UNIVERSITY STUDENT BELONGING SCALE:

DEFINING AND EVALUATING STUDENTS' SENSE

OF BELONGING TO THEIR UNIVERSITY

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Title of Study: UNIVERSITY STUDENT BELONGING SCALE: DEFINING AND EVALUATING STUDENTS' SENSE OF BELONGING TO THEIR UNIVERSITY

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Abstract: Students' Sense of Belonging (SoB) to a University is important because high levels of Sense of Belonging have a positive impact on students' motivation and retention. This mixed methods research design was developed to define Sense of Belonging to the University from the students' perspective, create a more comprehensive measurement tool for Sense of Belonging to the University, and investigate the impact involvement in Student Affairs programs may have on Sense of Belonging to the University.

The empirical analysis of the first phase of research led to the development of a new definition for Sense of Belonging to the University, and the themes identified within the data informed the development of the University Student Belonging Scale (USBS). Principal components analysis indicated a four-component structure was the best fit for the data: *Feelings that Impact Belonging* (20 items), *School Spirit* (13 items), *Social Connections at the University* (12 items), and *Academic Focus & Support* (9 items). Scores can be calculated for each component and as an overall score for Sense of Belonging to the University, with the final version of this 54-item measurement instrument.

The results in the evaluation phase indicate the program type (i.e., Student Affairs, Academic Affairs, or other groups) in which a student is involved can make a difference on their level of Sense of Belonging to the University. However, the number of Student Affairs programs in which a student is involved does not have an impact on Sense of Belonging to the University. An investigation into the differences between students who began attending classes prior to the Covid-19 pandemic and students who began attending classes during the Covid-19 pandemic revealed there was only a statistical difference between these groups for *Feelings that Impact Belonging*.

This research highlights the importance of a more comprehensive, validated instrument to measure Sense of Belonging to the University. The USBS can be used to answer research questions higher education administrators, policymakers, parents, and students want to know the answers to. These answers will inevitably lead to more effective support for university students and higher levels of Sense of Belonging to the University.

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CHAPTER I

INTRODUCTION

Background of Problem

Sense of Belonging

Colleges and universities strive to keep their students enrolled in courses for a variety of reasons including the desire to increase graduation rates, develop lifelong learners, and maintain a steady flow of income (O'Keeffe, 2013). Regardless of the reason, higher education administrators devote a significant amount of time on questions like: what causes students to leave? what indicators suggest a student may not persist to graduation? etc. One of the constructs floating around in these conversations, is the concept of Sense of Belonging to the university. Sense of Belonging has been defined multiple ways. Goodenow (1993) defines Sense of Belonging as, "the extent to which students feel personally accepted, respected, included and supported by others in the school environment." (p. 80). Sense of Belonging is also measured in settings outside of the University, and may more commonly be defined as, "the experience of personal involvement in a system or environment so that persons feel themselves to be an integral part of that system or environment" (Hagerty & Patusky, 1995, p. 9). Others have taken these definitions a step further and have attempted to identify the core elements of Sense of Belonging, such as belonging as a basic human need and its relation to the feeling that one matters (Knekta, Chatzikyriakidou, & McCartnery, 2020). While the overarching definition of Sense of Belonging may be agreed upon, there appears to be a lack of evidence on how the person experiencing the

phenomenon of belonging defines their personal belonging within the university structure. For example, a multitude of students may be able to say, “I belong here,” however when they are asked “why?” or “how?” their answers will naturally vary.

Figure 1

Maslow’s Hierarchy of Needs

Note. Maslow did not use the triangle imagery in his original theoretical framework, but many motivation theory experts have adapted his Hierarchy of Needs into structured images like the one above. (Jamali, 2015, https://samirajamali.wordpress.com/2015/06/08/maslows-hierarchy-of-needs/)

Based on Maslow’s (1943) Hierarchy of Needs, humans must have a Sense of Belonging before they can address needs pertaining to self-esteem or self-actualization. These later needs in Maslow’s theory are where knowledge attainment reside, which is the primary purpose of higher education. It is likely students who choose to pursue a college degree were attempting to fulfill a higher ranked need when they applied and enrolled because they had previously established a Sense of Belonging in an environment other than the college campus they will eventually land upon.

However, once they arrive on campus or begin taking classes, their Sense of Belonging has the potential to encounter disruptions which inevitably would have a direct effect on their ability to develop the needs of esteem and actualization. This is why helping students build a Sense of Belonging to their new environment is imperative, especially early in their transition.

Modern college life has a plethora of engagement opportunities that have the possibility of developing or impacting a student's Sense of Belonging. Some of these experiences include college athletics, student organizations, academic courses, religious groups, campus jobs, and many more. It is expected for a student athlete to feel some level of belonging to their respective sports team, however many students appear to demonstrate extreme levels of passion for their university by cheering on their team, whether that be in the stands or watching on television. Might this be a direct demonstration of their Sense of Belonging based on Goodenow's (1993) aforementioned definition because they may feel personally accepted, respected, and included by others in the school environment? Student organizations offer direct membership to a group of individuals working towards a common goal, which aligns with Hagerty and Patusky's (1995) more general definition of Sense of Belonging: the student becomes an integral part of the organization's system.

The Division of Student Affairs at most universities encompasses hundreds of student organizations including Greek lettered organizations, programming boards, student government, and special interest groups. Regardless of whether students hold a leadership role in said student organizations or they simply attend general member meetings, these groups of students innately make up a system to potentially build and maintain their Sense of Belonging. University faculty spend a tremendous amount of time establishing rapport with their students, and there is a significant amount of research on Sense of Belonging directly in the classroom that can be built upon (Kuh, Kinzie, & Schuh, 2010; Mayhew et al., 2016). Oftentimes, religious organizations are not directly affiliated with public universities, however students who seek out religious experiences with peers within the university are adding that onto their potential list of environments they may feel a Sense of Belonging to. Is it possible for a student to feel Sense of Belonging to their university because of their time

spent participating in an organization off campus? Employment during college is often vital to financial stability for students, and like any workplace, the environment can make or break a person's Sense of Belonging. One purpose of this study is to explore what organizations, within or outside of the university, that students attach a Sense of Belonging to and how that Sense of Belonging, either to the University or outside, affects university-related outcomes, such as retention.

Numerous measurement tools have been developed in an effort to measure Sense of Belonging. Some of the more generic instruments, such as the Sense of Belonging Instrument (SOBI; Hagerty & Patusky, 1995) and the General Belongingness Scale (GBS; Malone, Pillow, & Osman, 2011), have been used to measure Sense of Belonging among university students, however neither instrument has university specific questions (Hagerty & Patusky, 1995; Malone, Pillow, & Osman, 2011). These instruments can give administrators indicators of the pulse of Sense of Belonging among students at a certain point in time, but they do not indicate to what students feel a Sense of Belonging or provide data that is useful for making decisions regarding interventions in hopes of improving students' Sense of Belonging while at the university. One of the most popular instruments used to measure Sense of Belonging in the academic world is the Psychological Sense of School Membership (PSSM) created by Goodenow (1993). This particular instrument has been used to measure Sense of Belonging in K-12 settings as well as collegiate campuses for almost three decades, however the validation of this instrument has been challenged more often within the past ten years. The University Belonging Questionnaire (UBQ) is a more recent attempt at creating a measurement tool aimed at specifically measuring Sense of Belonging at the university level (Slaten et al., 2018). This instrument uses some items from aforementioned instruments as well as new items based on qualitative research conducted by the research team developing the new instrument. This particular measurement tool may prove to be beneficial to higher education administrators interested in measuring Sense of Belonging; however, more research needs to be done in order to prove its validity.

Many clever practitioners have been able to participate in the practice of measuring Sense of Belonging by adapting already existing measurement tools. The items included in the standard form of the PSSM are generic, but can easily be adapted to be university specific although there is still a primary focus on academic activities and faculty relationships (Abubakar et al., 2015). Knetka, Chatzikyriakidou, and McCartney (2020) adapted the PSSM to measure students' Sense of Belonging within the Biology department at their respective university. This approach is related to the present study because of how specifically it is attempting to measure the source of students' Sense of Belonging. Another unique method of studying the construct was used by Ahn and Davis (2020) to allow students to define their own Sense of Belonging using a method they coined as the 10 Words Question. Allowing for individuality in defining Sense of Belonging has the potential to be instrumental in identifying the source and development of university students' Sense of Belonging. This method resulted in identifying four domains of Belonging: academic engagement, social engagement, surroundings, and personal space (Ahn & Davis, 2020). This study did not develop a measurement instrument based on these domains, but the thematic results do suggest the potential for additional factors within the Belonging construct.

Statement of the Problem

Many programs and departments in higher education seem to say the students involved in their programs feel a greater Sense of Belonging because of their involvement (J.M. Day, personal communication, February 2020), but there is limited evidence of this because the most commonly used measurement tools for Sense of Belonging are not specific enough to identify the direct impact of a program and/or department. The first problem is a lack of definition of Sense of Belonging to the University from the students' perspective and identification of what program, organizations, etc. students feel a Sense of Belonging to. Most existing measurement tools for Sense of Belonging focus on general belonging to the University or belonging in the academic classroom setting (Abubakar et al., 2015; Hoffman, Richmond, Morrow, & Salomone, 2003; Slaten et al., 2018; Tovar & Simon,

2017). This study seeks to better understand the definition of Sense of Belonging within a University context beyond the classroom.

The second problem is a lack of a good measurement tool for measuring Sense of Belonging to the University. More research is needed to establish a measurement tool that accurately measures Sense of Belonging in a way that is useful for a variety of departments and units across campus in order to continue improving the collegiate experiences of students. The measurement of Sense of Belonging is often competing with other constructs such as loneliness, engagement, etc. Developing a measurement tool which directly measures Sense of Belonging for college students can help clarify between constructs.

The final problem is a lack of understanding between the specific entity in which students feel a Sense of Belonging to with academic outcomes. Further investigation is necessary in order to accurately identify the origination or stages of development of university students' Sense of Belonging. This clarification would be instrumental in providing practitioners and administrators with information that would allow them to develop high quality interventions in order to establish and/or develop a desirable Sense of Belonging for students leading to desirable university outcomes.

Purpose of the Study

This study has the following goals:

1. Define Sense of Belonging to the University from a university students' perspective.
2. Develop an instrument that can be used by a variety of departments and units at colleges/universities, including Student Affairs, Athletics, academic departments, etc., to measure Sense of Belonging to the University.
3. Evaluate the instrument and collect initial validity evidence supporting the proposed use of the tool.
4. Provide greater understanding of the relationship between the entity in which students feel a Sense of Belonging to with academic outcomes.

This new measurement tool will allow the participant to provide information that will help identify the source of their Sense of Belonging within the University context which should shed light on the possibility of programs, departments, and units having a direct impact on the development of students' Sense of Belonging and enhancing student outcomes.

Research Questions

The following questions will guide the framework of this study. Each question is organized into sub-categories which align with a different phase of the research design

- Research Design Phase 1: Definition
    - How do college/university students in the Southern Midwest region of the United States define Sense of Belonging to the University that they currently attend?
- Research Design Phase 2: Measurement
    - Is the measurement tool created in this study valid among university students?
- Research Design Phase 3: Evaluation
    - Does involvement in specific programs have an effect on Sense of Belonging to a University?
        a. Does the program type students are involved in make a difference in Sense of Belonging to the University?
        b. Do students who participate in Student Affairs programs feel a higher Sense of Belonging to the University than students who do not?
        c. Which programs in Student Affairs have more of an impact on Sense of Belonging to the University?
        d. What is the state of Sense of Belonging to the University after enduring the changes to college life as a result of the COVID-19 pandemic?

Significance of the Study

Sense of Belonging is an important construct for institutions of higher education because theory demonstrates one must have a Sense of Belonging before they can attain a large body of new knowledge. Furthermore, a positive Sense of Belonging is proven to increase rates of persistence as well as academic performance (Appleton et al., 2006; Astin, 1984; You et al., 2011). It is important for universities to care about students' Sense of Belonging because without people who belong, universities are unable to fulfill their main purpose: teaching skills that benefit the workforce, society, and person.

The majority of measurement instruments for Sense of Belonging at the college level primarily focus on relationships with academic departments and faculty (Abubakar et al., 2015; Hoffman, Richmond, Morrow, & Salomone, 2003; Knekta, Chatzikyriakidou, & McCartney, 2020; Slaten et al., 2018). This study would investigate where students' Sense of Belonging to the University comes from (i.e. what programs, organizations, departments) and specifically the impact Student Affairs programs have on Sense of Belonging. The common conversation among Student Affairs departments in higher education has recently shifted from student engagement to student Sense of Belonging, and it is likely many universities will begin to make an attempt at measuring Sense of Belonging and reporting it as a comparable measure. It is important for administrators to have a validated measurement tool that answers the questions they truly want answered, rather than make bold assumptions based on generic data.

Assumptions

The following assumptions are made for this study:

- It is assumed the COVID-19 pandemic has had an impact on college students' Sense of Belonging to the University. This study may address the current state of participants' Sense of Belonging, but it will not be compared to data collected pre-pandemic.

- It is assumed that all participants have some familiarity with their respective college/university.
- It is assumed that all participants are giving honest feedback through their responses to survey questions.

Limitations

One of the most significant limitations of any study conducted during or immediately after 2020 is the impact of the COVID-19 pandemic. Within the University setting, students have likely spent more time isolated from friends, been forced to take courses online, and had fewer options of activities and involvement within the university. Access to participants, ability to execute methods, and the mental health capacity of participants all affect our ability to conduct quality research right now. While there may be limitations for conducting research because of the COVID-19 pandemic, there may also be limitations within the data. For example, forced isolation and campuses shifting into a virtual format have likely had an impact on participants' Sense of Belonging to their respective university. This situation has the potential to skew the data because students may be struggling with a variety of mental health conditions or not had access to opportunities that foster a higher Sense of Belonging that directly impact their ability to form a Sense of Belonging or report on it.

Another limitation of this study is the potential response rate from each university. Since research is conducted differently at each university, participants may be more or less accessible to participate in the study. While the goal is to gain an equal sample from each university included in the study, it may be difficult to get exactly equal samples. One last limitation is the possibility of participants having familiarity with the concept of Sense of Belonging and the role the concept plays among administrators on college campuses. Their possible familiarity may allow bias to be present in the study because of their past experiences or perceptions of the construct.

Summary

This study is presented as the final dissertation for Kayla Loper, Ph.D. student at Oklahoma State University in the Research, Evaluation, Measurement, and Statistics (REMS) program. Overall, the researcher seeks to utilize their skillset developed from completing coursework and passing comprehensive exams in order to more clearly define Sense of Belonging to students at colleges/universities in the United States and to create a psychometrically valid instrument that measures Sense of Belonging in a collegiate setting that can be useful to a variety of professionals on campus. The remaining chapters will cover a literature review pertaining to important topics of the study, a description of the methods that have been executed, results of all phases of research, and discussions based on the findings.

CHAPTER II

LITERATURE REVIEW

Existing Research

Sense of Belonging

Definitions

The term Sense of Belonging dates back to the 1950's when it was published as a main tenant of Maslow's (1943) Hierarchy of Needs. A variety of definitions exist for Sense of Belonging depending on the field of study it is being used in and during different points in time throughout the development of research on the topic. A review of the literature pertaining to Sense of Belonging demonstrates disagreement about a specific definition, however all definitions attempt to describe a psychological experience regarding the level of integration into a system (Strayhorn, 2019, p.19). The most widely used definition within education systems comes from Goodenow (1993): "the extent to which students feel personally accepted, respected, included, and supported by others in the school environment." (p. 80). The use of the word "extent" in this definition indicates the author's belief that Sense of Belonging is measurable. Additionally, this particular definition describes a one-way relationship, primarily focused on the students' feelings.

Other definitions describe more of a two-way relationship such as Anant's (1966) definition, "Sense of Belonging characterizes a person's perceived belief of indispensability within a system." The word "indispensability" indicates the system may rely on the Sense of Belonging of the people within it in order to be successful which differs from Goodenow's definition because there is no reference to the actual operation of the system in Goodenow's definition. Hagerty and Patusky (1995) developed a more general instrument to measure Sense of Belonging based on the definition, "the experience of personal involvement in a system or environment so that persons feel themselves to be an integral part of that system or environment." (p. 9). This definition, more often used outside of education systems, also references a two-way relationship between the person and the system.

Some researchers appear to be interested in defining more specific elements of Sense of Belonging. Strayhorn (2019) describes seven core elements of Sense of Belonging:

1) it is a basic human need;

2) it is a fundamental motive sufficient to drive behavior; needing to belong makes people act, and acting might increase belongingness;

3) context, time, and factors determine importance; for example, Sense of Belonging in a certain context has greatest influence on outcomes in that particular context;

4) it is related to the feeling that one matters, is valued, or is appreciated by others;

5) it is influenced by one's identities;

6) it leads to positive outcomes and success such as achievement, engagement, and happiness; and

7) it must be satisfied continuously and changes as circumstances and conditions change (p. 30).

The elements of particular interest for this study pertain to the possibility of Sense of Belonging influencing contextual outcomes and the influence of one's identities on the ability to develop a Sense of Belonging. Connections between Sense of Belonging and university outcomes will be discussed in a later section of this literature review, however it is important to make note of this mention in existing definitions of the term. A review of the related research does not indicate much has been done in regards to developing a measurement tool that allows participants to develop their own definition of their personal Sense of Belonging. Since Sense of Belonging is affected by each participant's own identities, a personal definition is important to research on the construct.

One of the most mainstream researchers on Sense of Belonging is the University of Texas' Brené Brown, who is known for her New York Times Bestselling books, *Daring Greatly*, *Braving the Wilderness,* and *Daring to Lead*, among others. Brown (2021) refers to the construct in this study as simply, "belonging," in her research, and it will be referenced in this way when mentioning her work. Much of Brown's (2021) research throughout her career has focused on the human emotions: connection, shame, and vulnerability; However, her research continuously, "bumped into belonging," due to the primal nature of the construct (p. 155). Her definition of Belonging is unique compared to other common definitions and is worth mentioning:

> True belonging is the spiritual practice of believing in and belonging to yourself so deeply that you can share your most authentic self with the world and find sacredness in both being a part of something and standing alone in the wilderness. True belonging does not require you to change who you are; it requires you to be who you are (p. 156-157).

This definition, more than others, alludes to the personal responsibility of Belonging. Brown (2021) often talks about the requirement to first be courageous and/or vulnerable before a person can belong to something greater than themselves (p. 159). Belonging is not the same as fitting in. A person can only belong if they are able to be their authentic self.

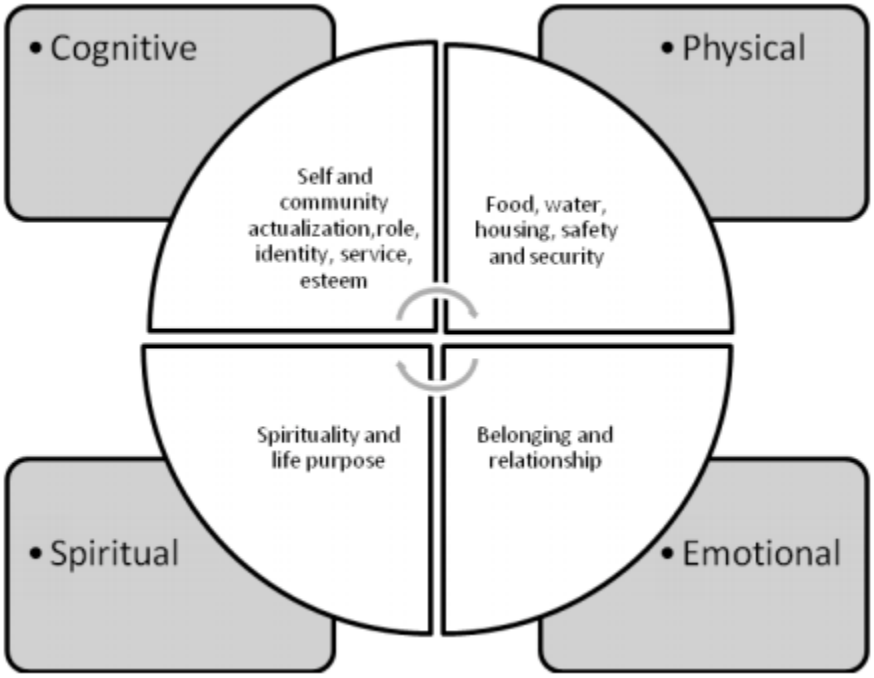
Motivation Theories

Many motivation theories identify the need to Belong, or have a higher Sense of Belonging, as foundational to human nature. Adler's (1931) motivational theory identifies the need to belong as something that begins as early as young childhood. Ferguson (2010) recognizes that, "to be human is to recognize that one's humanity rests on one's identity as a social being, an equal among equals" (p. 2). When humans do not feel that they belong in a group or are not treated equally compared to other people, they are less likely to be motivated to contribute to the group or any type of human community. This phenomenon often first occurs within a family unit. This also applies to University communities because the individual well-being of students can only be as good as the group well-being in which they belong.

Maslow's Hierarchy of Needs. Maslow's five-stage model is one of the most widely used motivation theories. The bottom levels of Maslow's pyramid are referred to as deficit needs (level 1-4), which allude to the idea that motivation comes from a place of having a deficit in one of these areas (McLeod, 2018). The top needs of the pyramid, in the category of self-actualization (level 5-7), are often referred to as growth needs which means motivation increases when these needs are met. Belonging is in the original third level of needs which comes after physiological (air, food, water, etc.) and safety, but before esteem (achievement, independence, etc.) and self-actualization (realizing potential, seeking personal growth, etc.). Maslow's theory has also been expanded to include cognitive (knowledge, understanding, etc.), aesthetic (beauty, balance, etc.), and transcendence (religious, sexual, etc.) needs which are all placed after belonging in the hierarchy. These additional needs are all considered growth needs. It is important to note that Maslow's motivation theory was greatly influenced by the Blackfoot Nation, one of the First Nations in Alberta, Canada (Bray, 2019). Maslow's version of this theory is based on a linear, Western worldview, while the native worldview is relational (Cross, 2007). A visual example of the relational version of this theory, Breath of Life Theory, is provided in Figure 2.

Figure 2

Breath of Life Theory



Note. (Bray, 2019, https://barbarabray.net/2019/03/10/maslows-hierarchy-of-needs-and-blackfoot-nation-beliefs/)

An understanding of this theory is important for this study because it demonstrates the necessity of a Sense of Belonging in order to live a productive human life. The purpose of higher education is to gain advanced knowledge in a specific career field as well as gaining a higher sense of independence. Based on Maslow's Hierarchy of Needs, students would struggle with motivation to gain knowledge and independence if they do not have some level of Sense of Belonging first. Accordingly, higher education administrators may consider investing in strategies that support higher levels of Sense of Belonging in order to support students' pursuit of a college degree.

Impact on Sense of Belonging

Demographics

Research demonstrates there are differences in the level of Sense of Belonging among college students based on a variety of demographic variables. It is important to consider the demographic makeup of each campus because the populations of students who express higher levels of Sense of Belonging will differ, as to be expected based on Strayhorn's (2019) fourth core principle of Sense of Belonging, context matters. It is common to start the analysis phase of research by looking at demographics. For example, one study sampling from multiple universities found African American/Black students on average had a lower Sense of Belonging as well as first-generation students compared to continuing-generation students (Duran, Dahl, Stipeck, & Mayhew, 2020, p. 142).

Environment

There is evidence that a variety of environmental situations have the potential to impact college students' level of Sense of Belonging. One environmental characteristic that is important to consider is the level of support a student receives from their advisor. Curtin, Stewart, and Ostrove (2013) found a significant relationship between advisor support and Sense of Belonging among doctoral students. This particular study demonstrated the positive impact of having a strong relationship with an academic advisor because the higher level of Sense of Belonging also coincided with a higher level of academic self-concept which describes a student's confidence in their ability to participate in academic activities (Curtin, Stewart, & Ostrove, 2013, p. 127). Duerr (2020) found students reported a higher Sense of Belonging when their faculty acknowledged the unique situation of being a commuter student (p. 71). Freeman, Anderman, and Jensen (2007) found students' social acceptance by peers and faculty was a positive predictor of Sense of Belonging, while Sense of Belonging in one class did not impact overall university Sense of Belonging suggesting the relationships with peers and faculty are a more important variable (p.

216). Even a supportive relationship with a student's parent(s) is able to predict the rate at which Sense of Belonging increases (Hausmann, Schofield, & Woods, 2007, p. 829).

Another environmental characteristic of particular interest by higher education staff members invested in co-curricular experiences is the level of involvement of college students. Typically, involvement is described as being familiar with a student's respective academic department or being involved with a student organization/program in Student Affairs. Duerr (2020) found students described their involvement as the activities that gave them a sense of community or gave them purpose such as being a member of a club related to their major or having a job on campus (p.67-68). A unique co-curricular experience is participating in residence life by either living in a residence hall or simply co-existing with a roommate. Dumford, Ribera, and Miller (2019) found that students who lived with a roommate had higher levels of Sense of Belonging than those who lived alone (p. 19). Another living situation that demonstrated higher levels of Sense of Belonging is first-year students who lived on campus compared to their off-campus counterparts (Dumford, Ribera, & Miller, 2019, p. 19). Interestingly, seniors who lived off campus had higher levels of peer belonging, but lower levels of institutional acceptance compared to their on campus counterparts (Dumford, Ribera, & Miller, 2019, p. 19).

Campus culture is a large environmental factor when students consider their Sense of Belonging to their respective university. Campuses where students feel a higher level of inclusivity, positivity, and a sense of community are more likely to have students who report having a higher level of Sense of Belonging (Duerr, 2020, p. 72). Essentially, students respond well when they feel cared for. The inverse is also true, for example students with a lower Sense of Belonging report feeling a lack of connection and comfortability to the university environment (Duerr, 2020, p. 73).

Impact of Sense of Belonging

Persistence

One of the most common themes in administrative conversations of today is the discussion regarding retention. As previously mentioned, administrators want college students to persist into their next semester and remain enrolled at the university until hopefully graduation. Some schools have implemented intentional interventions in order to increase the Sense of Belonging among students because research has supported higher levels of Sense of Belonging lead to higher levels of engagement, which leads to higher rates of persistence (Appleton et al., 2006; Astin, 1984; You et al., 2011). One example of an intentional program with the purpose of increasing Sense of Belonging is the Quantifying Biology in the Classroom (QBIC) program at Florida International University (FIU). The QBIC program is a 4-year interdisciplinary program that includes block schedules, study rooms, smaller classes, teaching pentagon instruction, summer workshops, and dedicated staff members (Knekta & McCartney, 2021, p. 725-726). Overall, these programs have proven to increase Sense of Belonging among peers, but students still hesitate to indicate they have a Sense of Belonging to their actual department (Knekta & McCartney, 2021, p. 736). Developing successful interventions continues to be an on-going area of research.

Motivation

When a student has a higher Sense of Belonging to the University, not only are they persistent to graduation, but they are also more motivated to complete coursework and participate in university activities. One study used minor interventions such as e-mail correspondence with language regarding belonging at the university as well as small items like magnets or decals with the university's logo/colors in order to determine if small interventions like this could possibly affect students' Sense of Belonging (Hausmann, Schofield, & Woods, 2007, p. 808). They found that these interventions did not have a significant direct effect on Sense of Belonging, however they did have an effect on the rate at which students' Sense of Belonging decreased throughout

the year (Hausmann, Schofield, & Woods, 2007, p. 830). Maintaining a higher level of Sense of Belonging for a longer period of time impacts the level of motivation students are able to sustain throughout the year because their basic need of belonging has been met.

Measurement of Sense of Belonging

Instruments

Many instruments have been developed to measure Sense of Belonging. Some are generic, while others get much more specific.

Sense of Belonging Instrument. One of the most commonly used instruments is the Sense of Belonging Instrument (SOBI) which has two different scales: SOBI-P (psychological state) and SOBI-A (antecedents) (Hagerty & Patusky, 1995, p. 11). After analysis was conducted on the factor structure of the original 55 items, the instrument was streamlined down to 27 self-report items that are generic in nature. For example, the items "I describe myself as a misfit," "People accept me," "I observe life rather than participate," and "It is important to be valued by others," are all generic statements. The scale uses a 4-point Likert response scale, where 1 = Strongly Disagree and 4 = Strongly Agree. The items that make up the SOBI relate more to a person's general Sense of Belonging at a certain point in time rather than their Sense of Belonging to a specific contextual environment. Because of this, the instrument can be used on any population within any field of study. The items were written "… to reflect the psychological experience of Sense of Belong (valued involvement and fit) and antecedents to Sense of Belonging" (Hagerty & Patusky, 1995, p. 10). The present study, however, seeks to answer questions related to Sense of Belonging in a specific context so the process of developing the SOBI was of more interest than the actual items within the instrument. The original study in which the SOBI was created used a variety of analysis methods including a principal components analysis (PCA), analysis of variance (ANOVA) among contrasted sample groups, and correlations with other constructs.

General Belongingness Scale. A shorter, generic scale for Sense of Belonging was created by Malone, Pillow, and Osman in 2011, referred to as the General Belongingness Scale (GBS) (p. 311). In order to develop this instrument, a pool of 30 items was analyzed and ultimately only 12 items were retained in the final version of the GBS (Malone, Pillow, & Osman, 2011, p. 313). As the name of this instrument indicates, all of the items are generic, similar to the SOBI. Some examples of items include "I feel isolated from the rest of the world," "I feel accepted by others," and "I have close bonds with friends and family" (Malone, Pillow, & Osman, 2011, p. 313). All items are measured on a 7-point Likert scale ranging from Strongly Disagree to Strongly Agree. The analysis of these items included an exploratory factor analysis (EFA), confirmatory factor analysis (CFA), and hierarchical regressions. A review of the literature indicates this may be one of the first times Sense of Belonging was measured in relationship to the Big Five personality constructs (neuroticism, extraversion, agreeableness, conscientiousness, and openness) (Malone, Pillow, & Osman, 2011, p. 314). The results indicated the Big Five were able to predict Sense of Belonging. If a person was high in extraversion and agreeableness they likely reported a higher Sense of Belonging, and a person with high neuroticism was more likely to report a lower Sense of Belonging (Malone, Pillow, & Osman, 2011, p. 315). While universities cannot change the personalities of their students, they can better understand how students' personalities affect the feeling of Sense of Belonging in order to develop interventions that serve students who struggle the most with developing these positive feelings.

Psychological Sense of School Membership. One of the most widely used definitions for Sense of Belonging is Goodenow's (1993) "the extent to which students feel personally accepted, respected, included, and supported by others in the school environment," (p. 80) and naturally her instrument, the Psychological Sense of School Membership (PSSM), is also widely used in education settings. The PSSM was originally developed to be used as a measurement of adolescent students' psychological membership in school environments (Goodenow, 1993, p. 79).

The original pool of 42 items was reduced to 18 items measured using a 5-point Likert response scale (p. 83). The items in this instrument refer to a more specific education context including "Most teachers in this school are interested in me," "People here notice when I'm good at something," and "Other students in this school take my opinions seriously." (p. 82). The analysis used to refine the scale included removing those items that did not contribute towards internal consistency reliability as well as items with low variability.

Shockingly, this instrument has been widely used in K-12 academic settings as a "validated" instrument, however only four factor analyses had been conducted in almost two decades of using the measurement tool (Hagborg, 1994; Hagborg, 1998; O'Farrell & Morrison, 2003; Cheung & Hui, 2003). One of the first robust factor analysis studies was conducted on the PSSM in 2011 by You, Ritchey, Furlong, Shochet, and Boman. The population in this study was Australian high school students. These researchers first conducted an EFA and then a CFA based on the emerging factor structure of the EFA. A correlated three-factor model of caring relationships, acceptance, and rejection was reported; the data fit the model well, but the uncorrelated three-factor model and the hierarchical second-order factor model did not (You et al., 2011, p. 231). Their recommendations included using structural equation modeling in order to correct for measurement error to validate the PSSM, but they also expressed concerns with using the PSSM unidimensionally because it is measuring more than one latent trait which contradicts some of the previous research on the PSSM (You et al., 2011, p. 231). Another study worth noting is a CFA of the PSSM across different cultural contexts for secondary school students (Abubakar et al., 2015). The countries included in this study were the Netherlands, Kenya, Indonesia, and Spain (p. 383). Four different models were tested using multigroup CFA. Essentially, this found that none of these models were a good fit, yet using cluster analysis they found an excellent fit for a unidimensional measure that should use the target of belongingness, such as a person or the university, as subscales (Abubakar et al., 2015, p. 385). This study also showed that the PSSM performed well across a variety of cultural contexts.

The PSSM has also been widely adapted to meet the needs of more specific studies. One example is the Departmental Sense of Belonging and Involvement (DeSBI) questionnaire created to measure university students' Sense of Belonging to a biology department (Knekta, Chatzikyriakidou, & McCartney, 2020). In order to build their questionnaire the language of Goodenow's original 18 items in the PSSM were re-worded to reference the specific department being investigated, and 15 involvement items related to existing programs were included as well (Knekta, Chatzikyriakidou, & McCartney, 2020, p. 6). An initial EFA was performed with these items, items were removed in a stepwise manner, and finally a CFA was performed on the remaining items (Knekta, Chatzikyriakidou, & McCartney, 2020, p. 8). The entire factor analysis process uncovered a variety of factor structures, and more items had to be removed until 20 items remained in the final version of the questionnaire having three factors (Knekta, Chatzikyriakidou, & McCartney, 2020, p. 11). The three-factor structure of this particular instrument included Sense of Belonging due to competency, Sense of Belonging due to social acceptance, and involvement.

University Belonging Questionnaire. In much more recent years, there has been an attempt to design a measurement tool specifically intended to measure the Sense of Belonging of university students. Rather than creating a universal tool, the University Belonging Questionnaire (UBQ) was designed with the university students ages 18 to 25 in mind (Slaten et al., 2018). Item creation was based upon a previous qualitative research study that focused on how university students defined the construct of Sense of Belonging (Slaten et al., 2018, p. 637). The definition used in this study was established through a qualitative process called Consensual Qualitative Research (CQR) and the sample was only 11 participants who participated in interviews about their belonging (Slaten et al., 2014). The four domains that emerged from the qualitative pre-study are Valued Group Involvement, Meaningful Personal Relationships, Environmental Factors, and Intrapersonal Factors (Slaten et al., 2014). A panel of experts reviewed the items for face validity, and ultimately 40-items remained in the UBQ, which was given to a large sample so that an EFA and CFA could be performed (Slaten et al., 2018, p. 638). After removing items

during the EFA to find a good fit, the researchers landed upon a three-factor structure which included university affiliation, university support and acceptance, and faculty and staff relations as the factors being measured across the final 24 remaining items (Slaten et al., 2018, p. 639-640). This analysis approach is similar to the methodology of the present study because students will be the ones defining Sense of Belonging and items will be specific to the university setting. One element that is missing from the UBQ is an exploration into what specific entities of the university traditionally-aged college students feel a Sense of Belonging to.

10 Words Question. Most instruments that attempt to measure Sense of Belonging either use a pre-determined definition of Sense of Belonging or use some form of qualitative research in their first phase of development before writing items for the instrument. Ahn and Davis (2020) sought to find a comprehensive definition of Sense of Belonging by using a method they referred to as the 10 Words Question. This method is a, "self-completion task, which asks participants to write down up to 10 words which come to mind when they think about their Sense of Belonging" (Ahn & Davis, 2020, p. 623). After the sample was collected, the researchers utilized four stages of analysis including 1) in vivo coding of qualitative responses, 2) systematic coding, 3) clustering and thematic analysis, and 4) merging data and contingency analysis. In vivo coding analyzes the responses in their original form. Systematic coding develops representative words using a thesaurus technique with the dataset. Thematic clustering categorizes the representative words into clusters that are consistent and homogenous. The findings illuminated how multi-faceted Sense of Belonging can be, and of particular note was the frequency with which out-of-classroom experiences were mentioned (Ahn & Davis, 2020, p. 628). Other unique findings were the themes of surroundings (i.e. living space and cultural location) and personal spaces (i.e. identities, life satisfaction, and personal interests) (Ahn & Davis, 2020, p. 629). The last finding, which continues to make this method intriguing, was the analysis of negative data because one in five participants included at least one negative word when considering their Sense of Belonging which indicates there is room for improvement among some students. This study will use this

method in the first phase of research in order to determine if students enrolled at universities in the United States report similar words in relation to their Sense of Belonging.

Additional Sense of Belonging Items. Another common practice for measuring Sense of Belonging is to add questions about this construct at the end of commonly used nation-wide surveys such as the National Survey of Student Engagement (NSSE). This practice leads to large sample sizes and the ability to analyze results alongside a wide range of demographic data and other constructs. Dumford, Ribera, and Miller (2019) utilized this practice when they added questions pertaining to the two dimensions of Sense of Belonging based on the definition they selected: peer belonging and institutional acceptance (p. 11). Four questions for each dimension were included using a 4-point Likert-type scale for each (Dumford, Ribera, & Miller, 2019, p. 26). Similar approaches have been taken with the Assessment of Collegiate Residential Environment and Outcomes survey (Dahl, 2020). Some of the national surveys even have a belonging elective such as the Healthy Minds Study (Shalka & Leal, 2020).

Related Constructs

Attachment is a closely related construct that frequently appears in literature on University Belonging (France, Finney, & Swerdzewski, 2010). Attachment is often defined as both group (university) attachment and member (peer, staff, faculty) attachment (France, Finney & Swerdzewski, 2010). Similar to Sense of Belonging, attachment has been shown to be associated with affective and behavioral variables, and administrators seek to have students who are attached to some degree to either the university or members within the university which would lead to a higher level of involvement (France, Finney, & Swerdzewski, 2010, p. 443).

Perceived cohesion is another common phrase used among the literature, originally coined by Bollen and Hoyle (1990), to describe Sense of Belonging, but only in relation to "the extent to which group members feel 'stuck to,' or part of particular social groups" (p. 482). This is not a definition that will be used in this study, however it is important to understand that cohesion within a group plays a role in the development of the construct of Sense of Belonging.

Other related but distinguishable constructs include social & academic fit (Shalka & Leal, 2020), and otherness (Read, Archer, & Leathwood, 2003).

It is possible to encounter constructs that appear to be the opposite or opposite in nature to Sense of Belonging. One example is isolation which is often talked about in relation to campus culture rather than an actual description of being isolated from peers (Read, Archer, & Leathwood, 2003, p.269). Essentially, the feeling of isolation may not necessarily describe feeling alone, but rather students who have no knowledge of the academic culture may feel isolated by the university when they do not know how to navigate the basics of college life (Read, Archer, & Leathwood, 2003).

Summary

After reviewing the existing definitions, impacts of Sense of Belonging, and existing measurement instruments, it is evident there is more to explore on the topic of Sense of Belonging on college campuses. This study seeks to build a more personal definition of Sense of Belonging by asking students to provide their own meaning of what it means to belong to their respective university. The greater purpose of this study, however, is to develop a measurement instrument which takes into consideration the wide range of demographics and environments that impact Sense of Belonging as well as the variety of opportunities university administrators provide for students to develop their Sense of Belonging. Overall, this instrument will be more helpful for practitioners and allow those interested to hone in on where and when Sense of Belonging is most impactful for college students.

CHAPTER III

METHOD

Introduction

The purpose of this study is to add a personal layer to the definition of Sense of Belonging to a University from the perspective of the student, to develop a measurement instrument that measures Sense of Belonging to the University for undergraduate college students that takes program membership and/or participation into consideration, and to answer some of today's relevant questions regarding Sense of Belonging to the University. In order to fulfill this multi-faceted purpose, three phases of research are described below, including the definition phase, measurement phase, and evaluation phase.

Phase 1: Definition

Research Design

The first phase of this research study sought to answer the question, "How do college/university students in the Southern Midwest region of the United States define Sense of Belonging to the University that they currently attend?" The research design most appropriate to answer this question is through a qualitative survey. The responses to this qualitative step informed the next phases of research for this study. This particular phase may not always be warranted in studies of a similar nature, however, the gap in existing measurement instruments

including questions that relate to Student Affairs' role in the development of Sense of Belonging to the University warrants additional investigation into students' personal definitions of the construct.

Participants

Population

The population for this study is undergraduate students enrolled in classes at their respective university. This study is interested in better understanding the Sense of Belonging to the University of all undergraduate students, so while demographic information was gathered, the sampling process did not restrict who was allowed to participate in the study based on demographics such as age, gender, race, etc. It also did not restrict participation for students living on or off campus, amount of involvement in extracurricular activities, or other university-related variables.

Sample

The sample for this study included students enrolled in classes at Oklahoma State University and Texas Christian University. These schools were chosen because they are both Division I schools with large student populations. They were strategically selected in order to allow for some similarities in campus characteristics, but also some differences. For example, Texas Christian University is the only private school included in the sample, but they are part of the Big 12 Conference similarly to Oklahoma State University. The ideal sample size for this phase of research was 60 students, ideally 30 students from each campus included in the sample.

Sampling Method

The overall sampling method for this study was a combination of convenience and voluntary response sampling. The researcher identified a professional contact at each university, and they agreed to disseminate each phase of research within classes or organizations they are affiliated with. Additionally, if the campus had a research participation system similar to Sona at Oklahoma State University, this resource was used to gather more random participants.

Participation was not mandatory or attached to any type of requirement to participate in class or organizational activities.

Data Collection

This phase of research was conducted via an online instrument through Qualtrics. The first phase of data collection was a short qualitative investigation into how students define their Sense of Belonging at their respective university. These results contributed to the development of a quantitative survey that is intended to measure Sense of Belonging to the University. Participants had four weeks to respond and will received reminder e-mails each week if they had not already responded.

Instrument

The qualitative survey utilized in this phase of research consisted of the 10 Words Question utilized in Ahn's (2017) research on Sense of Belonging in the United Kingdom and a small number of demographic questions. The 10 Words Question asked students to freely respond to the prompt, "Please write down up to 10 words that come to mind when you think about your Sense of Belonging to <insert respective university>." Appendix A contains the survey that was administered in Phase 1. An informal pilot study using this approach was conducted in the researcher's department and students on a campus in the United States also responded using unique approaches. Ahn (2017) said it best when she stated, "this method is regarded to be able to capture not only *what participants think* but also *how they express their thoughts*" (p. 91). Responses to this question were sorted into themes through the method of in vivo coding. These themes guided the development of the measurement instrument in the second phase of research.

Validity & Reliability

Qualitative research warrants the use of a different term than "reliability" or "validity" because the demonstration of high quality qualitative items cannot be determined by finding consistent results. "Dependability" is more often used in qualitative research to describe when the steps of qualitative research produce trustworthy data (Golafshani, 2003, p. 601). A high level of

dependability should be achievable through the 10 Words Question because the resulting data is adaptable to both qualitative and quantitative analysis through in vivo coding and systematic coding (Ahn, 2017). The responses were analyzed with word frequency counts and thematic analysis to identify emerging themes.

Data Analysis

The analysis process of the data gathered in this phase of research is rooted in grounded theory, which, "offers… a set of 'coding procedures' to 'help provide some standardization and rigor' to the analytical process" (Patton, 2015, p. 110). Grounded theory strives to make a connection between inductive and deductive qualitative analysis by utilizing an iterative process to generate new concepts while confirming them by gathering additional data (Patton, 2015). The coding procedure that was used for this study is called in vivo coding which maintains the participants' freely chosen linguistic terms (Rapley, 2011). Essentially, the word data was sorted by similar meaning and overarching terms were determined for each group of words. These overarching terms laid the groundwork for the themes that were the inspiration for the items in the measurement tool that was developed in phase two of research.

Phase 2: Measurement

Research Design

The second phase of research was the development of a measurement tool based on the themes that emerged among the 10 Words Question data. This measurement tool was quantitative and used a 5-point Likert response scale for each item. Demographic data was also gathered through this instrument in order to answer the remaining research questions in the data analysis phase. These demographics included involvement in organizations/programs, gender, race, etc., and can be found in Appendix B. The primary focus of the second phase of research was to validate this new measurement instrument.

Based on the 10 Words Question responses, some items were pulled from pre-existing surveys if the themes from Phase 1 suggested similarities to other studies. These items have the

benefit of comparability, and already have some level of validity to them. The remaining items were new, and the primary focus of this phase of research was confirming construct validity and internal consistency. Ideally, the results of this quantitative survey will aide university administrators in telling the story of their respective campuses and making informed decisions which benefit the Sense of Belonging of college students.

Participants

Population

The population for this study, similar to the first phase of research, was undergraduate students enrolled in classes at their respective university. This phase of research is also interested in the Sense of Belonging of all undergraduate students, so while demographic information was gathered, the sampling process did not restrict who is allowed to participate in the study based on demographics such as age, gender, race, etc.

Sample

The sample for this study included students enrolled in classes at Oklahoma State University, Texas Christian University, and Louisiana State University. In order to perform the necessary steps to validate the measurement, a larger sample size was needed. The ideal sample size for this phase of research was 20 students per item, preferably a similar number of students from each campus included in the sample. The developed instrument had 68 items, an ideal sample size was 1380 responses. This number will allow for both an EFA and CFA to be performed on the data. A minimum sample size of 680 responses was required for the EFA; if 1380 responses was not collected, CFA was not performed. Since this sample size needed to be significantly bigger than the sample size in the first phase, an incentive was offered to participants for a drawing for one of four $25 Amazon gift cards.

Sampling Method

The overall sampling method for this study was a combination of convenience and voluntary response sampling. The researcher identified a professional contact at each university, and they agreed to disseminate each phase of research within classes or organizations they are affiliated with. Additionally, if the campus has a research participation system similar to Sona at Oklahoma State University, this resource was used to gather even more random participants. Participation was not mandatory or attached to any type of requirement to participate in class or organizational activities.

Data Collection

This step in data collection was also conducted via an online instrument through Qualtrics. Items from already existing instruments were adapted for this instrument depending on the results of the first phase of research. Participants had three weeks to respond and received reminder e-mails each week if they had not already responded.

Instrument

Instrument development was the primary purpose of phase two of this study. The final instrument had three sections: Sense of Belonging definitions, the University Student Belonging Scale (developed from Phase 1 data and analysis), and demographic questions. Four primary Sense of Belonging definitions have been well-established by popular researchers:

- "I am an integral part of <university name>."
- "I feel personally accepted, respected, included, and supported by others at <university name>."
- "I consistently interact with and receive care from others at <university name>."
- "I believe in myself to the point of being able to share my most authentic self at <university name>."

The definition developed in Phase 1 of data analysis was included as a fifth definition in this part of the survey. Part 1 of the instrument presented the five definitions, personalized to the respondent, and asked the participant to "indicate the extent to which you agree with the following statements with 0 being strongly disagree and 100 being strongly agree." The purpose of Part 1 was to have a clear understanding of students' Sense of Belonging, as defined by others, with the participant's unique responses to different Sense of Belonging characteristics that emerged from Phase 1 of this research. For example, a student who has a 'busy' schedule may have a high or low sense of belonging.

Part 2 of the instrument was the primary scale written to measure students' Sense of Belonging to their University. Specific themes, or words, from Phase 1 (OSU and TCU data combined) were identified through word counts. For review, items from the University Belonging Questionnaire (Slaten et al., 2018), Sense of Belonging Inventory (Hagerty & Patusky, 1995), and Psychological Sense of School Membership (Goodenow, 1993) were paired to the themes that emerged from Phase 1. For any theme, or word, that appeared more than two times in the data collection, a positively- and a negatively-worded item was written or selected from a previous scale. These items were randomly chosen to be included in the instrument so that there was an even distribution of positively- and negatively-worded items. All items used a 5-point Likert response scale that was intended to measure the level they agree with each statement (1=Strongly disagree, 2=Somewhat disagree, 3= Neither agree nor disagree, 4=Somewhat agree, 5=Strongly agree). Appendix B includes all items that were developed for the instrument used in Phase 2 of data collection.

Validity

In order to maximize validity for item construction, the items were given to a small group of undergraduate students to edit for readability and interpretability. Additionally, all items were sent to the contacts at each university included in the Phase 2 sample to ensure each item was applicable to their university context.

Principal components analysis (PCA) was used in order to indicate construct validity among the items (Bagozzi, Yi, & Phillips, 1991). The final structure will provide a better understanding of students' Sense of Belonging to the University from the students' perspective. To clearly define the effects of unique characteristics of Sense of Belonging on students having a positive or negative Sense of Belonging, items were not recoded during the PCA analysis. The final loading structure, containing positive and negative loadings, provided a better understanding of the effect of the unique characteristics.

Reliability

Internal reliability was determined by calculating the Cronbach's alpha for the total score as well as within grouping of items based on principal components analysis. This evaluates the consistency of results across items within a measurement instrument.

Data Analysis

The data analysis step of this phase answered the research question proposed for Phase 2: "Is the measurement tool created in this study valid among university students?" Principal components analysis was done to examine the underlying component structure of the items. A Promax rotation was applied to the analysis because it was assumed that the components would be correlated to some degree, therefore an oblique rotation was most appropriate. The number of components to retain was determined by examining eigenvalues greater than one and comparisons to parallel analysis eigenvalues. Items were removed if they did not have an adequate component loading (e.g., greater than 0.30) and an iterative process was utilized in order to consider how the analysis changed as each item was removed. Additionally, investigating the Cronbach's alpha led to some items being removed or moved to a different component in order to have the highest level of internal reliability in the instrument.

Phase 3: Evaluation

Phase 2 developed and validated an instrument to measure students' Sense of Belonging to their University. Phase 3 utilized the same data along with other demographic data to better

understand students' Sense of Belonging to the University and their involvement in various university activities.

Data Analysis

Phase 3 of research did not involve gathering more data, but rather analyzing all of the data gathered in Phase 2 a variety of ways to answer the aforementioned research questions. Both subscores for each component and overall scores were calculated by averaging the responses from each item for their respective component. Negatively-worded items were reverse coded in order to not have adverse effects when adding together scores from items that are measuring in different directions.

Administrators would likely ask the next research questions in an effort to narrow down which programs are impacting Sense of Belonging best and where areas of growth exist. ANOVA was used to compare the impact programs have on Sense of Belonging to the University to answer the following questions:

- Does the program type students are involved in make a difference in Sense of Belonging to the University?
- Do students who participate in Student Affairs programs feel a higher Sense of Belonging to the University than students who do not?
- Does the number of Student Affairs programs a student is in make an impact on Sense of Belonging to the university?

The independent variable(s) for these analyses are program membership and/or involvement and the dependent variable is the level of Sense of Belonging to the University.

The last research question left to analyze presented an interesting challenge, but this research would be amiss without exploring the potential implications of the COVID-19 pandemic. In order to determine if students had only attended college during the COVID-19 pandemic, which has currently taken the world by storm for seventeen months at the time of this

research, participants were asked how many consecutive semesters they have attended their respective universities. The data was sorted into two groups: those who have attended more than four consecutive semesters at their university meaning they have had a collegiate experience pre-pandemic and those who have attended four or less consecutive semesters which indicated they have only attended their university during the pandemic. An ANOVA was performed to analyze if there are any differences in the Sense of Belonging to the University between these groups. Overall, descriptive statistics in relation to the number of semesters students have attended was reported to provide some clarity to the question, "What is the state of Sense of Belonging to the University after enduring the changes to college life as a result of the COVID-19 pandemic?"

Summary

The three proposed phases of research: definition, measurement, and evaluation, summarize a holistic approach to advancing research on the topic of undergraduate student's Sense of Belonging to their University. By utilizing the strengths of both qualitative and quantitative research, Student Affairs administrators may find more clarity regarding the ways in which their work connects to students' Sense of Belonging to the University. Additionally, this study began the conversation of Sense of Belonging to the University amidst a world-wide pandemic which has many implications for the future of our work.

CHAPTER IV

RESULTS

Introduction

The purpose of this study was to define Sense of Belonging to the University from the university student's perspective and develop a measurement instrument for Sense of Belonging to the University which helps provide a greater understanding of the activities and/or relationships that have an impact on Sense of Belonging in the university setting. The study was conducted in two phases of data collection. The first data collection sought to answer the research question: How do college/university students in the South Midwest region of the United States define Sense of Belonging to the University that they currently attend? The second data collection sought to answer the following research questions:

- Is the measurement tool created in this study valid among university students?
- Does involvement in specific programs have an effect on Sense of Belonging to a University?
    - Does the program type students are involved in make a difference in Sense of Belonging to the University?
    - Do students who participate in Student Affairs programs feel a higher Sense of Belonging to the University than students who do not?

- Does the number of Student Affairs programs a student is in make an impact on Sense of Belonging to the university?
- What is the state of Sense of Belonging to a University after enduring the changes to college life as a result of the COVID-19 pandemic?

Phase 1: Definition

The first phase of data collection was administered to a random sample of undergraduate students at Oklahoma State University and Texas Christian University via an online instrument in Qualtrics.

Demographics

There were 77 initial responses, and after eliminating incomplete responses there were 65 complete responses. The demographic data (Table 1) showed there were overwhelmingly more female (N=48, 73.8%) students than male (N=16, 24.6%) and non-binary (N=1, 1.5%) students. The class level of participants was determined by labeling each participant as freshman (0-30 credit hours), sophomore (31-60 credit hours), junior (61-90 credit hours) and senior (90+ credit hours) based on the amount of credit hours they reported having completed. Regarding class level, there were more freshmen (N=24, 36.9%) participants than other class levels, however all class levels were represented to some degree in all categories: sophomores (N=11, 16.9%), juniors (N=14, 21.5%), and seniors (N=12, 18.5%). Four participants (6.2%) did not report their completed credit hours.

One of the research questions for this study included taking a snapshot of the difference in Sense of Belonging to the University between students who started college before the COVID-19 pandemic began and those who started college during the pandemic. Based on those in the sample who reported how many consecutive semesters they had been attending their current university, we believe 17 (26.2%) of the participants started before the COVID-19 pandemic and 48 (73.8%) participants started during the COVID-19 pandemic.

An additional demographic question included in both phases, asked students to describe their family's collegiate educational background. Based on those who chose to respond, there were 11 (16.9%) first generation students who participated in this phase of data collection which means they indicated they were the first in their immediate family to pursue a college education. Five (7.7%) participants indicated somebody in their immediate family had completed some college and 47 (72.3%) participants indicated somebody in their immediate family had earned a college degree.

The racial background breakdown included 41 (63.1%) White students, eight (12.3%) Black or African American students, six (9.2%) Hispanic students, four (6.2%) American Indian students, three (4.6%) mixed race students, and three (4.6%) Asian students. Both universities included in this sample are predominately white institutions (PWI's), so these results are unsurprising.

Table 1

Demographic Characteristics of Phase 1 Sample ($N = 65$)

Variable		OSU ($N = 51$)	TCU ($N = 14$)
Gender			
	Male	12 (23.5%)	4 (28.6%)
	Female	38 (74.5%)	10 (71.4%)
	Non-binary/Third gender	1 (2.0%)	
Class Level			
	Freshman (0-30 credit hours)	14 (27.5%)	10 (71.4%)
	Sophomore (31-60 credit hours)	9 (17.6%)	2 (14.3%)
	Junior (61-90 credit hours)	14 (27.5%)	
	Senior (91+ credit hours)	11 (21.6%)	1 (7.1%)
	No Response	3 (5.9%)	1 (7.1%)
Experience pre-/post-COVID			
	pre-COVID (> 4 semesters)	17 (33.3%)	
	post-COVID (≤ 4 semesters)	34 (66.7%)	14 (100.0%)
Generational Status			
	First Generation	9 (17.6%)	2 (14.3%)
	Family has some college	4 (7.8%)	1 (7.1%)
	Family has completed degree(s)	36 (70.6%)	11 (78.6%)
	No Response	2 (3.9%)	
Racial Background			
	White	35 (68.8%)	6 (42.9%)
	Mixed Race	3 (5.9%)	
	Black	4 (7.8%)	4 (28.6%)

Variable		OSU ($N = 51$)	TCU ($N = 14$)
	American Indian	4 (7.8%)	
	Hispanic	3 (5.9%)	3 (21.4%)
	Other Asian (Hmong, Laotian, Thai, Pakistani, Cambodian, etc.)	1 (2.0%)	
	Asian Indian	1 (2.0%)	
	Vietnamese		1 (7.1%)

In order to make this research applicable to practitioners campus-wide, both phases of data collection also asked students what on campus organizations and activities they are involved in. The breakdown of involvement for the Phase 1 of data collection is included in Table 2 below.

Table 2

Phase 1: Involvement

Organization Involvement	Number of Participants
Activism/Social Justice Organization	1
International Organization	1
Marching Band	1
Non-traditional Student Organization	1
Student Governance	1
Off Campus Student Organization	2
Programming Board	3
Cultural Organization	3
Special Interest Organization	3
Special Interest Organization	3
Sports Club	3
Residence Hall Organization	4
University Athletics	4
Extended Orientation Camp	5
Other	5
Leadership Organization	7
Honorary Organization	9
On Campus Job	9
On Campus Research	9
Service Organization	12
Intramurals	16
Major-related Interest Organization	18
Greek Organization	20

10 Words Question

The main question in this instrument prompted students to, “Please write down up to 10 words that come to mind when you think about your Sense of Belonging to <insert name of university>.” There were 290 unique words submitted as responses to this prompt. The most common words can be viewed in the word cloud in Figure 3.

Figure 3

10 Words Question Word Cloud

Sense of Belonging to the University Definition Development

Qualitative data from the 10-word single-item survey was studied using NVivo and manipulation by the researcher in Excel.

In vivo Coding. In order to prepare to conduct in vivo coding, all of the reported words were combined for the two Universities and were exported into an Excel sheet as they were originally written in order to preserve the integrity of the data. Spelling mistakes and the use of acronyms or abbreviations were addressed before the data was uploaded into NVivo, a qualitative

data analysis software. The total number of words or phrases submitted through the instrument was 547 from 65 participants and the number of unique words was 290. The average number of words per participant was 5 (M=4.5), however 44 of the participants submitted a complete list of 10 words, 68% of participants. NVivo was used to group data with similar meaning or root words. The most frequent words can be viewed in the word cloud in Figure 2 where the size of the word corresponds with their frequency in the sample, and all words that were reported more than once are listed in Table 3.

The most common word was ‘friends’ and the combination of similar words such as ‘friendly’ accounted for a total of 32 of the 547 words submitted or 5.85% of the total submissions. With the exception of one participant, those that included the word ‘friends’ in their list of 10 words, always included it in their first four words entered. The next two most common words, ‘community’ and ‘family’ were also found frequently at the forefront of submissions with ‘community’ being listed first 10 times and ‘family’ being listed first 9 times. These top three words combined to be the first word listed 30 times which accounts for 46% of the first words submitted to this survey.

Table 3

1st Data Collection NVivo Coding

Word	Theme	Count
Friends	Relationships	26
Community	Relationships	23
Family	Relationship	19
Loving	Characteristics of Others	11
Home	Places	10
Inclusion	Characteristics of Others	10
Greek Life	Out-of-Classroom Experiences	8
Class	Academics	8
Happy	Personal Feelings	8
Football	Athletics	8
Teachers	Relationships/Academics	7
Clubs	Out-of-Classroom Experiences	7
Friendly	Characteristics of Others	7
Welcoming	Characteristics of Others	7
Classmates	Relationships/Academics	7
Education	Academics	6

Word	Theme	Count
Acceptance	Characteristics of Others	6
Fun	Benefits of Belonging	6
Games	Athletics	6
Comfort	Personal Feelings	5
Student	Academics	4
Diverse	Group Descriptions	4
Caring	Characteristics of Others	4
Orange	School Specific Jargon	4
Included	Feelings in Comparison to Others	3
Stillwater	School Specific Jargon	3
Spirit	Causes Belonging	3
Church	Relationships/Places	2
Cowboys	School Specific Jargon/Relationships	2
Roommates	Relationships	2
Small Groups	Out-of-Classroom Experiences	2
Parties	Out-of-Classroom Experiences	2
Homecoming	Out-of-Classroom Experiences/School Specific Jargon	2
Major	Academics	2
School	Academics	2
Learning	Academics	2
Equity	Feelings in Comparison to Others	2
Wanted	Feelings in Comparison to Others	2
Fitting In	Feelings in Comparison to Others	2
Optimistic	Personal Feelings	2
Excited	Personal Feelings	2
Safety	Personal Feelings	2
Positivity	Personal Feelings	2
Proud	Personal Feelings	2
Peaceful	Personal Feelings	2
Confident	Personal Feelings	2
Leadership	Benefits of Belonging	2
Growth	Benefits of Belonging	2
Commitment	Benefits of Belonging	2
Identity	Benefits of Belonging	2
Busy	Descriptions of Belonging	2
Genuine	Descriptions of Belonging	2
Engaging	Descriptions of Belonging	2
Small	Group Descriptions	2
Unity	Group Descriptions	2
Scooters	Physical items	2
Food Card	Physical items	2
Nice	Characteristics of Others	2
Help	Characteristics of Others	2
Kind	Characteristics of Others	2
Outgoing	Characteristics of Those that Belong (not Self)	2
Christian	Characteristics of Those that Belong (not Self)	2

Clustering and Thematic Analysis. The next step in analysis after looking at word counts and similar words was to sort the 290 unique words into thematic clusters. This procedure was done by the researcher in Excel. Words were sorted into columns based on the interpretation of the data by understanding the underlying meaning of each word and comparing them to the other words that were submitted together by the same participant. The criteria used for making decisions to build clusters were relevance, proximity, context, and comprehensiveness (Ahn, 2017). Addressing relevance and proximity required a similar mindset by grouping words with similar meanings together. The university environment was considered when approaching each word to cluster in order to keep context in mind. And ultimately, the goal was to make sure every word made it into a thematic cluster in order to address comprehensiveness.

Overall, there were 18 thematic clusters based on the aforementioned decision criteria. A description of each thematic cluster is provided in Table 4.

Table 4

Thematic Clusters

Relationships with People						
Friends	Teachers	Family	Church	Classmates	Community	People
Cowgirls	Mentor	Cliques	Brotherhood	Coworkers	Team Member	
Roommates	Sisterhood	Cowboys	Employee	High School Friends		
Out-of-the-Classroom Experiences						
Greek Life	Clubs	Involvement	Small Groups	Small	Parties	Homecoming
Extracurricular Activity		Cowboython	Greekwide	Performance	Wellness	Volunteering
Student Union Activities Board						
Academics						
Class	Teachers	Education	Classmates	Knowledge	Exams	Major
School	Student	Engineering	College	Learning	Discussion	Projects
Homework	Studying	Distance Learning				
Feelings in Comparison to Others						
Acceptance	Included	Togetherness	Separate	Respectful	Equity	Disconnected
Estranged	Reclusive	Wanted	Lonely	Close	Seen	Left out
Different	Fitting In	Jealous	Cared For	Love		
Personal Feelings						
Fulfillment	Security	Comfort	Grateful	Prideful	Loyal	Unwavering
Optimistic	Disengaged	Important	Happy	Excited	Safety	Content
Stressed	Positivity	Worthy	Active	Proud	Sadness	Peaceful

Confident	Hopeful	Satisfaction	Beautiful	Openness	Confused	Weird
Open-mind	Open	Easy-going	Hardworking	Invested		
Places						
Home	Church	My house	Work	Dorm	Online	Campus
Gym	Stillwater	Tulsa	Campus Housing	Student Union	Community Living	Eskimo Joe's
Benefits of Belonging						
Fun	Traditions	Memorial	Knowledge	Adventure	Leadership	Growth
Commitment	Sacrifice	Options	Opportunities	Convenient	Power	Development
Identity	Memories	Life Choices	Smiling	Pride	Faith	Introvert
Passion	Outlier	Respect	School Spirit			
Futuristic						
My Future	Lifetime	Future				
"Things I am When I Belong…"						
Integrity	Faith	Proud	Steadfast	Outsider	Drive	Fellowship
Involvement	Sleep	Busy	Connected	Not Involved		
Athletics						
Football	Softball	Games	Sports	Tailgate	Athletics	
"Belonging is…"						
Sporadic	Inconsistent	Changing	Variational	Genuine	Unexpected	Good
Challenging	Interesting	Enjoyable	Memorable	Special	Cool	Expensive
Sincere	Honest	Heartfelt	Distant	Engaging	Interactive	Encouraging
Empowering	Impactful	Enjoyable	Meaningful	Reality	Unforced	Social

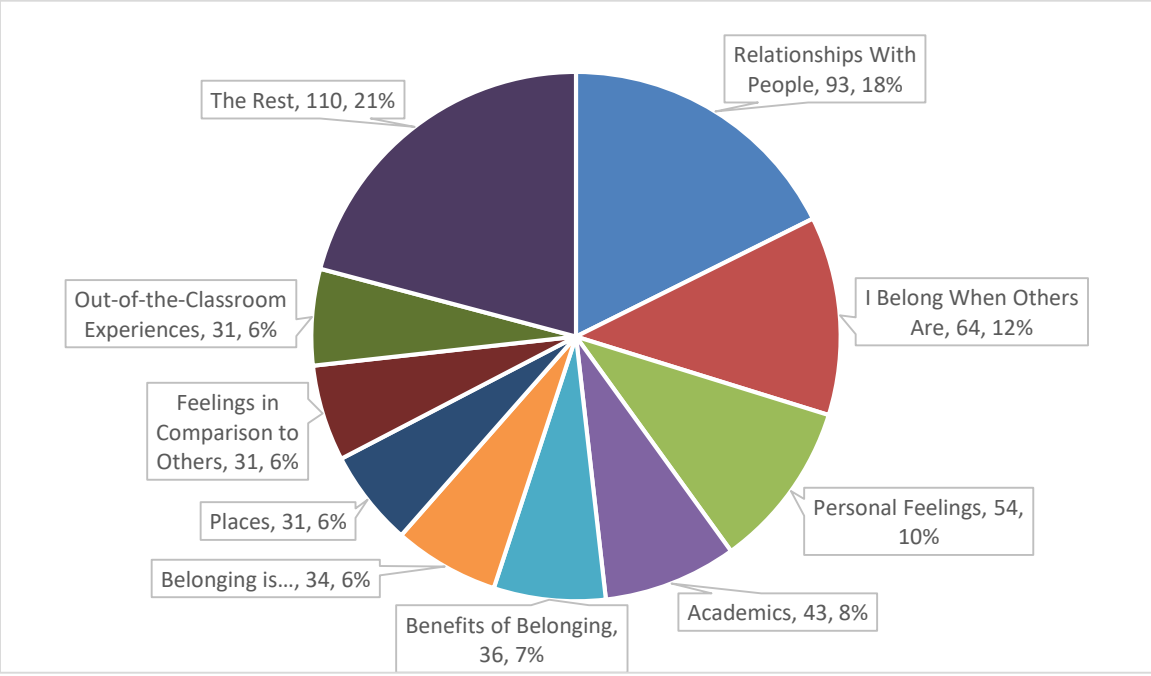
Real	Authentic	Minimal	Morale Boosting			
Negative Words						
Lacking	Separate	Disconnected	Outsider	Estranged	Disengaged	Reclusive
Non Involved	Lonely	Loner	Left out	Alone	Quiet	Jealous
Far Away	Excluded	Outcast	Sadness	Different	Late Bloomer	
Group Descriptors						
Collaborations	Diverse	Team Spirit	Group	Inclusion	Solidarity	Culture
Unity						
Physical Things						
Zoom	Bed	The Gear	Scooters	Food Card	Free Food	Books
"I Belong When Others Are…"						
Friendly	Caring	Loving	Nice	Welcoming	Help	Listener
Understanding	Kind	Sweet	Missed	Included	Trustworthy	Accepting
Inclusion	Teamwork	Close-knit	Cooperative	Open	Support	Generosity
Diversity	Semi-inclusive	Semi-supported	Respect	Open-Minded		
Those That Belong						
Outgoing	Alumni	Christian				
School Specific Jargon						
Pokes	Cowboys	Cowgirls	Country	Orange	Duffie	Mike Gundy
Bullet	Stillwater	Tulsa	Homecoming	Pistol Pete	Cowboython	SUAB
Student Union						
Identities That Affect Belonging						

Gender	Christian	Black	Woman	Kinky Hair

Relationships with People was the most common theme with 93 (18%) words falling in this category. The top nine categories amounted to 79% of the words data. In most frequent order, those categories include, *"I Belong When Others Are…"* (N=64, 12%), *Personal Feelings* (N=54, 10%), *Academics* (N=43, 8%), *"Things I Gain When I Belong"* (N=36, 7%), *"Belonging is…"* (N=34, 6%), *Places* (N=31, 6%), *Feelings in Comparison to Others* (N=31, 6%), and *Out-of-the-Classroom Experiences* (N=31, 6%).

Figure 4

Breakdown of Thematic Clusters ($N = 527$)



Definition Development. One of the main goals of this phase of the study was to define Sense of Belonging to the University from the university student's perspective. All of the definitions previously mentioned in Chapter 2 were written from a more clinical perspective as outsiders attempting to describe the phenomenon of a Sense of Belonging as something other people experience. The 10 Words Question directly asked students essentially how they would define their own Belonging, therefore an adapted definition is warranted to include their perspective. Since *Relationships with People* was the most common theme among the data it was

an important element to include in the definition. Feelings also appeared to be frequently brought up by participants when *Personal Feelings* and *Feelings in Comparison to Others* are combined, these themes make up 16% of the words data. These reasons led to the definition, "The extent to which the strength of your relationships at your university allow you to be your authentic self." This definition was included in the definition-based items of the instrument developed in the second phase of data collection. The differences between this definition and other widely used and popular definitions is discussed further in Chapter 5.

Phase 2: Measurement

Utilizing results of Phase 1, an instrument was developed and validated in Phase 2. Items for the instrument were developed using the words data from the 10 Words Question, common themes, and comparison to other widely accepted instrument.

Instrument Development

The first step executed to develop an instrument to measure Sense of Belonging to the University was to isolate all of the words or phrases that were submitted more than once. There were 68 words or phrases in total that met this criteria. Next, items from already existing instruments were sorted in comparison to the word data from Phase 1. The instruments used in comparison were the University Belonging Questionnaire (Slaten et al., 2018), the Sense of Belonging Inventory (Hagerty & Patusky, 1995), and the Psychological Sense of School Membership (Goodenow, 1993). These comparisons can be found in Appendix C.

Two items were written for all 68 words/phrases. The first item for each word/phrase either focused directly on the word data or referenced the definition of each term. The second item for each word/phrase was written to serve as a "negative" version of the item or referenced the antecedent of the word data. One of the items for each of the 68 words/phrases were selected to be included in the compiled instrument at random in order to have a fairly even spread of "positively" and "negatively" written items. All items were measured on a 5-point Likert scale with a "Does Not Apply" option. Three of the items included university specific language: I am a

(Cowboy, Horned Frog, Tiger); I am proud to wear the color(s) (orange, purple, purple & gold); I feel like a member of the community in (Stillwater, Fort Worth, Baton Rouge). The entire list of items was sent to each of the university contacts who helped with accessing a random sample of students to review for applicability and interpretability for their university context.

Additional items were included at the beginning of the survey to explore how participants connect with a variety of common definitions for Sense of Belonging and the new definition written in Phase 1. These definitions included: "I am integral part of [university name]" (Hagerty & Patusky, 1995); "I feel personally accepted, respected, included, and support by others at [university name]" (Goodenow, 1993); "I consistently interact with and receive care from others at [university name]" (Slaten et al., 2018); "I believe in myself to the point of being able to share my most authentic self at [university name]" (Brown, 2021); "The strength of my relationships at [university name] allow me to be my authentic self." These items asked participants to indicate the extent to which they agreed with each statement on a sliding scale of 0 (strongly disagree) to 100 (strongly agree). The last section of items on the survey were the same demographic questions used in the survey in Phase 1. The final version of the instrument that was used for data collection in Phase 2 can be viewed in Appendix B. The name given to this new instrument was the University Student Belonging Scale.

Demographics

There were 1,006 initial responses collected from Oklahoma State University, Texas Christian University, and Louisiana State University. In order to clean the data, the first step was to eliminate incomplete responses. Next, the "Does not apply" responses were analyzed and there was a clear cut-off for items that should not be included in the principal components analysis because more than 15% of participants indicated the item did not apply to them. All other

responses with “Does not apply” on other items were eliminated to wrap up cleaning the data. After these steps, there were 606 complete responses.

The demographic data (Table 5) showed there was a majority of female (N=428, 70.6%) student respondents and fewer male (N=147, 24.3%), non-binary (N=12, 2.0%), and transgender (N=1, 0.1%) students. The same class level labels were used from the first phase of data collection. Regarding class level, there was a similar representation from each class with freshmen (N=143, 23.6%), sophomores (N=131, 21.6%), juniors (N=150, 24.8%), and seniors (N=156, 25.7%). 26 participants (4.3%) did not report their completed credit hours.

Based on those in the sample from Oklahoma State University who reported how many consecutive semesters they had been attending their current university, we believe 105 (31.8%) of the participants started before the COVID-19 pandemic and 225 (68.2%) participants started during the COVID-19 pandemic.

Again, this survey asked students to describe their family’s collegiate educational background. Based on those who chose to respond, there were 66 (10.9%) first generation students who participated in this phase of data collection which means they indicated they were the first in their immediate family to pursue a college education. 58 (9.6%) participants indicated somebody in their immediate family had completed some college and 465 (76.7%) participants indicated somebody in their immediate family had earned a college degree.

The racial background breakdown included 409 (67.5%) White students, 53 (8.7%) Hispanic students, 38 (6.3%) Black or African American students, 24 (4.0%) mixed race students, 20 (3.3%) American Indian students, 11 (1.8%) Vietnamese students, 6 (1.0%) Asian students who identify as Hmong, Laotian, Thai, Pakistani, Cambodian, etc., seven (1.2%) Asian Indian students, four (0.7%) Chinese students, two (0.3%) Filipino students, and one (0.2%) Japanese student. All universities included in this sample are predominately white institutions (PWI’s), so these results are also unsurprising.

Table 5

Demographic Characteristics of Phase 2 Sample ($N = 606$)

Variable		
Gender		N=589 (97.2%)
	Male	147 (24.3%)
	Female	428 (70.6%)
	Non-binary/Third gender	12 (2.0%)
	Transgender	1 (0.2%)
	Prefer not to say	1 (0.2%)
Class Level		
	Freshman (0-30 credit hours)	143 (23.6%)
	Sophomore (31-60 credit hours)	131 (21.6%)
	Junior (61-90 credit hours)	150 (24.8%)
	Senior (91+ credit hours)	156 (25.7%)
	No Response	26 (4.3%)
Experience pre-/post-Covid		
	pre-Covid (> 4 semesters)	105 (31.8%)
	post-Covid (≤ 4 semesters)	225 (68.2%)
Generational Status		N=592 (97.7%)
	First Generation	66 (10.9%)
	Family has some college	58 (9.6%)
	Family has completed degree(s)	465 (76.7%)
	Prefer not to say	5 (0.5%)
Racial Background		N=590 (97.4%)
	White	409 (67.5%)
	Mixed Race	24 (4.0%)
	Black	38 (6.3%)
	American Indian	20 (3.3%)
	Hispanic	53 (8.7%)
	Other Asian (Hmong, Laotian, Thai, Pakistani, Cambodian, etc.)	6 (1.0%)
	Asian Indian	7 (1.2%)
	Vietnamese	11 (1.8%)
	Chinese	4 (0.7%)
	Filipino	2 (0.3%)
	Japanese	1 (0.2%)
	Other	2 (0.3%)
	Prefer not to say	13 (2.1%)

Data Analysis

Principal Components Analysis

The portion of the USBS intended to directly measure the construct Sense of Belonging to the University originally consisted of 68 items. All of these items were measured on a 5-point Likert scale where 1 indicated “strongly disagree” and 2 indicated “strongly agree.” Items with

more than 15% of participants answering “Does not apply” were removed for principal components analysis. The mean and standard deviation of the remaining items can be found in Table 6. The “negative” version or items written based on the antecedent of the original words in the 10 Words Question analysis were not reverse coded because the researcher was unable to guarantee the participants were interpreting these items as negative. For example, “My university feels big,” was written as the antecedent for the word “small,” but this may not be interpreted as a negative item for all participants. Since the component loadings are all squared in order to calculate eigenvectors, the negative loadings should not affect the overall analysis. There was a wide range in average responses from 1.45 to 4.90.

Table 6

Descriptive Statistics of Items

Item	Mean	Standard Deviation
I am committed to finishing my degree.	4.90	0.423
Gaining an education is an important part of my university experience.	4.83	0.463
I carry my student ID everywhere with me.	4.71	0.789
If I needed help, there is someone at my university I could ask.	4.50	0.837
I am a <school mascot>.	4.46	0.919
People at my university are friendly to me.	4.43	0.776
Other students are respectful to me.	4.41	0.741
I am proud to be a student at my university	4.37	0.963
I am proud to wear the color <school color>.	4.32	1.047
People at my university are kind.	4.27	0.785
I am excited to be a student at my university.	4.25	1.027
People at my university are outgoing.	4.21	0.858
I am loyal to my university.	4.20	1.194
I am satisfied with the opportunities at my university.	4.18	1.082
I have fun on campus.	4.12	1.057
I feel safe when attending my university.	4.08	1.091
My identity as a student is important to my university experience	4.07	0.998
I have gained leadership skills while attending my university.	4.05	1.118
I am part of a community at my university.	4.03	1.167
I feel that I am part of a group at my university.	3.96	1.232
The people I interact with at my university are genuine	3.95	0.986
My university feels big.	3.94	1.136

Item	Mean	Standard Deviation
I have been able to better understand my identity as a student at my university.	3.93	1.124
Football games are part of my university experience	3.90	1.503
I look forward to attending class.	3.89	1.040
I feel peaceful about my university experience.	3.89	1.175
I fit in with other students at my university.	3.88	1.047
The environment on campus can be described as caring.	3.86	0.987
I am more confident because I am a student at my university.	3.86	1.210
My university does a good job of making everybody feel included.	3.83	1.113
My university brings me comfort.	3.83	1.177
My university feels like home to me.	3.82	1.305
I feel like a member of the community in <town name>.	3.72	1.253
I feel similar to other people in my major.	3.67	1.126
My relationships at my university feel like family.	3.62	1.394
My university prioritizes being fair.	3.55	1.125
I look forward to Homecoming week at my university.	3.29	1.444
I seek out the opportunity to attend parties with other students at my university.	3.15	1.522
The student body is divided at my university.	3.01	1.148
I do not have relationships with other students in my classes	2.61	1.376
Attending sport events to support my university is important to me.	2.44	1.493
I have negative thoughts while on campus.	2.41	1.314
I am not satisfied with the amount of engaging opportunities my university offers.	2.34	1.196
I do not have a lot of school spirit for my university.	2.19	1.350
I feel pessimistic about my time at my university.	2.16	1.243
I am part of a loving environment on campus.	2.07	1.167
My university does not provide opportunities to have diverse experiences.	2.01	1.099
My day-to-day schedule is busy.	1.96	1.095
I am not accepted by other people at my university.	1.96	1.108
My university environment has not provided me an opportunity to grow.	1.92	1.229
I do not have friends at my university.	1.90	1.302
The people at my university are not nice.	1.86	1.949
None of the employees at my university care about me.	1.86	1.018
I do not enjoy being on campus.	1.85	1.138
I am not happy to be a student at my university.	1.78	1.129
I do not enjoy learning at my university	1.70	1.046
My campus does not have a welcoming environment.	1.66	0.901
I avoid associating myself with my university	1.57	0.957
Nobody at my university wants me to be there.	1.45	0.825

Note. All items were measured on a 5-point Likert scale where 1 indicated “strongly disagree,” 2 indicated “somewhat disagree,” 3 indicated “neither agree nor disagree,” 4 indicated “somewhat agree,” and 5 indicated “strongly agree.”

In order to make more decisions regarding analysis, additional indicators of appropriateness were evaluated. The ideal sample size for an EFA is 10 subjects per item (Pett, Lackey, & Sullivan, 2003). Since there were 59 items included in the intended principal components analysis, the ideal sample size for this phase of analysis was 590 participants (Nunnally, 1978). After cleaning the data, a total of 606 responses were able to remain in the dataset, therefore this characteristic was ideal. Investigation of the item correlation matrix indicated none of the items correlated greater than 0.8 which indicated there was not a concern with multicollinearity (Pett, Lackey, & Sullivan, 2003). Additionally, all items correlated with multiple other items greater than 0.3 which indicated there would be shared common variance among all remaining items (Pett, Lackey, & Sullivan, 2003). The determinant of the correlation matrix was 7.972 E-17 which is ideal for PCA because the absolute value should be between 0 and 1 (Pett, Lackey, & Sullivan, 2003). All of these characteristics indicated the Kaiser-Meyer-Olken Measure (KMO) and Bartlett's test of sphericity should be investigated.

The Chi-Square statistic from Bartlett's test of sphericity before any rotations were applied or items were removed was 21666.268, and the significance of this test was 0.000 which indicated the sample size was sufficient for a data reduction technique. The KMO statistic was 0.968 which was a "marvelous" indicator that the degree of overlap among variables is strong. All of these test statistics indicated a principal components analysis was the best course of action for analysis. Additionally, an oblique rotation was determined to be a good adjustment for this analysis since all of the items were developed by responses to one survey question in the first phase of data analysis. It was hypothesized that the resulting components would likely be strongly correlated. A promax rotation was applied to the principal components analysis as one of the most widely used oblique rotations (Pett, Lackey, & Sullivan, 2003). This aided in the ease of interpretation of the data.

Once it was determined that a PCA with a promax rotation was the best method for a data reduction technique, the next step was to determine the number of components best fit the data. The total variance explained in Table 7 indicated there were 11 eigenvalues greater than one. The Kaiser-Guttman Rule, which recommends retaining components with an eigenvalue greater than one, indicates these components can account for a sufficient portion of the variance in the model (Comrey & Lee, 1992). These 11 components account for 63.034% of the variance in the model, which was ideal because the recommended target in social sciences research is 50-60% (Pett, Lackey, & Sullivan, 2003).

Table 7

Total Variance Explained – Initial Principal Components Analysis with Promax Rotation (59 items)

Component	Total	% of Variance	Cumulative %
1	21.999	37.286	37.286
2	2.652	4.494	41.781
3	2.253	3.818	45.599
4	1.900	3.220	48.819
5	1.394	2.363	51.182
6	1.338	2.268	53.451
7	1.287	2.181	55.632
8	1.206	2.044	57.675
9	1.070	1.813	59.488
10	1.053	1.785	61.273
11	1.039	1.760	63.034

The number of components in the analysis based on the Kaiser-Guttman rule was not ideal because many of the 11 components had less than three items with component loadings greater than 0.3, so further reduction of components was desired to find a better fit. Parallel analysis was a good next step in order to eliminate the "noise" amidst the real data. This technique uses a Monte-Carlo simulation to create simulated eigenvalues for a dataset with the same sample size and number of variables in order to determine the number of significant eigenvalues in the real dataset (Horn, 1965). The syntax for parallel analysis in SPSS provided by

O'Connor (2000) was ran with a sample size of 606 and 59 variables. The resulting eigenvalues can be found in Table 8. When the simulated eigenvalues were compared to the real eigenvalues, only four of the real eigenvalues were greater than their simulated counterpart. This provided a rationale for forcing the data to load onto a four-component model, and next it would be determined if any items need to be removed due to low variance among the remaining components.

Table 8

Parallel Analysis Eigenvalues ($N = 606$, 59 number of items)

Root	Means
1	1.66688472
2	1.60874009
3	1.56546389
4	1.52699324
5	1.49291302
6	1.46211188
7	1.43295411
8	1.40483234
9	1.37776466
10	1.35299129
11	1.32919781

The next goal in analysis was to eliminate items with weak loadings on all components. Hair and colleagues (1995) recommend removing items that do not load greater than |.30| on any component. All of the component loadings for the forced four-component model can be found in Table 9. The items "I do not enjoy being on campus" and "My university feels big" did not load onto any of the four components greater than |.30|, therefore these items were removed for future analysis. The previous step of checking eigenvalues and running a parallel analysis for the new number of variables, 57, was repeated in order to examine the variance explained with these items removed. There were some items that had component loadings greater than |.30| on multiple components. These items include: "My university does not provide opportunities to have diverse experiences;" "None of the employees at my university care about me;" "The people I interact

with at my university are genuine;" "If I needed help, there is someone at my university I could ask;" "I have negative thoughts while on campus;" "I seek out the opportunity to attend parties with other students at my university;" "I am excited to be a student at my university;" "My university feels like home to me;" "My relationships at my university feel like family;" "I am part of a loving environment on campus;" "I am committed to finishing my degree;" "I carry my student ID everywhere with me;" and "I do not enjoy learning at my university." The data reduction literature does not recommend removing these items, but does encourage further reliability analysis in order to ensure these items are included with the most sensible component (Pett, Lackey, & Sullivan, 2003).

Table 9

Pattern Matrix – Principal Components Analysis with Promax Rotation: Forced Four Components with 59 Items

Item	Component			
	1	2	3	4
The people at my university are not nice.	-0.909	*	*	*
People at my university are kind.	0.898	*	*	*
My university does a good job of making everybody feel included	0.775	*	*	*
I am not accepted by other people at my university.	-0.749	*	*	*
My university does not provide opportunities to have diverse experiences.	-0.715	*	0.333	*
My campus does not have a welcoming environment	-0.671	*	*	*
My university prioritizes being fair.	0.668	*	*	*
Other students are respectful to me.	0.660	*	*	*
People at my university are friendly to me.	0.629	*	*	*
The student body is divided at my university.	-0.590	*	*	*
None of the employees at my university care about me.	-0.578	*	*	-0.376
The environment on campus can be described as caring.	0.573	*	*	*
I am not satisfied with the amount of engaging opportunities my university offers.	-0.572	*	*	*
Nobody at my university wants me to be there.	-0.563	*	*	*
The people I interact with at my university are genuine.	0.527	*	0.418	*
I feel safe when attending my university.	0.490	*	*	*
If I needed help, there is someone at my university I could ask.	0.482	*	*	0.375
My university environment has not provided me an opportunity to grow.	-0.456	*	*	*
I feel peaceful about my university experience.	0.448	*	*	*

Item	Component			
	1	2	3	4
I am satisfied with the opportunities at my university.	0.372	*	*	*
I have negative thoughts while on campus.	-0.427	-0.315	*	*
I am not happy to be a student at my university.	-0.425	*	*	*
I feel pessimistic about my time at my university.	0.398	*	*	*
People at my university are outgoing.	0.325	*	*	*
I do not enjoy being on campus.	*	*	*	*
Football games are part of my university experience.	*	0.974	*	*
I am proud to wear the color <school color>.	*	0.909	*	*
I am loyal to my university.	*	0.882	*	*
I am a <school mascot>.	*	0.877	*	*
Attending sporting events to support my university is important to me.	*	-0.876	*	*
I do not have a lot of school spirit for my university.	*	-0.799	*	*
I am proud to be a student at my university.	*	0.717	*	*
I look forward to Homecoming week at my university.	*	0.669	*	*
I seek out the opportunity to attend parties with other students at my university.	-0.468	0.638	0.367	*
I avoid associating myself with my university.	*	-0.514	*	*
I am excited to be a student at my university.	0.329	0.510	*	*
I am more confident because I am a student at my university.	*	0.460	*	*
My university feels like home to me.	*	0.390	0.343	*
I feel like a member of the community in <town name>.	*	0.388	*	*
My university brings me comfort	*	0.303	*	*
I do not have friends at my university.	*	*	-0.867	*
I feel that I am part of a group at my university.	*	*	0.831	*
My relationships at my university feel like family.	*	0.512	0.745	*
I am part of a community at my university.	*	*	0.634	*
I do not have relationships with other students in my classes.	*	*	-0.600	*
I fit in with other students at my university.	*	*	0.547	*
I have gained leadership skill while attending my university.	*	*	0.570	*
I have fun on campus.	*	*	0.502	*
I am part of a loving environment on campus.	-0.377	*	-0.439	*
I feel similar to other people in my major.	*	*	0.405	*
My university feels big.	*	*	*	*
Gaining an education is an important part of my university experience.	*	*	*	0.729
I am committed to finishing my degree.	-0.308	*	*	0.729
I carry my student ID everywhere with me.	*	-0.310	*	0.547
My identity as a student is important to my university experience.	*	*	*	0.540
I look forward to attending class.	*	*	*	0.472
My day-to-day schedule is not busy.	*	*	*	-0.460
I do not enjoy learning at my university.	-0.335	*	*	-0.437
I have been able to better understand my identity as a student at my university.	*	*	*	0.324

Note: * indicates the component loading was not greater than |0.30|. Highlighted items did not load onto any component.

Table 10 and Table 11 show the eigenvalues for the real data and the parallel analysis for simulated data, respectively using the same sample size, 606, but with fewer items, 57. This step reaffirmed the four-component model as the best fit because all of the real eigenvalues were greater than the parallel analysis eigenvalues. Ultimately, 37.985% of the variance among the data was explained by the first component, 4.411% of the variance was explained by the second component, 4.001% of the variance was explained by the third component, and 3.354% of the variance was explained by the fourth component. These percentages add up to represent the cumulative variance of 49.752% which is ideal for an instrument used in the social sciences.

Table 10

Total Variance Explained – Principal Components Analysis with Promax Rotation: Forced Four Components with 57 Items

Component	Total	% of Variance	Cumulative %
1	21.271	37.985	37.985
2	2.470	4.411	42.396
3	2.241	4.001	46.397
4	1.878	3.354	49.752
5	1.379	2.462	52.214

Table 11

Parallel Analysis Eigenvalues – (N = 606 and 57 items)

Root	Means
1	1.65143242
2	1.59452431
3	1.55061942
4	1.51222068
5	1.47838404

The results of the prior analysis made a strong recommendation for a four-component model as the best fit for the data from the USBS with 57 items. At this point in analysis, it is

common to compare multiple component-models to each other, however there are no criteria among this data to warrant looking at any models other than a four-component model. Table 12 shows the correlations among the four components, which ranged from 0.482 to 0.681. This data supported the use of a promax rotation.

Table 12

Component Correlation Matrix

Component	1	2	3	4
1	1.000	0.681	0.624	0.580
2		1.000	0.630	0.542
3			1.000	0.482
4				1.000

After loadings were examined, some were positive and some were negative. This reveals the relationship between the item's theme and the construct of Sense of Belonging to the University. In subsequent analyses, items with negative loadings were reverse coded because negative loadings would have an adverse effect on the statistics. In this way, items that were not reverse coded had the response scale 1=strongly disagree and 5=strongly agree so that responses with higher values indicate a higher Sense of Belonging to the University. For example "People at my university are kind." Items that had negative loadings indicated that a higher response to the item indicated a lower level of Sense of Belonging to the University, e.g., "The people at my university are not nice." After reverse coding the negatively-worded (i.e., negative loading) items, for all items, a higher response value indicates a higher Sense of Belonging to the University. The internal consistency of each component was important to examine in order to determine if the items within each component are truly the best fit for establishing this component as a subscale. A Cronbach's alpha test was ran for each component, which allowed an investigation into a variety of statistics regarding the makeup of each component. The items included in this analysis for each component are listed in Table 14 with the negative items marked with an asterisk (*).

The range of means for the items included in component one was 2.99 to 4.50. The scale for each item was 1 to 5, which indicated all of the means were in the middle to high range. The interitem correlations for component one ranged from 0.164 to 0.679. None of these interitem correlations were high enough to suggest any of the items were duplicates. Although there was a large range between interitem correlations, the variance for the interitem correlations was small (0.010) which indicated there was high consistency among the interitem correlations. The coefficient alpha for the first component was strong with a value of 0.931 which indicates 93.1% of the variance on this subscale can be attributed to reliable variance.

The range of means for the items included in component one was 3.15 to 4.46. Again, the scale for each item was 1 to 5, which indicated all of the means were in the middle to high range. The interitem correlations for component two ranged from 0.197 to 0.835. None of these interitem correlations were high enough to suggest any of the items were duplicates. Although there was a large range between interitem correlations, the variance for the interitem correlations was small (0.020) which indicated there was high consistency among the interitem correlations. The coefficient alpha for the second component was strong with a value of 0.931 which indicates 93.1% of the variance on this subscale can be attributed to reliable variance.

The range of means for the items included in component three was 3.39 to 4.12. The scale for each item was 1 to 5, which indicated all of the means were in the middle to high range. The interitem correlations for component one ranged from 0.265 to 0.649. None of these interitem correlations were high enough to suggest any of the items were duplicates. Although there was a large range between interitem correlations, the variance for the interitem correlations was small (0.010) which indicated there was high consistency among the interitem correlations. The coefficient alpha for the third component was strong with a value of 0.885 which indicates 88.5% of the variance on this subscale can be attributed to reliable variance.

The range of means for the items included in component four was 3.89 to 4.90. The scale for each item was 1 to 5, which indicated all of the means were in the middle to high range. The

interitem correlations for component one ranged from 0.015 to 0.493. None of these interitem correlations were high enough to suggest any of the items were duplicates. Although there was a large range between interitem correlations, the variance for the interitem correlations was small (0.019) which indicated there was high consistency among the interitem correlations. The coefficient alpha for the fourth component was not as strong with a value of 0.663 which indicates 66.3% of the variance on this subscale can be attributed to reliable variance.

Items that load onto multiple components were addressed by observing the changes in Cronbach's alpha if items are removed or added to different components. Items that increased the coefficient alpha on another component more than they decreased their original component were moved to the component they had the most reliability with the corresponding items (Pett, Lackey, & Sullivan, 2003). Additionally, items were removed if they would increase the coefficient alpha of their component in order to have the highest internal consistency within a component possible in the instrument. The items, "None of the employees at my university care about me," and "If I needed help, there is someone at my university I could ask," were moved from the first component to the fourth component. Additionally, the item, "The people I interact with at my university are genuine," was moved from the first component to the third component. The last item that moved was, "My university feels like home to me," from component two to component three. The items that were removed to create the final version of the USBS were, "The student body is divided at my university," from the first component, "I seek out the opportunity to attend parties with other students at my university," from the second component, and, "My day-to-day schedule is busy," from the fourth component. This created a final version of the instrument with 54 items. A comparison of the coefficient alpha's before and after moving and removing these items can be found in Table ?.

Table 13

Reliability Results from Reassigning Multiple-Loading Items

Component	Coefficient Alpha				Gain in α
	Before		After		
	N	α	N	α	
1	23	0.931	20	0.926	-0.005
2	15	0.931	13	0.931	0.000
3	11	0.885	12	0.904	+0.009
4	10	0.709	9	0.777	+0.068

Once items were finalized within each of the four components, themes of item topics within components were examined to name and identify each component.

Table 14

Item Breakdown for Components

Component 1: *Feelings that Impact Belonging*

1. The people at my university are not nice.*
2. People at my university are kind.
3. My university does a good job of making everybody feel included.
4. I am not accepted by other people at my university.*
5. My university does not provide opportunities to have diverse experiences.*
6. My campus does not have a welcoming environment.*
7. My university prioritizes being fair.
8. Other students are respectful to me.
9. People at my university are friendly to me.
10. The environment on campus can be described as caring.
11. I am not satisfied with the amount of engaging opportunities my university offers.*
12. Nobody at my university wants me to be there.*
13. I feel safe when attending my university.
14. My university environment has not provided me an opportunity to grow.*
15. I feel peaceful about my university experience.
16. I am satisfied with the opportunities at my university.
17. I have negative thoughts while on campus.*
18. I am not happy to be a student at my university.*
19. I feel pessimistic about my time at my university.*
20. People at my university are outgoing.

Component 2: *School Spirit*

1. Football games are part of my university experience.
2. I am proud to wear the color <school color>.
3. I am loyal to my university.
4. I am a <school mascot>.
5. Attending sporting events to support my university is important to me.*
6. I do not have a lot of school spirit for my university.*
7. I am proud to be a student at my university.

8. I look forward to Homecoming week at my university
9. I avoid associating myself with my university.*
10. I am excited to be a student at my university.
11. I am more confident because I am a student at my university.
12. I feel like a member of the community in <town name>.
13. My university brings me comfort.

Component 3: *Social Connections at the University*

1. I do not have friends at my university.*
2. I feel that I am part of a group at my university.
3. My relationships at my university feel like family.
4. I am part of a community at my university.
5. I do not have relationships with other students in my classes.*
6. I fit in with other students at my university.
7. I have gained leadership skills while attending my university.
8. I have fun on campus.
9. I am not part of a loving environment on campus.*
10. I feel similar to other people in my major.
11. The people I interact with at my university are genuine.
12. My university feels like home to me.

Component 4: *Academic Focus & Support*

1. Gaining an education is an important part of my university experience.
2. I am committed to finishing my degree.
3. I carry my student ID everywhere with me.
4. My identity as a student is important to my university experience.
5. I look forward to attending class.
6. I do not enjoy learning at my university.*
7. I have been able to better understand my identity as a student at my university.
8. None of the employees at my university care about me.*
9. If I needed help, there is someone at my university I could ask.

Note: Items that are reverse-coded are denoted with an asterisk (*).

The first component included 20 items that all referenced a feeling or emotion that impacts a Sense of Belonging to the University or the availability of certain opportunities. There were a lot of feelings in the list of items in the first component, including the words “nice,” “kind,” “included,” “accepted,” “welcoming,” “respectful,” “friendly,” “caring,” “safe,” “peaceful,” “negative,” “happy,” and “pessimistic.” All of these words were in one of the thematic clusters of Phase 1 related to feelings, either personal or how others make someone feel. The other items that makeup this component referenced different types of opportunities that encourage or lead to a Sense of Belonging to the University such as diverse experiences, engaging opportunities, and the opportunity to grow. Since there were many more feelings-based items than opportunities-based items, the label for this component was determined to be *Feelings*

that Impact Belonging. While the opportunity items may not be directly part of the label for this component, these opportunities often lead to having feelings of inclusion or support, therefore the label should suffice for all items.

The second component included 13 items that all referenced out-of-classroom activities or emotions about the university. While a lot of these items referenced characteristics that the average person would associate with school spirit, such as attending sporting events and wearing the school colors, many of the other items could be considered additional layers of school spirit. For example, feeling a higher level of confidence due to being a student at their university and feeling like a member of the local community are not surface level indicators of school spirit, but they reflect a certain level of pride in their university. School spirit is often defined as, "the sense of identity and community shared by members of an educational institution" (Barroso, 2018). Since all of these items align with the notion of this definition, the label for the second component was determined to be *School Spirit.* One item worth mentioning within this component, is the item, "Attending sporting events to support my university is important to me." This item was not originally written as a negatively-worded item, however the component loading was negative, therefore it will be reverse coded for future analysis of this instrument.

The third component included 12 items that all referenced social groups or interactions. All but two items in the above list directly referenced student relationships. The two exceptions were "I have fun on campus," and "My university feels like home to me." It was safe to assume, however, most people would agree with these items because of their social relationships. Therefore, this component was labeled *Social Connections at the University*.

The fourth component included 11 items that all referenced academic activities or the student's identity. Some of the items in this component directly referenced activities like gaining an education, attending class, and enjoying learning. Two items referenced student identity, and another two items reference support and care from professionals at the university. Taking all of

these types of items into consideration, it was determined the label for component four would be *Academic Focus and Support*.

Component Subscores

Once all four components had been labeled, the next step was to determine how scores for the instrument would be calculated. Since the purpose of this instrument was meant to be for practitioners to both directly measure a student's Sense of Belonging to the University and identify areas for improvement in programs both component subscores and an overall score would be beneficial to the user. A PCA assumes, "all of the variance in the items can be accounted for by the factors" (Pett, Lackey, & Sullivan, 2003, p. 215). Therefore, a direct sum or average of the results would suffice for a component score. This study used averages to calculate all subscores. All negatively loading items would be reverse coded for the calculation of subscores because this method required all items to be going in the same direction.

The subscore for *Feelings that Impact Belonging* ranged from 1.50 to 5.00. The subscore for *School Spirit* ranged from 1.31 to 5.00. The subscore for *Social Connections at the University* ranged from 1.45 to 4.91. And, the subscore for *Academic Focus and Support* ranged from 1.78 to 5.00. Overall scores were also calculated, and those ranged from 1.92 to 5.00. A summary of the descriptive statistics for all subscores and the overall score can be found in Table 15, including number of items, Cronbach's alpha level, minimum, maximum, mean, and standard deviation.

Table 15

Descriptive Statistics of Subscores & Overall Scores

Score	# Items	α	Min.	Max.	*M*	*SD*
Feelings	20	0.926	1.53	5.00	4.05	0.68
School Spirit	13	0.931	1.31	5.00	3.91	0.76
Social Connections	12	0.904	1.42	4.92	3.72	0.73
Academic Focus and Support	9	0.777	1.78	5.00	4.36	0.54
Overall Sense of Belonging to the University Score	54		1.92	5.00	4.07	0.66

Note: Scores ranged from 1 to 5, where 1 corresponds to low Sense of Belonging to the University and 5 corresponds to high Sense of Belonging to the University.

The correlation between components is an interesting statistic to observe in Table 16. *Feelings that Impact Belonging* and *School Spirit* are most correlated with the overall score with *Social Connections at the University* and *Academic Focus and Support* following in that order.

Table 16

Correlations of All Scores

	Feelings	School Spirit	Social	Academic	Overall Score
Feelings	1.000	0.785	0.700	0.704	0.934
School Spirit		1.000	0.723	0.643	0.906
Social			1.000	0.639	0.860
Academic				1.000	0.788
Overall Score					1.000

When the PCA is applied and four components emerged from the data, the component loadings provide understanding of the relationship between each item and the four components. A classical mean score weighs each item equally. However, a PCA score may also be calculated that takes into account the relationship between the participants' response to each unique item and the components. Table 17 presents the correlations between the Classical Test Theory (CTT) sum score and the PCA scores. PCA scores were highly correlated with the CTT Sum Score on the same component.

Table 17

Correlations of PCA Component Scores & Classical Test Theory Scores

	PCA Scores			
CTT Sum Scores	**Feelings**	**School Spirit**	**Social**	**Academic**
Feelings	**0.979**	0.752	0.677	0.560
School Spirit	0.742	**0.963**	0.687	0.561
Social	0.666	0.668	**0.968**	0.520
Academic	0.721	0.611	0.607	**0.930**

In order to provide a rationale for using a Mean, or Average, Score for the subscores instead of the PCA scores, it is important to remember the use of the instrument by practitioners. All four average scores are highly correlated with their respective PCA score which can be observed in the diagonal values above. This provides justification for being able to use either score to come to similar conclusions. Since the University Student Belonging Scale was intended for use by practitioners who are likely to be more comfortable with calculating averages instead of component scores, the rest of the analysis in this chapter will use the average subscores and overall score.

Phase 3: Evaluation

The final research question was, "Does involvement in specific programs have an effect on Sense of Belonging to a University?" with four sub-questions. For this analysis, four subscores based on PCA (Phase 2) were used. Phase 3 research questions were informed by students' involvement in various organizations. Table 18 presents the summary of involvement within the sample. Participants could choose more than one answer to the question, "Which of the following organizations/programs are you involved in?" The percent of sample column indicates how many people checked each item in the sample, so it is not a percentage of the total responses, but rather a percentage of the sample.

Table 18

Phase 3: Involvement

Organization Involvement	Number of Participants	Percent of Sample (N=606)
Scholarship-based Organization	9	1.8%
International Organization	13	2.6%
Programming Board	14	2.8%
Marching Band	17	3.4%
Residence Hall Organization	17	3.4%
Arts-based Organization	20	4.0%
Student Government	21	4.2%
University Athletics	24	4.8%
Cultural Organization	29	5.7%
Leadership Organization	32	6.3%

Extended Orientation Camp	40	7.9%
Sports Club	43	8.5%
Service Organization	50	9.9%
On Campus Research	61	12.1%
Other	64	12.7%
Special Interest Organization	67	13.3%
Honorary Organization	81	16.0%
Intramurals	93	18.4%
Religious Organization	102	20.2%
On Campus Job	155	30.7%
Greek Organization	170	33.7%
Major-related Interest Organization	204	40.4%

Note: Students could select more than one option.

Research Questions

3. Does involvement in specific programs have an effect on Sense of Belonging to a University?

   a. Does the program type students are involved in make a difference in Sense of Belonging to the University?
   a. Do students who participate in Student Affairs programs feel a higher Sense of Belonging to the University than students who do not?
   b. Does the number of Student Affairs programs a student is in make an impact on Sense of Belonging to the university?
   b. What is the state of Sense of Belonging to the University after enduring the changes to college life as a result of the COVID-19 pandemic?

In order to address research questions 3a, 3b, 3c, and 3d, some new variables were created. The first variable created was labeled Program Type and was created by using the decision tree in Figure 5. This variable indicated whether a participant was in a Student Affairs program such as an extended orientation camp, a Greek lettered organization, intramurals, student government, a programming board, or a university-specific program in Student Affairs. If a participant was not in one of these programs, but indicated they were in a program that was related to their major, an honorary/scholarship organization, or on campus research, they were

labeled as Academic Affairs. While many of these programs may be supported by Student Affairs in some way, their main focus lies within Academic Affairs. Some participants indicated they were only in programs such as an on campus job or a special interest student organization like the Dungeons & Dragons club, and these were labeled as Generic Program. All combinations of these programs were included as their own group. Those who did not answer the student organization/program involvement question on the survey were labeled as No Program. Table 19 presents the specific selections classified within each of the three types: Student Affairs, Academic Affairs, and Generic Program.

Table 19

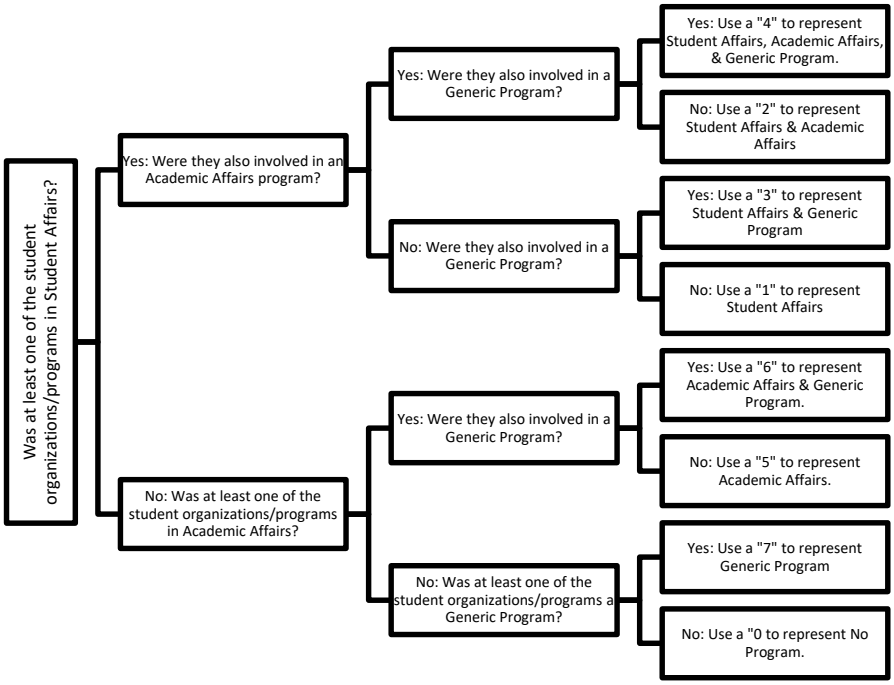
Program Type

Program Type	Frequency	Percent
Student Affairs	291	48.0%
Extended Orientation Camp		
Intramurals		
Greek-lettered Organizations		
Leadership Organizations		
Residence Hall Organizations		
Student Government		
Programming Board		
University-Specific Programs		
Academic Affairs	112	18.5%
Honorary Organizations		
Marching Band		
Major-related Organizations		
On Campus Research		
International Organizations		
Generic Program	102	16.8%
Cultural Organizations		
On Campus Job		
Religious Organizations		
Service Organizations		
Special Interest Organizations		
Sports Club		
University Athletics		
No Program	101	16.7%

Note: Figure 5 can be referenced for details on how participants were categorized.

Figure 5

Decision Tree for Coding Program Type



The final classification of each program type was:

0. Not involved in any program
1. Only involved in Student Affairs
2. Involved in Student Affairs and Academic Affairs, but not Generic Program
3. Involved in Student Affairs and a Generic Program, but not in Academic Affairs
4. Involved in Student Affairs, Academic Affairs, and a Generic Program
5. Only involved in Academic Affairs
6. Involved in Academic Affairs and a Generic Program, but not Student Affairs
7. Only involved in a Generic Program

Descriptive statistics of this variable are presented in Table 20.

Table 20

Descriptive Statistics of Program Type

Classification	N	%
0. No Program	101	16.67%
1. Student Affairs	65	10.73%
2. Student Affairs, Academic Affairs	36	5.94%
3. Student Affairs, Generic Program	85	14.03%
4. Student Affairs, Academic Affairs, Generic Program	110	18.15%
5. Academic Affairs	45	7.43%
6. Academic Affairs, Generic Program	69	11.39%
7. Generic Program	95	15.68%

Another new variable that was created before analysis began was Number of Student Affairs programs. This variable was fairly straight forward, and simply counted the specific number of Student Affairs programs a participant was in, if any. Of the 606 total respondents, 291 indicated that they were involved in at least one Student Affairs Program. Table 21 provides the descriptive statistics. This variable was treated as categorical.

Table 21

Number of Student Affairs Programs

# of Student Affairs Programs	N	%
1	198	68%
2	69	24%
3	16	5%
4	5	2%
5	3	1%

The last new variable created in this dataset was based on the number of consecutive semesters a student reported they had attended their university. If a student reported they had attended their university equal to or more than four semesters, they were labeled as starting their coursework during the Covid-19 pandemic because their first semester would have been Spring 2020, and if they reported more than four semesters they were labeled as having had some college experience prior to the Covid-19 pandemic.

Table 22

Covid Labels

Covid Label	N
pre-Covid (> 4 semesters)	105
post-Covid (≤ 4 semesters)	225

Note: Only Oklahoma State University data was included in the Covid analysis.

After all variables were determined, the specific analysis was chosen for each research question. Table 23 provides the independent and dependent variables for each research question and appropriate analysis.

Table 23

Analysis Techniques for Each Research Question

Research Question	Independent Variable(s) (categorical or continuous)	Dependent Variable(s) (categorical or continuous)	Analyses
3a	Program Type categorical 0 = No Program 1 = Student Affairs 2 = Student Affairs & Academic Affairs 3 = Student Affairs & Generic Program 4 = Student Affairs, Academic Affairs, & Generic Program 5 = Academic Affairs 6 = Academic Affairs & Generic Program 7 = Generic Program	Sense of Belonging continuous Component 1: Feelings Component 2: School Spirit Component 3: Social Component 4: Academic Overall Score	Analysis of Variance
3b	Program Type categorical	Sense of Belonging continuous	Post-hoc Analysis
3c	Number of Student Affairs programs categorical	Sense of Belonging continuous	Analysis of Variance
3d	Number of Continuous Semesters in Relation to the Covid-19 Pandemic categorical	Sense of Belonging continuous	Analysis of Variance

Research Question	Independent Variable(s) (categorical or continuous)	Dependent Variable(s) (categorical or continuous)	Analyses
	1 = ≤ 4 semesters (only attended university during Covid-19 pandemic) 2 = > 4 semesters (had at least one semester without the Covid-19 pandemic) 3 = No response		

Note: Survey was administered January 2022. The Covid-19 categorical variable was calculated based on how many semesters a student had attended considering the Covid-19 pandemic started in spring 2020.

Research Question 3a

Prior to conducting a one-way ANOVA, it was imperative to explore whether or not all of the assumptions for an ANOVA were met within the dataset from this research. The first assumption of ANOVA is that observations are independent of one another, which was confirmed based on the research design of this study (Lomax & Hahs-Vaughn, 2012, p. 309). No participant was asked to repeat the survey and they were not allowed to retake the survey using the same IP address. The second assumption of ANOVA is that there are no outliers in the data (Halldestam, 2016). Outliers among the dependent variables were determined to be any USBS subscore or overall score that had a standardized residual greater than ±2.5. Standardized residuals were calculated for all four component subscores and the overall scores and there were eight outliers for *Feelings that Impact Belonging*, nineteen outliers for *School Spirit*, nine outliers for *Social Connections at the University*, nineteen outliers for *Academic Focus*, and eleven outliers for the overall scores. These outliers can be observed in the box-and-whisker plots found in Figures 6, 7 ,8, 9, and 10. In order to address the outliers among the data, a filter was applied before the ANOVA was conducted in order to temporarily remove these responses from the analysis.

Figure 6

Box-and-Whisker Plot for Program Type and *Feelings that Impact Belonging*

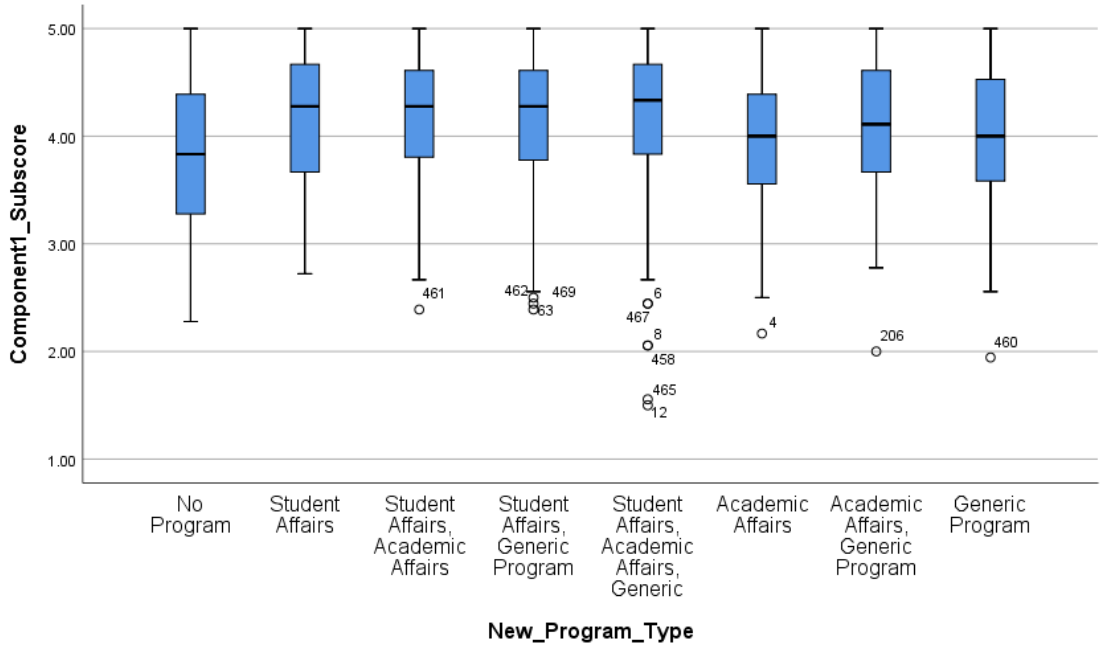


Figure 7

Box-and-Whisker Plot for Program Type and *School Spirit*

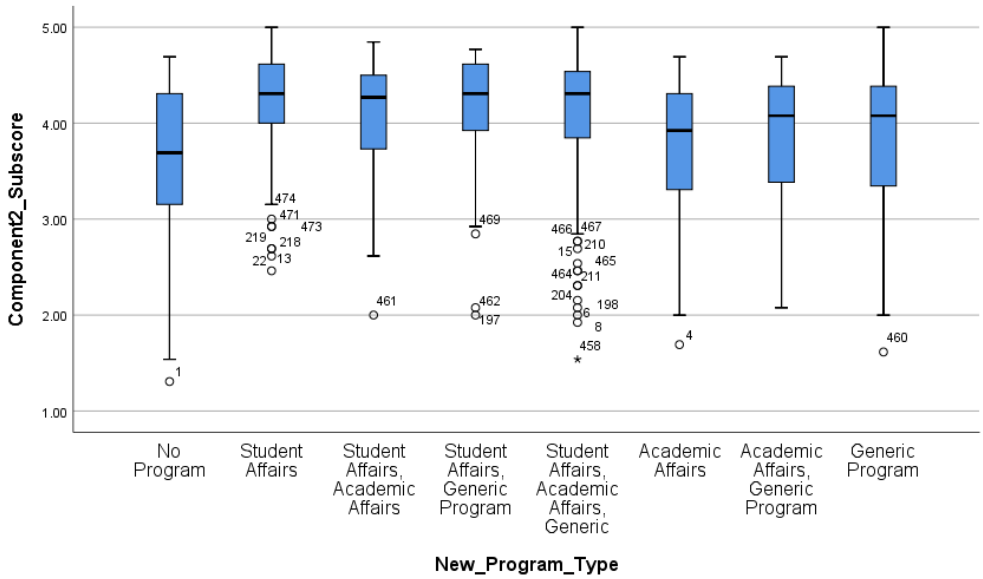


Figure 8

Box-and-Whisker Plot for Program Type and *Social Connections at the University*

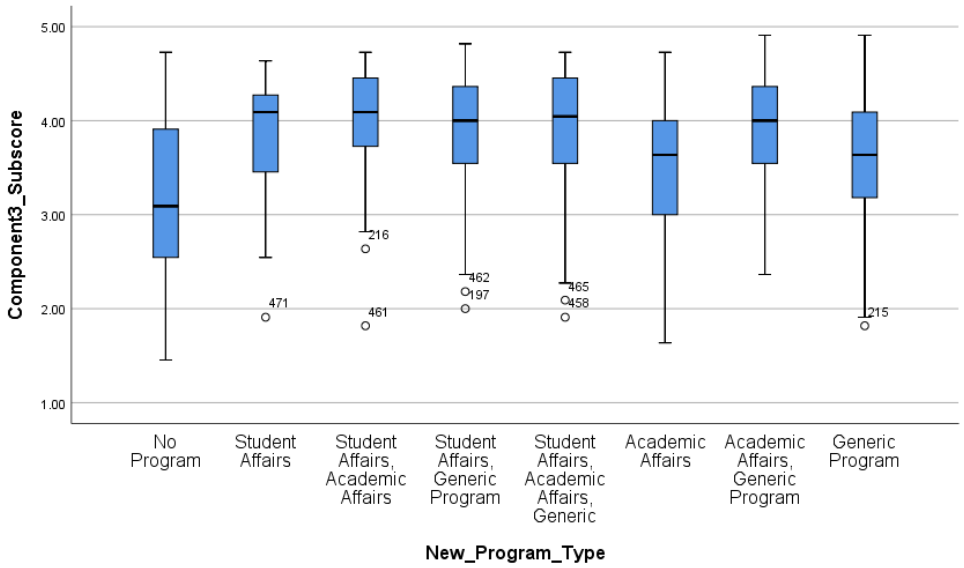


Figure 9

Box-and-Whisker Plot for Program Type and *Academic Focus and Support*

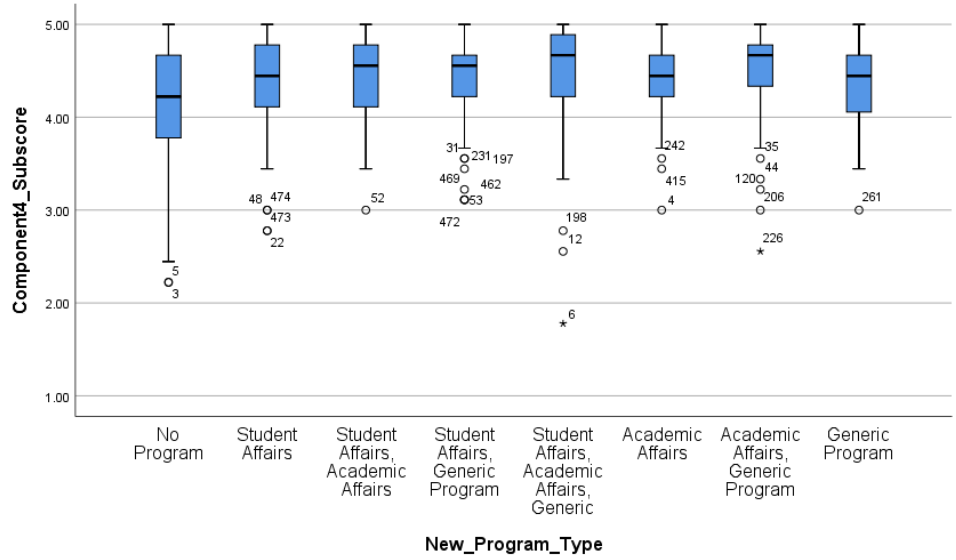
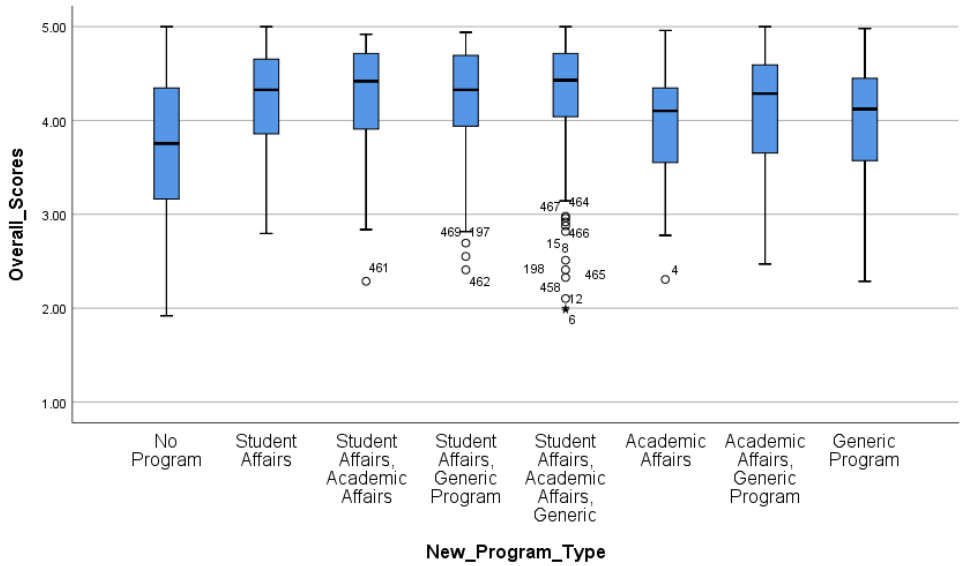


Figure 10

Box-and-Whisker Plot for Program Type and Overall Scores



The third assumption of ANOVA checked in this research was the assumption that the dependent variable followed a normal distribution for each group level of the independent variable, program type (Lomax & Hahs-Vaughn, 2012, p. 311). To check this assumption both the skewness and kurtosis for each dependent and independent variable pairing was observed and the Shapiro-Wilk test was conducted. Ideally, skewness and kurtosis would be within ±1.0 in order to meet the assumption of normality. This criteria is not met for all pairings. Additionally, none of the Shapiro-Wilk statistics (Table 24) had a significance level of $p > 0.05$, which resulted in the conclusion that the assumption of normality was not met for this dataset.

Table 24

Shapiro-Wilk Statistics for Research Question 3a

		Shapiro-Wilk		
	Program Type	**Statistic**	**df**	**Sig.**
Component 1: Feelings	Student Affairs	0.935	65	0.002
	Student Affairs, Academic Affairs	0.913	36	0.008
	Student Affairs, Generic Program	0.924	85	0.000
	Student Affairs, Academic Affairs, Generic Program	0.846	110	0.000
	Academic Affairs	0.945	45	0.032

	Program Type	Shapiro-Wilk		
		Statistic	df	Sig.
	Academic Affairs, Generic Program	0.953	69	0.012
	Generic Program	0.971	95	0.035
	No Program	0.970	101	0.020
Component 2: School Spirit	Student Affairs	0.856	65	0.000
	Student Affairs, Academic Affairs	0.876	36	0.001
	Student Affairs, Generic Program	0.831	85	0.000
	Student Affairs, Academic Affairs, Generic Program	0.807	110	0.000
	Academic Affairs	0.915	45	0.003
	Academic Affairs, Generic Program	0.881	69	0.000
	Generic Program	0.905	95	0.000
	No Program	0.907	101	0.000
Component 3: Social	Student Affairs	0.908	65	0.000
	Student Affairs, Academic Affairs	0.862	36	0.000
	Student Affairs, Generic Program	0.910	85	0.000
	Student Affairs, Academic Affairs, Generic Program	0.881	110	0.000
	Academic Affairs	0.945	45	0.034
	Academic Affairs, Generic Program	0.948	69	0.006
	Generic Program	0.973	95	0.049
	No Program	0.973	101	0.035
Component 4: Academic	Student Affairs	0.874	65	0.000
	Student Affairs, Academic Affairs	0.917	36	0.010
	Student Affairs, Generic Program	0.885	85	0.000
	Student Affairs, Academic Affairs, Generic Program	0.805	110	0.000
	Academic Affairs	0.938	45	0.018
	Academic Affairs, Generic Program	0.846	69	0.000
	Generic Program	0.939	95	0.000
	No Program	0.925	101	0.000
Overall Score	Student Affairs	0.936	65	0.002
	Student Affairs, Academic Affairs	0.882	36	0.001
	Student Affairs, Generic Program	0.890	85	0.000
	Student Affairs, Academic Affairs, Generic Program	0.824	110	0.000
	Academic Affairs	0.942	45	0.025
	Academic Affairs, Generic Program	0.931	69	0.001
	Generic Program	0.958	95	0.004
	No Program	0.959	101	0.003

The last assumption to check before running an ANOVA was homogeneity of variance, which would indicate the measures of the dependent variables within groups have equal variances (Lomax & Hahs-Vaughn, 2012, p. 310). This assumption is checked by looking at the Levene's statistic and determining whether the significance level is greater than the pre-determined alpha level, $\alpha > 0.05$. The Levene's statistic was only significant for *Feelings that Impact Belonging*

with a significance level of 0.594, therefore the conclusion was made that the assumption of homogeneity of variance was also not met.

Table 25

Levene's Statistic for Research Question 3a

Score	Levene Statistic	df1	df2	Sig.
Component 1: Feelings	0.792	7	598	0.594
Component 2: School Spirit	3.373	7	598	0.002
Component 3: Social	2.859	7	598	0.006
Component 4: Academic	2.603	7	598	0.012
Overall Score	2.253	7	598	0.029

Descriptive statistics for all pairings of scores and program types can be found in Table 26. The size of each program type group ranges from the smallest being students who are in at least one Student Affairs program and at least one Academic Affairs program with 36 participants to the biggest being students who are in all three types of programs (Student Affairs, Academic Affairs, and a Generic Program) with 110 participants.

Table 26

ANOVA Descriptive Statistics for Research Question 3a

Score	Program Type	N	M	SD
Component 1: Feelings	Student Affairs	65	4.166	0.634
	Student Affairs, Academic Affairs	36	4.140	0.627
	Student Affairs, Generic Program	85	4.146	0.637
	Student Affairs, Academic Affairs, Generic Program	110	4.137	0.761
	Academic Affairs	45	3.944	0.609
	Academic Affairs, Generic Program	69	4.087	0.633
	Generic Program	95	3.963	0.636
	No Program	101	3.824	0.698
Component 2: School Spirit	Student Affairs	65	4.146	0.612
	Student Affairs, Academic Affairs	36	4.060	0.629
	Student Affairs, Generic Program	85	4.158	0.692
	Student Affairs, Academic Affairs, Generic Program	110	4.042	0.757
	Academic Affairs	45	3.752	0.720
	Academic Affairs, Generic Program	69	3.848	0.725
	Generic Program	95	3.820	0.773
	No Program	101	3.566	0.891
Component 3: Social	Student Affairs	65	3.848	0.590
	Student Affairs, Academic Affairs	36	3.990	0.636
	Student Affairs, Generic Program	85	3.893	0.634

Score	Program Type	N	M	SD
	Student Affairs, Academic Affairs, Generic Program	110	3.902	0.668
	Academic Affairs	45	3.449	0.742
	Academic Affairs, Generic Program	69	3.892	0.576
	Generic Program	96	3.892	0.576
	No Program	101	3.163	0.805
Component 4: Academic	Student Affairs	65	4.352	0.544
	Student Affairs, Academic Affairs	36	4.423	0.464
	Student Affairs, Generic Program	85	4.412	0.446
	Student Affairs, Academic Affairs, Generic Program	110	4.487	0.531
	Academic Affairs	45	4.370	0.450
	Academic Affairs, Generic Program	69	4.472	0.513
	Generic Program	95	4.337	0.477
	No Program	101	4.119	0.652
Overall Score	Student Affairs	65	4.221	0.558
	Student Affairs, Academic Affairs	36	4.235	0.599
	Student Affairs, Generic Program	85	4.242	0.578
	Student Affairs, Academic Affairs, Generic Program	110	4.219	0.701
	Academic Affairs	45	3.930	0.593
	Academic Affairs, Generic Program	69	4.142	0.595
	Generic Program	95	3.985	0.610
	No Program	101	3.719	0.738

A modification can be made to the ANOVA by using the Kruskal-Wallis test because normality and homogeneity of variance were not met within the original dataset. The Kruskal-Wallis test, "is a nonparametric one-way ANOVA for rank order data and is based on medians rather than means" (Vogt & Johnson, 2016, p. 220). The results of the ANOVA using the Kruskal-Wallis Test can be found in Table 27. A conclusion was made that the effects of involvement in different program types at a university on all of the Sense of Belonging subscores and the overall score were different for some program type(s). This conclusion was made based on the test statistics $\chi^2(7) = 25.189, p < .05$ for *Feelings that Impact Belonging*, $\chi^2(7) = 50.029, p < .05$ for *School Spirit*, $\chi^2(7) = 85.595, p < .05$ for *Social Connections at the University*, $\chi^2(7) = 31.163, p < .05$ for *Academic Focus*, and $\chi^2(7) = 48.934,\ p < .05$ for the overall scores.

Table 27

Kruskal-Wallis Test Results for Research Question 3a

Score	Kruskal-Wallis H	df	Asymp. Sig.
Component 1: Feelings	25.189	7	0.001
Component 2: School Spirit	50.029	7	0.000
Component 3: Social	85.595	7	0.000
Component 4: Academic	31.163	7	0.000
Overall Score	53.149	7	0.000

The above ANOVA addressed research question 3a, "Does the program type students are involved in make a difference in Sense of Belonging to the University?" The significant Kruskal-Wallis on all subscores and the overall score led to a rejection of the null hypothesis. This indicated there was a difference in Sense of Belonging to the University based on the program type students belong to. Research question 3b explores further analysis regarding *which* involvement has an effect on Sense of Belonging to the University in the next section.

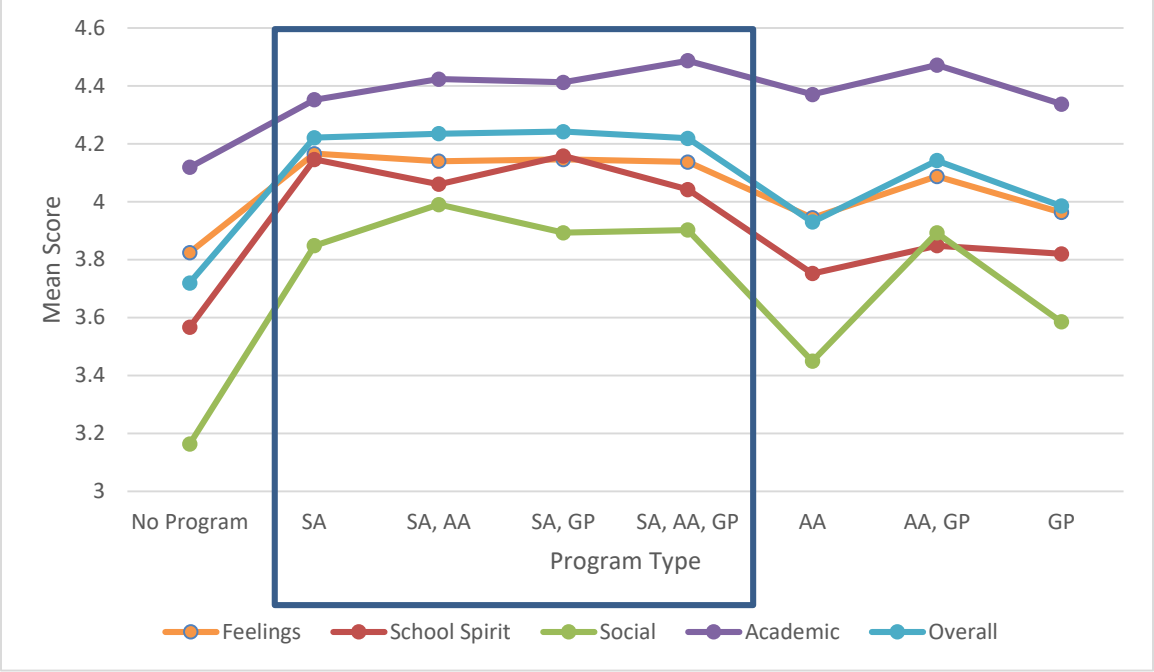
Research Question 3b

The significant Kruskal-Wallis test indicated post hoc analysis was possible for each University Sense of Belonging component as well as the overall scores. The next research question addressed by analysis was, "Do students who participate in Student Affairs programs feel a higher Sense of Belonging to the University than students who do not?" This specific research question led to the following null hypothesis: H_0: $\frac{\mu_1+\mu_2+\mu_3}{3} = \frac{\mu_0+\mu_4+\mu_5+\mu_6+\mu_7}{5}$. The contrast coefficients used on each group mean based on this hypothesis were $-\frac{1}{5}, \frac{1}{3}, \frac{1}{3}, \frac{1}{3}, -\frac{1}{5}, -\frac{1}{5}, -\frac{1}{5}, -\frac{1}{5}$. These contracts coefficients were then evaluated at $\alpha_{PC} = .025$ to control for the Type I Error-rate. The null hypothesis for *School Spirit*, *Social Connections at the University*, and the overall score was rejected; the effect of Student Affairs impact had no effect on *Feelings that Impact Belonging* and *Academic Focus & Support*. The test statistics for these scores were $t(598) = 4.013, p < .025$ for the *School Spirit* subscore, $t(598) = 4.357, p < .025$ for the *Social Connections at the University* subscore, and $t(598) = 3.118, p < .025$ for

the overall score. The rejection of the null hypothesis indicated there is a significant difference in the level of Sense of Belonging to the University between those students who are part of a Student Affairs program and students who are part of any other program type. After taking a look at the mean plots in Figure 11, the means indicate the program type groups that have Student Affairs in them are higher than the other program types, therefore the significant difference is that students who participate in a Student Affairs program feel a higher Sense of Belonging to the University than students who do not for *School Spirit*, *Social Connections at the University*, and the overall scores.

Figure 11

Mean Plots of Component Scores & Overall Scores



An additional post-hoc analysis test was run in SPSS in order to further evaluate differences among the program type groups for all four subscores and the overall score. The post-hoc analysis chosen was the Tukey test which, "enables us to examine *all pairwise* group comparisons with the experimentwise (overall) α level held in check" (Stevens, 1999, p. 86). The

family-wise error rate used for post hoc analysis was $\mu_{FW} = 0.05$, therefore the per-contrast error rate used for each individual post-hoc test used a per-contract error rate of $\mu_{PC} = .025$. The results of the Tukey HSD test are in Table 28.

Table 28

Tukey HSD Analysis Results

Dependent Variable	Program Type (I)	Program Type (J)	Mean Difference (I-J)	Std. Error	Sig.
Component 1: Feelings	SA	SA, AA	0.025	0.139	1.000
		SA, GP	0.020	0.110	1.000
		SA, AA, GP	0.029	0.105	1.000
		AA	0.222	0.130	0.682
		AA,GP	0.079	0.116	0.997
		GP	0.203	0.108	0.559
		No Program	0.342	0.106	0.030
	SA, AA	SA, GP	-0.005	0.133	1.000
		SA, AA, GP	0.004	0.128	1.000
		AA	0.196	0.149	0.894
		AA, GP	0.053	0.137	1.000
		GP	0.178	0.131	0.875
		No Program	0.316	0.130	0.224
	SA, GP	SA, AA, GP	0.009	0.097	1.000
		AA	0.201	0.123	0.730
		AA, GP	0.059	0.108	0.999
		GP	0.183	0.100	0.596
		No Program	0.322	0.098	0.025
	SA, AA, GP	AA	0.192	0.118	0.734
		AA, GP	0.050	0.103	1.000
		GP	0.174	0.094	0.578
		No Program	0.313	0.092	*0.017
	AA	AA, GP	-0.143	0.128	0.954
		GP	-0.018	0.121	1.000
		No Program	0.120	0.120	0.974
	AA, GP	GP	0.124	0.106	0.938
		No Program	0.263	0.104	0.189
	GP	No Program	0.139	0.096	0.833
Component 2: School Spirit	SA	SA, AA	0.086	0.153	0.999
		SA, GP	-0.013	0.121	1.000
		SA, AA, GP	0.179	0.0141	1.000
		AA	0.308	0.165	0.572
		AA, GP	0.211	0.151	0.858
		GP	0.240	0.144	0.711
		No Program	0.494	0.413	*0.013
	SA, AA	SA, GP	-0.099	0.146	0.998
		SA, AA, GP	0.0179	0.141	1.000
		AA	0.308	0.465	0.572

Dependent Variable	Program Type (I)	Program Type (J)	Mean Difference (I-J)	Std. Error	Sig.
		AA, GP	0.211	0.151	0.858
		No Program	0.494	0.143	*0.013
	SA, GP	SA, AA, GP	0.116	0.106	0.958
		AA	0.406	0.136	0.057
		AA,GP	0.310	0.119	0.158
		GP	0.338	0.110	0.045
		No Program	0.592	0.108	*0.000
	SA, AA, GP	AA	0.290	0.130	0.338
		AA, GP	0.194	0.113	0.679
		GP	0.222	0.103	0.383
		No Program	0.479	0.101	*0.000
	AA	AA, GP	-0.096	0.141	0.997
		GP	-0.068	0.133	1.000
		No Program	0.186	0.132	0.852
	AA, GP	GP	0.028	0.116	1.000
		No Program	0.283	0.115	0.216
	GP	No Program	0.254	0.105	0.234
Component 3: Social	SA	SA, AA	-0.142	0.140	0.972
		SA, GP	-0.046	0.111	1.000
		SA, AA, GP	-0.054	0.106	1.000
		AA	0.399	0.131	0.049
		AA, GP	-0.044	0.117	1.000
		GP	0.263	0.109	0.233
		No Program	0.685	0.107	*0.000
	SA, AA	SA, GP	0.097	0.134	0.996
		SA, AA, GP	0.088	0.130	0.997
		AA	0.541	0.151	*0.009
		AA, GP	0.098	0.139	0.997
		GP	0.405	0.132	0.046
		No Program	0.857	0.131	*0.000
	SA, GP	SA, AA, GP	-0.009	0.097	1.000
		AA	0.445	0.124	*0.009
		AA, GP	0.001	0.109	1.000
		GP	0.308	.0101	0.047
		No Program	0.730	0.099	*0.000
	SA, AA, GP	AA	0.453	0.119	*0.004
		AA, GP	0.010	0.104	1.000
		GP	0.317	0.095	*0.019
		No Program	0.739	0.093	*0.000
	AA	AA, GP	-0.443	0.129	*0.015
		GP	-0.136	0.122	0.953
		No Program	0.286	0.121	0.263
	AA, GP	GP	0.307	0.107	0.079
		No Program	0.729	0.105	*0.000
	GP	No Program	0.422	0.096	*0.000
Component 4: Academic	SA	SA, AA	-0.071	0.109	0.998
		SA, GP	-0.060	0.086	0.997
		SA, AA, GP	-0.135	0.082	0.724

Dependent Variable	Program Type (I)	Program Type (J)	Mean Difference (I-J)	Std. Error	Sig.
		AA	-0.018	0.102	1.000
		AA, GP	-0.120	0.091	0.891
		GP	0.015	0.084	1.000
		No Program	0.233	0.083	0.097
	SA, AA	SA, GP	0.011	0.104	1.000
		SA, AA, GP	-0.064	0.101	0.998
		AA	0.052	0.117	1.000
		AA, GP	-0.049	0.108	1.000
		GP	0.086	0.103	0.991
		No Program	0.304	0.102	0.058
	SA, GP	SA, AA, GP	-0.075	0.076	0.976
		AA	0.041	0.097	1.000
		AA, GP	-0.060	0.085	0.997
		GP	0.074	0.078	0.980
		No Program	0.293	0.077	*0.004
	SA, AA, GP	AA	0.117	0.093	0.915
		AA, GP	0.015	0.081	1.000
		GP	0.150	0.073	0.454
		No Program	0.368	0.072	*0.000
	AA	AA, GP	-0.101	0.100	0.973
		GP	0.034	0.095	1.000
		No Program	0.252	0.094	0.132
	AA, GP	GP	0.135	0.083	0.734
		No Program	0.353	0.082	*0.001
	GP	No Program	0.218	0.075	0.073
Overall Score	SA	SA, AA	-0.139	0.132	1.000
		SA, GP	-0.020	0.105	1.000
		SA, AA, GP	0.002	0.100	1.000
		AA	0.292	0.124	0.264
		AA, GP	0.079	0.110	0.996
		GP	0.236	0.103	0.293
		No Program	0.502	0.101	*0.000
	SA, AA	SA, GP	-0.006	0.127	1.000
		SA, AA, GP	0.016	0.122	1.000
		AA	0.306	0.143	0.388
		AA, GP	0.093	0.131	0.997
		GP	0.250	0.125	0.479
		No Program	0.516	0.124	*0.001
	SA, GP	SA, AA, GP	0.022	0.092	1.000
		AA	0.312	0.118	0.139
		AA, GP	0.100	0.103	0.979
		GP	0.257	0.095	0.126
		No Program	0.522	0.094	*0.000
	SA, AA, GP	AA	0.290	0.113	0.170
		AA, GP	0.077	0.098	0.994
		GP	0.234	0.089	0.149
		No Program	0.500	0.088	*0.000
	AA	AA, GP	-0.202	0.122	0.663

Dependent Variable	Program Type (I)	Program Type (J)	Mean Difference (I-J)	Std. Error	Sig.
		GP	-0.055	0.115	1.000
		No Program	0.211	0.114	0.591
	AA, GP	GP	0.157	0.101	0.776
		No Program	0.423	0.100	*0.001
	GP	No Program	0.266	0.091	0.071

Notes: All of the significant pairings are marked with an asterisk (*). The programs within the Program Type variable were coded correspondingly: SA = Student Affairs, AA = Academic Affairs, GP = Generic Program.

According to the Tukey test of pairwise comparisons, students in Student Affairs programs had significantly higher Sense of Belonging to the University levels in the following situations:

- *Feelings that Impact Belonging* subscores were higher for students who were in all three types of programs (Student Affairs, Academic Affairs, and a Generic Program) as compared to students in no program;
- *School Spirit* subscores were higher for all program type groups with Student Affairs in them (i.e., involvement in only Student Affairs programs or involvement in Student Affairs programs along with Academic Affairs and/or Generic Programs) as compared to students in no program;
- *Social Connections at the University* subscores were higher for all program types with Student Affairs in them (i.e., involvement in only Student Affairs programs or involvement in Student Affairs programs along with Academic Affairs and/or Generic Programs) as compared to students in no program;
- *Social Connections at the University* subscores were higher for those involved in Student Affairs and Academic Affairs programs and for those involved in Student Affairs and Generic Programs as compared to students in only an Academic Affairs program;
- *Social Connections at the University* subscores were higher for students who were in all three types of programs (Student Affairs, Academic Affairs, and a Generic Program) as

compared to students in only and Academic Affairs program and only a Generic Program;

- *Academic Focus* subscores were higher for students who were involved in both Student Affairs and Generic Program and for students who were involved in all three program types (Student Affairs, Academic Affairs, and a Generic Program) as compared to students in no program;
- Overall scores were higher for students involved in Student Affairs programs alone and for those involved in Student Affairs and other programs as compared to students in no program.

Research Question 3c

In order to address research question 3c, "Which programs in Student Affairs have more of an impact on Sense of Belonging to the university?" we first determined if the dataset would be capable of answering this question. The students who participated in this study were involved in a wide range of programs, as well as a wide range of combinations of student organizations and/or programs. Since there would be many groups with only one participant in this small of a dataset, this research question was rewritten to read, "Does the number of Student Affairs programs a student is in have an impact on Sense of Belonging to the university?" which could be explored with the current dataset. Descriptive statistics for the number of Student Affairs programs groups are included in Table ?. To begin this one-way ANOVA, we started by checking the assumptions again. The first two assumptions of ANOVA, independent samples and no outliers, were already addressed during the analysis for research question 3a.

Table 29

Descriptive Statistics of ANOVA for Research Question 3c

Score	# of Student Affairs Programs	N	M	SD
Component 1: Feelings	1	198	4.088	0.719
	2	69	4.232	0.595

Score	# of Student Affairs Programs	N	M	SD
	3	16	4.233	0.667
	4	5	4.467	0.518
	5	3	4.519	0.257
Component 2: School Spirit	1	198	4.046	0.707
	2	69	4.183	0.582
	3	16	4.173	0.671
	4	5	4.400	0.433
	5	3	4.410	0.194
Component 3: Social	1	198	3.827	0.671
	2	69	4.003	0.561
	3	16	4.040	0.620
	4	5	4.291	0.382
	5	3	4.303	0.319
Component 4: Academic	1	198	4.402	0.561
	2	69	4.446	0.427
	3	16	4.424	0.381
	4	5	4.622	0.348
	5	3	4.704	0.231
Overall Score	1	198	4.166	0.663
	2	69	4.321	0.536
	3	16	4.319	0.587
	4	5	4.567	0.422
	5	3	4.619	0.201

Figure 12

Box-and-Whisker Plot for Number of Student Affairs Programs and *Feelings that Impact Belonging*

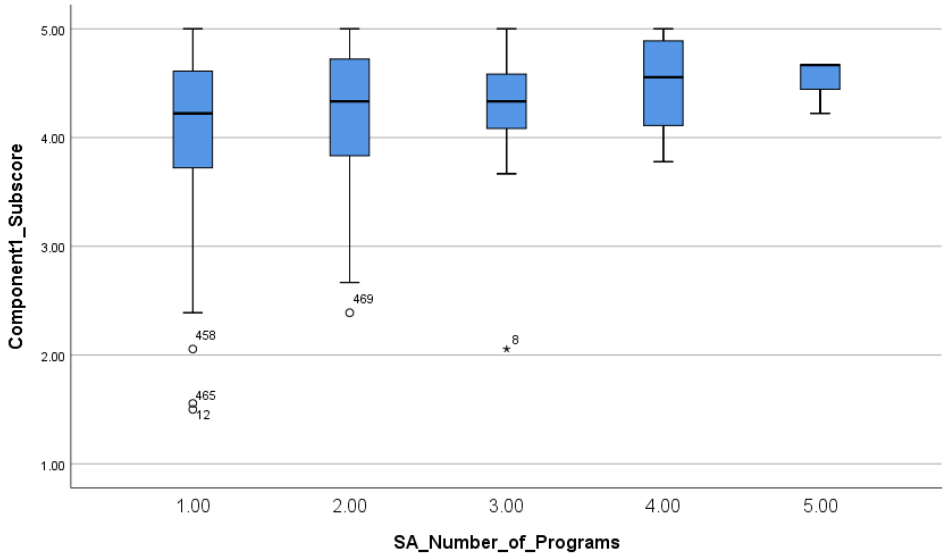


Figure 13

Box-and-Whisker Plot for Number of Student Affairs Programs and *School Spirit*

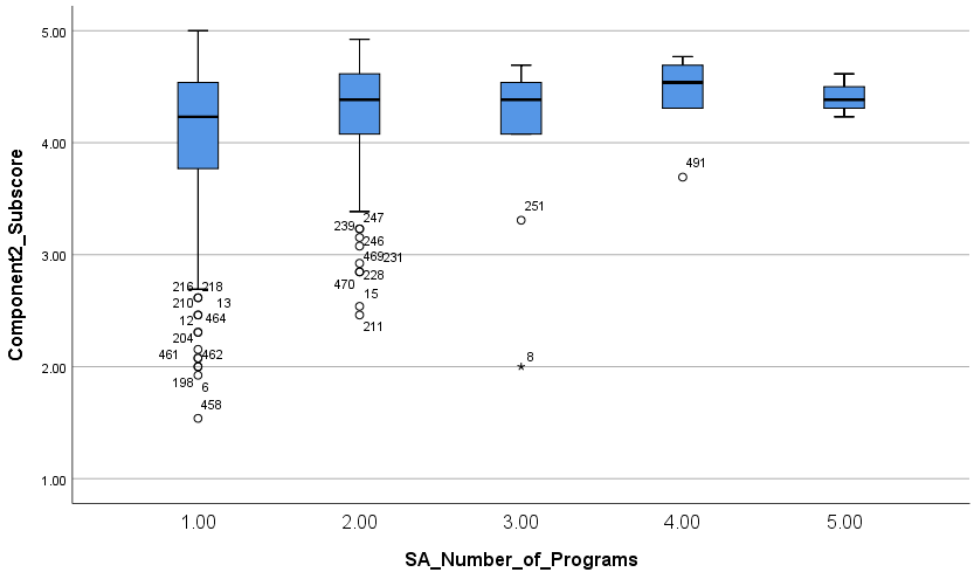


Figure 14

Box-and-Whisker Plot for Number of Student Affairs Programs and *Social Connections at the University*

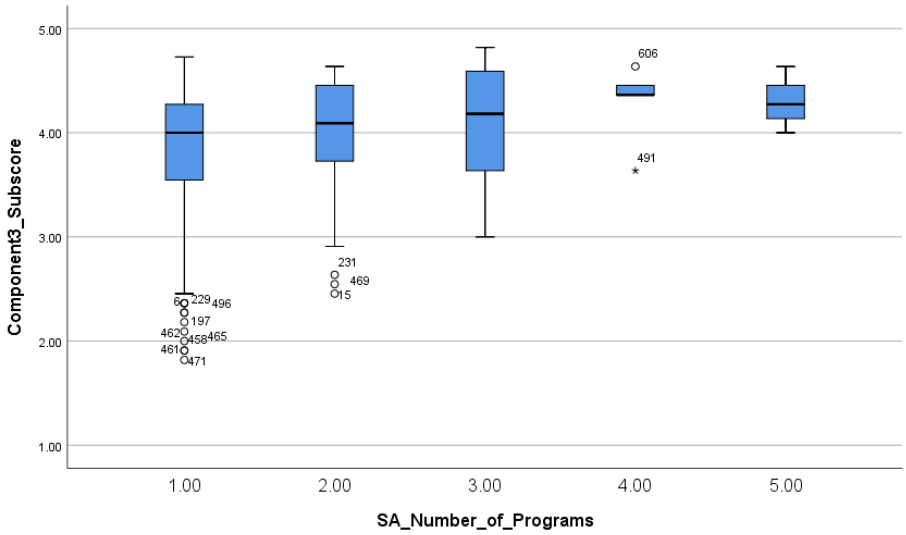


Figure 15

Box-and-Whisker Plot for Number of Student Affairs Programs and *Academic Focus and Support*

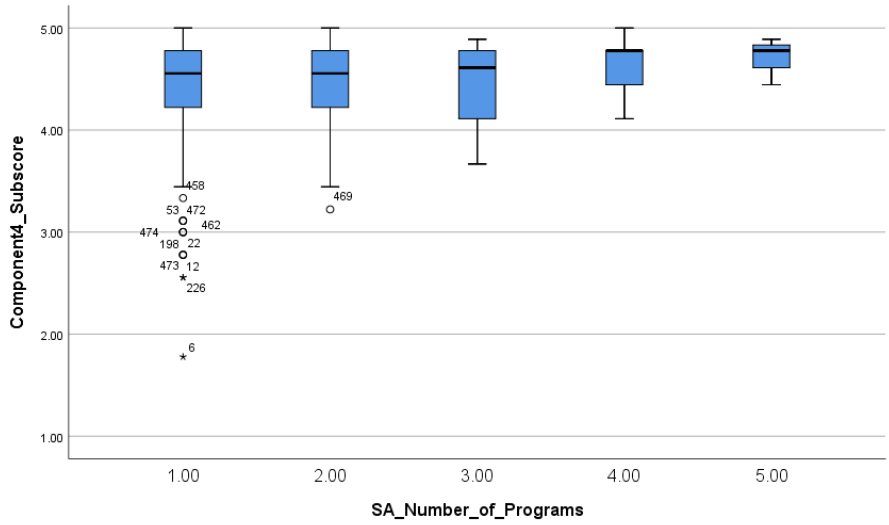
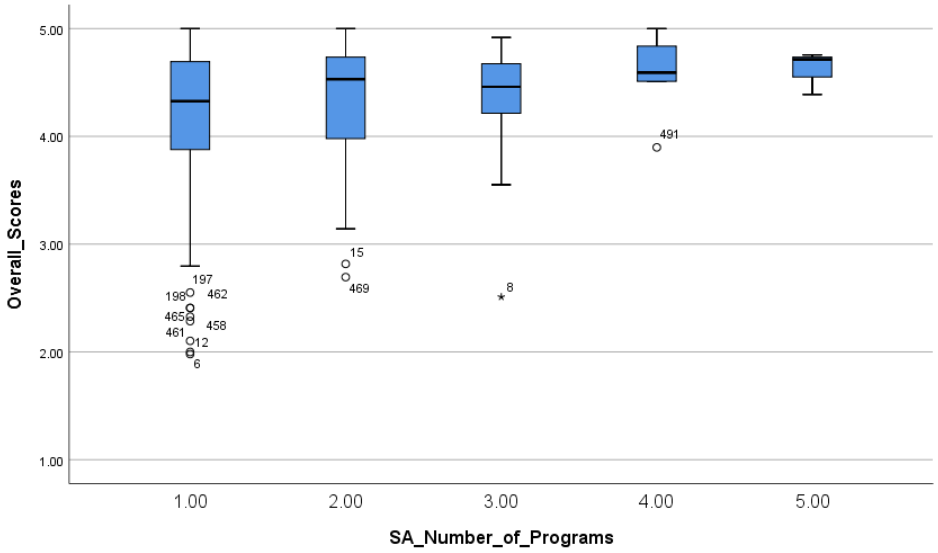


Figure 16

Box-and-Whisker Plot for Number of Student Affairs Programs and Overall Scores



Since there was a new dependent variable, number of Student Affairs programs, the third assumption was checked to determine if the dependent variable within groups is normally distributed in the population. To check this assumption both the skewness and kurtosis for each

dependent and independent variable pairing was observed and the Shapiro-Wilk test was conducted. The criteria of skewness and kurtosis within ±1.0 is not always met for most pairings. Additionally, not all of the Shapiro-Wilk statistics (Table 30) had a significance level of $p > 0.5$, which resulted in the conclusion that the assumption of normality was not met for this dataset. This resulted in the conclusion that the assumption of normality was not met.

Table 30

Shapiro-Wilk Statistics for Research Question 3c

		Shapiro-Wilk		
# of Student Affairs Programs		**Statistic**	**df**	**Sig.**
Component 1: Feelings	1	0.916	198	0.000
	2	0.921	69	0.000
	3	0.752	16	0.001
	4	0.933	5	0.619
	5	0.750	3	0.000
Component 2: School Spirit	1	0.852	198	0.000
	2	0.808	69	0.000
	3	0.679	16	0.000
	4	0.871	5	0.272
	5	0.987	3	0.780
Component 3: Social	1	0.892	198	0.000
	2	0.896	69	0.000
	3	0.905	16	0.095
	4	0.806	5	0.090
	5	0.993	3	0.843
Component 4: Academic	1	0.844	198	0.000
	2	0.912	69	0.000
	3	0.874	16	0.032
	4	0.931	5	0.603
	5	0.923	3	0.463
Overall Score	1	0.888	198	0.000
	2	0.891	69	0.000
	3	0.783	16	0.002
	4	0.925	5	0.561
	5	0.832	3	0.194

The last assumption to check before running this ANOVA was homogeneity of variance, which would indicate the measures of the dependent variables within groups have equal variances (Lomax & Hahs-Vaughn, 2012, p. 310). This assumption is checked by looking at the Levene's statistic in Table 31 and determining whether the significance level is greater than the pre-

determined alpha level of .05. The Levene's statistic was significant for all pairings, $\alpha > 0.05$, therefore the conclusion was made that the assumption of homogeneity of variance was met. The only assumption not met was normal distribution of the dependent variable which does not always warrant a modification. However, the F statistic was not robust in this situation because the population was not identically distributed and sample sizes were not greater than 12 for all groups (Lomax & Hahs-Vaughn, 2012, p. 311). The Kruskal-Wallis Test was the appropriate modification in this situation as well.

Table 31

Levene's Statistic for Research Question 3c

Score	Levene Statistic	df1	df2	Sig.
Component 1: Feelings	1.462	4	286	0.214
Component 2: School Spirit	1.514	4	286	0.198
Component 3: Social	1.701	4	286	0.150
Component 4: Academic	1.318	4	286	0.263
Overall Score	1.783	4	286	0.132

The results of the ANOVA using the Kruskal-Wallis Test can be found in Table 32. A conclusion was made that the effects of the number of Student Affairs programs a student was involved in on all of the Sense of Belonging subscores and the overall score were not different for different numbers. This conclusion was made based on the test statistics $\chi^2(4) = 4.085, p > .05$ for *Feelings that Impact Belonging*, $\chi^2(4) = 4.227, p > .05$ for *School Spirit*, $\chi^2(4) = 8.707, p > .05$ for *Social Connections at the University*, $\chi^2(4) = 1.910, p > .05$ for *Academic Focus and Support*, and $\chi^2(4) = 5.234, p > .05$ for the overall scores. Since the Kruskal-Wallis statistics were not significant, post-hoc analysis is not an option for further analysis of this question.

Table 32

Kruskal-Wallis Test Results for Research Question 3c

Score	Kruskal-Wallis H	df	Asymp. Sig.
Component 1: Feelings	4.085	4	0.395

Score	Kruskal-Wallis H	df	Asymp. Sig.
Component 2: School Spirit	4.227	4	0.376
Component 3: Social	8.707	4	0.069
Component 4: Academic	1.910	4	0.752
Overall_Score	6.200	4	0.185

Research Question 3d

In order to address research question 3d, "What is the state of Sense of Belonging to a University after enduring the changes to college life as a result of Covid-19?" there were multiple ways the data could be analyzed. Only data from Oklahoma State University was used to answer this question, so there was a sample size of 330 for this particular analysis. Of those who answered, the descriptive statistics including mean, standard deviation, minimum, and maximum are included in Table 33.

Table 33

Descriptive Statistics of Covid-19 Labels

Began OSU	Score	N	M	SD	Min.	Max.
pre-Covid	Component 1: Feelings	105	3.942	0.692	1.94	5.00
during Covid		220	4.161	0.588	2.44	5.00
pre-Covid	Component 2: School Spirit	105	3.828	0.803	1.62	5.00
during Covid		225	3.937	0.753	1.54	5.00
pre-Covid	Component 3: Social	105	3.676	0.701	1.64	4.91
during Covid		225	3.676	0.712	1.73	4.91
pre-Covid	Component 4: Academic	105	4.284	0.561	2.44	5.00
during Covid		225	4.392	0.451	2.56	5.00
pre-Covid	Overall Score	105	3.991	0.683	2.16	4.98
during Covid		225	4.122	0.606	2.47	5.00

Figure 17

Box-and-Whisker Plot for Covid Label and *Feelings that Impact Belonging*

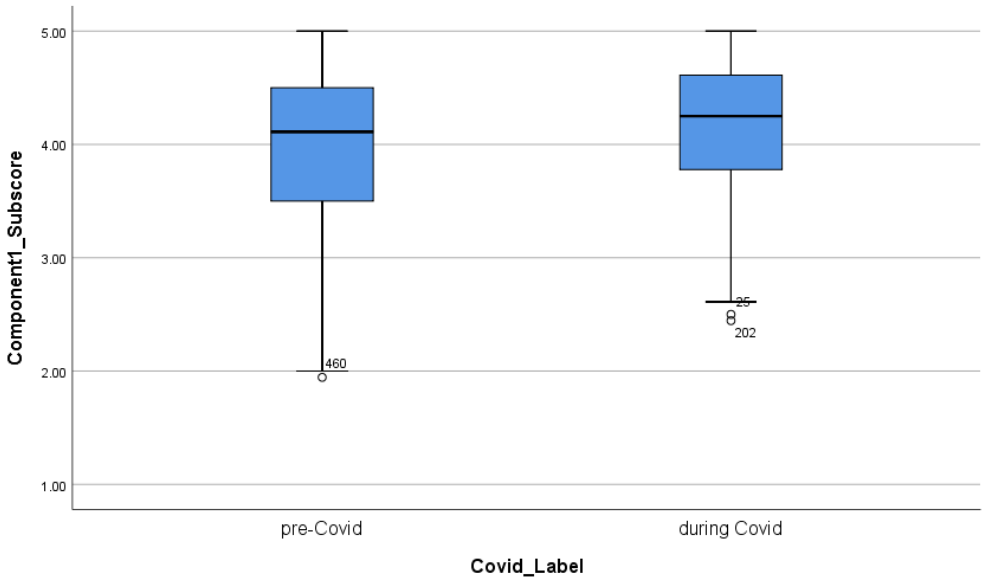


Figure 18

Box-and-Whisker Plot for Covid Label and *School Spirit*

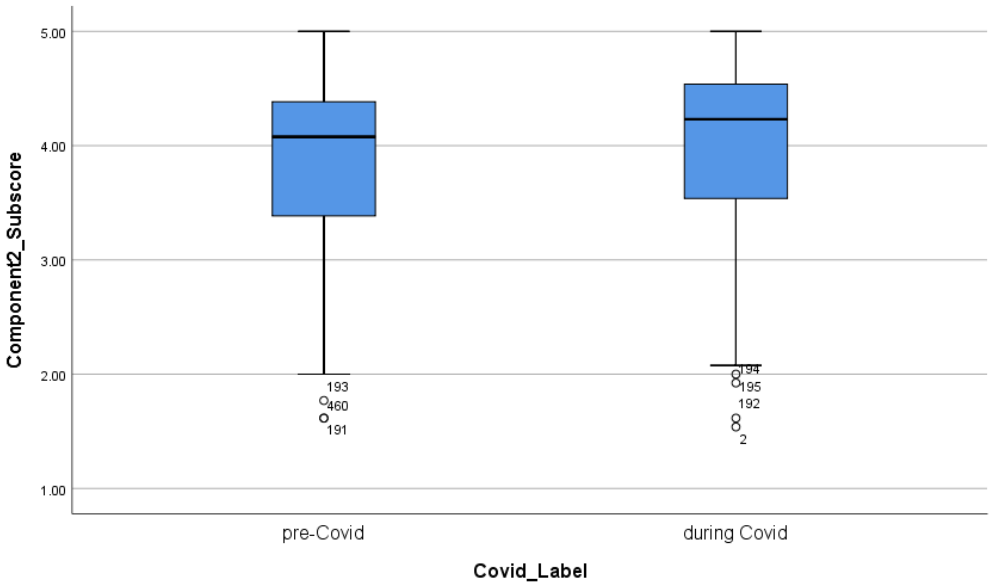


Figure 19

Box-and-Whisker Plot for Covid Label and *Social Connections at the University*

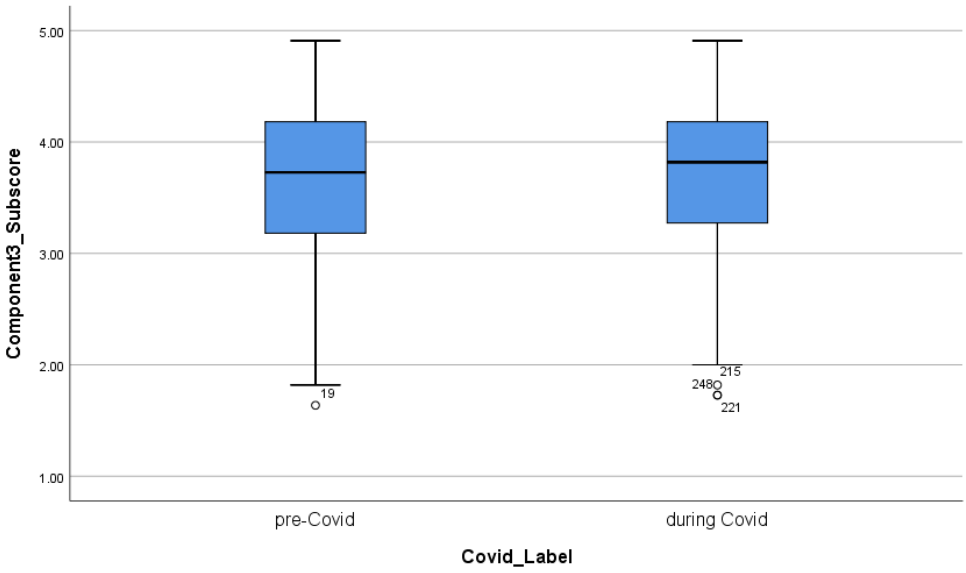


Figure 20

Box-and-Whisker Plot for Covid Label and *Academic Focus and Support*

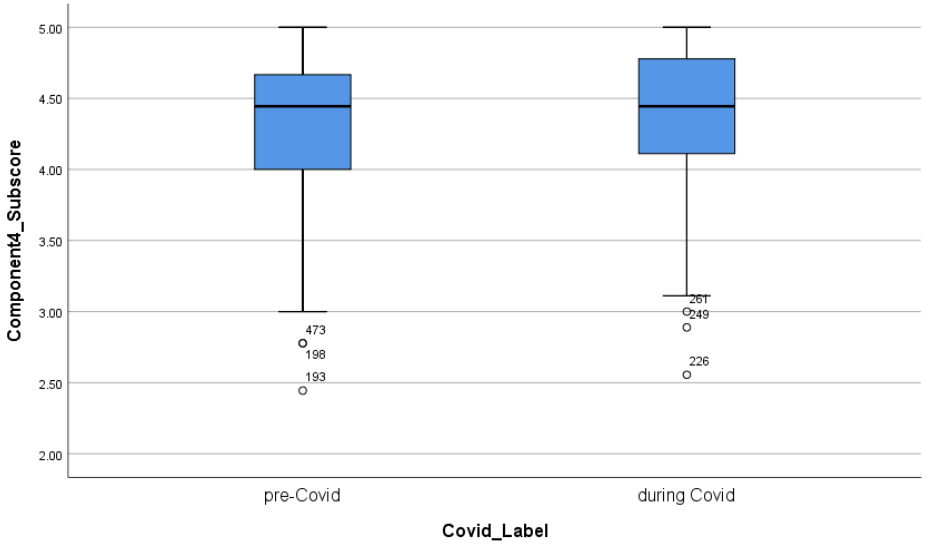
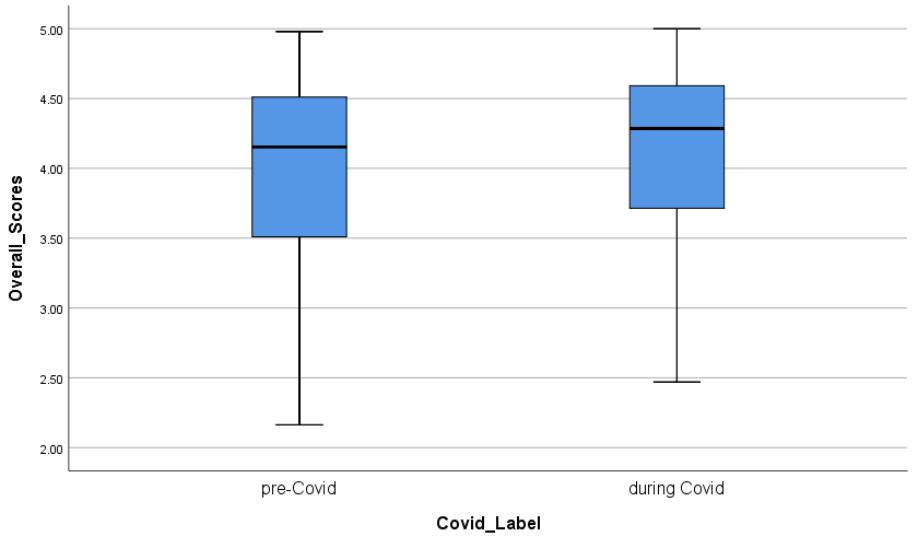


Figure 21

Box-and-Whisker Plot for Covid Label and Overall Scores



To begin this one-way ANOVA, we started by checking the assumptions once more. The first two assumptions of ANOVA, independent samples and no outliers, were already addressed during the analysis for research question 3a.

Since there was a new dependent variable, Covid label (when the respondent began college), the third assumption was checked to determine if the dependent variable within groups is normally distributed in the population. To check this assumption both the skewness and kurtosis for each dependent and independent variable pairing was observed and the Shapiro-Wilk test was conducted. The criteria of skewness and kurtosis within ±1.0 is met by most of the pairings except for both Covid labels on *School Spirit* and both Covid labels on *Academic Focus & Support*. None of the Shapiro-Wilk statistics (Table 34) had a significance level of $p > 0.5$, which resulted in the conclusion that the assumption of normality was not met for this dataset.

Table 34

Shapiro-Wilk Statistics for Research Question 3d

			Shapiro-Wilk		
		Covid Label	**Statistic**	**df**	**Sig.**
Component 1: Feelings	pre-Covid		0.950	103	0.001

	during Covid	0.950	224	0.000
Component 2: School Spirit	pre-Covid	0.887	106	0.000
	during Covid	0.885	224	0.000
Component 3: Social	pre-Covid	0.955	106	0.001
	during Covid	0.946	224	0.000
Component 4: Academic	pre-Covid	0.912	106	0.000
	during Covid	0.927	224	0.000
Overall Score	pre-Covid	0.933	106	0.000
	during Covid	0.933	224	0.000

The last assumption to check before running this ANOVA was homogeneity of variance, which would indicate the measures of the dependent variables within groups have equal variances (Lomax & Hahs-Vaughn, 2012, p. 310). This assumption is checked by looking at the Levene's statistic and determining whether the significance level is greater than the pre-determined alpha level of .05. The Levene's statistic was significant for all pairings, $\alpha > 0.05$, except for *Academic Focus and Support*. The conclusion was made that the assumption of homogeneity of variance was met for all Sense of Belonging scores except for *Academic Focus*.

Table 35

Levene's Statistic for Research Question 3d

Score	Levene Statistic	df1	df2	Sig.
Component 1: Feelings	3.735	1	328	0.054
Component 2: School Spirit	0.262	1	328	0.609
Component 3: Social	0.111	1	328	0.739
Component 4: Academic	5.548	1	328	0.019
Overall Score	2.554	1	328	0.111

Since the assumptions of normality and homogeneity were not met for all scores, a Kruskal-Wallis test was used once more. Results in Table 36 suggested there was only a significant difference in the Sense of Belonging scores across Covid label groups for component 1, *Feelings that Impact Belonging*. This conclusion was made based on the test statistics $\chi^2(1) = 6.928, p < .05$ for *Feelings that Impact Belonging*, $\chi^2(1) = 1.893, p > .05$ for *School Spirit*, $\chi^2(1) = 0.013, p > .05$ for *Social Connections at the University*, $\chi^2(1) = 1.615, p > .05$ for

Academic Focus and Support, and $\chi^2(1) = 2.119, p > .05$ for the overall scores. Post-hoc analysis was not appropriate in this situation.

Table 36

Kruskal-Wallis Test Results for Research Question 3d

Score	Kruskal-Wallis H	df	Asymp. Sig.
Component 1: Feelings	6.928	1	0.008
Component 2: School Spirit	1.893	1	0.169
Component 3: Social	0.013	1	0.911
Component 4: Academic	1.615	1	0.204
Overall_Score	2.373	1	0.123

Summary

The empirical analysis of the first phase of research led to the development of a new definition for Sense of Belonging to the University, and the themes identified within the data informed the development of the University Student Belonging Scale (USBS). Principal components analysis indicated a four-component structure was the best fit for the data: *Feelings that Impact Belonging* (20 items), *School Spirit* (13 items), *Social Connections at the University* (12 items), and *Academic Focus & Support* (9 items). Scores can be calculated for each component and as an overall score for Sense of Belonging to the University, with the final version of this 54-item measurement instrument.

The results in the evaluation phase indicate the program type (i.e., Student Affairs, Academic Affairs, or other groups) in which a student is involved can make a difference on their level of Sense of Belonging to the University. However, the number of Student Affairs programs in which a student is involved does not have an impact on Sense of Belonging to the University. An investigation into the differences between students who began attending classes prior to the Covid-19 pandemic and students who began attending classes during the Covid-19 pandemic revealed there was only a statistical difference between these groups for *Feelings that Impact Belonging*.

CHAPTER V

DISCUSSION

Introduction

The three phases of research conducted in this study were designed to explore Sense of Belonging to the University from the student perspective and to create a more comprehensive measurement instrument for Sense of Belonging to the University that could be widely used by practitioners in higher education. Throughout the literature review, it was evident that Sense of Belonging to the University plays a role in the success of university students, therefore making it an important construct for further research. The findings of all three phases of this research will be reviewed throughout this chapter and compared to previous research on the construct of Sense of Belonging to the University. Additionally, guidance for using the instrument created in this study will be provided, along with recommendations for further steps to continue validation of the University Student Belonging Scale. The analysis from the third phase begins to explore the results of the first data collection with this new instrument, and a better understanding of the role of Student Affairs programs and the Covid-19 pandemic can be achieved through this analysis. This chapter will be organized based on the three phases of the methodology and ultimately will answer the research questions in order:

- Research Design Phase 1: Definition

- How do college/university students in the Southern Midwest region of the United States define Sense of Belonging to the University that they currently attend?

- Research Design Phase 2: Measurement
  - Is the measurement tool created in this study valid among university students?
- Research Design Phase 3: Evaluation
  - Does involvement in specific programs have an effect on Sense of Belonging to a University?
    a. Does the program type students are involved in make a difference in Sense of Belonging to the University?
    b. Do students who participate in Student Affairs programs feel a higher Sense of Belonging to the University than students who do not?
    c. Does the number of Student Affairs programs a student is in make an impact on Sense of Belonging to the university?
    d. What is the state of Sense of Belonging to a University after enduring the changes to college life as a result of the COVID-19 pandemic?

Summary of Findings

Phase 1: Definition

The research question for Phase 1 of this study was, "How do college/university students in the Southern Midwest region of the United States define Sense of Belonging to the University that they currently attend?" All definitions of Sense of Belonging share one thing in common. According to Strayhorn (2019), all definitions attempt to describe a psychological experience. The thematic analysis of the 10 Words Question data revealed the multi-faceted nature of Sense of Belonging to the University and described this psychological experience from the students' perspective. The nine most common themes were *Relationships with People,* "*I Belong When Others Are…," Personal Feelings*, *Academics*, *"Things I Gain When I Belong," "Belonging*

is…," Places, *Feelings in Comparison to Others*, and *Out-of-the-Classroom Experiences*. When the term psychological experience is broken down, it can be described as a conscious event affecting the mind (Psychology Dictionary, n.d.; dictionary.com, n.d.). All of the thematic clusters found through analysis of the 10 Words Question data fits within this definition of the term psychological experience. Some of the themes are easier to explain as a psychological experience, such as the themes based on relationships and feelings. Others may seem more abstract; however, themes like *Academics* and *Places* describe conscious events such as attending class or going to a particular restaurant, and these events have the ability to have an impact on students mentally. This finding reinforced the need to describe Sense of Belonging to the University as a psychological experience through the new definition written in this phase of research.

The way in which the researcher chose to define this psychological experience in the new definition was by describing a student's ability "to be your authentic self." Havens (1986) indicates, "the authentic self develops from the acknowledgement of both impulse and prohibition as one's own" (p. 377). Authentic self can actually be better described through examples of losing one's authentic self, such as lacking the courage to live by one's values or not being able to reflect upon oneself or another's perspective (Havens, 1986). Since two of the most prevalent themes in the 10 Words Question data focused on feelings which often take courage to express and/or acknowledge, this seemed to align with one's ability to be their authentic self. Feelings are natural impulses that occur before, during, and after a psychological experience, and students are their most authentic selves when they are able to express and reflect upon their feelings. This rationale combined with the most prevalent theme of *Relationships with People* culminated into the final definition, "The extent to which the strength of your relationships at your university allow you to be your authentic self."

This definition is both similar and different from the other definitions mentioned in the literature review. One of the main factors that differentiates the definitions of Sense of Belonging

is whether they describe a one-way or two-way relationship in regards to the person and/or a system, which would be the University in this setting. Goodenow (1993) and Brown (2021) refer to Sense of Belonging as a one-way relationship where the responsibility of feeling like you belong lies solely on the person. Anant (1966) and Hagerty and Patusky (1995) describe more of a two-way relationship where the responsibility lies upon both the person and the organization to which they may or may not belong. **The definition created in Phase 1, "The extent to which the strength of your relationships at your university allow you to be your authentic self,"** describes a two-way relationship, however the difference is that the responsibility lies upon the person and the other people they have relationships with rather than specifically the university. This difference is important to mention because a student's strongest relationships may be with members of their church or their local barista. Although the Sense of Belonging we are measuring is to their University, their relationships do not have to be an official entity of the university in order to affect their Sense of Belonging to the University.

Phase 2: Measurement

There are many measurement instruments for Sense of Belonging, as mentioned in the literature review for this study. The University Student Belonging Scale developed in this study differs from already existing instruments in multiple ways. One of the most significant differences is the number of items that were retained in the final version of this instrument. A comparison of the number of items in the SOBI, GBS, PSSM, UBQ, and USBS can be found in Table 37. The number of items in the final version of the University Student Belonging Scale is almost more than double the number of items in all other instruments with a total of 54 items retained. This makes the instrument from this study more comprehensive than other instruments, and likely more specific to the university setting. While, more items may lengthen the amount of time it takes a participant to complete the survey, the results will give those who administer the survey a deeper insight into how and why students are reporting their Sense of Belonging to the University in the way that they are.

Table 37

Measurement Instrument Basic Comparisons

Instrument	# of Items	Intended Audience	Analysis Techniques Used
Sense of Belonging Instrument (SOBI)	27	Generic	PCA, ANOVA
General Belongingness Scale (GBS)	12	Generic	EFA, CFA, Hierarchical Regression
Psychological Sense of School Membership (PSSM)	18	K-12 Students	EFA, CFA, Cluster Analysis
University Belonging Questionnaire (UBQ)	24	University Students	EFA, CFA
University Student Belonging Scale (USBS)	54	University Students	PCA, ANOVA, Tukey & Contrast Coefficient Post-hoc

Another worthwhile comparison is the analysis techniques used to develop each instrument. An exploratory factor analysis followed by a confirmatory factor analysis appears to be a common approach as represented in Table 37, however not all of the instruments were initially developed using this technique. Most notably, the PSSM was utilized in the K-12 academic setting for many years without first conducting any type of factor analysis (Hagborg, 1994; Hagborg, 1998; O'Farrell & Morrison, 2003; Cheung & Hui, 2003). There have been multiple factor analyses performed on the PSSM, but the results are conflicting whether or not the instrument represents a unidimensional construct or a three-factor construct (You et al., 2011; Abubakar et al., 2015). This conflict might have been avoided had the initial development of the PSSM involved factor analysis before it was utilized. Since the purpose of the instrument developed in this study was to be utilized by administrators campus-wide, hopefully at a variety of universities, it was imperative that we performed a similar data reduction technique before it is recommended for use.

The research question for Phase 2 of this study was, "Is the measurement tool created in this study valid among university students?" This study started the process of validating the University Student Belonging Scale by performing a principal components analysis combined

with parallel analysis to determine the best fit for the component structure and to eliminate items that either were not adequately measuring one of the components or were distracting within the instrument. This analysis resulted in a four-component structure: *Feelings that Impact Belonging, School Spirit, Social Connections at the University,* and *Academic Focus and Support*. These components are compared to the other components or factors found in the other measurement instruments in Table 38. Interestingly, the UBQ, which is the other instrument that is intended to be used on university students, also had a four-component structure, although the components appear to be more relational than the components found in the University Student Belonging Scale. Two of the other instruments, the GBS and PSSM, include acceptance and rejection as factors. Both acceptance and rejection are addressed within the items in the University Student Belong Scale, however they fall within a broader component, either *Feelings that Impact Belonging* or *Social Connections at the University*. This suggests that a Sense of Belonging to the University is much more complex than feeling rejected or accepted.

Table 38

Measurement Instrument Component Comparisons

Instrument	Component 1	Component 2	Component 3	Component 4
Sense of Belonging Instrument (SOBI)	Psychological	Antecedents		
General Belongingness Scale (GBS)	Rejection/ Exclusion	Acceptance/ Inclusion		
Psychological Sense of School Membership (PSSM)	Caring Relationships	Acceptance	Rejection	
University Belonging Questionnaire (UBQ)	Valued Group Involvement	Meaningful Personal Relationships	Environmental Factors	Intrapersonal Factors
University Student Belonging Scale (USBS)	Feelings that Impact Belonging	School Spirit	Social Connections at the University	Academic Focus & Support

The final version of the Likert-scale items in the University Student Belonging Scale can be found in Appendix D. These items could be combined with other questions about

demographics, similar or opposite constructs for comparison, or even other types of Sense of Belonging related questions such as the definition questions that were included in this study. However, these 54 questions are all that is needed to calculate subscores for *Feelings that Impact Belonging, School Spirit, Social Connections at the University, Academic Focus & Support*¸ and overall scores for Sense of Belonging to the University. The subscores are calculated by first reverse coding all negatively-worded items and then calculating averages of the item responses for items within each component. The overall score is calculated by then taking an average of all of the items. Calculating the scores in this way should make this instrument user friendly for administrators at any level within higher education.

Phase 3: Evaluation

Research Question 3a

The first research question of Phase 3 was, "Does the program type students are involved in make a difference in Sense of Belonging to the University?" The results of the Kruskal-Wallis test, a modification to the one-way ANOVA when the assumptions of normality and homogeneity of variance are not met, indicated there is a difference in Sense of Belonging to the University based on the program type students belong to. As discussed in the literature review, many campuses are implementing intentional interventions to build a Sense of Belonging to the University among their students. Some of these examples are sponsored by Student Affairs departments such as living learning programs, while others are more general such as giving new students items in the school colors when they arrive on campus (Knekta & McCartney, 2021; Hausmann, Schofield, & Woods, 2007).

Determining there is a difference in Sense of Belonging to the University based on the program type students are involved in, indicates further intention should be placed on which programs are being implemented when the goal is to impact Sense of Belonging to the University. Devoting resources to those programs with the largest potential for impact could lead to Universities being more efficient. Additionally, administrators are likely to see a direct impact on

persistence and motivation which have also been shown to be related to the level of Sense of Belonging of University students. Which programs should be implemented? The next research question more directly addresses this question, which is a natural next step.

Research Question 3b

The second research question of Phase 3 was, "Do students who participate in Student Affairs programs feel a higher Sense of Belonging to the University than students who do not?" The results of the post-hoc analysis, a continuation of the analysis for Research Question 3a, indicated there are situations when students in Student Affairs programs had significantly higher Sense of Belonging to the University levels. Those situations include:

- *Feelings that Impact Belonging* subscores were higher for students who were in all three types of programs (Student Affairs, Academic Affairs, and a Generic Program) as compared to students in no program;
- *School Spirit* subscores were higher for all program type groups with Student Affairs in them (i.e., involvement in only Student Affairs programs or involvement in Student Affairs programs along with Academic Affairs and/or Generic Programs) as compared to students in no program;
- *Social Connections at the University* subscores were higher for all program types with Student Affairs in them (i.e., involvement in only Student Affairs programs or involvement in Student Affairs programs along with Academic Affairs and/or Generic Programs) as compared to students in no program;
- *Social Connections at the University* subscores were higher for those involved in Student Affairs and Academic Affairs programs and for those involved in Student Affairs and Generic Programs as compared to students in only an Academic Affairs program;
- *Social Connections at the University* subscores were higher for students who were in all three types of programs (Student Affairs, Academic Affairs, and a Generic Program) as

compared to students in only and Academic Affairs program and only a Generic Program;

- *Academic Focus* subscores were higher for students who were involved in both Student Affairs and Generic Program and for students who were involved in all three program types (Student Affairs, Academic Affairs, and a Generic Program) as compared to students in no program;
- Overall scores were higher for students involved in Student Affairs programs alone and for those involved in Student Affairs and other programs as compared to students in no program.

In summary, students who were at least involved in a Student Affairs program reported higher levels of Sense of Belonging to the University than students who were not in any programs. Additionally, the students at least in Student Affairs programs have higher levels of *Social Connections at the University* than students only involved in Academic Affairs or only in Generic Programs.

Although the claim cannot be made that Student Affairs programs alone cause higher levels of Sense of Belonging to the University, results indicate that there is some connection between Student Affairs programs alone or in combination with other programs with having higher levels of Sense of Belonging to the University, especially when it comes to social connections. The results of this analysis justify recommending that students who are not involved in any student organizations or out-of-classroom programs would benefit by getting involved in something in order to increase their level of Sense of Belonging to the University. More specifically, if students who are not already involved in something are looking to strengthen their social relationships, a Student Affairs program would be the strongest recommendation.

Research Question 3c

The third research question for Phase 3 was, "Does the number of Student Affairs programs a student is in make an impact on Sense of Belonging to the University?" The results of the Kruskal-Wallis test for this question indicated there is no difference in Sense of Belonging to the University based on the number of Student Affairs programs students are involved in. This analysis suggests an overwhelming amount of involvement or a very "padded" resume is not required to impact the level of Sense of Belong to the University that students experience. Being involved in one Student Affairs program can have the same impact as being involved in five Student Affairs programs. Might this suggest that a Sense of Belonging to the University doesn't "add up," but rather the simple act of having the experience or the degree of involvement in a program matters more?

Research Question 3d

The last research question for Phase 3 was, "What is the state of Sense of Belonging to a University after enduring the changes to college life as a result of the COVID-19 pandemic?" One way to address this question was by comparing the Sense of Belonging to the University scores between students who had started taking classes at their respective universities prior to the Covid-19 pandemic starting and students who started taking classes during the Covid-19 pandemic. The results of the Kruskal-Wallis test for this question indicated there was a significant difference in the Sense of Belonging to the University scores across Covid label groups for the subcomponent of *Feelings that Impact Belonging*; however, *School Spirit, Academic Focus* and *Social Connections* were not significantly different for the two groups. This was an interesting finding because the true impact of the Covid-19 pandemic may not be understood for many years to come. Although post-hoc analysis was not possible for this analysis because there were only two groups in the independent variable, it can be concluded that students are reporting differently

about many of their feelings in relation to the university depending on when they began taking classes at their respective university in comparison to when the Covid-19 pandemic began.

Another way to address this research question is to simply take a glance at the current levels of Sense of Belonging to the University using descriptive statistics. Every student has had a different experience with the Covid-19 pandemic, so a simple snapshot of the current state of Sense of Belonging to the University can give us a baseline of where students are at now and where they might be able to go in regards to Sense of Belonging to the University. The descriptive statistics in Table 39 show there is a wide range between the minimums and maximums for all scores. However, the means for each score are encouraging because these range from 3.69 to 4.36 which are all positive scores, indicating a higher level of Sense of Belonging to the University, on the 5-point Likert scale. On average, our students may be doing well in regards to Sense of Belonging to the University, but the lower minimums indicate students of concern still exist.

Table 39

Descriptive Statistics of Subscores & Overall Scores

Score	# Items	α	Min.	Max.	*M*	*SD*
Feelings that Impact Belonging Subscore	20	0.926	1.53	5.00	4.05	0.68
School Spirit Subscore	13	0.931	1.31	5.00	3.91	0.76
Social Connections at the University Subscore	12	0.904	1.42	4.92	3.72	0.73
Academic Focus and Support Subscore	9	0.777	1.78	5.00	4.36	0.54
Overall Sense of Belonging Score	54		1.99	4.86	4.01	0.60

Implications

Phase 1: Definition

Administrators in higher education cannot tell their students whether or not they have a Sense of Belonging to the University. Only the students themselves can determine whether or not

they feel as if they Belong. Utilizing a definition written using the perspective of students strengthens the understanding and impact administrators may have on developing a Sense of Belonging to the University for their students. Additionally, shifting the focus of the two-way relationship from student and university to student and the people they have relationships while at the university provides clarity for higher education administrators who may want to focus on changing students' Sense of Belonging to the University. Rather than asking the question "What can the University do to make a difference in Sense of Belonging to the University?" the question may be phrased as "What can we do to strengthen students' relationships to make a difference in Sense of Belonging to the University?"

Phase 2: Measurement

The development of the University Student Belonging Scale furthers the exploration of Sense of Belonging to the University by serving as a new tool for administrators to use to better understand an abstract construct. No measurement instrument will be able to address all of the intricacies of what it truly means to belong, however this instrument will allow higher education administrators to gain a glimpse of the state of a Sense of Belonging to the University on their campuses. The idea of setting a goal to increase the Sense of Belonging to the University among university students is admirable, but no goal can be met without a way to measure that goal's desirable outcome.

The University Student Belonging Scale provides a way for higher education administrators to measure Sense of Belonging to the University on their campuses and whether or not different interventions have an effect on Sense of Belonging to the University or not. It is important to consider when the University Student Belonging Scale is administered because certain campus events such as the very beginning of a semester or Homecoming week could establish a bias within the measurement of Sense of Belonging to the University. Comparison between students is not recommended, however a more ideal use of the University Student Belonging Scale would be comparing scores for the same student at different points throughout

the year or their academic career. More advanced analysis would be required to determine the differences between interventions or certain demographics, however a baseline for directly measuring a Sense of Belonging to the University has been set through the development of this instrument.

Additionally, the four components of the instrument indicate that Sense of Belonging to the University extends beyond classroom experiences. Students only spend on average twelve to seventeen hours in the classroom depending on their given class load, yet feelings, school spirit, social connections, and even academic support are experiences students constantly participate in while attending the university. If we truly strive to cause our students to belong, this justifies the worth of out-of-classroom experiences and supporting our students to adopt healthy behaviors outside of the classroom as well as good study habits.

Phase 3: Evaluation

One of the largest takeaways from the analysis for all four of the research questions addressed in Phase 3, is that analysis of the University Student Belonging Scale is able to answer the questions that practitioners are often asking. From the dataset that was gathered in this study, conclusions were made about Sense of Belonging to the University in relation to program type, number of programs, and even when a student started classes in relation to the timing of the Covid-19 pandemic. If the University Student Belonging Scale were to be adopted as a regularly used instrument, higher education administrators would be able to find answers to similar questions and answer them with confidence.

The analysis regarding program type and number of programs provided many interesting conclusions for administrators specifically in Student Affairs to consider. Involvement in a student organization or out-of-classroom program clearly benefits students' Sense of Belonging to the University compared to no involvement. This provides justification for the work of Student Affairs in providing resources to support out-of-classroom experiences. Additionally, social connections are clearly impacted by Student Affairs programs. Oftentimes we ask, "How do we

help students make friends?" and it seems the best answer may be to get them involved in a Student Affairs program. However, we can also confidently say that it is likely the number of Student Affairs programs does not matter in regards to Sense of Belonging to the University. This is reassuring for students who may already be struggling to get involved. There does not appear to be a "magic number" and then suddenly you have a higher level of Sense of Belonging to the University.

One of the last implications of the results of the analysis in Phase 3 is simply understanding the current state of Sense of Belonging to the University amidst the Covid-19 pandemic. An easy assumption to make is that the experiences students have had as a result of this nationwide pandemic have possibly been a detriment to all four components of Sense of Belonging to the University: *Feelings*, *School Spirit*, *Social Connections*, and *Academic Focus*. I have chosen to be reassured that our students continue to be resilient based on the positive averages of all of the scores in the University Student Belonging Scale, but also reminded that our students will likely always need our support to maintain or improve their Sense of Belonging to the University regardless of what challenges they face.

Limitations

The original plan for this research study was to perform both a principal components analysis and a confirmatory factor analysis. Once the University Student Belonging Scale was developed, the number of items in the instrument required a very large sample size in order to be able to perform both of these analyses. After the data was cleaned, only the first step in validating the instrument, the principal components analysis, was able to be completed due to the sample size. Therefore, one of the largest limitations of this study was being able to access and gain responses from students. The response rate was only 5.3%, so this research could greatly benefit from the ability to provide more incentives to gain more participants.

The data collected from this study was from three universities: Louisiana State University, Oklahoma State University, and Texas Christian University. These were chosen

because they are all large Division 1 universities in the Southern Midwest region of the United States. Results of the University Student Belonging Scale may only be generalized to universities with similar descriptors without further research. Generalizations should not be made to community colleges, smaller private or public universities, or online college programs. Additionally, the sample in this study only included undergraduate students, therefore additional research would be required in order to investigate how this instrument would perform with graduate students.

Future studies

There is a plethora of further research that could be conducted on Sense of Belonging to the University as well as traditional analysis techniques that would benefit both the worlds of higher education and research analysis. I will mention a few immediate studies that emerged as I worked on this document, however I would be remiss to mention to the reader that I have come to view this research as truly career defining and I believe there is much more work to be done on this topic. The first recommendation I would like to make is for Phase 2 of this study to be repeated in order to conduct the confirmatory factor analysis that was part of the original research design. This would allow for further refinement of the University Student Belonging Scale, and reinforce the validity of this new instrument. Additionally, none of the research questions proposed in this study involved analysis of the definition items included at the beginning of the Phase 2 instrument. A comparison of the way students responded to each of the Sense of Belonging definitions, including the new one developed in this study, and how they scored on the University Student Belonging Scale would be very interesting.

There were also multiple situations during the analysis phase where I struggled to find thorough literature on sound research analysis that I would like to recommend as further research topics. One of those is guidance on reviewing the Component Correlation Matrix in the SPSS output of factor analysis. Another recommendation is further exploration into nonparametric MANOVA analysis. Research questions 3a, b, and c had the right ingredients to conduct a

MANOVA, however there is little research on modifications that can be made when the assumptions of normality and homogeneity of variance are violated.

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APPENDICES

Appendix A: 10 Words Survey

Students' Sense of Belonging to <respective university>

Task: Please write down up to 10 words that come to mind when you think about your Sense of Belonging to <insert respective university>.

Demographic Information

How many credit hours have you completed towards your degree? _____

How many consecutive semesters have you attended your current university? _____

How many years have you attended college including your current year? _____

Which of the following organizations/programs are you involved in? (select all that apply) <adapt for each university>

- ☐ Camp Cowboy
- ☐ Competitive Sports (Intramurals)
- ☐ Cultural Organization
- ☐ Greek Organization
- ☐ Honorary Organization

- International Organization
- Marching Band
- Major-related Interest Organization
- McKnight Scholars
- Non-Traditional Student Organization
- Off Campus Student Association
- On Campus Job
- President's Leadership Council
- Religious Organization
- Residence Hall Organization
- Service Organization
- Special Interest Organization
- Sports Club
- Student Arts Alliance
- Student Governance
- Student Union Activities Board
- University Athletics
- Other _____

How would you describe your gender identity?

- Male
- Female
- Non-binary/third gender
- Transgender
- Prefer not to say

What is your racial background?

- American Indian or Alaska Native
- Asian Indian
- Black or African American
- Chamorro
- Chinese
- Filipino
- Hispanic
- Japanese
- Korean
- Mixed race
- Native Hawaiian
- Other Asian (Hmong, Laotian, Thai, Pakistani, Cambodian, etc.)
- Other Pacific Islander (Fijan, Tongan, etc.)
- Samoan

- Vietnamese
- White
- Other _____
- Prefer not to say

Are you of Hispanic, Latino, or Spanish origins?

- No, not of Hispanic, Latino, or Spanish origins
- Yes, Mexican, Mexican American, Chicano
- Yes, Puerto Rican
- Yes, Cuban
- Yes, another Hispanic, Latino, or Spanish origin

How would you describe your generational status as a college student?

- I am the first in my immediate family to attend college.
- Somebody in my immediate family has attended college, but did not complete their degree.
- At least one person in my immediate family has a college degree.
- Prefer not to say.

Appendix B: Sense of Belonging Instrument

Please use the slider to indicate the extent to which you agree with the following statements with 0 being strongly disagree and 100 being strongly agree:

1. I am an integral part of Oklahoma State University.
2. I feel personally accepted, respected, included, and supported by others at Oklahoma State University.
3. I consistently interact with and receive care from others at Oklahoma State University.
4. I believe in myself to the point of being able to share my most authentic self at Oklahoma State University.
5. The strength of my relationships at Oklahoma State University allow me to be my authentic self.

On a scale from 1 (strongly disagree) to 5 (strongly agree) please indicate how you feel about the following statements:

1. I am part of a community at my university.
2. I do not have friends at my university.
3. My relationships at my university feel like family.
4. My university feels like home to me.
5. None of the employees at my university care about me.
6. People at my university are friendly to me.
7. My university does a good job of making everybody feel included.
8. I am not accepted by other people at my university.
9. I do not have relationships with other students in my classes.
10. Other students are respectful to me.
11. I feel like a member of the community in <insert town of the university>.
12. I feel that I am part of a group at my university.
13. I do not enjoy having a roommate.
14. I feel similar to other people in my major.
15. Nobody at my university wants me to be there.
16. I fit in with other students at my university.
17. The people I interact with at my university are genuine.
18. The student body is divided at my university.
19. The people at my university are not nice.
20. If I needed help, there is someone at my university I could ask.
21. People at my university are kind.
22. People at my university are outgoing.
23. My university feels big.
24. I am not part of a loving environment on campus.
25. I am not happy to be a student at my university
26. My campus does not have a welcoming environment.
27. I have fun on campus.

28. My university brings me comfort.
29. The environment on campus can be described as caring.
30. I am proud to wear the color <insert university colors>.
31. I am loyal to my university.
32. I do not have a lot of school spirit for my university.
33. I am a Cowboy.
34. I avoid associating myself with my university.
35. I do not enjoy learning at my university.
36. My university prioritizes being fair.
37. I feel pessimistic about my time at my university.
38. I am excited to be a student at my university.
39. I feel safe when attending my university.
40. I have negative thoughts while I'm on campus.
41. I am proud to be a student at my university.
42. I feel peaceful about my university experience.
43. I am more confident because I am a student at my university.
44. I do not enjoy being on campus.
45. My university environment has not provided me an opportunity to grow.
46. I have been able to better understand my identity as a student at my university.
47. Greek Life at my university has played a role in my belonging to the university.
48. I look forward to attending class.
49. I am not happy to be a student at my university.
50. Football games are part of my university experience.
51. Being a member in a student organization has a positive impact on my university experience.
52. Gaining an education is an important part of my university experience.
53. Attending sporting events to support my university is not important to me.
54. My identity as a student is important to my university experience.
55. My university does not provide opportunities to have diverse experiences.
56. My current job has an impact on my university experience.
57. I enjoy spending time in my dorm room.
58. My faith does not play a role in my university experience.
59. I prioritize attending church while I am at college.
60. I seek out the opportunity to attend parties with other students at my university.
61. I look forward to Homecoming week at my university.
62. I have gained leadership skills while attending my university.
63. I am committed to finishing my degree.
64. I am satisfied with the opportunities at my university.
65. My day-to-day schedule is not busy.
66. I am not satisfied with the amount of engaging opportunities my university offers.
67. I like that my university has electric scooters available.
68. I carry my student ID everywhere with me.
69. I am able to practice my religion at my university.

Demographics

How many credit hours have you completed towards your degree? _____

How many years have you attended college including your current year? _____

How many consecutive semesters have you attended your current university? _____

Do you participate in a program/organization sponsored or supported by the Student Affairs division on your campus?

- ☐ Yes
- ☐ No
- ☐ I'm not sure

Which of the following organizations/programs are you involved in? (select all that apply) <adapt for each university>

- ☐ Camp Cowboy
- ☐ College Council
- ☐ Competitive Sports (Intramurals)
- ☐ Cultural Organization
- ☐ Greek Organization
- ☐ Honorary Organization
- ☐ International Organization
- ☐ Marching Band
- ☐ Major-related Interest Organization
- ☐ McKnight Scholars
- ☐ Non-Traditional Student Organization
- ☐ Off Campus Student Association
- ☐ On Campus Job
- ☐ President's Leadership Council
- ☐ Religious Organization
- ☐ Residence Hall Organization
- ☐ Service Organization
- ☐ Special Interest Organization
- ☐ Sports Club
- ☐ Student Arts Alliance
- ☐ Student Governance
- ☐ Student Union Activities Board
- ☐ University Athletics
- ☐ Other _____

How would you describe your gender identity?

- Male
- Female
- Non-binary/third gender
- Transgender
- Prefer not to say

What is your racial background?

- American Indian or Alaska Native
- Asian Indian
- Black or African American
- Chamorro
- Chinese
- Filipino
- Hispanic
- Japanese
- Korean
- Mixed race
- Native Hawaiian
- Other Asian (Hmong, Laotian, Thai, Pakistani, Cambodian, etc.)
- Other Pacific Islander (Fijan, Tongan, etc.)
- Samoan
- Vietnamese
- White
- Other _____
- Prefer not to say

Are you of Hispanic, Latino, or Spanish origins?

- No, not of Hispanic, Latino, or Spanish origins
- Yes, Mexican, Mexican American, Chicano
- Yes, Puerto Rican
- Yes, Cuban
- Yes, another Hispanic, Latino, or Spanish origin

How would you describe your generational status as a college student?

- I am the first in my immediate family to attend college.
- Somebody in my immediate family has attended college, but did not complete their degree.
- At least one person in my immediate family has a college degree.
- Prefer not to say.

Appendix C:

Table 40

Item Development & Comparisons

Word	UBQ Item	SOBI Item	PSSM Item	USBS Item
Friends				I do not have friends at my university.
Community				I feel that I am part of a community at my university.
Family				My relationships at my university feel like family.
Loving				I am not part of a loving environment on campus.
Home	I feel "at home" on campus.			My university feels like home to me.
Greek Life				Greek Life at my university has played a role in my Belonging to the university.
Class			I wish I were in a different school.	I look forward to attending class.
Happy				I am not happy to be a student at my university.
Football				Football games are part of my university experience.
Teachers	I believe that a faculty/staff member at my university cares about me.	Most faculty and staff in the biology department are interested in me.	Most teachers at (name of school) are interested in me.	None of the employees at my university care about me.
Clubs				Being a member in a student organization has a positive impact on my university experience.

Word	UBQ Item	SOBI Item	PSSM Item	USBS Item
Friendly		People in the biology department are friendly to me.	People at this school are friendly to me.	People at my university are friendly to me.
Welcoming				My campus does not have a welcoming environment.
Inclusion			I am included in lots of activities at (name of school)	My university does a good job of making everybody feel included.
Education				Gaining an education is an important part of my university experience.
Acceptance				I am not accepted by other people at my university.
Fun				I have fun on campus.
Games	I attend university sporting events to support my university.			Attending sporting events to support my university is not important to me.
Comfort				My university brings me comfort.
Student				My identity as a student is important to my university experience.
Diverse	My university provides opportunities to have diverse experiences.			My university does not provide opportunities to have diverse experiences.
Caring	I feel that a faculty/staff member has appreciated me.			The environment on campus can be described as caring.
Orange	I take pride in wearing my university's colors.			I am proud to wear the color orange.
Classmates		Other students in the biology department take my opinions seriously.	Other students in this school take my opinions seriously.	I do not have relationships with other students in my classes.

Word	UBQ Item	SOBI Item	PSSM Item	USBS Item
Respectful				Other students are respectful to me.
Loyal				I am loyal to my university.
Work				My current job has an impact on my university experience.
Dorm				I enjoy spending time in my dorm room.
Stillwater	I feel like I belong to my university when I represent my school off campus.			I feel like a member of the community in Stillwater.
Faith				My faith does not play a role in my university experience.
Group		Students in the biology department help each other to succeed.		I feel that I am part of a group at my university.
Spirit				I do not have a lot of school spirit for my university.
Church				I prioritize attending church while I am at college.
Cowboys				I am a cowboy.
Roommates				I do not enjoy having a roommate.
Parties				I seek out the opportunity to attend parties with other students at my university.
Homecoming				I look forward to Homecoming week at my university.
Major	I feel similar to other people in my major.			I feel similar to other people in my major.
School	I tend to associate myself with my school.		I feel like a real part of (name of school).	I avoid associating myself with my school.

Word	UBQ Item	SOBI Item	PSSM Item	USBS Item
Learning				I do not enjoy learning at my university.
Equity				My university prioritizes being fair and impartial.
Wanted				Nobody at my university wants me to be there.
Fitting in				I fit in with other students at my university.
Optimistic				I feel pessimistic about my time at my university.
Excited				I am excited to be a student at my university.
Safety				I feel safe when attending my university
Positivity		The instructors in the biology department give me compliments when I do something good.		I have negative thoughts while I am on campus.
Proud				I am proud to be a student at my university.
Peaceful				I feel peaceful about my university experience.
Confident				I am more confident because I am a student at my university.
Campus				I do not enjoy being on campus.
Leadership				I have gained leadership skills while attending my university.
Growth	My university provides me an opportunity to grow.			My university environment has not provided me an opportunity to grow.

Word	UBQ Item	SOBI Item	PSSM Item	USBS Item
Commitment				I am committed to finishing my degree.
Opportunities	I am satisfied with the academic opportunities at my university.			I am satisfied with the opportunities at my university.
Identity				I have been able to better understand my identity as a student at my university.
Busy				My day-to-day schedule is not busy.
Genuine		Other students in the biology department like me the way I am.	Other students here like me the way I am.	The people I interact with at my university are genuine.
Engaging				I am not satisfied with the amount of engaging opportunities my university offers.
Unity				The student body is divided at my university.
Scooters				I like that my university has electric scooters available.
Food card				I carry my student id everywhere with me.
Nice				People at my university are not nice.
Help				If I needed help, there is someone at my university I could ask.
Kind				People at my university are kind.
Outgoing				People at my university are outgoing.

Word	UBQ Item	SOBI Item	PSSM Item	USBS Item
Christian				I am able to practice my religion at my university.
Small				I prefer to interact with large groups of people at my university.

Appendix D: Final University Student Belonging Scale (USBS)

The University Student Belonging Scale can be used to calculate scores for four components of Sense of Belonging to the University: *Feelings that Impact Belonging, School Spirit, Social Connections at the University,* and *Academic Focus & Support*. It is strongly recommended to add additional questions to this instrument in order to conduct analysis based on demographics, other constructs, or additional aspects of Sense of Belonging.

Consider your role as a student at [insert University name] when responding to the following questions.

On a scale from 1 (strongly disagree) to 5 (strongly agree) please indicate how you feel about the following statements:

1. The people at my university are not nice.
2. People at my university are kind.
3. My university does a good job of making everybody feel included.
4. I am not accepted by other people at my university.
5. My university does not provide opportunities to have diverse experiences.
6. My campus does not have a welcoming environment.
7. My university prioritizes being fair.
8. Other students are respectful to me.
9. People at my university are friendly to me.
10. The environment on campus can be described as caring.
11. I am not satisfied with the amount of engaging opportunities my university offers.
12. Nobody at my university wants me to be there.
13. I feel safe when attending my university.
14. My university environment has not provided me an opportunity to grow.
15. I feel peaceful about my university experience.
16. I am satisfied with the opportunities at my university.
17. I have negative thoughts while on campus.
18. I am not happy to be a student at my university.
19. I feel pessimistic about my time at my university.
20. People at my university are outgoing.
21. Football games are part of my university experience.
22. I am proud to wear the color <school color>.
23. I am loyal to my university.
24. I am a <school mascot>.
25. Attending sporting events to support my university is important to me.
26. I do not have a lot of school spirit for my university.
27. I am proud to be a student at my university.
28. I look forward to Homecoming week at my university.
29. I avoid associating myself with my university.
30. I am excited to be a student at my university.

31. I am more confident because I am a student at my university.
32. I feel like a member of the community in <town name>.
33. My university brings me comfort.
34. I do not have friends at my university.
35. I feel that I am part of a group at my university.
36. My relationships at my university feel like family.
37. I am part of a community at my university.
38. I do not have relationships with other students in my classes.
39. I fit in with other students at my university.
40. I have gained leadership skills while attending my university.
41. I have fun on campus.
42. I am not part of a loving environment on campus.
43. I feel similar to other people in my major.
44. The people I interact with at my university are genuine.
45. My university feels like home to me.
46. Gaining an education is an important part of my university experience.
47. I am committed to finishing my degree.
48. I carry my student ID everywhere with me.
49. My identity as a student is important to my university experience.
50. I look forward to attending class.
51. I do not enjoy learning at my university.
52. I have been able to better understand my identity as a student at my university.
53. None of the employees at my university care about me.
54. If I needed help, there is someone at my university I could ask.

Scoring:

Items 1, 4, 5, 6, 11, 12, 14, 17, 18, 19, 25, 26, 29, 34, 38, 42, 51, and 53 are negatively worded and must be reverse-coded before scoring.

Feelings: Items 1-20 measure *Feelings that Impact Belonging.* After reverse-scoring items 1, 4, 5, 6, 11, 12, 14, 17, 18, and 19, responses may be averaged to create a *Feelings* subscore.

School Spirit: Items 21-33 measure *School Spirit*. After reverse-scoring items 25, 26, and 29, responses may be averaged to create a *School Spirit* subscore.

Social: Items 34-45 measure *Social Connections at the University*. After reverse-scoring items 34, 38, and 42, responses may be averaged to create a *Social* subscore.

Academic: Items 46-54 measure *Academic Focus & Support*. After reverse-score items 51 and 53, responses may be averaged to create an *Academic* subscore.

Appendix E: Institutional Review Board Approval Form

Oklahoma State University Institutional Review Board

Date:	09/16/2021
Application Number:	IRB-21-381
Proposal Title:	Sense of Belonging and Student Affairs: Defining and Evaluating Students' Sense of Belonging to their University Outside of the Classroom
Principal Investigator:	Kayla Loper
Co-Investigator(s):	
Faculty Adviser:	Ki Cole
Project Coordinator:	Kayla Loper
Research Assistant(s):	
Processed as:	Exempt
Exempt Category:	

Status Recommended by Reviewer(s): Approved

The IRB application referenced above has been approved. It is the judgment of the reviewers that the rights and welfare of individuals who may be asked to participate in this study will be respected, and that the research will be conducted in a manner consistent with the IRB requirements as outlined in 45CFR46.

This study meets criteria in the Revised Common Rule, as well as, one or more of the circumstances for which continuing review is not required. As Principal Investigator of this research, you will be required to submit a status report to the IRB triennially.

The final versions of any recruitment, consent and assent documents bearing the IRB approval stamp are available for download from IRBManager. These are the versions that must be used during the study.

As Principal Investigator, it is your responsibility to do the following:

1. Conduct this study exactly as it has been approved. Any modifications to the research protocol must be approved by the IRB. Protocol modifications requiring approval may include changes to the title, PI, adviser, other research personnel, funding status or sponsor, subject population composition or size, recruitment, inclusion/exclusion criteria, research site, research procedures and consent/assent process or forms.
2. Submit a request for continuation if the study extends beyond the approval period. This continuation must receive IRB review and approval before the research can continue.
3. Report any unanticipated and/or adverse events to the IRB Office promptly.
4. Notify the IRB office when your research project is complete or when you are no longer affiliated with Oklahoma State University.

Please note that approved protocols are subject to monitoring by the IRB and that the IRB office has the authority to inspect research records associated with this protocol at any time. If you have questions about the IRB procedures or need any assistance from the Board, please contact the IRB Office at 405-744-3377 or irb@okstate.edu.

Sincerely,

Oklahoma State University IRB

VITA

Kayla Renee Loper

Candidate for the Degree of

Doctor of Philosophy

Dissertation: UNIVERSITY STUDENT BELONGING SCALE: DEFINING AND EVALUATING STUDENTS' SENSE OF BELONGING TO THEIR UNIVERSITY

Major Field: Educational Psychology: Research, Evaluation, Measurement, & Statistics

Biographical:

Education:
Completed the requirements for the Doctor of Philosophy in Research, Evaluation, Measurement and Statistics at Oklahoma State University, Stillwater, Oklahoma in May, 2022.

Completed the requirements for the Master of Education in Higher Education at University of Arkansas, Fayetteville, AR in May 2014.

Completed the requirements for the Bachelor of Science in Mathematics at Friends University, Wichita, KS in May 2012.

Experience:
Manager of Arts, Culture, & Entertainment | Oklahoma State University
August 2018-Present

Guest Lecturer – Quantitative Research | Oklahoma State University
Fall 2019-Present

Professional Memberships:
Research & Scholarship Group | National Association for Campus Activities