groups did not indicate a significant difference between locus of control and participants year in school ($F(2, 418) = 1.91$, p = 0.15, $\eta_p^2 = 0.01$) with a power of 0.40. Table 4.40 illustrates the one-way ANOVA.

Table 4.39

Descriptive Statistics for Self-Efficacy Based Year in School

	n	*M*	*SD*	Min	Max
Underclassman	101	7.73	1.28	3.30	10.00
Juniors	152	7.76	1.17	5.10	10.00
Seniors	184	7.52	1.24	3.40	10.00
Total	437	7.65	1.23	3.30	10.00

Note: Self-Efficacy is measured on a scale from 1 (not confident) to 10 (confident).

Table 4.40

Comparative Analysis of Self-Efficacy Scores Based on Year in School

	SS	*df*	*MS*	*F*	*p*	η_p^2	1-β
Between Groups	46.99	2	23.50	1.91	0.15	0.01	0.40
Within Groups	4931.996	418	11.80				
Total	70498.00	421					

Size of High School

Students attended different sized high schools. Students who attend 1A schools reported self-efficacy ranged from 4.60 to 10.00 (n = 59, M = 7.56, sd = 1.36), 2A schools reported self-efficacy ranged from 5.10 to 9.50 (n = 42, M = 7.41, sd = 1.19), 3A schools reported self-efficacy ranged from 4.60 to 9.90 (n = 75, M = 7.78, sd = 1.04), 4A school reported self-efficacy ranged from 3.30 to 10.00 (n = 156, M = 7.74, sd = 1.22) and 5A schools reported self-efficacy ranged from 3.30 to 10.00 (n = 102, M = 7.77, sd = 1.14). Descriptive statistics are outlined in Table 4.41. Participants self-efficacy was analyzed for differences based on the size of the high school which he/she attended. With a power of 0.45, a one-way examination of variance resulted in no difference between self-efficacy scores and size of high school ($F(4, 429) = 1.43$, p = 0.22, $\eta_p^2 = 0.01$) as shown in Table 4.42.

Table 4.41

Descriptive Statistics for Self-Efficacy Based on Size of High School

	n	*M*	*SD*	Min	Max
1A	59	7.56	1.36	4.60	10.00
2A	42	7.41	1.19	5.10	9.50
3A	75	7.48	1.04	4.60	9.90
4A	156	7.74	1.22	3.30	10.00
5A	102	7.77	1.14	4.10	10.00
Total	434	7.65	1.19	3.30	10.00

Note: Self-Efficacy is measured on a scale from 1 (not confident) to 10 (confident).

Table 4.42

Comparative Analysis of Self-Efficacy Scores Based on Size of High School

	SS	*df*	*MS*	*F*	*p*	η_p^2	1-β
Between Groups	36.76	4	9.19	1.43	0.22	0.01	0.45
Within Groups	607.455	429	1.416				
Total	615.555	433					

Organization

The reported self-efficacy for BPA students ranged from 4.60 to 10.00 (n = 96, M = 7.56, sd = 1.36), DECA ranged from 3.30 to 10.00 (n = 47, M = 7.61, sd = 1.29), FCCLA ranged from 3.40 to 9.60 (n = 55, M = 7.46, sd = 1.18), FFA ranged from 4.60 to 9.90 (n = 69, M = 7.50, sd = 1.19), HOSA ranged from 5.10 to 10.00 (n = 94, M = 7.88, sd = 1.09) and SkillsUSA ranged from 4.20 to 9.80 (n = 58, M = 7.72, sd = 1.13). The descriptive statistics are outlined in Table 4.43. Organizations that included 31 participants or more were include in the difference test. One organization did not have 31 members attend the BASIC training and therefore was excluded for the difference test. The one-way ANOVA difference test did not indicate differences between participants primary organization and their self-efficacy scores ($F(5, 400) = 1.32$, p = 0.26, $\eta_p^2 = 0.02$) and the reported power is 0.47. The comparative analysis between self-efficacy and participants primary organization is shown in Table 4.44.

Table 4.43

Descriptive Statistics for Self-Efficacy Based on CTSO Organization

	n	*M*	*SD*	Min	Max
BPA	96	7.56	1.36	4.60	10.00
DECA	47	7.61	1.29	3.30	10.00
FCCLA	55	7.46	1.18	3.40	9.60
FFA	69	7.50	1.19	4.60	9.90
HOSA	94	7.88	1.09	5.10	10.00
SkillsUSA	58	7.72	1.13	4.20	9.80
Total	419	7.64	1.21	3.30	10.00

Note: Self-Efficacy is measured on a scale from 1 (not confident) to 10 (confident).Due to low respondent numbers, one case was excluded for the difference test.

Table 4.44

Comparative Analysis of Self-Efficacy Scores Based on CTSO Organization

	SS	*df*	*MS*	*F*	*p*	η_p^2	1-β
Between Groups	9.684[a]	5	1.937	1.32	0.26	0.02	0.47
Within Groups	4651.88	400	11.63				
Total	67883.00	406					

Summary

This chapter outlined the results from this research by objective. Demographics of participants (N = 443) were reported, descriptive statists for each non-cognitive trait were analyzed and the mean and standard deviation was reported. A one-way difference tests (ANOVA) was calculated and analyzed for difference between non-cognitive factors and students' demographic characteristics (location, gender, year in school, size of high school, and organization). Non-cognitive traits for participants were, grit *M* = 3.59(0.54), optimism *M* = 3.29(0.85), locus of control *M* = 12.00(4.09), and self-efficacy mean was *M* = 7.64(1.22). As shown in Table 4.52, the CTSO students who attended the 2018 BASIC training had grit, locus of control, and self-efficacy means above the reported adolescent average (Duckworth & Quinn, 2009; Scheier, Carver & Bridges, 1994; Rotter, 1966; Schwarzer & Jerusalem, 1995).

Table 4.45

Non-Cognitive Traits of CTSO Students and Reported Adolescent Averages

	Adolescent Average	*BASIC Attendees*	
	M	*M*	*SD*
Grit	3.40	3.64	0.35
Optimism	3.70	3.66	0.62
Locus of Control	9.03	12.73	4.02
Self-Efficacy	7.40	8.15	1.04

Based on the results the following conclusions can be made. We conclude that differences exist between HOSA and BPA student's grit scores. Additionally, difference exist between locus of control and gender and self-efficacy and participants gender. Even

though a majority of participants were female, male participants had higher self-efficacy and locus of control. Religious affliction may be varied based on regions in the state of Idaho. We recommend including religious affiliation when examining non-cognitive traits, such as locus of control. As discussed in previous research, school size may affect student optimism. This study did not find significant differences in optimism and student characteristics; however, we recommend future research further examine the relationship between not only school size, but also school culture and available resources as it relates to student optimism. Even though 4A schools have the lowest number of schools, the 4A division had the most representation at the BASIC conference. Lastly, we would like to note race frequencies and percentages varied by region of the state.

Chapter V

Grit, optimism, locus of control and self-efficacy are important individual characteristics that can help improve student aptitude (Estireis-Winkler et al. 2014; Aspinwall et al. 1992; Carden et al. 2004; & Chemers et al. 2001). A review of the literature yielded a lack of a descriptive analysis of non-cognitive characteristics in CTSO students in Idaho. With the data from this study, we examined multiple non-cognitive traits of CTSO students to help fill the current research gap. The study was descriptive-relational in nature. As CTE administrators work to develop programs that help prepare students for careers, it is imperative to teach non-cognitive traits. Without a cross-sectional analysis of students today, educators and administrators do not have a baseline to know whether they are adequately teaching the non-cognitive skills students need to be fully prepared for their future. Chapter 4 outlined the non-cognitive factors of CTSO students, and this chapter will discuss the conclusions, implications and recommendations for practice and for future research.

Conclusions and Recommendations

Based on the findings of this study, several conclusions can be made. Three statistical difference were observed between non-cognitive traits and participants demographics. The differences were between grit and organization, locus of control and gender, and self-efficacy and gender. Potential reasons for these differences are discussed. More female students attended the state-wide leadership training. Many factors may contribute to the percentage of males and females who attended the conference including GPA, and career aspirations. Another conclusion based on this study is Hispanic/Latino students were not represented when compared to the Idaho high school student demographic data. These students may face unique cultural challenges to participate in afterschool activities.

Differences were identified between grit and student organization. Members of HOSA had significantly higher grit than members of BPA. Both the medical field and the business industry have identified grit as a characteristic that contributes to an individual's success in their career (Stoffel & Cain, 2018; Duening, 2010). Why do students in the HOSA organization have higher grit? One reason might be the courses HOSA students are required to take. Students in HOSA take course such as medical terminology, while students in BPA may take economics. Students may need more grit to be successful at a difficult course like medical terminology. An interesting question for future research is whether the different classes taken by CTSO students have varying impacts on grit and other non-cognitive traits.

Looking specifically at grit, Duckworth et al. (2007) discussed that students who had more grit where more likely to deliberately practice and ranked higher in competition. Students with more grit may find more difficult courses enjoyable because they are more likely to deliberately practice the course content. Additional research could focus on determining whether the findings in Duckworth et al. (2007), that students with more grit ranked higher in competitions, applies the same way in the context of CTSO competitions. A quantitative study could examine the number of hours students spend practicing for their CTSO competitions and compare between organization, hours spent and grit.

To help explain some of the difference found in this research, future research should examine the career aspirations of student in CTE and CTSOs. Fortin et al. (2015) suggested that students with higher career aspirations strive for better grades. It could be the case that students with higher non-cognitive traits also aspire towards more prestigious careers like doctors, leading them to join a student organization like HOSA.

Based on this research, we recommend training specifically focused on helping students build non-cognitive traits like grit. Duening (2010) described competitive events as

a strategy to teach resiliency. As students compete in competitions through their CTSO this provides an opportunity to teach the adolescents participating resiliency and overcoming failure. He continued to say that students need to feel the emotion of failure and develop coping mechanisms in order to overcome that failure (Duening, 2010). CTSO leadership trainings could include sessions focused on overcoming a failure with your peers. The session would need to stimulate the emotion of failure and allow participants to process and overcome the failure (Duening, 2010). Further research should examine CTSO competitive events using a pre-test/post-test design to investigate non-cognitive traits in CTSO students who compete competitively. Based on Duening (2010), competitions help increase students' non-cognitive traits. Is this true in a population of CTSO students' competitions?

Demographic characteristics have provided many opportunities for discussion. Previous research indicated that females generally have higher (more internal) locus of control compared to their male counterparts (Manger & Eikeland, 2000). Our results show a difference between male and female locus of control. Interestingly, males had a higher average locus of control. Our results were further disputed by Manger et al. (2000) and Lease (2004) as the results of his study concluded that females generally had a higher (more internal) locus of control. Fiori, Brown, Cortina, and Antonucci (2006) discussed difference between male and female locus of control based on religiosity. The authors note that women tend to display higher levels of religiosity and a more external locus of control (Fiori, et al., 2006). They continue to say that for men religiosity may be positively associated with external locus of control. As result of Fiori et al. (2006) we recommend examining religion when investigating locus of control in Idaho, because religious affiliation may vary by region of the state.

Our recommendation for practice based on this finding, is that teachers can use this data to inform recruiting and retaining efforts within their organizations. CTE teachers and CTSO advisors can incorporate leadership development activities specifically focused on helping students develop locus of control into classes which naturally attract more female students. Additional investigation into the non-cognitive traits of CTSO populations could help to confirm or dispute the findings in this study. We recommend further examination into the potential causes for the difference observed in this study.

Another significant difference was observed between self-efficacy and gender. In this population of CTSO student leaders who attended a state-wide leadership training, male students had a significantly higher self-efficacy than female students. In his meta-analysis focused on gender differences in self-efficacy, Huang (2013) helped confirm our findings by explaining that gender differences are inconsistent but based on 187 studies an overall effect size of 0.08 males had higher self-efficacy. The author continues to say self-efficacy changes over time as individuals age and can differ based on content (Huang, 2013). For example, male students consistently have higher math self-efficacy across all educational levels; females tend to have higher writing self-efficacy in middle school, but the difference disappears as the students age (Huang, 2013; Pajares, 2002). A longitudinal study examining CTSO students' self-efficacy regarding different organization constructs might provide further insight into the gender differences examined in this study. The organizational constructs examined might include leadership roles, specific events within the CTSO organization, or the content the student has learned in their CTE course. Future research should also run a correlation statistic between non-cognitive factors and gender. Male students may perceive locus of control and self-efficacy to be more similar than female students.

One reason a difference may exist is due to the manner in which self-efficacy is assessed. Pajares (2002) explained that while male and female elementary students had equivalent writing self-efficacy, the female students expressed that they were better writers when asked directly. Future research should consider examining gender differences in self-efficacy in a non-tradition fashion. Pajares (2002) noted that male and female students tend to respond to self-efficacy measurement tools with a different mindset. Male students tend to use an inflated sense of confidence while female students tend to be more modest in their response (Pajares, 2002).

McCormick et al. (2002) noted that self-efficacy was correlated with students attempts to assume leadership roles and the male participants in our population had higher self-efficacy than the female participants. Based on McCormick's (2002) findings, one might predict that more males would assume chapter officer roles, leading to their participation in a state-wide leadership training for chapter officers. However, that assumption was not supported by the study results. The population in this study was a majority female (n = 291, 65.59%). This does not align with Idaho's high school enrollment which states that 48.62% of students are female. Based on the data in this study we can concluded that the 2018 BASIC training was disproportionately attended by female students. The question becomes why did more female students attend this conference? We know that the BASIC conference was advertised as a training for chapter officers in Idaho's CTSOs. More research is needed to examine if more female students are attending leadership conferences or if more female students hold chapter officers across Idaho's CTSOs. However, we will discuss potential reasons why more female students might choose to attend or be selected to attend a leadership conference like BASIC.

Female students on average have a higher GPA than their male counterparts (Fortin et al., 2015) and in this study female students had significantly higher GPAs. A higher GPA might make a female student a more favorable candidate during the officer selection process. If more females obtain chapter offices, and BASIC is advertised as a chapter officer training, this could help explain why more female students were in attendance at the 2018 BASIC. In addition, female students have been found to be less confident in their abilities or have less self-efficacy (Zimmerman, 2000; Huang, 2013). Our study supported previous research with female participants scoring lower on the self-efficacy instrument. CTSO participation can be promoted as educational and an opportunity to learn more. If female students feel less confident in their abilities, they may be more likely to seek opportunities to help advance their skills. Due to their confidence or high self-efficacy, male students may be less interested in CTSO officer involvement.

Career aspirations may also effect a student's decision to be a member of and an officer in a CTSO. Fortin et al. (2015) notes that students career aspirations will motivate the student as his/her GPA can determine the educational opportunities are available to them in the future. Fortin et al. (2015) said the following:

> Students motivated toward professional or medical careers will come to understand they need to aim for As. Those thinking about white-collar occupations, such as financial analyst, will need a bachelor's degree and can aim for Bs; those expecting jobs that require fewer credentials may instead aim for Cs (p. 563).

The authors continue to say that on average female students have greater career aspirations. High optimism was also correlated with a more confident career choice and career goals in Creed's et al., (2002) study, and the female students in this population had optimism scores above the male participants. Female students may have prestigious career goals but might

lack self-efficacy. So, female students choose to participate in CTSOs to help build their leadership and technical skills and they have the academic accolades that may help them get elected to serves as an officer. An officer position or other organizational accolades could lead students to participate in a leadership conference like BASIC. Future research should examine the career aspirations of CTE students, and CTSO members. There could be a correlation between students CTSOs involvement and their career goals. Future research could also examine the correlation between career aspirations and GPA.

Practitioners in CTE can use this information when designing programs for students. Knowing that female students generally have a higher GPA, but lower self-efficacy and male students have high self-efficacy and locus of control could lead to the development of gender specific training at leadership conferences and in the classroom. This research showed that in 2018 more female students attended BASIC. Idaho's CTE teachers will be a valuable asset in helping administrators to discover the barriers a male student might face to attend leadership conferences like BASIC, or assuming an officer role. As CTE teachers interact with students they can use this information to promote leadership development opportunities to male students differently. As male students tend to have more self-efficacy, teachers may need to help students see the value in attending conferences and serving in officer roles. Helping male students see the benefit of the leadership training could help increase the participation of male CTSO students.

The data from this research showed that 2018 BASIC participants were 76.08% White. The data reflecting Idaho's high school students showed that 75.57% of students in Idaho are white. The white population was closely aligned with the Idaho average. However, we start to see some racial difference in those who attended BASIC as we examine the data further. While we can't compare specifically to the number of students participating CTE

courses, in Idaho, approximately 17.58% of high school students are Hispanic/Latino, but 9.48% of the BASIC participants in this study were Hispanic/Latino. It is interesting to note that the state data reported 2.52% of students as Multi-racial but 7.90% of BASIC participants self-identified as multi-racial. Some students of Hispanic or Latino origin may be accounted for in this category. The other categories of race were fairly aligned with the Idaho high school student data. We will discuss potential reason why for the difference of percentage in Hispanic/Latino BASIC participants and Idaho high school students and how future research might address examining this phenomenon.

Future research should compare CTE participation, CTSO membership, and leadership conference in a population of students with varying racial backgrounds. This type of data can help paint a clearer picture of students CTE/CTSO involvement. The research should include to what extent students are currently involved in CTE, CTSOs, and leadership trainings/conferences and to what extent these students want to be involved. Are students able to participate as much as they want to, if not why? In their qualitative study examining the barriers Hispanic students face to participate in extracurricular activities, Simpkins, Delgado, Price, Quach, and Starbuck (2012) noted a student saying that even through he/she participants in after school activities he/she feels limited in the amount of time he/she can spend due to family obligations.

The barriers Hispanic students might face to participate in activities outside of school include the family's SES status, working parents, and family/cultural values (Simpkins et al., 2012). In their discussion Simpkins et al. (2012) include transportation to and from events, monetary funds for extra activities, and house hold assistance as barriers Hispanic students might face related to their household SES. The authors continue to say that a working parent may prevent a student from participation as the student may have to take care of younger

siblings or cousins. Additionally, due to high family values, parents may want to spend their limited time off of work with their children, which may prevent the student from using that time to participate in extra activities (Simpkins et al., 2012). Idaho students may be facing some of these same barriers when participating in CTSOs and/or BASIC training.

More research is needed to determine how to help students overcome some of these barriers in order to participate or participate more. For example, if a student cared for younger siblings after school, he/she could participate in a competition practice from home. This solution is limited by internet access but could provide some students with an option to participate. The CTE/CTSO community has to be creative to in order to help these students overcome these barriers and many more so they too can have the opportunity to participate.

More research could examine the culture of CTSO organization and compare to the cultural needs and wants of students from various racial backgrounds. Are students limited to participate due the barriers mentioned above or are there other factors contributing to their lack of attendance? Do students of all racial backgrounds feel included in Idaho CTSOs? These questions will have to be answered qualitatively with future research. Based on the data from the 2018 BASIC training, we would predict that students with different racial backgrounds do feel included and there is likely more growth that could help CTSOs be more inclusive.

Another factor that may contribute to the differences observed in this study is school factors. Carrol's (1984) model for school learning identified that student aptitude is affected by student factors and school factors. We examined the size of high school that students attend in relation to students' non-cognitive traits. Students at larger high school may have more opportunities but lack the one-on-one attention for the teacher. Even though not significantly different in this study, student optimism may be affected by the size of high

school which students attend (Carrol, 1984). Another factor which many affect CTE students specially is the number of CTE programs and CTE teachers in the high school. This could change the number of opportunities available to students therefore effecting their optimism. Future research should examine the relationship between CTE program dynamics and students' optimism.

In this population, students mean grit, locus of control, and self-efficacy were above the reported adolescent average. There are a couple reasons that might explain why. First, students with higher non-cognitive traits, who are enrolled in CTE might be more likely to join a CTSO and attend a leadership training. Second, BASIC training was marketed toward CTSO chapter officers. Students who have been selected as officers or are interested in pursuing a chapter office may be interested in these roles because they have more grit, optimism, an internal locus of control and self-efficacy toward an officer position. More research is needed to explore differences and causation. We recommend future research to compare all CTE students and those who join CTSO. What factors influence a student's decision to join a CTSO? Knowing students' motivations to join can help CTSO advisors recruit and retain students into their programs. Additionally, the State Board of CTE and teacher educators could better prepare CTE teachers to recruit and retain members if students' motives, the factors related to the observed differences in non-cognitive traits and the impact of competitions and leadership trainings on helping students develop non-cognitive traits were further explored.

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Appendix A: Consent From

BASIC Training ATTENDEE RELEASE FORM

CHAPTER ADVISORS: This form is your responsibility to obtain for all advisors, members, and chaperones. You also need to have these forms with you at BASIC Training for each member attending including yourself.

Scan and email a copy to andrew.armstrong@cte.idaho.gov prior to BASIC.

To give permission for your child to attend this conference and relevant activities complete the information below and return to the teacher/advisor named below along with any payment. If not returned, your child will not be permitted to attend. This form must be signed by the legal guardian and the student. Both parents should sign if feasible.

NAME OF SCHOOL	SCHOOL CONTACT	TELEPHONE NUMBER
NAME OF ATTENDEE (First, M.I., Last Name)		GRADE
ADVISOR	ADVISOR CELL #	STUDENT INFORMATION (allergies, medications, restrictions, etc.)
DESTINATION ( ) BASIC North (Lewiston, ID) **OR** ( ) BASIC Central (Twin Falls, ID) **OR** ( ) BASIC South (Pocatello, ID) **OR** ( ) BASIC Treasure Valley (Nampa, ID)		

NAME OF **LEGAL GUARDIAN** (if a minor) (First, M.I., Last Name)		CELL #
OTHER TELEPHONE #	EMERGENCY CONTACT NAME (First, M.I., Last Name)	EMERGENCY TELEPHONE #
PHYSICIAN NAME	TELEPHONE #	INSURANCE POLICY NAME AND NUMBER:

I give the above attendee permission to attend the state-approved Building and Achieving Success in Idaho Chapters Training (BASIC Training) and activities. I agree and my student agrees to abide by all rules and safety precautions. I am aware that during these events certain risks are inherent. I understand that these events may involve certain conditions, hazards and potential dangers including those associated with traveling or those associated with the facilities or property where the events will occur or whether the dangers are open and obvious or concealed. Any questions which have occurred to me have been answered to my satisfaction. I am participating in these activities of my own free choice. I understand that my child may be photographed and/or videotaped during BASIC Training and allow use of said photo/video on the Idaho Career & Technical Education website.

My signature acknowledges that I have been informed of the reasonably expected hazards associated with these events in which my student will be participating. I do hereby release and agree to hold harmless Idaho Career & Technical Education, Idaho BPA, Idaho DECA, Idaho FCCLA, Idaho HOSA, Idaho Skills USA, and Idaho TSA from any and all liability, claims or demands for personal injury, sickness or death, as well as property damages and expenses, of any nature whatsoever which may be incurred while my student is participating in the field trip. In the event of an emergency, reasonable attempts will be made to contact the legal guardian. This would not prevent the emergency health care provider from acting in the best interests of the student. **I authorize emergency medical treatment for my student in the event of accident or illness during this conference.**

As part of ICTE's ongoing efforts to better support our students and our student organizations, we will be collecting aggregate-level data on this year's BASIC participants. No identifying information will be captured, and all information related to BASIC will be reported on a regional or statewide level.

If you do not want you child to participate in this activity, please indicate here with initials. ☐

( ) Check here if the student wears a medical alert

Signature of Student _____ Date _____

Signature of Legal Guardian _____ Date _____

Signature of Advisor _____ Date _____

Signature of Legal Guardian _____ Date _____

Appendix B: Instrument

Idaho BASIC Student Information Sheet

Thank you in advance for completing this questionnaire. Please make sure to complete the whole questionnaire.

Section 1:

1. Sex: ☐ Male ☐ Female ☐ Prefer Not to Respond

2. Age: _____ Cumulative GPA: _____ Year in School: _____

4. What is your race?

   ☐ Hispanic or Latino
   ☐ White
   ☐ Black or African American
   ☐ Asian
   ☐ American Indian or Alaska Native
   ☐ Native Hawaiian or Other Pacific Islander
   ☐ Prefer not to respond

5. Organization that your are representing at BASIC

   ☐ BPA ☐ DECA ☐ FCCLA ☐ FFA ☐ HOSA ☐ SkillsUSA ☐ TSA

   Officer Position in the above organization: _____

6. I am/was also a member of (check all that apply)

   ☐ BPA ☐ DECA ☐ FCCLA ☐ FFA ☐ HOSA ☐ SkillsUSA ☐ TSA

7. What size is your high school?

   ☐ 1A DI ☐ 1A D2 ☐ 2A ☐ 3A ☐ 4A ☐ 5A

8. Did you attend the Sunday night team building activity? ☐ Yes ☐ No

Section 2:

For each statement, put an X in the box representing your level of agreement.

Statement	Not at all like me	Not much like me	Somewhat like me	Mostly like me	Very much like me
1. New ideas and projects sometimes distract me from previous ones.					
2. Setbacks do not discourage me. I don't give up easily.					
3. I often set a goal but later choose to pursue a different one.					
4. I am a hard worker.					
5. I have difficulty maintaining my focus on projects that take more than a few months to complete.					
6. I finish whatever I begin.					
7. My interests change from year to year.					
8. I am diligent. I never give up.					
9. I have been obsessed with a certain idea or project for a short time buy later lost interest.					
10. I have overcome setbacks to conquer an important challenge.					

Section 3:

For each statement, put an X in the box representing your level of agreement.

Statement	I disagree a lot	I disagree a little	I neither agree nor disagree	I agree a little	I agree a lot
1. In uncertain times, I usually expect the best.					
2. It's easy for me to relax.					
3. If something can go wrong for me, it will.					
4. I'm always optimistic about my future.					
5. I enjoy my friends a lot.					
6. It's important for me to keep busy.					
7. I hardly ever expect things to go my way.					
8. I don't get upset too easily.					
9. I rarely count on good things happening to me.					
10. Overall, I expect more good things to happen to me than bad.					

Section 4:

How confident are you on a scale from 1-10 with 10 being completely confident that you have the ability to accomplish the following task as they related to your officer position?

For each statement, put a X in the box representing how much the sentence is like you.

Statement	Not Confident									Confident
	1	2	3	4	5	6	7	8	9	10
1. I can always manage to solve difficult problems if I try hard enough.										
2. If someone opposes me, I can find the means and ways to get what I want.										
3. It is easy for me to stick to my aims and accomplish my goals.										
4. I am confident that I could deal efficiently with unexpected events.										
5. Thanks to my resourcefulness, I know how to handle unforeseen situations.										
6. I can solve most problems if I invest the necessary effort.										
7. I can remain calm when facing difficulties because I can rely on my coping abilities.										
8. When I am confronted with a problem, I can usually find several solutions.										
9. If I am in trouble, I can usually think of a solution.										
10. I can usually handle whatever comes my way.										

Section 5:

For each number below, place an X in the box next to the statement that most represents you.

(Choose either A or B NOT both)

1		A. Children get into trouble because their parents punish them too much
		B. The trouble with most children nowadays is that their parents are too easy with them
2		A. Many of the unhappy things in people's lives are partly due to bad luck
		B. People's misfortunes result from the mistakes they make
3		A. One of the major reasons why we have wars is because people don't take enough interest in politics
		B. There will always be wars, no matter how hard people try to prevent them
4		A. In the long run people get the respect they deserve in this world
		B. Unfortunately, an individual's worth often passes unrecognized no matter how hard he tries

5		A. The idea that teachers are unfair to students is nonsense B. Most students don't realize the extent to which their grades are influenced by accidental happenings
6		A. Without the right breaks one cannot be an effective leader B. Capable people who fail to become leaders have not taken advantage of their opportunities
7		A. No matter how hard you try some people just don't like you B. People who can't get others to like them don't understand how to get along with others
8		A. Heredity plays the major role in determining one's personality B. It is one's experiences in life which determine what they're like
9		A. I have often found that what is going to happen will happen B. Trusting to fate has never turned out as well for me as making a decision to take a definite course of action
10		A. In the case of the well prepared student there is rarely if ever such a thing as an unfair test B. Many times exam questions tend to be so unrelated to course work that studying in really useless
11		A. Becoming a success is a matter of hard work, luck has little or nothing to do with it B. Getting a good job depends mainly on being in the right place at the right time
12		A. The average citizen can have an influence in government decisions B. This world is run by the few people in power, and there is not much the little guy can do about it
13		A. When I make plans, I am almost certain that I can make them work B. It is not always wise to plan too far ahead because many things turn out to be a matter of good or bad fortune anyhow
14		A. There are certain people who are just no good B. There is some good in everybody
15		A. In my case getting what I want has little or nothing to do with luck B. Many times we might just as well decide what to do by flipping a coin
16		A. Who gets to be the boss often depends on who was lucky enough to be in the right place first B. Getting people to do the right thing depends upon ability, luck has little or nothing to do with it
17		A. As far as world affairs are concerned, most of us are the victims of forces we can neither understand, nor control B. By taking an active part in political and social affairs the people can control world events
18		A. Most people don't realize the extent to which their lives are controlled by accidental happenings B. There really is no such thing as "luck."
19		A. One should always be willing to admit mistakes B. It is usually best to cover up one's mistakes
20		A. It is hard to know whether or not a person really likes you B. How many friends you have depends upon how nice a person you are
21		A. In the long run the bad things that happen to us are balanced by the good ones B. Most misfortunes are the result of lack of ability, ignorance, laziness, or all three

22		A. With enough effort we can wipe out political corruption B. It is difficult for people to have much control over the things politicians do in office
23		A. Sometimes I can't understand how teachers arrive at the grades they give B. There is a direct connection between how hard I study and the grades I get
24		A. A good leader expects people to decide for themselves what they should do B. A good leader makes it clear to everybody what their jobs are
25		A. Many times I feel that I have little influence over the things that happen to me B. It is impossible for me to believe that chance or luck plays an important role in my life
26		A. People are lonely because they don't try to be friendly B. There's not much use in trying too hard to please people, if they like you, they like you
27		A. There is too much emphasis on athletics in high school B. Team sports are an excellent way to build character
28		A. What happens to me is my own doing B. Sometimes I feel that I don't have enough control over the direction my life is taking
29		A. Most of the time I can't understand why politicians behave the way they do B. In the long run the people are responsible for bad government on a national as well as on a local level

Appendix C: BASIC Schedule

Proposed Schedule

Sunday

Registration and Check-in (for Package A) .....3:00 pm

Team Leadership Activities.....3:30 pm - 6:30 pm

Dinner (provided).....7:00 pm

Monday

Registration and Check-in (for Package B).....8:00 am

Opening Session..... 9:00 am - 9:30 am

Key Note Speaker - Officer Leadership Training.....9:30 am -12:00 pm

Advisor Updates and Training.....9:30 am -12:00 pm

	9:30am-10:30am	10:30-10:45	10:45am-12:00pm
Advisors	**DYNAMITE** Identifying Measures for Quality CTSOs	Break	**FREE MONEY?** Program Quality Initiative CTSO Grant Writing for Success

Lunch (provided).....12:00 pm -1:00 pm

Chapter CTSO Breakout Sessions.....1:00 pm - 5:00 pm

	1:00-2:00	2:00-2:15	2:15-3:30	3:30-3:45	3:45-5:00
BPA	Community Service/ Torch Awards	Break	Involvement/Recruitment	Break	Program of Activities/ Scheduling
DECA	What Drives You? Planning Session!	Break	Being an Effective DECA Leader	Break	How to be a Glass Go-Getter!
FCCLA	What is A Leader	Break	Outreach, STAR Events, Membership	Break	Fundraising, POW, Chapter Growth
FFA	DOT Recap	Break	Chapter Officer Training	Break	Leadership Training
HOSA	Project Initiation Sheet	Break	Program of Work	Break	Project Calendar
SkillsUSA	Delivering the SkillsUSA Message, Parli-Pro	Break	Being a Role Model/ Leader	Break	Pin/T-shirt/Banner Projects / Chapter Proj./Prog.of Work
TSA	Leadership Pyramid	Break	Action Plan, Setting Goals	Break	vision and execution

Dinner on your own

Travel Home