RELATIONSHIP BETWEEN SENSE OF COHERENCE AND SCHOOL CONNECTEDNESS

AMONG ONLINE PUBLIC HIGH SCHOOL STUDENTS

by

Brad Lee Hilliard

Liberty University

A Dissertation Presented in Partial Fulfillment

Of the Requirements for the Degree

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APPROVED BY:

Dr. Joanne Gilbreath, Ed.D., Committee Chair

Dr. Michael Pruess, Ed.D., Committee Member

Dr. Becky Smith, Ph.D., Committee Member

ABSTRACT

The purpose of this study was to determine the relationship between sense of coherence and school connectedness among online public high school students. The connection students make with their school can affect their well-being based on the stress they perceive from the school and its environment. The variables of interest were the sense of coherence score and the school connectedness score. A bivariate correlational research study was performed to determine if there was a significant relationship between the two variables. The sample was 83 high school students enrolled in an online public school. Each completed the Sense of Coherence – Orientation to Life Questionnaire (SOC-13) and the School Connectedness Survey. Data was analyzed using the Pearson's Product Moment r to examine the relationship between the two variables. Results of the study found a negative correlation between the sense of coherence score, sense of coherence comprehensibility score, sense of coherence manageability score and school connectedness score. No correlation was found between the sense of coherence meaningfulness score and school connectedness score. Recommendations for future research include examining different populations and socioeconomics of the participants. A qualitative study is also recommended to examine motivation and academic support. This study will help online public high school administrators and faculty understand students like those enrolled in their schools and develop programs to help promote school connectedness and reduce stress.

Keywords: online, student, sense of coherence, school connectedness.

Dedication

This work was completed with a great deal of support, sacrifice and patience from my wife, Alyssa. She is my rock and my encourager. Along with our children, Ian and Emma, she is the backbone of our family and allows us all to become the best we can be in our educational journeys. It has been her steadfast love that has allowed me to pursue this goal as she tended to the everyday business of family life. I will always love her.

I also dedicate this work to my family, friends and professional colleagues who have supported me while I have been enrolled at Liberty University. I will always appreciate the encouragement, inspiration, urging, and comfort they have shown me.

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Table of Contents

List of Tables

List of Figures

List of Abbreviations

School Connectedness score (SC)

Sense of Coherence score (SOC)

Sense of Coherence Thirteen Item Questionnaire (SOC-13)

Sense of Coherence, Comprehensibility score (SOC, C)

Sense of Coherence, Manageability score (SOC, Man)

Sense of Coherence, Meaningfulness score (SOC, Mean)

CHAPTER ONE: INTRODUCTION

Background

School climate can affect how much students feel connected with, or a sense of belonging to, the schools in which they are enrolled. Because "the need to belong is a fundamental human motivation" (Osterman, 2000, p. 326), it is important to understand how school connectedness impacts students. School connectedness and the mental health of the student are directly correlated, even as a student progresses from grade to grade (Shochet, Dadds, Ham, & Montague, 2006). Many research studies found that students who are connected to their school also have a positive outlook and education experience (Kidger, Araya, Donovan, & Gunnell, 2012; McNeely & Falci, 2004). The education experience includes the school's environment. If the school environment is viewed as positive, the morale and sense of community are increased (Rowling, 2009). Nearly 80 percent of students have an increased level of well-being when the education experience is positive (Weare, 2007). A student's positive outlook was also found to be correlated to peer attachment and self-esteem stemming from the ability to socialize with peers in a face-to-face environment (Millings, Buck, Montgomery, Spears, & Stallard, 2012). In contrast, 44 percent of students who were depressed also experienced negative impacts on their academic performance and did not view their connection to school as positive (Kernan, Bogart, & Wheat, 2011).

An early form of distance education was the delivery of textbooks and course information by mail to a student enrolled in a correspondence school (Hull, 2009). Today, many courses are streamed across the Internet to a student's computer. Online learning has largely impacted on education since the first use of the Internet in 1969 by the United States Department of Defense. Nearly 40 years later, over 25 percent of higher education students are enrolled in an online

course (Perry & Pilati, 2011). Students born after 1980 are called digital natives (Thompson, 2013) and are using technology such as smart phones and tablets to connect to information and people, even in their learning experiences. This use of technology includes wearing sensors to help display empathy and emotion (Lyons, Kluender, & Tetsutani, 2005), which helps students enrolled in online schools feel as though they are part of a real community (Scrimin, Moscardino, Altoe, & Mason, 2016; Turvey, 2006). When students are more connected in an online school, they have a greater sense of community and encourage others to be more open, reveal more about themselves (Slagter van Tryon & Bishop, 2009), and gain more knowledge from collaboration with others (Greenhow, 2011).

Current online high school students, who are considered digital natives, typically live in houses where technology such as computers, smart phones, and the Internet is used on a regular basis to gain information quickly (Helsper & Eynon, 2010). However, the Internet plays different roles for the student at home and at school (Helsper & Eynon, 2010). In the online school environment, the Internet should be used to create a sense of school community beyond the classroom (Vignare, 2009). Feelings of loneliness and disconnectedness from the online school are common (Hughes, Ventura, & Dando, 2007), making it even more important for school administration to understand the impact of connection to school for online public high schools where students learn at home. This understanding is important because the way students cope with life situations can influence their health. Additionally, the way a student copes with stress relates to how the body and mind respond to positive or negative demands placed upon them (Donatelle, 2014). Information gathered from this research may help online school administrators understand and promote school connectedness by creating programs in which students can relieve academics-related stress.

Researchers suggest that the key to students' success in the online environment is being socially connected to the school (Slagter van Tryon & Bishop, 2012). A connection with the school environment is important since it impacts the student's motivation and behavior, regardless of their socioeconomic status (Battistich, Solomon, Kim, Watson & Schaps, 1995), gender, race, or culture (Sanchez, Colon, & Esparza, 2005; Vianio & Daukantaite, 2016; Voelkl, 1996). Students who enroll in an online school may experience stress related to a sense of unfamiliarity with the learning system. This stress, in turn, may result in negative feelings or behaviors toward the school. Moreover, high levels of stress may occur if no school connectedness exists (Emerson & MacKay, 2011). If the stress level is too great, negative outcomes in learning and depression can result (Jung, Kudo, & Choi, 2012). Depression may occur due to the pressures, disappointments, challenges, and changes (Donatelle, 2014) a student feels from school. And, within the online learning environment, students may experience challenges and disappointments due to the need to adapt to new technology or a new learning environment.

Used to help determine the effects of stress as well as note indirect health behaviors, The Sense of Coherence theory, developed by Aaron Antonovsky (1987), postulates that a person's sense of coherence is made up of three dimensions. The three dimensions are comprehensibility, manageability, and meaningfulness (Antonovsky, 1987). Comprehensibility is a person's sense that they can understand things and whether they are predictable. Manageability refers to the idea of being able to have the skills and support needed to address challenges and concerns that arise. Finally, meaningfulness relates to ideas and activities being interesting and perceived as worthwhile (Geyer, 1997). These three items are useful to these understanding of students and school connectivity since they can be good tools for identifying the feelings students have about

the school, if the students have the skills required for the lessons and activities, and if the

students find the school and school work interesting (Mattila et al., 2011).

A student's sense of coherence is linked to how connected they feel to their school and

how much support they perceive they get from the school (Myrin & Lagerstrom, 2008). Both

have direct correlations with mental health. Therefore, it is most beneficial for online schools to

create an atmosphere in which the student feels connected to the school.

Problem Statement

In online learning, contexts researchers have found that students want to feel connected to

their school and have a sense of belonging to a real community (Scrimin et al., 2016; Turvey,

2006). Students who feel more connected to their school display less mental health risks and

have higher self-esteem (Greenberg et al., 2003; Kidger et al., 2012; McNeely & Falci, 2004).

Also, students who scored more highly on the Sense of Coherence Scale were less likely to

suffer from higher levels of stress (Garcia-Moya, Rivera, & Moreno, 2013). Some students may

need to display more effort to become connected to the school, which, unfortunately, produces

more stress for them (Emerson & MacKay, 2011; Reid, Thomson, & McGlade, 2016). In

addition, the definition of success of students in online programs must consider their level of

engagement and personal learning characteristics (Dray, Lowenthal, Miszkiewicz, Ruiz-Primo,

& Marczynski, 2011). Although much research has been done on the sense of coherence and

school connectedness, most research has been set in higher education (Crawford, 2010; Glazer &

Wanstreet, 2011; Secreto & Pamulaklakin, 2015; Thompson & Ku, 2006; Xie, Lin, & Zhang,

2001) or by researchers who were looking for differences related to gender (Sanchez et al., 2005;

Vianio & Daukantaite, 2016; Voelkl, 1996). These studies have found a correlation between

school connectedness and sense of coherence; however, few studies, as noted above and

throughout this paper, have considered the K–12 online education setting. This setting needs to be studied more because data shows the popularity of online public K–12 schools is increasing, as over one million new students have enrolled in online schools within the past sixteen years (Digital Learning Now, 2014; Hawkins, Graham, Sudweeks, & Barbour, 2013).

Purpose Statement

The purpose of this quantitative correlational study was to consider the relationship between the sense of coherence and school connectedness of students in an online public high school. Variables of interest included the sense of coherence and the sense of school connectedness. The predictor variable was the score the student received on the Sense of Coherence Survey. The sense of coherence is defined as the feeling a person has and how he or she copes based on (a) the person's internal and external stimuli being predictable, (b) the resources available to meet the demands of the stimulus, and (c) the stimulus being seen as a valuable investment (Volanen, Lahelma, Silventoinen, & Suominen, 2004). The criterion variable for this study was school connectedness, which can be described as a student's sense of belonging within the school environment, leading to positive reactions to teachers and peers and engagement in school activities (Thompson, Iachan, Overpeck, Ross, & Gross, 2006). The students who participated in this study, all of whom were in grades ten through twelve, receive at least 80% of their instruction online from a state-approved curriculum.

Significance of Study

This study's significance is found in the potential to determine if a relationship exists between the sense of coherence and school connectedness for students in online public high schools. Many studies examining the relationship between the sense of coherence and school connectedness only considered the impact of gender (Moksnes, Espnes, & Lillefjell, 2012;

Vianio & Daukantaite, 2016; Volanen et al., 2004) and were conducted at the university level

(Barbera & Linder-VanBerschot, 2011; Reid et al., 2016; Secreto & Pamulaklakin, 2015; Park &

Choi, 2009), but the current study was conducted at the high school level and, more specifically,

with students enrolled in an online school. The result is an extension of the knowledge base, as

many studies that have been conducted at the high school level in an online setting looked at the

potential relationship between school connectedness and risk behavior (Langille, Rasic, Kisely,

Flowerdew, & Cobbett, 2012; Lester, Waters, & Cross, 2013) whereas this study looked at sense

of coherence and its correlation with school connectedness.

Although this study can be replicated using participants from traditional brick-and-mortar

schools, it was specifically designed for the online community since studies show students

enrolled in online schools should make more effort to connect with the school, a process which

may cause them stress (Emerson & MacKay, 2011). Results of this study also pertain to the

schools' need to reach out more to students to make them feel more connected and a part of the

school community, which could reduce the students' stress levels. Used on a wider scale, this

study has the potential to help not only online public high schools in the United States, but also

online public middle schools since school connectedness and mental health are directly

correlated as a student progresses from grade to grade (Lester et al., 2013; Shochet, et al., 2006).

If a relationship does exist, the finding will reinforce the need for schools to promote

connectedness due to the explained previously increase of over one million students in K–12

online schools over the past sixteen years (Digital Learning Now, 2014; Hawkins, et al., 2013).

Research Question

The research question for this study was:

RQ1: What is the relationship between sense of coherence as measured by the Sense of Coherence (SOC-13) Questionnaire and school connectedness as measured by the School Connectedness Survey of online public high school students?

Null Hypotheses

H_01: There is no statistically significant correlation between an online public high school's students' sense of coherence score their school connectedness score.

H_02: There is no statistically significant correlation between an online public high school's students' *comprehensibility* score and their school connectedness score.

H_03: There is no statistically significant correlation between an online public high school's students' *manageability* score and their school connectedness score.

H_04: There is no statistically significant correlation between an online public high school's students' *meaningfulness* score and their school connectedness score.

Definitions

1. *Digital Native* – Someone born after 1980 who has either taught himself to use a computer or had assistance from a friend or family member in learning how to use a computer or other technology such as a smart phone or tablet (Brown & Czerniewicz, 2010; Prensky, 2001).

2. *Online Learning* – A facilitated and "structured learning activity that utilizes technology with intranet/Internet-based tools and resources as the delivery method for instruction, research, assessment, and communication" (Michigan Department of Education, 2006, p. 13).

3. *Online Instruction* – Teaching provided over the Internet by an educational institution such as a university or K–12 school. The content is web-based and is a significant part of

the learning process. This phrase can be used interchangeably with the terms *virtual learning*, *cyber learning*, and *e-learning* (International Association for K-12 Online Learning, 2011).

4. *Online school* – *"*A formally organized educational institution, either private or public, with educational material delivered to the student primarily over the Internet." (International Association for K-12 Online Learning, 2011, p. 7).

5. *Sense of Coherence* – The stress a person feels when placed in various situations and how he or she copes based on (a) the person's internal and external stimuli being predictable, (b) the resources available to meet the demands of the stimulus, and (c) the stimulus being seen as a valuable investment (Volanen et al., 2004).

6. *School Connectedness* – A student's sense of belonging within the school environment, which leads to positive reactions to teachers and peers and engagement in school activities (Thompson et al., 2006).

7. *Motivation* – When someone attempts to complete something because they have the desire to do so and see the value in the accomplishment (intrinsic) or, if he or she does not see value or enjoyment in the task, because they are rewarded from an outside source (extrinsic) (Center on Education Policy, 2012b).

CHAPTER TWO: LITERATURE REVIEW

Introduction

Rivera, Garcia-Moya, Moreno & Ramos (2012) found adolescent students who feel more connected to their school have a greater sense of coherence (comprehensibility, manageability, and meaningfulness). It was also determined that school connectedness has an effect on student motivation and behavior (Battistich et al., 1995; Sanchez et al., 2005; Voelkl, 1996). It is important to understand how school connectedness can affect the sense of coherence among students because the need to belong is present in all humans (Osterman, 2000). Abraham Maslow discussed this idea in his development of the Hierarchy of Needs, which states that a person's needs at one level must be met before he or she can be truly healthy at the next level (Donatelle, 2014). For example, if a student is worried about feeling safe at school, he will be unable to focus on meeting his self-esteem and social needs. Feeling safe and being able to focus in school is important because included in Maslow's levels, just above survival and security needs, is social needs. Social needs are met when a person is able to feel as though he is she belongs to a group and is accepted. Failure to have this need met may cause the person to behave poorly or have mental health issues (Donatelle, 2014). Many studies have examined the relationship between school connectedness and mental health in traditional schools in higher education (Kristensson & Ohlund, 2005; Myrin & Lagerstrom, 2008; Thomas & Smith, 2004; Torsheim, Aaroe, & Wold, 2001). Others have considered school connection and a student's sense of coherence in the same setting (Nielsen & Hansson, 2007; Moksnes et al., 2012; Moksnes, Rannestad, Byrne, & Espnes, 2011). However, the literature reviewed for this study has not addressed students enrolled in an online high school, which is why this project is important. This research is also important because there has been a significant increase in online

schools for students in grades K–12 (Hawkins et al., 2013). The technology utilized in these schools includes the Internet, cell phones, social media, and even electronic gaming. Technology has influenced the way a student engages with others, how he or she learns at school and at home, and how achievement is determined (Gurung & Rutledge, 2014), which may influence a student's sense of coherence score and how connected he or she feels to the school.

Background

Correspondence schools, such as the ones developed in England and Scotland in 1840, were created to help students learn shorthand. In the United Stated in the 1890s, vocational schools were created to help expand the mining industry. This then led to the development of extension programs for state agricultural colleges. Eventually, the Distance Education and Training Council was created, which federally recognized correspondence schools. Such schools were fundamental in helping high school students achieve skills needed for agriculture in remote areas of the United Stated and uniformed United States military personnel obtain the skills and trades needed to perform their jobs after the end of World War II (Hull, 2009). The development of distance education, from books and notes sent in the mail to lessons conducted over the Internet, has been a beneficial learning platform for many students over the years.

In 1969, The Department of Defense became the first user of the Internet, utilizing it for internal purposes. But, it was not until 1991 that the "World Wide Web" was developed by the European Organization for Nuclear Research. Then, just two years later, "Mosaic" was created at the University of Illinois and helped connect people through the use of a graphical web browser. This was also when the term "Web" became popular (Perry & Pilati, 2011). Since then, schools have taken hold of the Internet as a way to deliver content to their students. In 2008, more than 25% of students enrolled in higher education were taking at least one online

class, and the number of students enrolling in online classes in higher education continues to increase by at least 17% annually (Perry & Pilati, 2011). In the 2006-2007 school year, it was reported that over 66& of two- and four-year higher education institutions offered online courses, in which over 12 million students registered (Hull, 2009).

Online education is not happening just at the higher education level. Schools at the K–12 level, both private and public, have also taken part in online education. In the past sixteen years, online schools have become a staple in every state, with over one million students enrolled (Hawkins et al., 2013). Some schools have integrated online courses into their existing courses in the confines of the school building while others have created programs in which the students can complete their education at home (Barbour & Reeves, 2009).

Online offerings have changed the accessibility and timing of educational activity. It is a perfect fit for a student who may live far from a school or whose personal or work schedule limits the possibility for regular attendance at a fixed time (Perry & Pilati, 2011). This format allows learning to take place anywhere and at any time, which is one reason people enroll (Barbour & Reeves, 2009). This includes student athletes who are on a traveling team, a student who may have health challenges but is still able to make the commitment to education, persons with physical limitations and handicaps, and a multitude of other scenarios.

In education settings, school connectedness is one of the things students seek, as they want to feel that they are part of the school community (Glazer & Wanstreet, 2011; Scrimin et al., 2016; Turvey, 2006). Having a sense of connectedness to a school may be more difficult for an online student because he or she must have the self-motivation to achieve this over the Internet and with interaction limited to one medium (Perry & Pilati, 2011). Greenhow noted that when students in an online school are more connected to the school, they feel the school

encourages openness, creates an atmosphere of collaboration, allows diverse perspectives, and provides resources to help them (2011). Other researchers have studied the associated negative pattern that students may not feel connected to the school if they feel there is no structure in the learning process or a way to navigate and integrate themselves into a social interaction with others (Slagter van Tryon & Bishop, 2012).

Spencer (2013) noted in her investigation that students want to fit in and be liked by their peers which may correlate to a student's feeling of "being well," which plays a role in their mental health. One's mental health influences the perception of stress including frustration, disappointment, and challenges. Students enrolled online do state they have more stress, as they believe it requires more effort to succeed in their academics (Emerson & MacKay, 2011). Stress is strongly associated with a person's sense of coherence and, for a student, it can identify the need for extra support for their mental health (Mattila et al., 2011).

K-12 Online Schools

Since state legislation has allowed the formation of charter schools and reduced the restrictions placed upon them, online schools across the United States have seen a dramatic increase in enrollment (Digital Learning Now, 2014). Digital Learning Now has gathered statistics to track online education for many years and created a report in 2014 outlining their results. The purpose of Digital Learning Now and the creation of the report was not to promote the importance of technology, but to promote the use of technology that encourages and enhances education (Digital Learning Now, 2014). The report gave a grade to each state offering online education based on the following ten elements considered beneficial to online learning:

- The student is capable of learning in a digital format.
- The student has access to online course with high quality digital content.

- The learning can be personalized.

- The student shows competency and progress.

- The content of the curriculum is considered high quality.

- The instruction of the curriculum is high quality.

- The student has access to a variety of choices including curriculum providers and course subjects.

- The student is assessed and held accountable based on a quality metric system.

- Funding for the school is adequate.

- Digital learning is supported throughout the delivery of the curriculum (Digital Learning Now, 2014).

The report revealed 35 states received a grade of C- or lower. Of those 35, 14 received a grade of F. The only two states to receive a grade of A were Florida and Utah (Digital Learning Now, 2014). This report also emphasized the importance of a quality curriculum taught by well-qualified instructors who are empowered with technology to create quality lessons and can personalize those lessons to meet the needs of the students to help promote school connectedness as well as motivate the students (Digital Learning Now, 2014).

Because this study was based in Ohio, this report card was examined to determine the effectiveness of online instruction for students enrolled in online schools in Ohio. Although Ohio received a score of D, the score is an average of the ten elements beneficial to online learning. Ohio scored highly in student access, personalized learning, and the quality of the curriculum and instruction. However, even with the quality of instruction and the curriculum, students did not demonstrate the proficiency to advance from one grade to another and also failed at assessing students in core subjects based on state-mandated assessment testing (Digital

Learning Now, 2014). Even with the poor grade Ohio received, online education is changing how students in Ohio learn. Ohio's first online school started in the 2000–2001 school year with nearly 2,200 students (Innovation Ohio, 2011). Ten years later, with the incorporation of many more online schools in Ohio, state report cards determined only three online schools rated effective or better. This statistic stands in contrast to the over 75% of traditional schools that rated effective or better. Online schools in Ohio also have a low graduation rate; often in the bottom 15% (Innovation Ohio, 2011).

According to a report completed by STATEIMPACT OHIO, in 2012, more than 30,000 students were enrolled in an online school in Ohio. Seven statewide online schools are offered in Ohio, in which 90% of online students are enrolled. The other 10% of students are enrolled in online academies serving students living in rural areas. If combined, online schools in Ohio would make up the third largest school district in Ohio, with a total student population just below that of the Cincinnati school district (O'Donnell & Bloom, 2012). Many of these schools are operated by local districts which have set up an academy or through education service centers relying on a national curriculum provider (O'Donnell & Bloom, 2012).

Even though many of these online schools provide a quality curriculum with highly qualified instructors, the graduation rate of these schools is much lower than the rates of traditional brick-and-mortar school districts. However, online schools in Ohio also receive higher than average scores in value-added measures, possibly due to learners who have a difficult time grasping new information or need the extra time to move at their own pace (O'Donnell & Bloom, 2012). This suggests that the students are learning, even if state proficiency assessments are not met.

The Digital Learner

Many online students enrolled in classes today were born after 1980, which places them in a group known as "digital native" (Prensky, 2001; Thompson, 2013). Other names for this demographic, especially for those born after 1990, include generation Z, net generation, and web-savvy generation (Rosenfeld & Loertscher, 2007). These students often visit social media sites to share personal stories, contribute to a conversation, play games, or search for events and items (Bolton et al., 2013). Many of these students' daily interactions take place on the Internet through social media sites such as Facebook accessed using a computer, tablet, or smart phone (Voss, 2013). Voss (2013) found that many teenagers send over 50 text messages per day to their friends. Many students have their own cell phones and computers, making it easier for them to access information. For this generation, digital forms of communication are perceived as valuable and most suitable for the nature of interaction in which they are engaged since information can be quickly accessed and received (Bennett & Maton, 2010).

The use of social media often allows a student to gain an identity as well as achieve goals on the personal and academic level. Social media sites, due to their high usage and facilitation of rapid communication to a broad audience, are increasingly the venue where students experiment with different ideas and, as a result, develop their sense of identity (Bolton et al., 2013). In this process, they gain access to a variety of perspectives and develop personal preferences for types of information, patterns of interaction, and worldviews (Jordaan & Surujlal, 2013). This activity can be positive for the student, but it can also become a negative if the student develops behavior issues or creates a virtual identity as someone they wish to be (Bolton et al., 2013). Jordaan and Surujlal (2013) found the self-esteem and confidence of digital learners are increased when they are able to use their cell phones for social and media purposes. They also found that social

interaction, including interaction with family, was increased through cell phone use even though face-to-face interactions decreased (Jordaan & Surujlal, 2013). However, the way students utilize technology differs based on if they are at home or at school. Czerniewicz and Brown (2013) found in their study of 543 university students that online students use technology differently based on the way they have been exposed to it and how they normally use it. For example, some students may be "digital strangers," meaning that they lack the knowledge to use a computer or the software needed to complete assignments. However, those same students can clearly identify themselves as being able to use a smart phone as a tool for completing school assignments.

Researchers have argued that students in online settings may be unable to develop the skills of deep learning and critical thinking as well as be productive in their work (Thompson, 2013). Other arguments include the students' ability to access information quickly as a perfect rationale for online learning. However, Huddlestone and Pike (2008) determined online students are responsible for their own study habits and must have the "motivation and confidence to use the technologies that support the instructional experience" (Huddlestone & Pike, 2008, p. 245). Yet another argument is instructors may find the students' preference of technology for learning is individualized, which then has the student relying on one or more forms of digital communication or technology (Gurung & Rutledge, 2014). An example of a difference in preferences may be the use of an Apple versus an Android device. But, no matter the technology or operating system, just as in the past (Bennett, Maton, & Kervin, 2008), the most commonly used applications to support student learning are word processors, email, and Internet inquiries (Gurung & Rutledge, 2014).

The perception a student has of technology and how it is used is developed based on the way he or she interacts with it in his or her personal life and at school (Saeed, Yang, & Sinnappan, 2009). Bennett, Maton, and Kervin (2008) found that some learners might not have the same technological skills as their peers when using applications or software with which they are unfamiliar. Even though students still prefer discovery-based learning to interact with others, Mayes et al. (2011) found the different perceptions of technology, technical skills, and familiarity with software shows there are many inconsistencies with the technology backgrounds of online learners due to socioeconomic factors, technical fluency, the motivation to learn, and the students' views of technology.

Even though digital learners have different experiences using various technology around them, they still explore different learning styles to find what works best for them. The learning patterns they find advantageous help bring on not only a sense of identity, but also academic achievement (Kim, 2012). The ability of students to use different learning patterns was found in a study conducted by Prinsen, Volman and Terwel (2007), in which 120 students in grade 5 engaged in an online discussion forum on healthy eating in which they were able to respond in their own way instead of using a set structure. It was found that boys were more skilled in using the discussion forum and posted more discussion threads. They were also more likely to disagree with others. It was found that even though girls had difficulty working with the computer and technology, they contributed more to the discussions by asking questions to their peers. This finding is similar to the study Haigh (2007) conducted on 148 university students which found many students were more comfortable communicating electronically to express their views and opinions, regardless of technology skill level. Also, since social media allows for the exchange and experimentations of ideas (Bolton et al., 2013), it is easy to see how this

type of communication can easily blend into the online classroom, even though students do not view the skills as transferable to the classroom (Mayes, Luebeck, Ku, Akarasriworn, & Korkmaz, 2011).

The Online Classroom

Online schools are similar to traditional brick-and-mortar schools in that both recognize the importance of education and the curriculum delivered to the students (McFarlane, 2011). Differences between the two settings occur in the interactions among instructors, the school administration, and the students. Since online schools deliver content via the Internet, access to the material and the ability to interact with others can be done any time of the day or night. Interaction via the internet can also be a cost savings for many families since many online schools not only provide a computer for the student, but also offer an internet reimbursement (McFarlane, 2011). Online schools are often marketed as places with reduced discrimination based on race, culture, or many other factors seen in the traditional setting. It also boasts the elimination learning differences by placing students in classes based on their learning achievements (McFarlane, 2011). Instruction in an online school takes place over the Internet, which some students may find difficult, even though the Internet has become a part of everyday life for many people.

In educational settings, the online setting can help address the needs of the learner and help motivate them based on the medium of instruction (Zacharis, 2011). Although there is little difference in learning outcomes between online and face-to-face learners, the biggest difference is that the online student needs to log onto a course management system to gain a link to all their classes. The course management system is often password protected, and students can log into their classes, where they will see the course goals and objectives (Dando, 2005). Even though

students are able to see the goals and objectives for the course, online teachers, just as traditional brick-and-mortar teachers, need to make a conscious effort to accommodate every learner and organize the class content and activities effectively (Crawford-Ferre & Wiest, 2012; Gurung & Rutledge, 2014; Zacharis, 2011). These efforts may include captioning videos and providing clear links to course material to access technology used. And, because of the shift from textbooks to e-books and hands-on activities to simulations, instructors must be able to help a student gain critical thinking skills and provide authentic learning situations making it important that the different technology available to instructors and students used in the classroom is based on its ability to foster learning (Bennett et al., 2008).

New online instructors may try to mimic teaching in a face-to-face class without modifying the course objectives to suit the online environment. A lecture-based teaching style employed in an online class may cause the student to become frustrated and not want to participate in the course (Terrell, 2008). Crawford-Ferre and Wiest (2012) found that despite the distractions of the technology instructors and students use or the cultural barriers of a student, instructors should be encouraged to build a new persona to create relationships with their online students that differs from the students they interact with face-to-face. Dialogue within the online course also needs to facilitate an environment in which the students are able to think critically and have meaningful reflections. (Kachel, Henry, & Keller, 2005). Blanchette (2009) noted that teacher talk, although similar to face-to-face classrooms, is needed to actively engage the student. She also found that online instructors used less verbiage but managed to maintain quality and collaboration in the curriculum and lessons. Although some teachers are learning to use new technology to improve course interactions, they must develop comfort with it and confidence that it benefits the students (Gurung & Rutledge, 2014; Hammonds, Matherson,

Wilson, & Wright, 2013). When new technology is experienced in the classroom and throughout

the curriculum, it can help instructors keep the online course they teach interesting for the

student as well as provide opportunities for participation and engagement in the learning process

(Park & Choi, 2009). The range of resources used in the online classroom should also be used to

help meet the needs of the learner and support the learning process. In addition, classes that

utilize a variety of technology were found to be filled with students who felt confident about the

classroom and course of study because it was perceived as interesting and meaningful (Armatas,

Holt, & Rice, 2003).

Instruction includes consideration of student needs and concerns, and instruction in the

online setting has several unique considerations. Although the world today is filled with

technology, students may not be familiar with it or have opportunities to use it (Chandler, 2013).

As Crook (2012) showed in his study of 53 students who were part of a class that incorporated

Web 2.0, those who were unfamiliar with the learning process and had little instructor interaction

became frustrated and felt threatened by the new technology. Park and Choi (2009), in their

study of 147 adult learners who either completed or dropped out of an online course, found that

unless there was active engagement by the instructor, students easily lost motivation.

In the online classroom, just as in a traditional classroom, instructors are not only the

education specialist, but also the manager, advisor and course facilitator (Mayes et al., 2011).

This is especially the case in an asynchronous setting that allows individualized access and

patterns of participation. Asynchronous classrooms also make learning more accessible since

there are no constraints as to when or where the class meets. This type of learning environment

allows students to access the course curriculum when they are able (Simpson, 2014). Just as in

the traditional setting, online instructors not only need to help students develop problem-solving

skills and the ability to think critically, but also must help them become engaged in the course

through surveys, tutorials, the provision of resources, and the facilitation of interactive learning.

This may also include helping the student learn to navigate the course and the technology

involved with it. For example, in an asynchronous environment, students should be able to add

their own perspectives to the course (Mayes et al., 2011) to allow for more engagement.

     Even though many online courses are meant to be asynchronous, there are also times

when synchronous learning takes place. For example, virtual meetings can be completed by

webinar, conference call, or other platform (Simpson, 2014). This synchronous learning may

take place in online high schools in the form of announcements, tutoring, and special sessions.

Proper scheduling should be maintained by the student and learning coach. And, just as in some

asynchronous settings, instructors must be aware of how familiar students are with using the

technology presented for instruction (Gurung & Rutledge, 2014). Further, in regard to the

technology used in the classroom, the instructors must recognize that the tools they use are not

the only method necessary to effectively teach the class or help students reach the goals and

objectives in the lesson (Hammonds et al., 2013), no matter the setting.

     Many online high schools enlist the help of a learning coach. The learning coach is just

one of the seven key factors that Serianni and Coy (2014) believe contribute to a successful

online learning experience. The other six factors are the student, the course and how it is set up,

the instructor, the physical learning environment, technology used, and other support systems

used by the school, such as a special education department. The role of the learning coach must

be well-defined and supported by the school and its instructors as well as be seen as a part of the

teaching and development role (Skues & Cunningham, 2013). The learning coach is usually the

parent of the student, although it could also be another adult family member, adult friend, or

tutor (Coy, 2014). The learning coach helps the student manage assignments and daily study activities and aids them in being actively engaged in the learning process with the instructor. Engagement could include phone or web conferences in which the teacher and learning coach meet to help set goals for the student as well as help the student establish a schedule. The learning coach's activities may even extend to helping the learner create an environment in which to study free of distractions (Coy, 2014).

In Saeed, Yang, and Sinnappan's (2009) study, students who had the assistance of a learning coach were found to have a greater interest in learning new technology. Most online students are familiar with communicating using a chat utility, reading web blogs and posts, downloading music and movies, and downloading images for both educational and social needs. However, use of unfamiliar technology results in a steeper learning curve for all students (Nasah, DaCosta, Kinsell, & Seok, 2010). Nasah, DaCosta, Kinsell, and Seok found that the age and gender of the student did not strongly impact the challenge of learning new technology. Instructors in the online classroom also need to realize students do not expect to use the same technology as they use at home, such as email and Facebook (Gurung & Rutledge, 2014; Nasah et al., 2010; Saeed, Yang & Sinnappan, 2009).

Online Instructor-Student Interaction

Reid, Aqui, and Putney's (2009) study evaluated a new online school for students enrolled within the same traditional brick-and-mortar district. They found communication and interactions between instructors and their students was limited, which created a feeling of isolation for the student. The students also felt there was no accountability from the instructor to perform, which led them to falling behind in the course or dropping out. Hawkins, Graham, Sudweeks, and Barbour (2013) found that instructors in online schools who were proactive in

communicating course goals and outcomes for their students and had multiple interactions with the students throughout the course, with the first day being the most critical, had students who were more interested and engaged in the course. The interactions with the student included an introduction to the course including goals and outcomes as well as an explanation of how to navigate the course. However, the most important factor was an introduction by the instructor that was warm and welcoming. These interactions made a student feel welcomed and moved them from not being interested in the course to completing the course (Hawkins et al., 2013).

When examining the two examples above regarding instructor-student interaction, it is easy to see how the interactions instructors have with their students can be the most important factor connecting an online student to their school. This idea is also emphasized in Blum's (2005) list which shows the characteristics of a good online instructor:

- They have the ability to make learning meaningful and relevant to the student.

- They create a clear classroom structure.

- They are consistent with performance and behavior.

- They encourage team-building by breaking down social isolation.

- They encourage cooperation by integrating students across gender, academic ability, and race.

- They reward student achievements and progress.

Online instructors also support the emotional well-being of their students by creating an open door of communication and allowing students to expose their vulnerabilities without being shamed. This includes students who are experiencing challenges outside the classroom, students who have an impairment, or students considered at-risk. Although instructors may be unfamiliar with various disabilities or conditions, they are many times the only connection a student feels to

the school. Therefore, the instructor should be proactive and seek support from the school to help the student succeed (Sulkowski, Demaray, & Lazarus, 2012). Repetto, Cavanaugh, Wayer, and Liu (2010) found success is more common in high-risk students enrolled online when the instructors are encouraging. They also found these students are more likely to be involved in class extracurricular activities.

Instructors need to create a safe learning environment for the student and show they actually care for the student. Instructors who continually promote student successes and show they are interested in the student by developing activities to connect the student to the learning process have fewer students who drop out of the class (Repetto et al., 2010). A working relationship between the instructor and student also lets students feel as though they are a part of the course and they can collaborate on lessons with the instructor. Courses supplemented with online discussion in which the instructor regularly participated were found to have a small decrease in student participation as the course. The decrease may have been due to assignments in other courses or activities outside the classroom. However, the students still remained active as much as they could as the course progressed (Wilson, Cordry, & King, 2004).

Since communication is the key to good instructor-student relationships, the instructor must address possible communication challenges. Suggestions include giving students clear expectations at the beginning of the class by stating how long it will take for the instructor to reply to emails, return phone calls (Mupinga, 2005), and grade homework and other course assignments. Instructors must able be able to determine which form of communication works best for their students. Murphy, Rodriguez-Manzanares and Barbour (2011) found students preferred to use the chat function on Skype but not talk or share video. Teachers recognized this and organized the class to limit the voice function. In the same study, it was found that email

was the preferred choice of communication since the instructor could take the time to write a personal response.

Instructors caring for students enrolled in an online school was the subject of Velasquez, Graham, and Osguthorpe's (2013) study. They found that when an instructor made a connection with and showed interest in students' well-being, the students were more likely to view the instructor as someone they could approach to discuss non-academic topics. This connection often led to students gaining more self-confidence, even when the student had done something wrong. The reactions displayed between the instructor and the student through the various communication techniques included everything from frustration to excitement and satisfaction. And, in every reaction by the students, there was still a desire to respond to the instructor in a positive manner because they knew the instructor cared about their academic success and well-being.

Because of the things previously noted, many online schools know that not just any instructor can teach online. The biggest factor in a student's ability to be connected to the school is a good instructor who cares about both the well-being and academic success of the student and facilitates good communication between both parties (Mupinga, 2005).

School Connectedness

The Center for Disease Control and Prevention (CDC) (2009) suggests the following six strategies to increase connectedness in schools:

- Create of decision-making processes that include all members of the school, staff and students alike;

- Provide opportunities for families of students to become involved in school activities;

- Actively engage students in the academics, socially and emotionally;

- Foster positive learning through classroom management and methods of teaching;

- Allow teachers and staff professional development opportunities to meet the needs of the students; and

- Create trusting relationships in which the students are cared for.

The above bullet points are used for both traditional brick-and-mortar and online schools. The application of these concepts is supported by Osterman's 2000 review of literature, which found that students' need to belong and be a part of a community was strong. When associated with a strong psychological process, students who can relate to the environment around them, including the school, perceive themselves as more competent and independent with high levels of intrinsic motivation. Also, the more they feel accepted as part of something, the more they feel they belong. In regards to the environment, Greenberg et al. (2003) found when a school environment is positive and there is a connection with other peers, faculty, and the community, the student adapts a healthier lifestyle. This finding was confirmed in Thomas and Smith's (2004) study of the relationship of violence and school connectedness. Of nearly 300 students who felt the environment of the school was unsafe, only 10 percent of males and 22 percent of females liked going to school. Almost one third of male respondents felt as though they were in a jail. McNeely and Falci (2004) found that because teachers and staff are a part of the school environment, when teachers are fair and consistent, students were less likely to engage in high-risk health behavior such as smoking, getting drunk, being promiscuous, being depressed, and engaging in violence. Similar results are found with children whose parents are involved in their school activities and academics. Thompson, Iachan, Overpeck, Ross, and Gross (2006) found these students felt a high rate of school connectedness and had higher levels of emotional well-being.

School connectedness plays a large role in a student's health. In a study conducted with over 1,900 students in grades seven through twelve, Bonny, Britto, Klostermann, Hornung and Slap (2000) found at least four identifiable health risks associated with low school connectedness. Of the four, how an individual perceives their health and wellness status was the most common. High-risk health behaviors were also associated with low school connectedness as determined by Bond et al. (2007) in their longitudinal study of nearly 2,700 13- to 14-year-olds in grades eight through ten in Australia. Even though students felt socially connected to their friends, nearly 50 percent of the students did not feel connected to the school. This state of disassociation was correlated with higher depressive symptoms, drinking, and smoking. In addition, in a 2009 study by Faulkner, Adlaf, Irving, Allison and Dwyer, it was found that students who lacked vigorous physical activity were also likely to feel disconnected from their school and, just as in the previously mentioned study, alcohol and tobacco use increased.

Depression caused by stress, which may lead to high-risk behavior, has been examined in many research studies. As recently as 2013, it was found that signs of anxiety and depression increase in students as they progress from grade seven to grade nine. It was also found during this same time their school connectedness decreased (Lester et al., 2013). Langille, Rasic, Kisely, Flowerdew and Cobbett (2012) confirmed this dynamic in their study of high school students in grades 10 to 12. They concluded that a higher connectedness with school protects students from the risk of depression. These two studies suggest that without school connectedness, the risk of depression exists at all grade levels in high schools. Moreover, according to the study performed by Shochet, Dadds, Ham, and Montague (2006), the risks either stay the same or worsen as a student progresses in grade level. In a 2013 study, one of

every eleven students who did not feel connected their school were found to be depressed (Govender et al., 2013).

As stated previously, feeling connected to the school depends on how connected one is to peers. Because depression is a factor of mental health, Kidger, Araya, Donovan and Gunnell's (2012) synthesis of 39 research studies found "evidence that the school environment has a major influence on [student] mental health" (p. 925). They also found direct connections between students' perceptions of their teachers and school and their emotional well-being. Although Millings, Buck, Montgomery, Spears, and Stallard (2012) found no relationship between school connectedness and depression, it is important to note they also found those who were more connected to their school peers felt more connected to their school.

Studies performed on school connectedness which consider gender found both males and females have more motivation and perform fewer risky behaviors when they have a positive connection to their school (Sanchez et al., 2005; Voelkl, 1996). Battistich, Solomon, Kim, Watson and Schaps (1995), in a study of children in 24 elementary schools, found a student's socioeconomic status also did not relate to school connectedness. However, Rice, Kang, Weaver, and Howell (2008) found that school connectedness was negatively associated with stress and anger, even in fourth-grade students.

All studies cited above have been performed in a traditional school setting. Interestingly, results have been nearly the same in online college or university settings. Crawford (2010) found that despite the "anytime" and "anywhere" aspect of online learning, students and faculty want to feel connected to the school. One of the stressors many students experienced with online schools was ineffective communication. In a study by Thompson and Ku (2006) on collaboration among peers and student attitudes, it was found students want to be connected to

their peers and school, and ineffective communication was the number one stressor. Many students also feel online learning, although advantageous due to freedom of time and location, is not relaxing because students are dependent on instructors and tutors for help with assignments and must wait until they are available (Xie et al., 2001). Although students in the previously mentioned study were active in their classes, their stress levels remained the same. Hughes, Ventura and Dando (2007) found the online environment is flexible with the location and time the learning takes place, but students could also feel lonely if they do not feel connected. This disconnection is caused by how much presence the school and teacher have, how much support is given by peers, and the setting in which the student completes the course.

A gap in the research literature exists as evidenced by the studies cited above. In the sense of coherence and school connectedness studies reviewed, the participants were either elementary through high school students in traditional brick-and mortar-schools or university students enrolled in an online course. No research was found which examined the relationship between a student's sense of coherence and school connectivity for online high school students.

Student Motivation and Engagement

How an online school motivates a student is the topic of many research studies (Matuga, 2009; Roblyer, 1999). A student who is most suitable for online learning displays the following:

- A positive self-image

- A strong work ethic

- Determination

- Self-discipline

- A fairly strong knowledge of technology

- A feeling that they can control their outcomes in academics

- Comfort with taking risks and experimentation

- The ability set his or her own goals

- The motivation to learn and succeed

(Kachel et al., 2005; Reid et al., 2009).

Motivation itself is hard to define since it can be either intrinsic, extrinsic, or a combination of both. Intrinsic motivation occurs when a student attempts to complete something because he or she has the desire to do so and sees the value in the accomplishment. Extrinsically motivated students may not see value or enjoyment in the assignment, but they will work hard since they are rewarded from an outside source (Center on Education Policy, 2012a). This reward could be a grade, award, or food. Students who are intrinsically and extrinsically motivated may accomplish a task because they value it, but know they will also be rewarded when the task is completed. Schools continually experiment with ideas to effectively motivate students and to determine why a student may not be motivated. However, this process can be difficult due to the need to consider each student to see if he or she are motivated and have the self-efficacy to motivate himself or herself to learn. Even through this difficulty, schools continually need to make decisions to help their students excel in academics (Center on Education Policy, 2012a). These decisions include making the choice to reward students, creating individual goals for students, involving parents and the community, and using nontraditional methods to motivate students who do not care about academics (Center on Education Policy, 2012c). These decisions are similar to the six strategies the Center for Disease Control and Prevention suggest to increase school connectedness, which include allowing students to partake in the decision-making process, fostering positive learning in the classroom environment, and actively engaging students emotionally and in academics (2009).

Online learners only need to think positively of the online class to be able to have a sense of attainment and motivation in the course, no matter the workload (Barbera & Linder-VanBerschot, 2011). The student's motivation may not be affected in the online environment since there is flexibility as well as freedom in the way a student regulates his learning and behavior (Zacharis, 2011). Because online learners may be more task-oriented and independent, they may also have more motivation intrinsically, which can make the online learning environment preferred over the face-to-face learning environment (Terrell, 2008). Many studies promote learning online for these types of learners (Barbera & Linder-VanBerschot, 2011; Bennett et al., 2008; Gurung & Rutledge, 2014; Kolikant 2010). However, in a qualitative study of 25 students in post-elementary schools, many students said their motivation to learn was diminished because the schoolwork is easier when completed on the Internet (Barbera & Linder-VanBerschot, 2011). A possible result of this oversimplification is low self-efficacy and less application in learning. Low application in learning may also result from the way the students connect to their school, which, in turn, can affect their sense of coherence.

Schools must examine their curricula periodically to see if they allow for growth of motivation in their students. Schools need to help the student feel as though they are competent enough to complete assignments. They must also allow students to have some control of their personal outcomes and academic goals. Instructors have the job of making sure students are able to relate to the tasks in the lesson and have a sense of belonging in the classroom (Center on Education Policy, 2012a). A final strategy for schools to make sure motivation is present in their students is for them to determine if students are interested in the subject matter and if they see value in completing the assignments.

Students' motivation is also based on interaction with their parents. The Center on Education Policy (2012c) found motivation was affected by the background and socioeconomics of a student's family. Students raised in families with a low socioeconomic status tend to lag behind their peers from higher socioeconomic families. This dynamic may be due to the resources available at higher socioeconomic schools, which are able to challenge the students more (Center on Education Policy, 2012c). When examining families, one also needs to look at the value the parent places on education. The background, behavior, values, and actions of the parent toward education may play a role in how the child will view education. Therefore, children's ideas about education and how motivated they are to learn may be derived from a parent's opinion (Center on Education Policy, 2012b). Even though the students' view of education may not be the same as their parents', it is the responsibility of the school and instructor to help the student recognize the importance of an education. Instructors must also realize non-traditional students tend to display varying degrees of motivation since they may have cultural or language barriers (Brewer, 2010). Also, more Caucasians than African-Americans are motivated to attend online schools because they are more likely to have computers in their home (Roblyer, 1999).

Motivation is especially important when it comes to distance education. Historically, the typical online student could be described as the high-achieving honor student who was motivated to gain credit for learning and move on to a gain a college degree. Now, the typical student may need credits to fulfill a requirement to graduate (Hawkins et al., 2013). No matter the student population, they may feel alone and struggle in group work because there is little support or interaction and no reward for achievement. In this case, the student must be proactive and use a self-rewarding system for motivation (Hartley, Gill, Walters, Bryant & Carter, 2001). However,

in a study of the effects of interactivity on student achievement and motivation in online learning, Mahle (2011) found student achievement and motivation were greater for students whose instructor engaged in more interaction with the class and took note of individual student situations, including why the student is enrolled in the school.

Callaway (2012), when looking at student satisfaction while enrolled in online courses, found students need to determine if the online course is more of a convenience for them or if it is the quality of the curriculum and instruction. It was also determined that when the convenience of the online course and the quality of instruction were perceived as high, students were more motivated to participate and interact within the course. Xie (2013) confirmed these results in his study of student motivation and peer feedback in an online course discussion board. Students who were proactive in the course, supported their peers, and perceived the quality of the course as high were found to be more motivated to complete the course. Conversely, students who were not confident in their ability to complete assignments were found to have less motivation and did not support their peers. This loss of motivation was primarily due to the feeling that the technology the instructor used was confusing. However, a student's motivation was not lost if the technology used was perceived as authentic to the course and the learning outcomes prescribed by the instructor were clear (Huddlestone & Pike, 2008; Martens, Bastiaens & Kirschner, 2007; Saeed et al., 2009;).

Factors found to be predictors of student achievement affecting motivation include a student's emotions, enjoyment in class activities, and boredom in the class. It was also found that a student's self-efficacy played a large role in the correlation of student motivation and emotions (Kim, Park & Cozart, 2014). The previously mentioned factors are critical for students and instructors when planning for and engaging in course activities. In a tenth-grade science

class, an online learning environment which challenged the students with set goals employed different strategies to motivate students (Wang & Reeves, 2007). The course was designed to allow students to engage their curiosity through course interactions, give students control of tools to promote individual learning goals, and allow students to interact with new video technology to promote the goals of the curriculum. It was found when these tactics were used, students were more engaged and motivated to complete the course. This was the result of students being interested in the material and wanting to find out what occured next for each stage.

Instructors who are diligent to engage the student throughout the entire period of the course have more motivated students. When looking at student retention, academic achievement, and instructor communication, it was found that student motivation decreased as the course progressed if students felt the course was stagnant and did not continue to be engaging (Hannum, Irvin, Lei, & Farmer, 2008; Lehman, Kauffman, White, Horn & Bruning, 2001; Matuga, 2009). Therefore, the interaction the instructor has with the student must be engaging and perceived as positive by the student for the student to feel more motivated to complete the course.

Theory

Antonovsky first advanced the Sense of Coherence Theory in 1987 in his book *Unraveling the Mysteries of Health*. Influenced by information theory, which involves the quantification of information, the Sense of Coherence Theory divides its primary construct into three components: comprehensibility, manageability, and meaningfulness. Comprehensibility refers to how people perceive stimuli, which can be internal or external, and whether the stimuli are comprehendible. Manageability refers to how a person perceives the resources that are available to meet the needs of the stimuli. Finally, meaningfulness refers to how important the

stimuli is to a person and how it can shape the person for future stimuli (Antonovsky, 1987). The basis of coherence theory is that a strong sense of coherence leads to the ability to cope successfully with the stressors of everyday life equating to maintaining emotional and mental wellness (Antonovsky, 1987). When applying this theory to students, it would be expected they would have a weaker sense of coherence as compared to older adults due to seeing the world around them as less predictable (Antonovsky & Sagy, 1986). Also, the period of adolescence is a time when young people develop a sense of who they are and begin to orient themselves to society, which can be stressful (Antonovsky & Sagy, 1986). According to the sense of coherence theory, a person who has a high sense of coherence will have lower levels of stress (Antonovsky & Sagy, 1986). As applied to this research study, this theory holds that students enrolled in an online public high school who feel connected to the school should have a high sense of coherence if they experience comprehensibility, manageability, and meaningfulness more strongly.

Sense of Coherence

When people have a high sense of coherence, they are able to cope with stress much more effectively, which has a positive impact on their health. Sense of coherence is not just about coping with stress; rather, it concerns how one perceives the stress. Questions a person may ask to determine their sense of coherence may be found in the appendix of Antonovsky's (1987) book *Unraveling the Mysteries of Health.* Sample questions include:

- "Do you feel that you can understand things?"
- "Do you feel things are predictable and can be expected?"
- "Do you feel things can be handled or taken care of?"
- "Do you feel you have the skills necessary to take care of things?"

- "Do you feel things are interesting and can bring satisfaction?"

- "Do you feel things are really worth it?" (pp. 190–194)

Answering questions like these will help a individuals understand if they can control their stress, if it will harm their health, and if a stressor is beyond their control (Antonovsky, 1987). Griffiths, Ryan and Foster (2011) found in their study of 20 adults that a person's sense of coherence helps identify how they deal with everyday problems as well as how they cope with them. Everyday problems could include traveling to school or having to complete tasks. It could also be trying new technology or communication with people. Geyer (1997) concluded in his synthesis of literature that "a high sense of coherence can be expected in persons who have learned to decide, who are used to doing it and who have opportunities to do so" (p. 1777). This is another reason to investigate if there is a relationship between school connectedness and a student's sense of coherence. If the students have decided to learn, are used to the learning process and the technology associated with it and have opportunities for growth, and are actively engaged in the course material and the online learning experience they should also have a high sense of coherence.

There have been many studies performed to determine if factors exist that influence a person's sense of coherence. Volanen, Lahelma, Silventoinen and Suominen's (2004) study looking at the factors contributing to males' and females' sense of coherence found the quality of relationships with family and friends increased sense of coherence. Also, the "ability to receive social support and satisfaction . . . showed strong associations with sense of coherence for both sexes" (p. 328). When looking back at the Center for Disease Control and Prevention's six items promoting school connectedness, creating trusting relationships falls into one of the six categories. And, when the students' needs can be met through a relationship with an instructor

they can trust, positive learning is the likely result. This concept reinforces the importance of making sure a student is actively engaged socially through the communication in the course as well as emotionally by building their self-esteem (Center for Disease Control and Prevention, 2009). Antonovsky's theory is also reinforced in that strong social support and relationships do increase a person's sense of coherence (Antonovsky, 1993). In the traditional school environment, this would be evident through the interactions with their peers, faculty, and staff. In online schools, it is believed this would be evident in the interactions the students have with their peers and teachers in discussion boards and staff with whom they communicate. Also, as stated earlier, parental involvement could play a role. All of these concerns are included in the six categories promoting school connectedness published by the CDC (Center for Disease Control and Prevention, 2009) and are important since they can help a student feel less stress as determined by Antonovsky's sense of coherence theory.

Myrin and Lagerstrom (2008) conducted a study on nearly 400 eleven-, thirteen-, and fifteen-year-olds representing different socioeconomic classes and found those who had a low sense of coherence score were also at risk for feeling depressed and had poor life satisfaction. In a study investigating the how emotional health is effected by sense of coherence, Moksnes, Espnes and Lillefjell (2012) found that of the 1,200 students aged 13 to 18, nearly half showed signs of depression and anxiety, producing a strong correlation between sense of coherence to gender and age. Pallent and Lae (2002) found that this type of research is shifting to the area of health and its relationship to stress and coping. In their study of nearly 500 participants, with a majority being late high school students, they found results consistent with prior research studies and described a person who was psychologically healthy as having less stress and overall better physical health.

In a study of nearly 3,500 fifteen-year-old students in Denmark that examined the association between a student's health, stress, and sense of coherence (Nielsen & Hansson, 2007), it was found that students with a higher sense of coherence were more protected against the effects of stress on the body. The effects of stress weaken the immune system and its protective responses of the body. It was also noted in their study that they could not determine cause and effect since it was a cross-sectional design and not a longitudinal study, though it was found the number of health-related issues of the student declined as the sense of coherence increased.

Moksnes, Rannestad, Byrne and Espnes (2011) found in their study of just over 1,200 high school students that higher levels of stress did have a relationship with a low sense of coherence. Both males and females were also found to be stressed and had a low sense of coherence score. Even though females tended to be more stressed than males, they did have a higher sense of coherence score. According to Rivera, Garcia-Moya, Moreno, and Ramos's (2012) systematic review of literature, nearly all studies done on adolescents found levels of sense of coherence increase with age. There is also a close relationship between school and a student's sense of coherence. Students often felt no connection with the teachers when they also had no connection to academics.

Another study found sense of coherence scores were lower for students in high school (Myrin & Lagerstrom, 2008) when all other variables were similar. Kristensson and Ohlund (2005) studied 253 high school students enrolled in various programs such as basic study programs designed for students planning to go on to college as well as vocational schools and found there was a difference in sense of coherence scores between the types of schools. Students who participated in more physical education due to their enrollment in the basic study program

were found to have a higher sense of coherence. These students were also more connected to the school. Participating in more physical activity has been shown to positively affect sense of coherence (Kristensson & Ohlund, 2005). As Torsheim, Aaroe, and Wold (2001) found, there is a direct correlation between students' sense of coherence and their health when their stress levels were high. The sense of coherence has a direct effect on a students' health due to the association of school-related stress (Garcia-Moya et al., 2013). This relationship is why it is important to understand the environment of the school and how the students perceive it. If students perceive more stress, they will have a low sense of coherence score as well as a low sense of school connectedness (Bowen, Richman, Brewster, & Bowen, 1998).

Conclusion

The literature reviewed in this chapter included studies that determined how a student's connectedness and sense of coherence affect their health due to stress. Many studies also revealed the effect of school connectedness on the well-being of the student. And with school connectedness, the literature showed how important motivation and engagement is for the student in any type of learning format. It also demonstrates how sense of coherence is vital to one's health. Literature revealed how some online schools have a failing report card, yet are able to provide quality curriculum and instruction. A gap in the literature was revealed based on search results from Academic Search Complete, as no articles came back with results for correlational studies that considered sense of coherence and school connectedness in the online public high school. Rivera et al. (2012) noted in their literature review of 1,458 studies that not one was completed on students enrolled in an online public high school. Monica Eriksson, on behalf of Aaron Antonovsky the director of the Center on Salutogenesis, also confirmed this

through her personal communication with this author by stating, "To my knowledge nobody has

[researched] this before. You will be the first one" (March 7, 2014).

CHAPTER THREE: METHODS

Design

A quantitative, non-experimental bivariate correlational research design was used to determine the relationship between the sense of coherence and school connectedness of online public high school students. The sense of coherence, the predictor variable, is defined as the stress a person feels when places in various situations and how they cope based on (a) the person's internal and external stimuli being predictable, (b) the resources available to meet the demands of the stimulus, and (c) the stimulus being seen as a valuable investment (Volanen et al., 2004). The criterion variable is school connectedness, which can be defined as a student's sense of belonging within the school environment, which leads to positive reactions to teachers, peers, and engagement in school activities (Thompson et al., 2006). This design was chosen because it attempts to explore the relationship of the sense of coherence and school connectedness for online public school students and does not seek to determine cause and effect (Mertens, 1998), as the two variables may not be demonstrated concurrently. A correlational pattern was chosen for this investigation because the relationship of a predictor variable, the Sense of Coherence score, to a criterion variable, the School Connectedness score, was tested to understand whether there is a positive or negative relationship between the two variables. It was also chosen because randomization of the participants was not required. Finally, bivariate correlation does not impose restrictions on the instruments used to measure the variables; other than the scores they represent must be normally distributed (Gall, Gall & Borg, 2010).

Research Question

The research question for this study is:

RQ1: What is the relationship between sense of coherence as measured by the Sense of Coherence (SOC-13) Questionnaire and school connectedness as measured by the School Connectedness Survey of online public high school students?

Null Hypotheses

H$_0$1: There is no statistically significant correlation between an online public high school's students' sense of *coherence* score their school connectedness score.

H$_0$2: There is no statistically significant correlation between an online public high school's students' *comprehensibility* score and their school connectedness score.

H$_0$3: There is no statistically significant correlation between an online public high school's students' *manageability* score and their school connectedness score.

H$_0$4: There is no statistically significant correlation between an online public high school's students' *meaningfulness* score and their school connectedness score.

Participants and Setting

Participants for this study were students enrolled in a state-approved online public high school in which at least 80% of instruction takes place outside of a traditional classroom setting on the Internet. The participants completing the survey ($N = 83$) were 28% male and 72% female. A majority of the students, 55%, were black, with other races including Hispanic (15%), white (12%,), and multiracial (11%). Other races reported include Asian or Pacific Islander and American Indian/Alaskan Native (Table 1). The mean age of participants was 16 years. For class standing, 28% were sophomores, 34% juniors, and 38% were seniors. The mean years a student had attended an online school was 4.5 (Table 2). Of all reported participants, 73 had attended a traditional brick-and-mortar school in the past. The number of students enrolled in their first year of online schooling was six.

The participants, all born after 1980, are considered digital learners since they have grown up in a digital world in which many of their life and social interactions take place on the Internet accessed either on their computer or another portable digital device (Voss, 2013). Students enrolled in the program also have various backgrounds experiences with technology. Because of this, programs offered at the school provide support for students who may not be familiar with the technology they are asked to use. This support comes from their instructors and a learning coach, if provided. The learning coach is a person at the student's home or other location who can regularly assist with non-educational tasks such as making sure the student checks in with their instructor and is completing assignments. This person is most commonly a parent or guardian (Coy, 2014).

Due to the nature of this study, parental permission was needed. Because of this, the study was first introduced to the parents of enrolled students via a letter (see Appendix C) and consent form (see Appendix D) sent home with their child after they attended the schools mandatory in person orientation session. Information contained in the letter explained the purpose of study, asked the parents to allow their child to participate, and included instructions on how to have their child complete the Sense of Coherence – Orientation to Life questionnaire (SOC-13) and School Connectedness with Demographics Survey. After the parent signed the consent form, the participant was required to sign an assent form (see Appendix D). When the consent and assent forms were completed, the researcher gave the survey to the participant. This method of survey distribution and return allowed the responses provided to be anonymous since the consent forms had no identifiers linking it to the survey. The method for selecting the participants was a convenience sample, which suited the purpose of this study. This allowed the researcher to sample students enrolled in and volunteering from the school selected. The

population sampled was representative of the school where the research was conducted.

Although the population is not representative of all online schools, this study will allow

generalization to similar groups of online students based on the demographics characteristics.

A simple power analysis reveals that a minimal total sample size with alpha at a .05 level

of significance and a statistical power of .7 with medium effect size results in needing a

minimum of 66 participants (Gall, Gall, & Borg 2007). Only students enrolled in the school

were given the option to complete the survey. Although the school was used as the research site

and source of participants, the Sense of Coherence – Orientation to Life questionnaire (SOC-13)

and School Connectedness with Demographics Survey (see Appendix F) were completed at the

student's home or other location suitable to the participant. They were returned to the school,

where the researcher collected them from the administration.

<div align="center">**Instrumentation**</div>

Sense of Coherence – Orientation to Life Questionnaire

Antonovsky published a sense of coherence instrument in 1987 in the appendix of the

book *Unraveling the Mysteries of Health: How People Manage Stress and Stay Well*. The

questionnaire addresses how adaptive coping may lead to a healthier lifestyle. It does not look at

specific coping strategies, but considers factors that relate to coping as a form of stress reduction

(Antonovsky, 1993). As described by Antonovsky (1986), the instrument is used to measure

how people will perceive things work out and how much they can be expected to see their

internal and external environments as predictable based on their confidence. This questionnaire

is aligned with the study's purpose and therefore is appropriate since it attempts to determine if

there is a relationship between the stress a student feels and school connectedness. The

questionnaire has been tested in various cultures, with different social classes, ages, and genders

returning similar reliability and validity results for all groups (Bowen et al., 1998; Eriksson &
Lindstrom, 2005; Mattila et al., 2011; Rivera et al., 2012). It has primarily been used to test
audiences such as college students; however, children and teenagers have also been studied
(Antonovsky, 1993; Eriksson & Lindstrom, 2005). The questionnaire is copyrighted, but it is
free to use for academic, non-commercial purposes. Dr. E. Eriksson of the Center on
Salutogenesis granted permission for the researcher to use the survey on behalf of Dr.
Antonovsky (see Appendix E).

The instrument used to measure the variable of interest, sense of coherence, is the 13-
item Sense of Coherence – Orientation to Life Questionnaire (SOC-13), which is an adaptation
of the 29-item Sense of Coherence – Orientation to Life Questionnaire (SOC-29) developed by
Aaron Antonovsky in 1987 (Antonovsky, 1993). The 13-item questionnaire was created for
larger populations due to its ease of completion (Eriksson & Lindstrom, 2005). For both the 13-
and 29-item questionnaire, the responses to each question are Likert-type, ranging from one to
seven, with seven being the highest score (Antonovsky, 1993). The maximum score possible for
the 13-item questionnaire is a 91, which would mean the student has a high sense of coherence,
whereas the highest possible points for the 29-item questionnaire is 203. The lowest scores
possible are 13 and 29, respectively. Unlike the 29-item questionnaire, which asks 11 questions
related to comprehensibility, 10 related to manageability and eight on meaningfulness, the 13-
item questionnaire asks five questions related to comprehensibility, four related to
manageability, and four on meaningfulness (Antonovsky, 1993). Examples of questions asked
on the survey include "When thinking of your school, do you sometimes think it is not the best
choice for you?" (comprehensibility); "Do you feel you are being treated unfairly at school by

your teachers and administration?" (manageability); and "How often do you not care about the activities that go on at your school?" (meaning).

Eriksson and Lindstrom (2005) conducted a literature review of 458 research studies that used the Sense of Coherence Questionnaires to examine the reliability and validity of the test. They found the face validity of the SOC-13 was acceptable, since many respondents did not find the questionnaire difficult to complete and the mean range of scores for all respondents was 35.39 to 77.60. Consensual validity found the original 29-item questionnaire is the most valid, even though some experts claim it is too long and the 13-item should be used instead for larger populations. The original purpose of the questionnaire was to measure a person's sense of coherence as a whole. And, more than 10 years after the survey has been given for the first time, the results have been comparatively stable in verifying validity. Because there are three subcategories to the survey, some researchers argue there is no construct validity when the three subscales are measured separately. This would be true since the questionnaire was meant to be used as a whole. Eriksson and Lindstrom (2005) found when examining criterion validity consideration, there is a negative correlation between depression and anxiety and a positive correlation between self-esteem and optimism. This would also predict that a person with high self-esteem would have little stress. The predictive validity was found to be useful in the medical field when the test was used on patients with morbid obesity and high post-traumatic stress symptoms. For people with no health problems, including prior stress, Eriksson and Lindstrom (2005) also found there was no relationship between stress and self-esteem. Reliability of the questionnaire has an internal consistency, measured by Cronbach's alpha, of anywhere between .70 and .92 (Eriksson & Lindstrom, 2005). Cronbach's alpha is a method used to compute test score reliability, with a higher score indicating greater test reliability (Gall

et al., 2007). Test-retest reliability has a correlation of .69 to .72 over one year (Eriksson &

Lindstrom, 2005). Internal consistency of the SOC-13, measured by Cronbach's alpha, is nearly

the same as the SOC-29: .92 compared to .95. There is also a three-item Sense of Coherence –

Orientation to Life Questionnaire (SOC-3) but the Cronbach's alpha was .35 (Eriksson &

Lindstrom, 2005). Reliability for the current study will be set using a .7 Cronbach's alpha,

which is in line with what has been reported in previous studies.

School Connectedness Survey

The School Connectedness Survey, designed and updated by Anderson-Butcher,

Amorose, Iachini and Ball (2013), was also used in this research study. The instrument is a

Likert-scale survey consisting of five questions, with no reverse scoring and no sub scales

(Bonny et al., 2000; McNeely & Falci, 2004). The survey asks how strongly a student agrees or

disagrees with a statement about their school. These statements include: "I feel a part of my

school"; "I feel close to people at my school"; "I am happy to be at my school"; "I feel safe at

my school"; and "I feel I am treated fairly by my teachers in my school" (Anderson-Butcher et

al., 2013). Participants give each statement a score ranging from one, which is strongly disagree,

to five, which is strongly agree. The possible range of scores is 5 to 25. The survey has an

acceptable reliability, Cronbach's alpha of .82 to .88, and validity, $r = .44$ to .55 (Furlong,

O'Brennan & You, 2011). Permission to use the survey was granted with the understanding that

a citation must be used acknowledging the researchers (Anderson-Butcher et al., 2013). The

survey the participants completed included questions regarding demographics as well as the two

previously mentioned surveys. It consisted of 34 questions taking no more than 45 minutes to

complete and was available on hard copy to allow the participant to write any additional

information they may wish to report.

Procedures

After gaining IRB approval, questions for the Sense of Coherence Survey (SOC-13), the School Connectedness Survey, and questions for descriptive statistics were entered into a Word document, and copies were made. After the surveys were copied, a letter was sent to the head of school of an online public school with approximately 350 students enrolled asking permission for students to participate in the research study (see Appendix A).

When approval was granted from the head of school (see Appendix B), a letter written by the researcher describing the study and inquiring about participation was given to the student in the homeroom class (see Appendix C). The parent and participant consent and assent forms (see Appendix D) were also attached to this letter. This letter was taken home by the student after the one time mandatory orientation presented by the school to be signed by the parent and student giving consent and assent to participate in the research study. Information contained in the form included the purpose of study, parental permission information, and instructions on how to have the parent's child complete the survey. Parents were also informed that the forthcoming survey could only be completed once, that participation in the study is voluntary, and that their child would remain anonymous. After they signed their name to give consent, their child also had to sign the assent form (see Appendix D). This form was returned to the school by the participant and in return, the participant received the survey to complete. When the survey (see Appendix F) was completed, the participant returned it to the school administration and it was collected by the researcher. The participants were thanked for their time and given researcher contact information if they have any further questions.

When the minimum level of 66 participants for the study, as determined by a statistical power analysis for a medium effect size (Gall et al., 2007), was met, data processing with SPSS

was initiated. However, data was not analyzed until all questionnaires were collected and entered. The application of descriptive statistics was the first form of data analysis. Then, as presented in the next section of this chapter, the data were analyzed to determine the relationship between the two variables of interest.

Data Analysis

A Pearson product-moment correlation coefficient (r) test was conducted to determine the degree of relationship between the two variables. This test also determined if there was a linear relationship between the variables (Green & Salkind, 2011). When performing the test, assumptions had to be tested. First, the variables, the sense of coherence score (x) and the school connectedness score (y), were bivariate and normally distributed at all levels. To determine if the relationship is positive or negative, a scatterplot was designed (Green & Salkind, 2011). Normality was also tested by creating a histogram to check for a normal bell curve and by using the Kolmogorov-Smirnov test since the sample size was over 50 participants. The second assumption was the cases represent a random sample and the core of one variable is independent of the other. A final assumption tested was there were no outliers and that the data followed the normal pattern (Gall, Gall, & Borg, 2010). A scatterplot for each variable, along with a box-and-whisker plot, were created to observe any outliers that might exist. If an outlier existed, the data were rechecked to make sure they were not entered incorrectly. If one still existed and did not affect any assumption previously mentioned, it was dropped. If the outlier was dropped, the reason was reported. These procedures were undergone because the Pearson's product-moment correlation coefficient is sensitive to outliers. This study met each of the above assumptions, as the variables had scores that were normally distributed. The study's participants were also a random sample of students enrolled in an online public high school (Green & Salkind, 2011),

since the researcher had no control over who completed the study. However, the overall sample was a convenience sample since the participants also consented to the study.

The results for the variables of interest were determined using a bivariate analysis. First, to test normal distribution, a histogram was created for each variable and was observed to have a normal bell curve. A Kolmogorov-Smirnov test was also conducted to test for linearity. Secondly, a scatterplot was created to visually represent the degree of linearity and homoscedasticity. Finally, a box-and-whisker plot was created to check for outliers. The significance level was set at .01 due to the use of a Bonferroni. Since this study tested four hypotheses, the alpha level, .05, was divided by four to control for null hypotheses to be significant purely by chance. This test is also used when false positives may be a problem. The study looked to see if the correlation is <.01, meaning this would be considered statistically significant (Green & Salkind, 2011) and the null hypothesis would be rejected. Results reported in Chapter Four include all assumption tests, the descriptive statistics, the degrees of freedom, significance level, and the Cohen's convention for effect size and power.

CHAPTER FOUR: FINDINGS

Research Question

The research question for this study is:

RQ1: What is the relationship between sense of coherence as measured by the Sense of

Coherence (SOC-13) Questionnaire and school connectedness as measured by the School

Connectedness Survey of online public high school students?

Null Hypotheses

H_01: There is no statistically significant correlation between an online public high

school's students' sense of coherence score their school connectedness score.

H_02: There is no statistically significant correlation between an online public high

school's students' *comprehensibility* score and their school connectedness score.

H_03: There is no statistically significant correlation between an online public high

school's students' *manageability* score and their school connectedness score.

H_04: There is no statistically significant correlation between an online public high

school's students' *meaningfulness* score and their school connectedness score.

Descriptive Statistics

Data collected from 83 students enrolled in an online public high school were entered

into SPSS. Of the participants completing the survey ($n = 83$), 23 (28%) were male and 60

(72%) were female. African-Americans represented 55% of respondents, with Hispanics as the

second largest group (12%) and Whites as the third largest group (11%) (see Table1).

Table 1

Ethnicity of Students

Ethnicity	*n*	*% of n*
American Indian/Alaskan Native	1	1
Asian or Pacific Islander	5	6
Black, Non-Hispanic	46	55
Hispanic	12	15
Multiracial	9	11
White, Non-Hispanic	10	12
	83	100

Ages of the participants ranged between 14 and 18 with age 16 being the most reported (35%) followed by age 17 (29%) and 15 (28%). Participants age 14 and 18 totaled only seven responses (8%). Grade twelve had the most participants, 32 (38%), followed by grade eleven with 28 (34%) participants and grade ten with 23 (28%). Of the 83 participants, 10 (12%) have never attended a traditional brick and mortar school. The years the participants have attended an online school are reported in Table 2.

Table 2

Years Enrolled in an Online School

Total Years Enrolled	*n*	*% of n*
1	6	7.2
2	17	20.5
3	21	25.3
4	13	15.7
5	5	6.0
6	6	7.2
7	4	4.8
9	1	1.2
11	2	2.4
12	6	7.2
13	2	2.4
	83	100

Participants stated many reasons for deciding to enrolled in school online. The most

common was to get a head start for college (*n=67*). Other reasons are reported in Table 3.

Table 3

Why Enrolled in an Online School

Reason	n	% of n
Flexibility in Schedule	16	19
Get a Head Start for College	67	81
Get Away from Negative Peer Groups	9	11
Ability to Work at Own Pace	21	25
Focus on Work and Avoid Distractions	41	49
Need More Time to Master Concepts	12	14
Escape Bullying	9	11
Access New Technology	21	25
Free or Reduced Internet Cost	10	12
Possibility to Get a Loaner Computer	7	8
Ability to Work Alone	32	39

Note: n equals the number of participants who chose this option. *n%* = n/83

Sixty-two percent (*n=51*) of the participants felt very comfortable using their computer,

tablet and/or smart phone, while 3% (*n=2*) did not feel comfortable at all. When the participants

were asked how comfortable they were using the school website to complete tasks, 92% (*n=76*)

felt comfortable or very comfortable as opposed to seven (8%) who did not feel comfortable.

Table 4 reports the type of technology the participants regularly use to complete school

assignments.

Table 4

Type of Technology Used to Complete School Assignments

Technology Type	n	% of n
Desktop Computer	19	23
Laptop Computer	44	53
Tablet	2	2
Smart Phone	18	22
	83	100

Fifty-five (66%) of the participants reported they use their computer, tablet and/or smart phone for educational purposes approximately two to four hours per day. Fifteen (18%) used the computer five to seven hours, and 10 (12%) used it more than eight hours. Only three (4%) reported using the computer less than one hour per day for educational use. The time spent using a computer, tablet and/or smart phone for social use was commonly five to seven hours ($n=28$, 34%) followed by eight or more ($n=26$, 31%) and two to four ($n=24$, 29%). Only five (6%) reported using their computer, tablet and/or smart phone less than one hour per day for social purposes.

Participants reported they met with more friends from their school face-to-face than they did virtually (via text, email, Snapchat, Facebook Messenger, etc.) by 3:1 on a regular basis. Of the participants who reported having a designated learning coach ($n=63$), 54% ($n=45$) felt very comfortable with their learning coach keeping them on task with school assignments. Only four (5%) felt neutral about their learning coach and no participant reported their learning coach as not being helpful.

Assumption Testing

The following assumptions were tested prior to the statistical analysis:

Normal Distribution

Normality was tested by first creating a histogram. Secondly, a Kolmogorov-Smirnov test was conducted since the sample size was over 50 participants. This test evaluates the data and determines if they are normally distributed (Green & Salkind, 2011). Normality was assumed since there was a symmetrical, bell-shaped curve as determined by the skewness and kurtosis for each variable. The results of each test are displayed below (Figure 1; Table 5.).
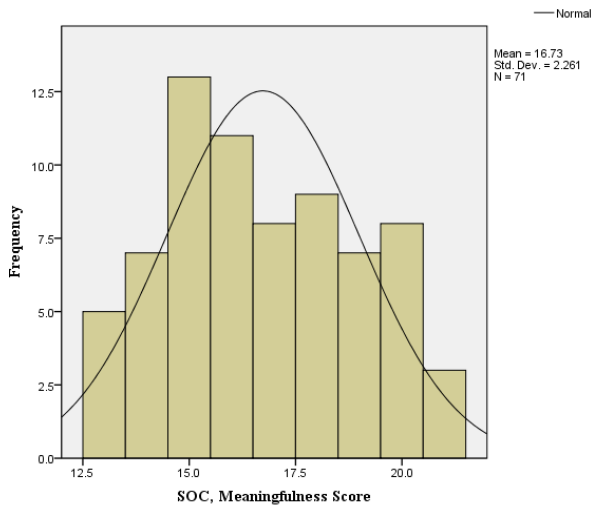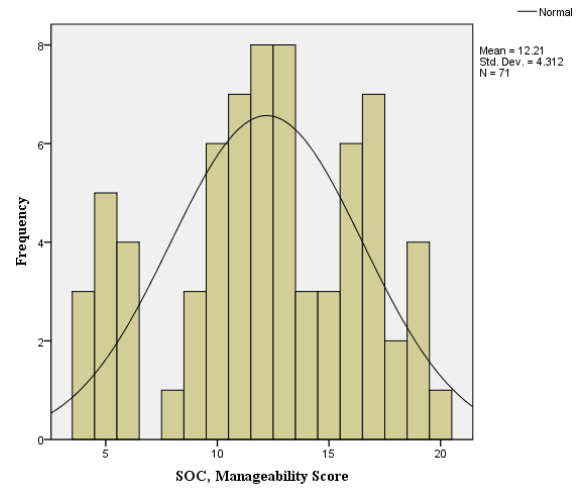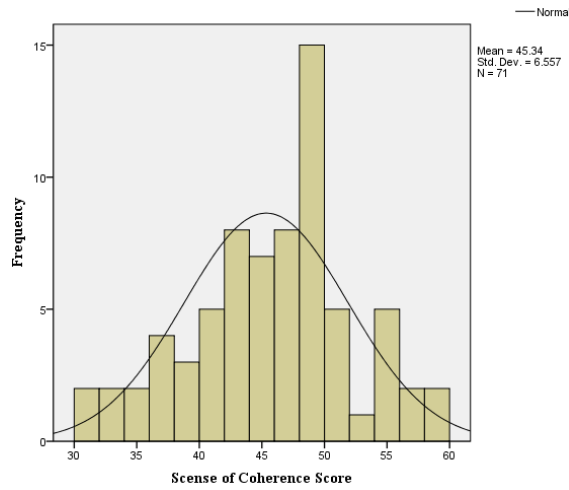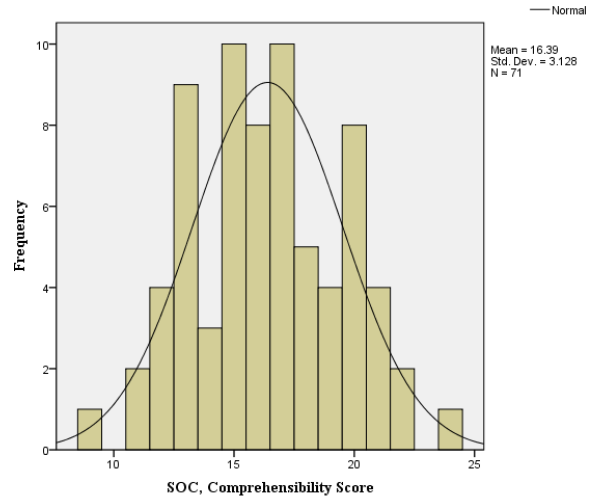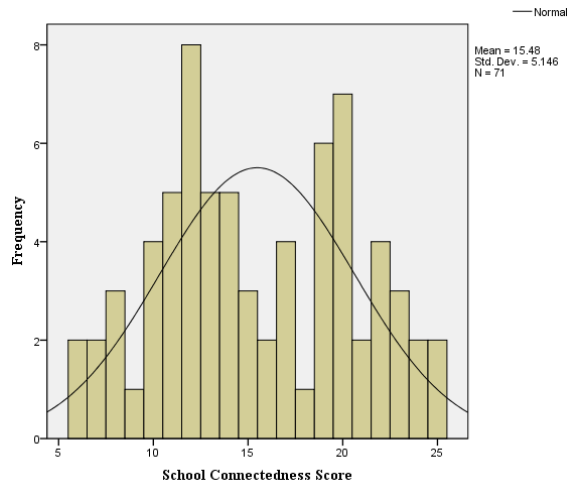
Figure 1. Histograms for variables.

Table 5

Skewness and Kurtosis of Bell Curve in Histogram Figures.

	Skewness	Kurtosis
School Connectedness	0.069	-1.042
Sense of Coherence	-0.241	-0.268
SOC, Comprehensibility	.083	-0.500
SOC, Manageability	-0.266	-0.727
SOC, Meaningfulness	0.175	-0.992

Independent Observations / Random Samples

This test was met since each variable has its own normally distributed scores. The

sample was drawn from participants who chose to participate in the study.

Linearity

Scatterplots were created for each hypothesis and a line of best fit was included to check

for linearity (Figures 2–5). The scatterplots are important because they also show if there is a

positive or negative correlation or no correlation. They also provide a descriptive picture of the

relationship. In addition, the scatterplot and line of best fit also show any outliers that may

influence the relationship (Green & Salkind, 2011). Outliers were also examined with a box-

and-whisker plot. The straight lines indicate the line of best fit, showing the assumption of

linearity is justifiable.
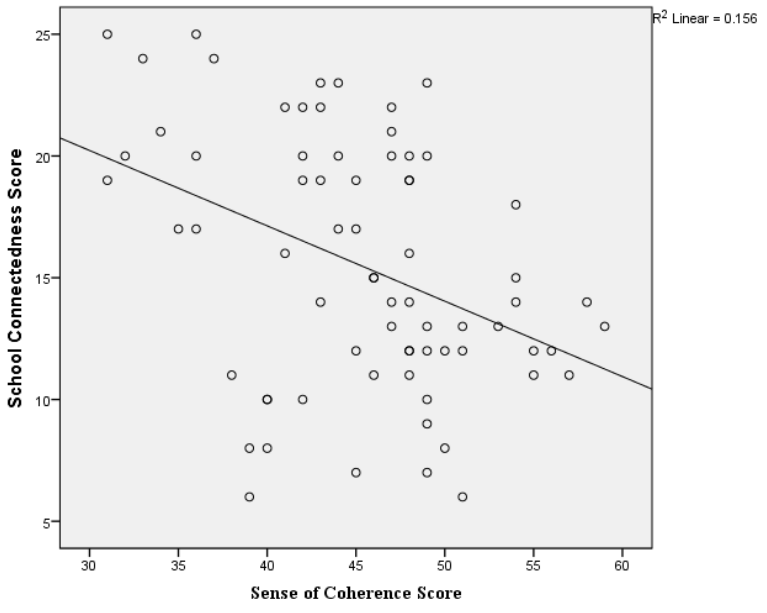
Figure 2. Scatterplot showing line of total fit for School Connectedness and Sense of Coherence

Score variables.
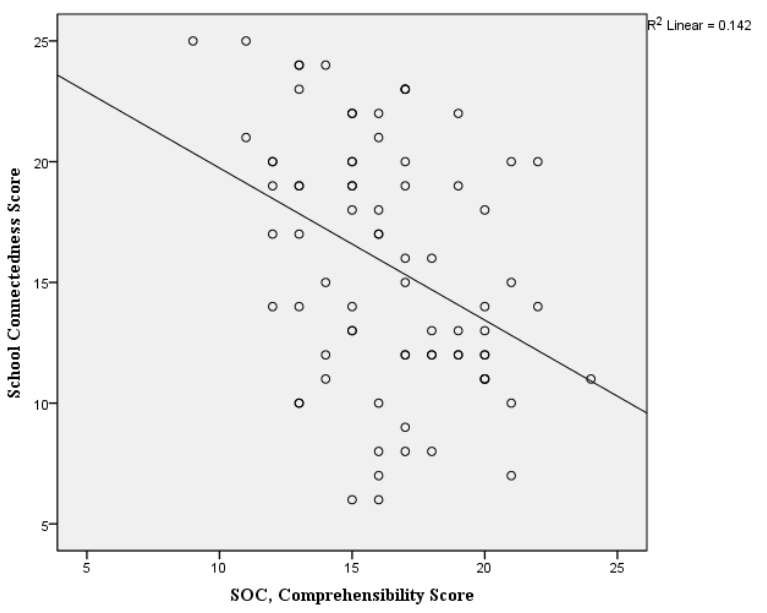
Figure 3. Scatterplot showing line of total fit for School Connectedness and Sense of Coherence

Score, Comprehensibility variables.
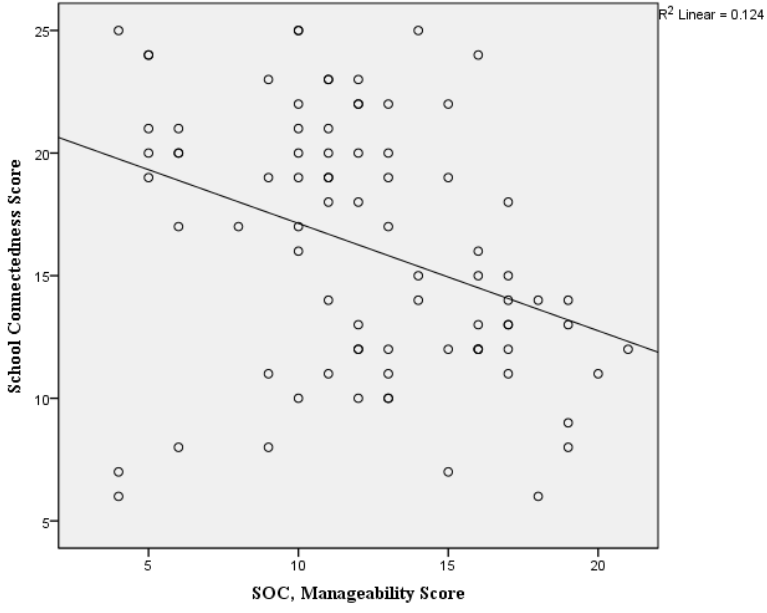
Figure 4. Scatterplot showing line of total fit for School Connectedness and Sense of Coherence Score, Manageability variables.
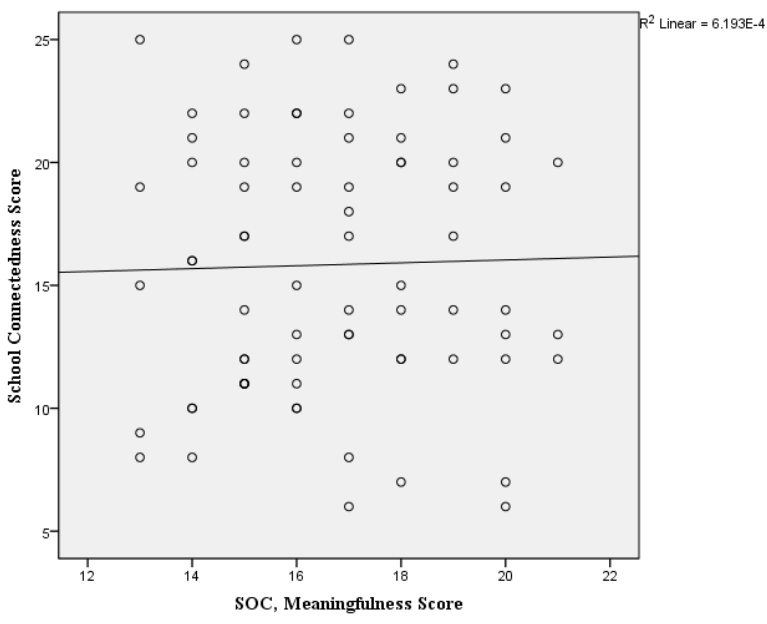
Figure 5. Scatterplot showing line of total fit for School Connectedness and Sense of Coherence Score, Meaningfulness variables.

Outliers

A box-and-whisker plot was created for each variable to determine if there were any outliers. The variables included the school connectedness score, the sense of coherence total score, sense of coherence comprehensibility score, sense of coherence manageability score, and the sense of coherence meaningfulness score. The presence of an outlier, an extremely high or low score, would distort the results and lead to misinterpretations of the data (Gall et al., 2010). During initial data entry, it was found some outliers did exist due to portions of the questionnaire not fully completed, resulting in a score lower than the minimum score possible. After the questionnaires with incomplete answers were removed from the data, as shown in Figures 6–10, no outliers existed.
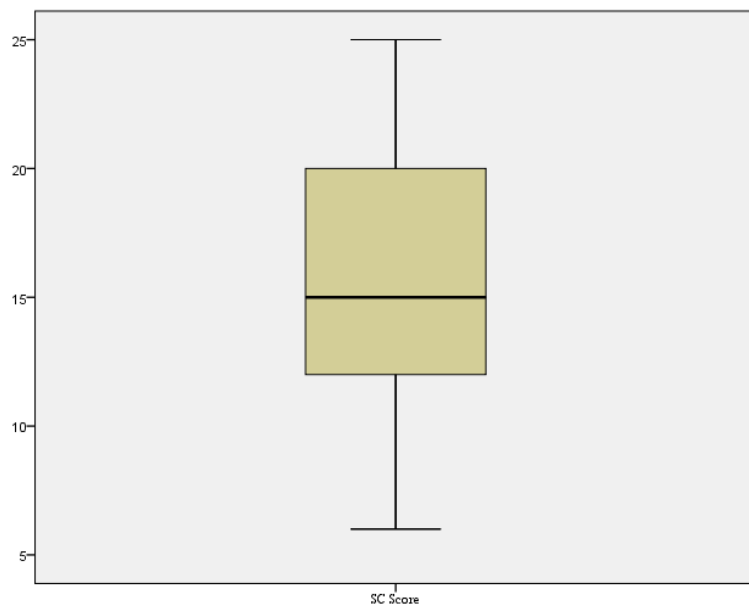
Figure 6. Box-and-Whisker Plot for School Connectedness Score showing no outliers.
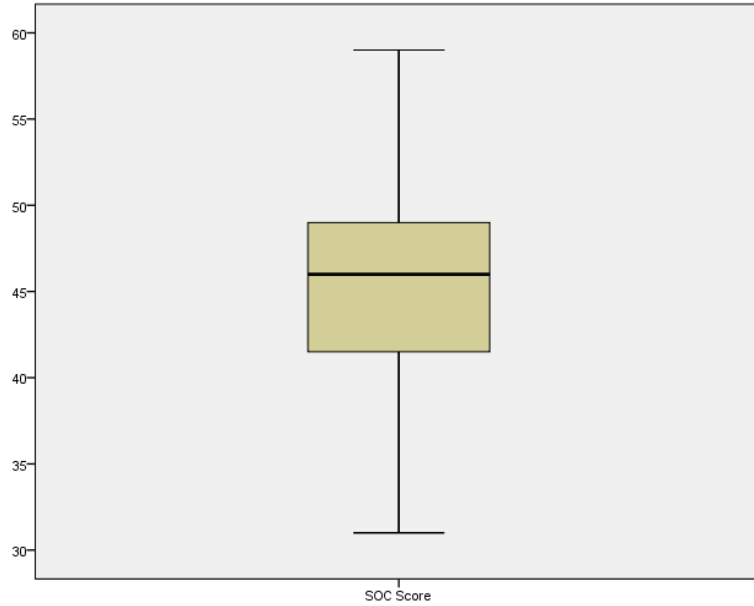
Figure 7. Box-and-Whisker Plot for Sense of Coherence Score showing no outliers.
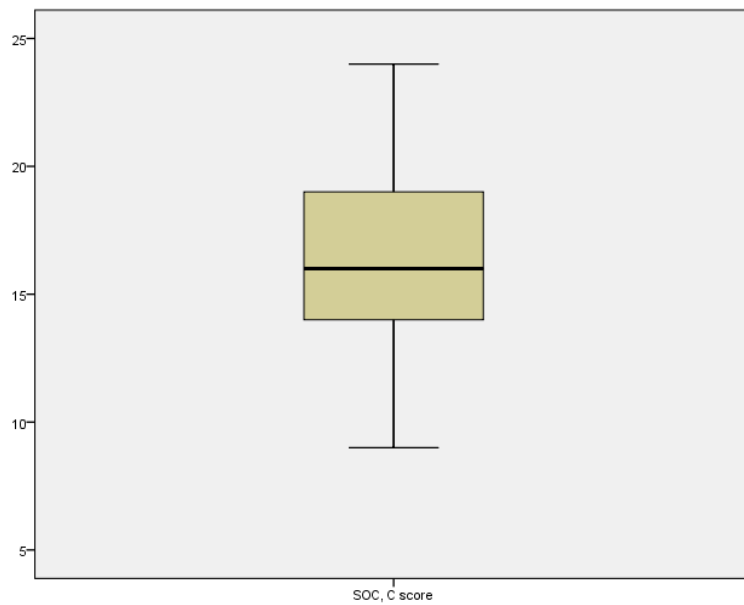
Figure 8. Box-and-Whisker Plot for Sense of Coherence, Comprehensibility Score showing no outliers.
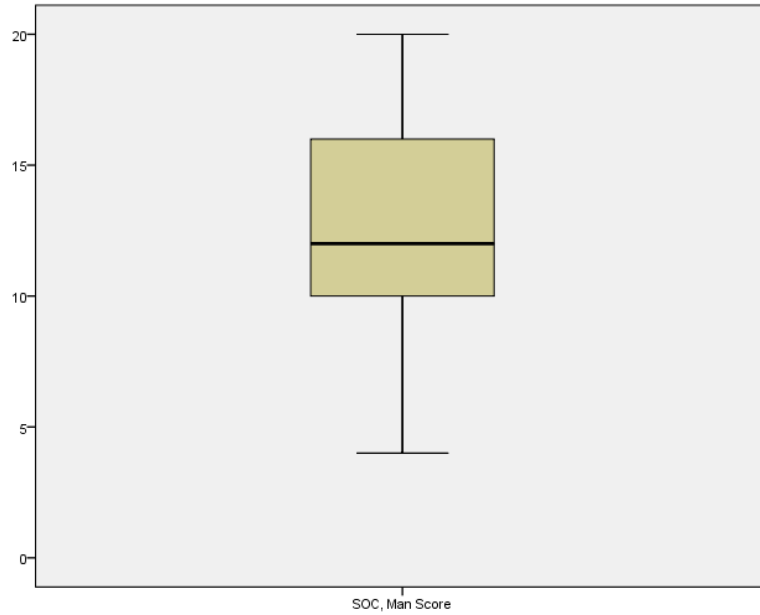
Figure 9. Box-and-Whisker Plot for Sense of Coherence, Manageability Score showing no outliers.
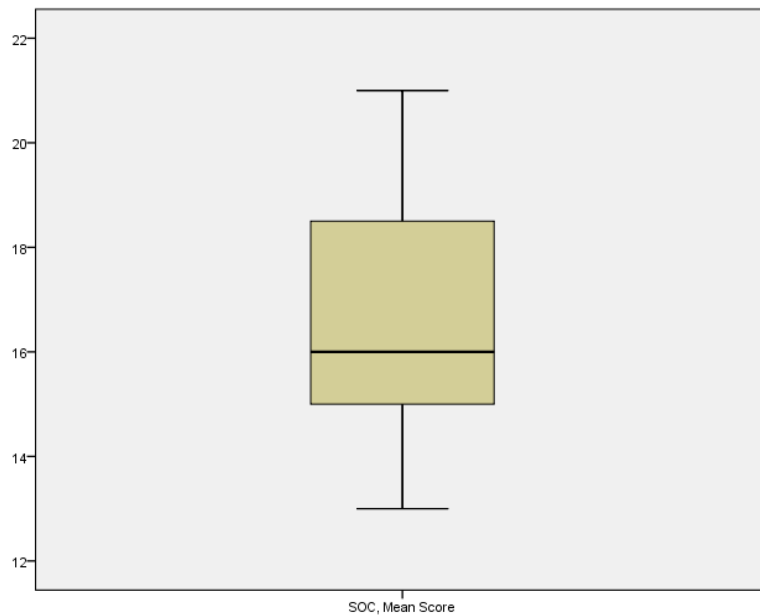
Figure 10. Box-and-Whisker Plot for Sense of Coherence, Meaningfulness Score showing no outliers.

Results

The study hypotheses were tested using a Pearson's correlation coefficient and bivariate analysis. After the assumptions tests previously mentioned were performed, a bivariate correlations box was created with significant correlations noted (Table 5). Significance was examined to see if $p < .01$ due to the Bonferroni correction that is used to control the familywise error rate. This also controls for the null hypothesis to be significant purely by chance. The Bonferroni correction was used since multiple tests were being performed simultaneously. The adjustment was made by dividing the alpha level, .05, by four. This controlled for the null hypotheses to be significant purely by chance.

Table 6

Bivariate Correlations

		SC Score	SOC, C Score	SOC, M Score	SOC, M Score	SOC Score
SC Score	Pearson Correlation	1	-.376*	-.352*	.025	-.394*
	Sig. (2-tailed)		.001	.001	.832	.001
	N	82	77	82	75	71

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

Due to the nature of the questionnaire used, having a participant decline to answer a question resulted in the responses from their questionnaire for that section being excluded. Otherwise, without all answers being provided, a complete total for each score could not be computed, thus artificially depressing the overall score. This would, in turn, impact the results of the research study. The mean and standard deviation for each questionnaire are found in Table 6 along with the total of fully completed questionnaires (*n*).

Table 7.

Means and Standard Deviations

	Mean	Std. Deviation	n
SC Score	16.18	5.287	82
SOC, C Score	16.33	3.056	78
SOC, Man Score	12.17	4.231	83
SOC, Mean Score	16.71	2.208	76
SOC Score	43.35	6.511	72

Null Hypothesis One

A Pearson's product-moment correlation coefficient was conducted to evaluate the null

hypothesis that there was no significant relationship between an online public school's students'

sense of coherence score and their school connectedness score. Preliminary analysis showed

there were no violations in the assumptions of normality, linearity, or homoscedasticity. It was

found that there was a negative association between the sense of coherence (comprehensibility,

manageability, and meaningfulness) score (M = 45.35, SD = 6.51) and school connectedness

score (M = 16.18, SD = 5.29), and the analysis resulted in r (69) = -.394, p < .001. The degree of

freedom is 69 because the actual number of fully completed SOC-13 questionnaires returned was

71 and one degree of freedom was subtracted for each variable. The Pearson's product-moment

r of -.394 is evidence of a medium effect size, a measure of the strength of the relationship

between the variables measured. The p value obtained shows that the relationship was

significant since the confidence level was over 90%. As a result, this null hypothesis was

rejected.

Null Hypothesis Two

A Pearson's product-moment correlation coefficient was conducted to evaluate the null

hypothesis that there is no significant relationship between an online public school's students'

comprehensibility score and school connectedness score. The Pearson's product-moment

correlation coefficient was employed because it measures the strength of the relationship

between the variables measured. Preliminary analysis showed there were no violations in the

assumptions of normality, linearity, or homoscedasticity. It was found that there was a negative

association between the sense of coherence *comprehensibility* score ($M = 16.33$, $SD = 3.06$) and

school connectedness score ($M = 16.18$, $SD = 5.29$), and the analysis resulted in r (75) = -.376, p

< .001. The degree of freedom is 75 because the actual number of fully completed SOC-13

comprehensibility questionnaires returned was 77 and one degree of freedom was subtracted for

each variable. The Pearson's product-moment r of -.376 is evidence of a medium effect size.

The p value showed that the relationship was significant since the confidence level was over

90%. As a result, this null hypothesis was rejected.

Null Hypothesis Three

A Pearson's product-moment correlation coefficient was conducted to evaluate the null

hypothesis that there is no significant relationship between an online public school's students'

manageability score and school connectedness score. Preliminary analysis showed there were no

violations in the assumptions of normality, linearity, or homoscedasticity. It was found that there

was a negative association between the sense of coherence *manageability* score ($M = 12.17$, SD

= 4.23) and school connectedness score ($M = 16.18$, $SD = 5.29$), and the analysis resulted in r

(80) = -.352, p < .001. The degree of freedom is 80 because the actual number of fully

completed SOC-13 manageability questionnaires returned was 82 and one degree of freedom

was subtracted for each variable. The Pearson's product-moment r of -.352 is evidence of a

medium effect size. The p value showed that the relationship was significant since the

confidence level was over 90%. As a result, this null hypothesis was rejected like the first two

null hypotheses.

Null Hypothesis Four

A Pearson's product-moment correlation coefficient was conducted to evaluate the null

hypothesis that there is no significant relationship between an online public school's students'

meaningfulness score and school connectedness score. Preliminary analysis showed there were

no violations in the assumptions of normality, linearity, or homoscedasticity. It was found that

there was little association between the sense of coherence *meaningfulness* score (M = 16.71, *SD*

= 2.21) and school connectedness score (M = 16.18, *SD* = 5.29), and the analysis resulted in *r*

(73) = .025, *p* = .832. The degree of freedom is 73 because the actual number of fully completed

SOC-13 meaningfulness questionnaires returned was 75 and one degree of freedom was

subtracted for each variable. The Pearson's product-moment *r* of .025 is evidence of a small

effect size. The *p* value shows that this relationship was not significant since the confidence

level was over 50% but under 90%. As a result, this null hypothesis was not rejected.

CHAPTER FIVE: DISCUSSION, CONCLUSIONS, AND RECOMMENDATIONS

Discussion

The purpose of this quantitative correlational study was to consider the relationship between the Sense of Coherence and School Connectedness scores for students in an online public high school in northeast Ohio. One research question was developed into four null hypotheses that considered the Sense of Coherence score, the comprehensibility portion of the Sense of Coherence score, the manageability portion of the Sense of Coherence score, and the meaningfulness portion of the Sense of Coherence score. For each of these sections, the relation to the School Connectedness score was investigated.

The first null hypotheses, that there is no statistically significant correlation between an online public high school's students' Sense of Coherence (comprehensibility, manageability, and meaningfulness) score and School Connectedness score, was rejected, as a negative correlation ($r = -.394$) was found. This contradicts studies conducted by Kidger et al. (2012), McNeely and Falci (2004), and Greenberg et al. (2003), which found students who are connected to school also have a positive outlook. Rivera et al.'s (2012) study, which found adolescent students who were connected to their school had a greater sense of coherence, was also contradicted.

As found by Emerson and MacKay (2011), online school students may experience stress and have negative feelings because they may be unfamiliar with the online learning system and have to exert more effort to become connected to the school. Although many of the participants had attended an online school in the past ($n=73$), the majority of the participants had only attended an online school for two to four years ($n=51$). This study's focus on online students may be why there is a difference of results between this study and Rivera et al.'s (2012) work, as their study did not include online students.

There were also similarities between this study and Lester, Walters and Cross's (2013) and Shochet, Dadds, Ham and Montague's (2006) studies, which found that as students increase in grade level, their anxiety also increases. However, unlike Lester, Walters and Cross's (2013) study, which found school connectedness also increases, this dissertation did not support that conclusion.

The second null hypothesis, that there is no statistically significant correlation between an online public high school's students' Sense of Coherence *comprehensibility* score and School Connectedness score, was also rejected and shown to have a negative correlation ($r = -.376$). Comprehensibility refers to how individuals perceive various stimuli and if they can predict the outcome of the stimuli (Geyer, 1997). Antonovsky and Sagy (1986) expect adolescents to have a weaker sense of coherence since they cannot predict outcomes as easily as older adults. Their weaker ability to predict outcomes is due to the way in which their stress increases as they try to develop a sense of who they are and orient themselves to society.

The questions asked in the comprehensibility portion of the sense of coherence questionnaire deal with the feelings of surprise, unfamiliarity, confusion, doubt, and change. Perry and Pilati (2011) noted that students who feel connected to their schools perceive that their school provides many resources for them and an atmosphere of collaboration. Although many students in the study scored highly in school connectedness ($M = 16.18$), there were still many who had a low comprehensibility score ($M = 43.35$). This result supports Slagter van Tryon and Bishop's (2012) study, which found a negative pattern when there was no structure in the learning process. Since many students are enrolled in the school to get ahead for college ($n=67$) those students may feel the school is the best choice since it is preparing them for college coursework, giving them a connection to the school. However, they may also find the learning

system confusing or unfamiliar if they are newly enrolled, which may create a disconnection with the school.

Null hypothesis three, that there is no statistically significant correlation between an online public high school's students' Sense of Coherence *manageability* score and School Connectedness score, was rejected due to the negative correlation found ($r = -.352$). Manageability refers to how a person reacts to available resources to meet his or her needs (Geyer, 1997). The resources mentioned in the manageability portion of the sense of coherence questionnaire refer to the teachers, administration, and the student's peers.

Because students want to have a sense of belonging to their school (Scrimin et al., 2016; Turvey, 2006), it is interesting to note that the mean score for this section was 12.17. This result indicates that many students who participated in this study felt as though they were being treated unfairly or were disappointed by their teachers and peers. This finding also contradicts Greenhow's (2011) study, which determined the more connected a student is to their online school, the more resources they have, including a greater number of teachers. Yet, if the teachers do not actively engage the students, the students will easily lose motivation and their connection to the school (Park & Choi, 2009). This also holds true for technology for the student. The students need to see the technology they use at school as a viable resource that supports the academic experience (Huddlestone & Pike, 2008). As explained in the previous chapter, 66% of the participants in this study used their computer, tablet, or smart phone approximately two to four hours a day for educational purposes, with 61% feeling very comfortable using these devices. And, nearly all the participants (92%) felt very comfortable navigating the school's website for educational purposes. Although the students were comfortable navigating the school's website for educational purposes, students' learning styles are based on the way they

interact with the website and perceive how it can help them. Since the manageability portion of

the sense of coherence looks at how individuals react to resources to meet their needs, there may

be a negative correlation between sense of coherence and school connectedness because even

though many students are familiar with social media technology, they do not see those skills

obtained as transferable to the classroom (Saeed et al., 2009) and vice versa.

That there is no statistically significant correlation between an online public high school's

students' Sense of Coherence *meaningfulness* score and School Connectedness score was the

fourth null hypotheses. This hypothesis was not rejected since $r = .025$. The meaningfulness

portion of the sense of coherence questionnaire addresses how one thing can help the respondent

in the future and whether it is viewed as worthwhile (Geyer, 1997). This section asked questions

regarding academic goals, how much one cares about school, and if what is done at school

matters. As explained by Geyer (1997), those who are happy and decided to learn should also be

connected to their school. However, this is not always the case, as some students may value

school and the various activities associated with it but do not feel they have a connection to the

school. This idea was also supported by Salikhova's (2015) study which reported some

adolescents' perceived value on meaningfulness of life is lower than those of an adult. Yet, they

still want to have a connection with school.   There may also be no correlation since

meaningfulness in adolescents does not necessarily coordinate to motivation and connectedness

(Davis, Kelley, Kim, Tang, & Hicks, 2016). The connection to the school may be because due to

factors such as receiving a loaner computer or free internet costs (see Table 3) or another

variable not discovered in this study.

Conclusion

Students surveyed in this study provided new data to demonstrate that a high sense of coherence does not always correlate to high school connectedness. The negative correlation for the overall scores also shows adolescents who attend an online school may not be able to cope with the stressors of everyday life. Antonovsky (1993) found an increase in a person's sense of coherence may be due to a strong social support. However, in this study, it was found students who had a high score in school connectedness had a low sense of coherence score, which may be due to the students having a sense that they need to please the administration and teachers or feel they do not understand the material. It was also found students enrolled in the school may not find meaningfulness in the school but are still connected to it because of their friends at the school.

Emerson and MacKay (2011) found students enrolled in online schools do feel more stress because of the effort put forth to be successful. This finding is similar to this study, which showed 81% of the students participating in this study enrolled as a way to get ahead for college. And, even though they may feel connected to the school, Emerson and MacKay's work would indicate that they may have higher stress as they try to succeed academically.

Even though 92% of the participants reported feeling very comfortable using their school website to complete assignments and 62% reported feeling very comfortable using their computer or smart phone, students may still find learning over the Internet difficult (McFarlane, 2011). Experts (Callaway, 2012; Huddlestone & Pike, 2008; Mahle, 2011; Martens et al., 2007; Matuga, 2009; Saeedet al., 2009; Roblyer, 1999) indicate that the administration of the school need to see that students are engaged and instructors should make the course material interactive. As applied to this study, and the low sense of coherence score found, the school in this study

may not engage and interact with the student effectively. This can create feelings of isolation and possibly cause more stress for the student (Reid et al., 2009).

Many participants in this study also represented qualities of students who are thought to be most suitable for online learning. They are comfortable using their smart phones and other types of technology to complete assignments (see Table 4). As stated previously, they are familiar with technology and have a drive to succeed as noted by their willingness to get ahead for college and master concepts (see Table 3). Yet, these qualities may be what are causing the stress. And even though the participants in this study do connect with their peers, either face-to-face or online, the low scores on the sense of coherence portion ($M = 43.35$) of the questionnaire show there is a disconnect with teachers and administration.

Age is also a factor in this study since high school students, no matter the gender, have been shown to have a lower sense of coherence score than those in a university setting (Moksnes et al., 2011; Myrin & Lagerstrom, 2008; Vianio & Daukantaite, 2016) as well as less perceived meaningfulness (Davis et al., 2016; Salikhova, 2015). Adolescent students who have a high sense of coherence score who are enrolled in a traditional school tend to have a high school connectedness score as revealed in the study completed by Rivera, Garcia-Moya, Moreno and Ramos (2012). But, this dissertation project provides further insight as it also considered adolescents. It would appear that even though online students may feel connected to their school, they may also be stressed, resulting in a low sense of coherence score. This dissertation project also found even though the student may have a connection to the school, they may not find any meaningfulness behind it.

Implications

According to Academic Search Complete, there have been no research studies conducted which examined the relationship between the sense of coherence and school connectedness among high school students enrolled in an online public school. This study added to the research corpus and provided new data regarding the interaction of several key factors. The findings of this study were based on the results of a questionnaire completed by students enrolled in an online public school. Antonovsky's (1987) understanding of the Sense of Coherence Theory is borne out of the results of this research since he notes adolescents should have a weaker sense of coherence as compared to older adults since they see the world as less predictable. Also, Antonovsky and Sagy (1986) see the period of adolescence as a time when young people develop a sense of who they are, which may create more stress in their lives. The theory was also supported in past research studies of high school students which examined stress (Kristensson & Ohlund, 2005; Moksnes et al., 2011; Myrin & Lagerstrom, 2008).

This dissertation project also showed that even though students may have a lot of stress, they can still feel connected to their school, although they may not find any meaningfulness attending the school. In a review of literature, it was found that students can have strong feelings regarding their belonging to a community, including school (Osterman, 2000). This study found many students enrolled in the school interacted face-to-face outside of school with at least nine of their peers (*Mode* = nine or more), which is similar to other studies that found students feel more connected to their school when they connect with their peers (Millings et al., 2012). This finding indicates that the stress of the participants in this study does not have an effect on how connected they are with their school. It may be that the adolescents in this study also do not find

meaningfulness in attending the school. The connection to the school may develop from their relationships with their peers who also attend the school.

Limitations

Because of the correlational design of this study, causal relationships cannot be assumed between the two variables. This study failed to eliminate alternative explanations, including motivation and academic success, for the results. It is also impossible to assume the results of this study would be applicable to other online schools since a convenience sample was utilized. The sample was primarily black, non-Hispanic (55%). In future research, a broader spectrum of races could be incorporated. The results of this study was also generalized for this population. Variables that were not explored such as socioeconomic status, school and community dynamics, and cultural differences may produce different results. Another limitation to note in this dissertation project is the teachers in the school did not participate in the study. Therefore, the students' connection to the school could not be determined if they made a connection with their teachers.

Even the questionnaire may have produced limitations. The 13-question Sense of Coherence questionnaire (SOC-13) was utilized for this study. This instrument is similar to the 29-question Sense of Coherence questionnaire (SOC-29), as the Cronbach's alpha is .92 as compared to .95. However, if the 39-question questionnaire was utilized the results, may have been different. Due to the nature of self-reporting, students completing the questionnaire may not have honestly answered the questions. The high results of the school connectedness may be partially due to students having to return the surveys to the school for the researcher to pick up. Also, some students may not have answered the questions honestly to make them feel better about themselves since some questions dealt with disappointment and failure.

The results of the study may also have been different had individuals who did not participate responded to the survey. Since students in the online school need to set a good pace for themselves to finish assignments, students who are behind in assignments may have been less likely to participate. Additionally, the student's desire to please the researcher, teacher, or another person may affect the rate of participation as well as the honesty of the answers from those who did participate. Since the study also examined school connectedness, those students who did not feel connected may not have had the desire to participate. Another reason a student may not have participated is peer pressure from friends who were not participating or whose parents would not allow them.

Recommendations for Future Research

Because there is a significant increase in the number of online schools for students in grades K-12 (Hawkins et al., 2013), with nearly 17% of all students enrolling in online schools annually (Perry & Pilati, 2011), there are great opportunities to advance knowledge in this topic area. One approach is to examine different populations including students from various socioeconomic statuses and academic levels. Because a convenience sample was used in this study, examining specific groups of students would be recommended for future investigations. These groups could include students at private online schools, students in various grade levels, gifted students, and students enrolled in schools which offer additional support such as one-on-one tutoring or multiple technology use.

Another recommendation would be to recruit participants directly from a group of schools. This strategy might increase the number and spectrum of participants. This may also allow for differences in school curriculums. The location of the participants was determined due

to convenience for the researcher. However, if the area of the study was expanded, different results might be found.

Qualitative research designs could also be utilized which would allow the researcher to examine the personal perspectives of the students. A qualitative study would also take into account motivation, meaningfulness, and academic goals. Other issues which could be explored are peer, parental, and academic support. By utilizing these recommendations, further research may be able to build on this study to broaden the understanding of the relationship between sense of coherence and school connectedness of online public high school students.

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APPENDIX A

Letter to Heads of School Requesting Permission for Participation.

Dear Head of School,

I am writing to request permission to conduct research on students enrolled in your school. I am a doctoral candidate in the School of Education at Liberty University, Lynchburg, VA. The research I am conducting is to determine the relationship between sense of coherence and school connectedness among online high school students. Studies of this type have been completed before, but none in an online high school setting. This research will allow online schools to help enrolled students feel more connected to the school.

The study consists of having students complete the Sense of Coherence – Orientation to Life questionnaire (SOC-13) and School Connectedness with Demographics Survey. The survey consists of 34 questions and is completed in the student's home anonymously over the Internet via Survey Monkey or hard copy. It should take approximately 15 - 25 minutes to complete. I am asking that you send an email to the parents of high school students enrolled in your school, which will provide them with a link to the survey and the consent form. Although I would like the survey to be sent to all students enrolled in the school, I understand that some students are considered high risk and this study may not pertain to them. I would give you full rights to exclude them from the study. However, if this is done, I would need to know how many emails were not sent out and why.

The survey will need to be sent to the parents of the students since parental permission needs to be granted before their child, a minor, can access the survey. The students will also need to provide consent. Only my committee and I will have access to the information received from the students. In addition, at the conclusion of the study, student responses will be reported as a group results only.

Participation in this study is voluntary. Your decision whether or not to allow your students to participate will not affect the services you normally provide to the student. Your student's participation in the survey will not lead to the loss of any benefits. If permission is granted for your students to participate, the parents are free to refuse participation of their child. Even then, if your students agree to participate after gaining parental consent, they are free to end participation at any time.

Attached, I have provided you a copy of the survey, consent forms, and a sample email to send to parents asking permission of their child to participate in this research study.

Your approval to conduct this study will be greatly appreciated. I will follow up with a telephone call next week and would be happy to answer any questions or concerns that you may have at that time.

Thank you for your time and consideration in this matter. If you choose to grant permission, please provide a signed statement acknowledging your consent and permission for me to distribute this survey to students in your school on approved letterhead and kindly return it to me in the enclosed stamped envelope.

Yours Sincerely,

Brad Lee Hilliard
Liberty University, Lynchburg VA

APPENDIX B

Consent Letter from Participating School

June 5, 2015

To: Brad L. Hilliard
Re: Letter of Consent

Dear, Mr. Hilliard:

It was nice meeting with you to discuss your educational pursuits, as well as the research you will be conducting.

The ▮▮▮▮▮▮▮▮▮▮ would be delighted to assist your efforts, therefore I'm providing consent. The research and data collection is scheduled for the 2015-2016 school year. You will be permitted to distribute the survey and questionnaire to the students, and it's my goal to have at minimum 80% participation amongst those enrolled.

If you have any questions, please call me directly at ▮▮▮▮▮▮▮
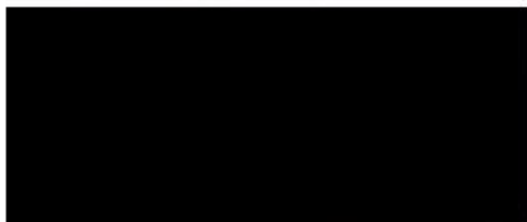
APPENDIX C

Letter to Parents Requesting Permission for Children to Participate

Dear Parent or Guardian,

Allow me to introduce myself. My name is Brad Lee Hilliard and I am a doctoral candidate in the School of Education at Liberty University, Lynchburg, VA.

This letter has been sent to you to inviting your child to participate in my research study. The study is looking at the relationship of sense of coherence and school connectedness of online high school students. A person's sense of coherence can be defined as the feelings they have and how they cope.

I hope to use what I learn from this study to be able to have a better understanding of how much a student feels they are connected to their school and how it related to their sense of coherence. Research conducted at higher education levels has shown that students who feel a connection to their school are less likely to be stressed, amounting to better overall health.

The study consists of having your child complete the Sense of Coherence – Orientation to Life questionnaire (SOC-13) and School Connectedness with Demographics Survey. The survey consists of 34 questions completed anonymously over the Internet via Survey Monkey using any Internet provider or hard copy. It should take approximately 15 - 25 minutes to complete.

Only my committee chairs and I, not the school your child is enrolled in, will have access to the information received from your child. In addition, at the conclusion of the study, responses will be reported as a group results only. I will be unable to determine who completed the survey. A summary of all the results will be made available if requested. If you are interested in this summary, please reply to this email with your mailing address.

Please note that participation in this study is voluntary. Your decision whether or not to allow your child to participate will not affect the services normally provided by the school. And, participation in the survey will not lead to the loss of any benefits for you. Even if you grant permission, your child is free to refuse to participate. If your child agrees to participate and begins to fill in the survey, they are free to decline to answer any question or end participation at any time. If your child logs off at any time while completing the survey, they will be unable to access it in the future. You and your child are not waiving any legal claims, rights, or remedies because of your child's participation in this research study. I also ask that you be available for your child at the completion of this survey of they have any questions. Any questions they may have that you may be unable to answer can be directed to me.

To grant permission for your child to participate in this study, please sign the attached consent form.

After granting permission for your child to complete the survey, your child must also sign their consent form.

Your approval for your child to complete the survey will be greatly appreciated.   Should you have any questions or desire further information, please call or email me. Thank you for your time and consideration in this matter.

Yours Sincerely,
Brad Lee Hilliard
Liberty University, Lynchburg VA

APPENDIX D

Parents/Guardians' and Participants' Consent Forms

<u>Relationship between the Sense of Coherence and School Connectedness among Online Public High School Students</u>

Conducted by:
Brad Lee Hilliard, Doctoral Candidate
Liberty University
School of Education

Thank you for logging on to allow your child to participate in this research study.

Your child is invited to be in a research study to examine the relationship of an adolescent's sense of coherence and school connectedness. In brief, a person's sense of coherence is how a person copes with the stressors of everyday life. Your child is selected as a possible participant because they are enrolled in an online high school. I ask that you read this form and ask any questions you may have before agreeing to let your child be in the study.

Background Information:

The purpose of this study is to determine if there is a relationship between the Sense of Coherence score and School Connectedness score among high school students enrolled in an online school. Although studies of this type have been completed before, none have been conducted with online high school students. Research conducted at the higher education level has shown students who feel a connection to their school are less likely to be stressed and have better overall health.

Procedures:

If you agree to allow your child to participate in this study, they will anonymously and voluntarily complete the Sense of Coherence – Orientation to Life questionnaire (SOC-13) and School Connectedness with Demographics Survey. This questionnaire and survey consist of 34 questions and will be completed online through the use of Survey Monkey taking 15 – 25 minutes to complete or on a hard copy. The data collected online will be encrypted and secured.

Risks and Benefits of being in the Study:

The risks of this research are minimal in that they are no greater than the risks your child will encounter in everyday life.

Although there are no benefits to your child, their participation will benefit society since they will be the first to be a part of a study looking at the relationship of sense of coherence and school connectedness for online high school students. This research will able be able to help online schools gain a better understanding of how connected students are to their school and why.

Compensation:

You or your child will not receive any type of compensation, monetary or otherwise, by participating in this research.

Confidentiality:

Only my committee and I, not the school your child is enrolled in, will have access to the information received from your child. In addition, at the conclusion of the study, responses will be reported as group results only. For three years the records of this study will be kept private under lock and key for hard copies and encrypted for data kept on the computer. After this time period the data will be destroyed and deleted. Also, any sort of report I publish will not include information making it possible to identify your child.

Voluntary Nature of the Study:

Participation in this study is voluntary and anonymous. Your decision whether or not to let your child participate will not affect your current or future relations with Liberty University and the school your child is enrolled. Your child is also free to not answer any question or withdraw at any time without affecting those relationships.

Contacts and Questions:

The researcher conducting this study is Brad Lee Hilliard. You may ask any questions you have before agreeing to this study. If you have questions now or later, **you are encouraged** to contact him at (please allow up to 48 hours for a response):

Brad Lee Hilliard   ████████ advisor
███████████████   ██████████████
████████████

If you have any questions or concerns regarding this study and would like to talk to someone other than the researcher, **you are encouraged** to contact the Institutional Review Board at Liberty University located at:

1971 University Blvd, Suite 1837
Lynchburg, VA 24515
irb@liberty.edu

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

Statement of Consent:

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

I have read and understood the above information. If applicable, I have asked questions and have received answers. I give consent for my child to participate in the study. If you would like your child to take the survey on paper form, please contact Brad Lee Hilliard and one can be sent to you along with a return envelope. Thank you for your time and consideration in this matter.

If you agree to the above information, please type your name and date in the space provided and click "YES". If you do not agree, you may click "NO" which will exit this survey.

Signature of parent or guardian: _____   Date: _____

Assent to Participate in a Research Study

First, let me introduce myself. My name is Brad Lee Hilliard and I am a doctoral candidate in the School of Education at Liberty University, Lynchburg, VA.

What is the name of my study?
The name of my study is: The relationship between the Sense of Coherence and School Connectedness among Online Public High School Students. Your sense of coherence can be defined as the way you cope with the stress of everyday life.

Why am I doing this study?
With your participation, I hope to have a better understanding of how a students sense of coherence is related to their connectedness to school. Research has shown students who feel a connection to their school are less likely to be stressed and have better overall health.

Why am I asking you to be in this study?
You are being asked to be in this research study because you are a high school student enrolled in an online school.

If you agree, what will happen?
If you agree to be in this study you will complete the Sense of Coherence – Orientation to Life questionnaire (SOC-13) and School Connectedness with Demographics survey along with information describing yourself. The survey and questionnaire consist of 34 questions and should take approximately 15 - 25 minutes to complete.

Only people overseeing my research and I will have access to your results, not your school. Even then, please note participation in this study is anonymous and voluntary. This means I will not know your name or any other personal information about you.

Do you have to be in this study?
No, you do not have to be in this study. If you want to be in this study, then you will type your name and date in the space below. You can say yes now and change your mind later. It's up to you. If you don't want to participate, it's OK to say no. All you would need to do is exit this screen or click "NO" below.

Do you have any questions?
You can ask questions any time. You can ask now. You can ask later. You can talk to me. If you do not understand something, please ask me to explain it to you. My contact information is listed below and was also provided to your parents.

If you agree to the above information, please type your name and date below and click "YES" which will direct you to the survey. If you do not agree, you may click "NO" which will exit this survey.

Typing your name below and clicking "YES" means that you want to be in the study.

Signature of Child _____Date _____

Researcher contact information:

Brad Lee Hilliard   ███████████ advisor
███████████████████   ████████████████████
████████████

Liberty University Institutional Review Board
1971 University Blvd, Suite 1837

Lynchburg, VA 24515
irb@liberty.edu

APPENDIX E

Permission to use Sense of Coherence – Orientation to Life Questionnaire

March 7, 2014

Doctoral Candidate Student Brad Hilliard
Liberty University
Lynchburg VA

████████████

Dear Dr Cand Student Brad Hilliard,

I hereby grant permission to use the 29-item version of the Sense of Coherence (Orientation to Life) Questionnaire, originally found in *Unraveling the mystery of health: How people manage stress and stay well*, by Aaron Antonovsky (Jossey-Bass Publishers, 1987), for use in your study on high school students.

The permission is granted upon fulfillment of the following conditions:

1. You may not redistribute the questionnaire (in print or electronic form) except for your own professional or academic purposes and you may not charge money for its use. If administered online, measures should be taken to insure that (a) access to the questionnaire be given only to participants by means of a password or a different form of limited access, (b) the questionnaire should not be downloadable, and (c) access to the questionnaire should be time-limited for the period of data collection, after which it should be taken off the server. Distributing the questionnaire to respondents via email is *not* permitted. Finally, any electronic version of the questionnaire which you may have for your research purposes (other than distribution to research participants) should be in PDF format including password protection for printing and editing

2. The questionnaire is intended for research purposes only, and may *not* be used for diagnostic or clinical use. By "diagnostic or clinical" it is meant that the SOC score cannot be the basis of any kind of physical, mental, cognitive, social or emotional diganosis or assessment of the respondent, and cannot direct therapeutic or medical decisions of any kind.

3. In any publication in which the questionnaire is reprinted, reference to the abovementioned source should be given, and a footnote should be added saying that the questionnaire is reprinted with the permission of the copyright holder.

4. The copyright of the Sense of Family Coherence Questionnaire remains solely in the hands of the Executor of the Estate of Aaron Antonovsky.

If possible, I would appreciate receiving a copy of any forthcoming paper concerning a study in which the SOC questionnaire has been used, for private use in building an SOC publication database.

Sincerely,

Avishai Antonovsky, Ph.D.
Estate of Aaron Antonovsky
Department of Education and Psychology
The Open University
Israel

On behalf of Avishai Antonovsky
Monica Eriksson, PhD, Associate Professor
Department of Nursing, Health & Culture
University West, Center on Salutogenesis
Trollhättan, Sweden

APPENDIX F

Sense of Coherence – Orientation to Life questionnaire (SOC-13) and School Connectedness with Demographics survey questions

The first five questions are for descriptive purposes only:

1) Are you male or female?

Male   Female

2) How old are you?

13   14   15   16   17   18   Other

3) What is your grade level in school?

9th   10th   11th   12th

4) What is your Zip Code?

5) What is your race?

American Indian/ Alaskan Native

Asian or Pacific Islander

Black, Non-Hispanic

Hispanic

Multiracial

White, Non-Hispanic

The following two questions are about your use of technology:

6) On average, how many hours per day do you operate your computer, phone or tablet for social and/or personal use (Facebook, Twitter, Snapchat etc)?

Less than 1   2 – 4   5 – 7   8+

7) How comfortable do you feel using your computer?

1   2   3   4   5

Not very comfortable   Very comfortable

The following nine questions are regarding you and your school:

8) Please check the grades you have attended an online school including your current grade

K   1   2   3   4   5   6   7   8   9   10   11   12

9) Please check the reason(s) you or your parents decided to enroll you in an online school

Flexibility in schedule

Interested in getting a head start on college education

Feel you do not fit in or want to get away from negative peer groups

Ability to work at own pace

Focus on work and avoid distractions

Seek extra attention from instructors
Need more time to master concepts
Escape bullying
Access to new technology and programs not offered in face-to-face school
Free or reduced Internet cost
Possibility to get a loaner computer and printer at no cost
Ability to work by yourself
Other (please list reason(s))

10) If you have attended a face-to-face school in the past, write one thing you miss the most from attending that school.

11) If you have a designated learning coach (or other person not employed by your school to help manage your school assignments and activities), how helpful do you believe they are at helping you stay connected to the school? Choose N/A if you do not have a learning coach.
1   2   3   4   5   N/A
Not very comfortable   Very comfortable

12) What type of technology do you regularly use to complete school assignments? Choose the one you use the most.
Desktop Computer   Laptop Computer   Tablet   Smart Phone

13) How comfortable are you using your school's website to complete assignments?
1   2   3   4   5
Not very comfortable   Very comfortable

14) How many hours per day do you operate your computer, phone or tablet for educational purposes (writing papers, searching the Internet for information, etc?
Less than 1   2 – 4   5 – 7   8+

15) How many friends at your school do you meet with face-to-face on a regular basis (at least 1-2 times a week)?
0   1-2   3-4   5-6   7-8   9+

16) How many friends at your school do you meet with virtually (text, email, Snapchat, etc) on a regular basis (at least 1-2 times a week)?
0   1-2   3-4   5-6   7-8   9+

The next five questions will ask about school connectedness. School connectedness refers to how much one feels that they are a part of the school community – this includes administration, teachers, staff, and their peers. Each question will have five choices you can chose. Be sure to read the choices before selecting your answer.

17) I feel I am a part of my school

1	2	3	4	5	Decline to Answer
Very much				Not at All	

18) I feel close to people at my school; this includes administration, teachers, staff, and my peers

1	2	3	4	5	Decline to Answer
Very much				Not at All	

19) I am happy to be enrolled at my school

1	2	3	4	5	Decline to Answer
Very much				Not at All	

20) I feel the online environment my school provides is safe from bullying and other abuse

1	2	3	4	5	Decline to Answer
Very much				Not at All	

21) I feel I am treated fairly by administration, teachers, staff and my peers in my school

1	2	3	4	5	Decline to Answer
Very much				Not at All	

The next five questions are about comprehensibility. Comprehensibility is the extent to which events are perceived as making logical sense, that they are ordered, consistent, and structured. Each question will have seven choices you can chose. Be sure to read the choices before selecting your answer.

After each question there is an option to write any comments on why you chose your answer.

22) Were you ever surprised by the behavior or comments of your teachers who you thought you knew well?

1	2	3	4	5	6	7	Decline to Answer
Never						Always	

23) When participating in school activities online, do you feel you are in an unfamiliar situation and do not know what to do?

1	2	3	4	5	6	7	Decline to Answer
Very often						Very seldom	

24) Other than not knowing the subject matter, do you often feel confused at school?

1	2	3	4	5	6	7	Decline to Answer
Very often						Very seldom	

25) When thinking of your school, do you sometimes think it is not the best choice for you?

1	2	3	4	5	6	7	Decline to Answer
Very often						Very seldom	

26) When things change at school that affect your learning (such as dealing with new technology), you have generally found:

1   2   3   4   5   6   7   Decline to Answer
You do not deal well   You deal well

The next four questions are about manageability. Manageability is the extent to which a person feels they can cope. Each question will have seven choices you can chose. Be sure to read the choices before selecting your answer.

After each question there is an option to write any comments on why you chose your answer.

27) Have your teachers and/or the school administration disappointed you?

1   2   3   4   5   6   7   Decline to Answer
Never   Always

28) Do you feel your teachers and administration treat you unfairly at school?

1   2   3   4   5   6   7   Decline to Answer
Very often   Very seldom

29) How often do you feel like you are not wanted at school by your teachers, administrators and peers?

1   2   3   4   5   6   7   Decline to Answer
Never   Very often

30) Other than academics, are there situations at school in which you feel you have no control?

1   2   3   4   5   6   7   Decline to Answer
Very often   Very seldom

The next four questions are about meaningfulness. Meaningfulness is how one feels that things makes sense, and challenges are worthy of commitment. Each question will have seven choices you can chose. Be sure to read the choices before selecting your answer.

After each question there is an option to write any comments on why you chose your answer.

31) How often do you not care about the activities that go on at your school?

1   2   3   4   5   6   7   Decline to Answer
Very seldom   Very often

32) Before enrolling in your online school, your academic goals have:

1   2   3   4   5   6   7   Decline to Answer
Not been clear   Been very clear

33) Doing the things you do every day for school is:

1   2   3   4   5   6   7   Decline to Answer

Satisfying   Boring

34) Do you feel there is little meaning in the things you do at school?

1   2   3   4   5   6   7   Decline to Answer

Very often   Very seldom

Please use the space provided below to write any comments regarding the questions on this survey or any additional information you may want to add.

This concludes the survey.

Thank you for your participation in this research study.

If you have any questions, please email Brad Lee Hilliard at ██████████████