VALIDITY OF THE 2013 NSSE ENGAGEMENT INDICATOR MODEL FOR PERSISTING TRANSFER STUDENTS: A CONFIRMATORY FACTOR ANALYSIS STUDY

by

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ABSTRACT

THANH MINH LE. Validity of the 2013 NSSE engagement indicator model for persisting transfer students: A confirmatory factor analysis study. (Under the direction of DRS. SANDRA DIKA AND MARK D'AMICO)

The National Student Clearinghouse Research Center (2015) reported that there were 2.4 million student transitions from one institution to another over a six-year period between 2008 and 2014. According to the Student Achievement Measure (SAM, n.d.), which uses National Student Clearinghouse Snapshot 20 data, only 11% of students who transfer from a four-year to another four-year institution completed their bachelor's degree. In addition, Jenkins and Fink's (2016) analysis indicated that of the 33% of community college students that transfer to a four-year institution, only 42% earn a bachelor's degree within six years of entering postsecondary education. Given the low levels of success that transfer students have at four-year institutions, this study aimed to better understand the post-transfer student engagement experience.

The NSSE is a widely used survey instrument designed to collect information from four-year college students and their level of engagement with respect to their learning and personal development (NSSE, 2014). For the purposes of this study, it was important to investigate the use of the survey to provide data on student engagement for varying student demographics, particularly transfer students. In 2013, NSSE updated the survey (NSSE 2.0) based on feedback from participating institutions, research on the survey, and much needed terminology updates (Pike, 2013a). The survey transitioned from having five benchmarks to four themes with ten underlying engagement indicators (NSSE, 2014).

The purpose of this study was to explore the model fit of the 2013 NSSE (NSSE 2.0) engagement indicator model as applied to persisting transfer students at a single four-year higher education institution using confirmatory factor analysis (CFA). Specifically, the primary research question of the study was: How well does the model of the NSSE engagement indicators organized by content themes fit to the empirical data for persisting transfer students at a public urban research university? Further, the study examined the fit for all transfer students, then for transfer student subgroups including two-year institution transfers (vertical), four-year institution transfers (horizontal), and transfer students that attended both a two-year and another four-year institution (swirling).

The findings of this study suggest that none of the subgroups necessarily demonstrated overwhelming good model-fits across the four engagement themes. Based on the CFA results for each of the themes, only one of the four engagement themes showed a good model fit for the all transfer student group and the subgroups. A closer look shows each subgroup did not demonstrate a good fit across two of the four themes. Anecdotally, the vertical transfer subgroup did not meet any of the fit indices for the Campus Environment engagement theme and can be viewed as the subgroup with the worst model fit. However, indication of which subgroup shows a better model fit cannot be determined.

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DEDICATION

I would like to dedicate this dissertation to my wife, Rosetta Galloway Le, whose unconditional love and support have given me the confidence to complete this journey. Thank you for being my rock and my cheerleader. I also would like to dedicate this dissertation to my three sons: TJ, Braylon, and Caden. My hope is to set a standard of excellence and serve as a role model for you three.

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CHAPTER 1: INTRODUCTION

The National Student Clearinghouse Research Center (2015) reported that there were 2.4 million student transitions from one institution to another over a six-year period between 2008 and 2014. According to the Student Achievement Measure (SAM, n.d.), which uses National Student Clearinghouse Snapshot 20 data, only 11% of students who transfer from a four-year to another four-year institution completed their bachelor's degree. In addition, Jenkins and Fink's (2016) analysis indicated that of the 33% of community college students that transfer to a four-year institution, only 42% earn a bachelor's degree within six years of entering postsecondary education. Given the low levels of success that transfer students have at four-year institutions, this study aimed to better understand the post-transfer student engagement experience.

Student engagement at higher education institutions has been studied for more than seven decades with the meaning evolving over time (Kuh, 2009). An aspect that has remained consistent is that students who are actively engaged in educational and purposeful activities, both inside and outside the classroom, are more likely to graduate compared to less engaged students (Braxton & Hirschy, 2004). Identification of these key educational and purposeful activities are critical for students in college. The transfer student population is faced with a unique set of circumstances and experience different paths. Some of the unique circumstances or barriers include misalignment of curricula, credit transfer or loss, complex transfer process, and little guidance (Fink, McShay, & Hernandez, 2016).

Background and Historical Context

Enrollment patterns for higher education institutions between 2005 and 2015 can be deceiving. Based on the National Center for Education Statistics (2018) data, enrollment between 2005 and 2015 in degree-granting postsecondary institutions increased 14%. However, most of the growth was experienced from 2005 to 2010 as there was a five percent decrease between 2010 and 2015. An enrollment trend to monitor is the increasing enrollment of students under the age of 25. This population of students has grown 15% from 2005 to 2015 and is predicted to increase another 17% by 2026 (U.S. Department of Education, NCES, 2018). Based on this pattern, enrollment numbers will potentially level off or could see a potential increase. Students have a multitude of options as to where to pursue their education.

The opportunity to transfer in higher education has presented challenges with transition and transfer credits, however it has provided an opportunity for students to expand their choices of institutions and educational experiences. Acknowledging that many college students no longer follow a traditional path from college entry to degree completion at a single institution, approximately one-third of all students change institutions within their college experience (Hosler, Shapiro, & Dundar, 2012; Simone, 2014). Furthermore, The National Student Clearinghouse Research Center reported that of the 3.6 million students who entered college for the first time in the fall of 2008, 37.2% of those students transferred to a different institution at least once within six years (Shapiro, Dundar, Wakhungu, Yuan, & Harrell, 2015).

Based on National Center for Educational Statistics (NCES) data, community college students represented approximately 46% of all undergraduate students in the

United States in the Fall 2013 semester, and 41% of all first-time students attend community college (Ginder, Kelly-Reid, & Mann, 2014). Enrollment at community colleges experienced an increase due to several factors: adult students, access to financial aid, part-time attendees, reclassification of institutions, redefinition of students and courses, and high attendance of women and minorities (Cohen, Brawer, & Kisker, 2014). Transferring from one college to another has become an increasingly important trend to monitor. Within the 2013-2014 academic year, as many as 46% of graduates at four-year institutions were previously enrolled at two-year institutions (National Student Clearinghouse, 2015).

The 2012 National Student Clearinghouse report indicated that transfer rates are almost equal between vertical and horizontal transfers (Hosler et al., 2012). A vertical transfer refers to a student transitioning from a two-year institution to a four-year institution and conversely a horizontal transfer refers to a transition from four-year to another four-year institution (Jacobs, 2004; Kirk-Kuwaye & Kirk-Kuwaye, 2007). Most research literature examined only the transfer of community college students to a four-year institution; therefore, there is a significant gap in literature on horizontal transfer students compared to vertical transfer students.

The importance of understanding the circumstances of institution departure cannot be understated; however, understanding post-transfer engagement is essential as it can provide a framework for institutions to increase transfer success. A popular instrument that many institutions use to assess level of student engagement with respect to their learning and personal development is the National Survey of Student Engagement (NSSE). The NSSE was designed for three core purposes: to provide high-quality data

that institutions can use to improve the undergraduate experience, to discover and document effective educational practice in postsecondary settings, and to advocate for public acceptance and use of empirically derived conceptions of collegiate quality (Kuh, 2009).

Problem

Between 2000 and 2012, the NSSE's Five Benchmarks of Effective Educational Practice were used to report the survey data. The benchmarks, created with a blend of theory and empirical analysis, were Level of Academic Challenge, Active and Collaborative Learning, Student-Faculty Interaction, Supportive Campus Environment, and Enriching Educational Experiences (Kuh, 2003, 2009). Institutions have used the NSSE benchmark scores internally to make substantial changes in polices and services (Campbell & Cabrera, 2011). However, institutional reliance on just one instrument or survey can be problematic.

Institutional administrators must to keep in mind that the NSSE is administered only to first-year, first-time and senior students (NSSE, 2014). Based on this study design, the transfer student population is limited in representation to only senior transfer students. Another factor that administrators need to consider is the changing of the NSSE instrument. The new version of the NSSE survey launched in 2013, NSSE 2.0, grew out of feedback from participating institutions, research on the survey, and recognition that the terminology needed to be updated (Pike, 2013a). The new NSSE reports scores for four engagement themes with ten engagement indicators, rather than the five benchmarks listed earlier (NSSE, 2014). The ten engagement indicators are Higher-Order Learning, Reflective & Integrative Learning, Learning Strategies, Quantitative Reasoning,

Collaborate Learning, Discussions with Diverse Others, Student-Faculty Interaction, Effective Teaching Practices, Quality Interactions, and Supportive Environment and are associated with the four engagement themes of Academic Challenge, Learning with Peers, Experiences with Faculty, and Campus Environment (NSSE, 2014).

Purpose

The purpose of this study was to explore the model fit of the 2013 NSSE (NSSE 2.0) engagement indicator model as applied to persisting transfer students at a single four-year higher education institution. For the purposes of this study, two-year institution transfers (vertical), four-year institution transfers (horizontal), and transfer students that attended both a two-year and another four-year institution (swirling) are included as sub-groups in the analysis. With the continuing rise in rate of college student transfer, it is necessary to better understand the post-transfer experience of students.

Research Question

The interest of this researcher was to examine post-transfer student engagement using NSSE data. Research on post-transfer student engagement can assist an institution to develop or modify programs and services to better support this population. The researcher intended to examine the model fit of the NSSE 2.0 engagement indicator model for the persisting transfer population. As described earlier, the sample included responses from senior transfer students in the 2014 and 2016 administrations of the NSSE at the participating institution. Specifically, the primary research question of the study was: How well does the model of the NSSE engagement indicators organized by content themes fit to the empirical data for persisting transfer students at a public urban research university? Further, the study examined the fit for all transfer students, then for transfer

student subgroups including two-year institution transfers (vertical), four-year institution transfers (horizontal), and transfer students that attended both a two-year and another four-year institution (swirling).

Significance

Among the students beginning community college studies in the 2003-2004 school year, 81.4% indicated their educational goal was to earn a bachelor's degree or above (Horn & Skomsvold, 2011). The United States Government Accountability Office (2017) estimated that 35% of college students transferred at least once from 2004 to 2009. Of these transfers, an estimated 62% were between public schools (U.S. Government Accountability Office, 2017). The aim of the current research study is to see if transfer student engagement looks similar to the overall model of student engagement proposed by NSSE. These findings could help institutions create and provide a setting where transfer students can engage and succeed and ultimately persist to degree attainment.

Recent studies centered on transfer students have been focused on transfer decisions, institutional partnership, transfer student support, and transfer pathways to degree completion (e.g., Fink & Jenkins, 2017; Hodara, Martinez-Wenzl, Stevens, & Mazzeo, 2017; Taylor & Jain, 2017). Most researchers agreed that students' decision or reasoning to transfer are vastly different and transfer pathways, transfer mobility, and policies must be flexible to assist with transfer student success (Taylor & Jain, 2017). Based on these studies, it is critical for institutions with large transfer student populations to establish a strong partnership with transfer students.

Furthermore, understanding transfer student demographic characteristics and engagement become essential. Transfer rates and transfer student success rates are important to note, especially regarding institution type. Transfer Mobility Report in 2015 showed that the transfer rate for women outpaces that of men (Shapiro, Dundar, Wakhungu, Yang, & Harrell, 2015). This report also indicated that 45% of transfer students changed institution more than once, which is also known as "swirling" (Shapiro et al., 2015). The student transfer rate from a public two-year institution to a four-year institution is 39.5% (Shapiro et al., 2015). In contrast, the transfer rate of students who started at a four-year public, a four-year private non-profit, and four-year private for-profit institutions are 36.5%, 34.3%, and 22.9%, respectively (Shapiro et al., 2015).

The NSSE is a widely used survey instrument designed to collect information from four-year college students and their level of engagement with respect to their learning and personal development (NSSE, 2014). For the purposes of this study, it was important to investigate the use of the survey to provide data on student engagement for varying student demographics, particularly transfer students. In 2013, NSSE updated the survey based on feedback from participating institutions, research on the survey, and much needed terminology updates (Pike, 2013a). The survey transitioned from having five benchmarks to four themes with ten underlying engagement indicators (NSSE, 2014). Limited research has been conducted to investigate the utilization of NSSE to better understand transfer student engagement. Therefore, examining the model fit of the 2013 NSSE instrument with respect to the transfer population was unique.

Research on post-transfer student engagement can assist institutions to develop and modify programs and services to better support this population of students. This

study is significant because further analysis will provide a better understanding of the 2013 NSSE's themes and engagement indicators with respect to the transfer student demographic. Ultimately, the results of this study will add to the current conversation in providing better support to increase transfer student success.

Design

This quantitative research study utilized multiple statistical analyses to examine data from the 2014 and 2016 administrations of the NSSE at a public, urban, research university in the Southeast region of the United States. In addition to the survey responses, the dataset included a verification of student transfer status (yes/no) provided by the institution. The data was thoroughly examined using data processing and cleaning methods prior to analysis. The NSSE (2014) instrument proposed to measure multiple variables (47 survey questions) and multiple underlying constructs (ten engagement indicators) organized within four content themes. Therefore, a multivariate statistical method, confirmatory factor analysis (CFA), was used to test the relationship between the observed variables and their respective latent variables. An analysis of the chi-square test and the root mean square error approximation (RMSEA) was used to examine the NSSE model fit for the transfer student population and provide a comparison for horizontal, vertical, and swirling transfer students.

To address the research question, the researcher also examined the CFA models for three transfer student subgroups in the sample: two-year institution transfers (vertical), four-year institution transfers (horizontal), and transfer students that had attended both a two-year and another four-year institution (swirling). Student subgroup

membership was identified by responses to an item on the survey requesting students to indicate the type(s) of institution (two-year, four-year) that they had studied at previously.

Definition of Terms

For the purposes of this study, the following critical key terms were identified and defined for comprehension and clarity:

- *Lateral or horizontal transfer*: A student who transfers from a four-year institution to another four-year college or a university. This includes students who transfer within the two-year sector (Bahr, 2009, Taylor & Jain, 2017).
- *Student engagement*: Constructs such as quality of effort and involvement in productive learning activities (Kuh, 2009).
- *Student involvement*: Astin (1984) refers to involvement as "the amount of physical and psychological energy that the student devotes to the academic experience" (p. 297).
- *Swirlers and alternating enrollees:* A transfer student that attends more than two institutions or who transfers from and to community colleges (Taylor & Jain, 2017).
- *Transfer shock*: Refers to the tendency of students transferring from one institution to another to experience a temporary dip in grade point average at the new institution (Hill, 1965).
- *Vertical transfer*: A transfer student who begins at a two-year institution and transfers to a four-year institution with or without an associate's degree (Townsend, 2001, Taylor & Jain, 2017).

Delimitations

This quantitative study explored the National Survey of Student Engagement (NSSE, 2013) and assessed the model fit of the ten engagement indicators with respect to post-transfer student engagement. The study utilized a combined dataset of the NSSE results from all respondents 2014 (n=1,528) and 2016 (n=1,425) at a public, urban, research university in the Southeast region of the United States. This institution enrolls transfer students at the highest rate within this particular southern state and was selected for this study based on the high level of incoming transfer students and access to the data. An agreement with the primary investigator of the NSSE dataset at the host institution was made and an Institutional Review Board (IRB) request was submitted at the appropriate time for approval of the study.

As previously mentioned, the NSSE is administered only to first-year, first-time and senior students, thus the transfer student sample is limited to senior student respondents in 2014 and 2016. Transfer student status was determined by institutional verification of student admission as a first-time or transfer student. While the survey included an item for students to self-report whether they began college elsewhere, the researcher determined that obtaining the institutional classification would provide the most accurate representation of transfer students. Starting elsewhere is not the same as transferring in course credit. Indeed, when comparing student responses to the "started elsewhere" item with official admission status, it is evident that the decision to use the institutionally verified status to identify transfer students served to ensure the analysis focused on the population of interest.

Table 1.

Crosstabulation of NSSE survey responses and institutional verification of transfer

Survey year	Survey response	Institutional verification	
		First-time	Transfer
2014	Started at institution	599 (39.2%)	12 (0.8%)
	Started elsewhere	42 (2.7%)	561 (36.7%)
	No response	156 (10.2%)	158 (10.3%)
2016	Started at institution	688 (48.3%)	9 (0.6%)
	Started elsewhere	50 (3.5%)	330 (23.2%)
	No response	249 (17.5%)	99 (6.9%)

To identify transfer type subgroups (vertical, horizontal, or swirling), student responses to the survey were used. Students who indicated they began their studies elsewhere were asked to check whether they had also attended a community or junior college and had also attended a four-year college or university.

Limitations

Based on the design of the study, certain limitations are acknowledged. The limitations of the research include:

- Limited to a single-institution,
- Limited sample size for transfer students within NSSE data,
- The sample years may not be indicative of the institution's typical transfer student,
- Combining two data sets from different years can provide inconsistencies,
- The student data provided by NSSE will only be senior students.

Another significant limitation is the validity of student transfer status and transfer type. Indication of transfer status and transfer type is limited to student responses and is not

institutionally confirmed. This limitation can provide inaccuracies about transfer status and a comparison of the number of transfer students as identified by the students' response compared to the data verified by the institution is shown in Table 2. However, the student response was used for both datasets to categorize transfer type.

Table 2.

NSSE Data (Before Institution Confirmation of Transfer)

	NSSE Survey	Verified by Institution
Attended a community or junior college (vertical transfer)	614	495
Attended another four-year college or university (horizontal transfer)	290	206
Indicated attended comm. college & four-year institution (swirling transfer)	215	196

Organization of the Study

The complete dissertation includes five chapters. Chapter 1 provided an introduction of the topic, background information, discussed the problem and research question, and the significance of this study. Research literature corresponding to the follow topics: transfer student engagement, NSSE (National Survey of Student Engagement), transfer student engagement using NSSE, and confirmatory factor analysis study of the NSSE will be reported in Chapter 2. Chapter 3 will present the research design, including the data source, the sample, research methods, and data analysis procedures. The findings will be reported in Chapter 4, followed by a presentation of the conclusions, implications, and recommendation for future research in Chapter 5.

CHAPTER 2: LITERATURE REVIEW

This study sought to examine post-transfer student engagement using NSSE data. Specifically, the researcher examined the model fit of the 2013 NSSE instrument with respect to a particular institution's transfer population. Based on the purpose of the study, Chapter 2 of the dissertation will include a thorough review of literature related to transfer students and the National Survey of Student Engagement (NSSE).

To better understand transfer student experiences, it was important to examine literature regarding student engagement and involvement theory, academic and social integration, and transfer student engagement. The next phase of the review was to examine literature with respect to NSSE that would guide methodology of the study. It was critical to review literature on the NSSE's original five benchmarks, any studies that utilize confirmatory factor analysis on NSSE data, research that focuses on understanding transfer student engagement using NSSE and show any studies that provide information and analysis for the updated NSSE released, NSSE 2.0. The subsequent sections, outlined in Table 3, are snapshots and salient portions of the literature.

Table 3

Literature Outline

Heading	Subsection
Transfer Students	**Transfer Student Characteristics**
	Jenkins & Fink (2016)
	Lester, Leonard, & Mathias (2013)
	NCES (2011)
	Shapiro, Dundar, Wakhungu, Yang, & Harrell (2015)
	Transfer Decisions, Pathways, and Institutional partnerships
	Fink & Jenkins (2017)

	Hodara, Martinez-Wenzl, Stevens, & Mazzeo (2017)
	Taylor & Jain (2017)
	Student Engagement
	Astin (1983)
	Astin (1984)
	Bahr, Toth, Thirolf, & Masse (2013)
	Braxton, Hirschy, & McClendon (2004)
	Harper & Quaye (2009)
	Junco, Heiberger, & Loken (2011)
	Kezar & Eckel (2002)
	Kuh (2009)
	NSSE (2013)
	Schuetz (2008)
	Tinto (2006)
	Academic and Social Integration
	Berger & Malaney (2003)
	Braxton, Milem, & Sullivan (2000)
	D'Amico, Dika, Elling, Algozzine, & Ginn (2014)
	Hills (1965)
	Kuh, Kinzie, Buckley, Bridges & Hayek. (2011)
	Lester, Leonard, & Mathias (2013)
	Milem & Berger (1997)
	Mintrop & Sunderman (2009)
	Ose (1997)
	Pace (1984)
	Pascarella & Terenzini (2005)
	Rhine, Milligan, & Nelson (2000)
	Tinto (1993)
	Tinto (1997)
	Transfer Student Engagement
	Flaga (2006)
	Ishitani and McKitrick (2010)
	Laanan (2006)
	Lester, Leonard, & Mathias (2013)
	Townsend & Wilson (2006)
NSSE	**Original NSSE Survey**

	CCSSE (2015) Kuh (2009) McClenney (2007) NSSE (2014)
	Validity of NSSE's Five Original Benchmarks
	Campbell & Cabrera (2011) Gordon, Ludlum, & Hoey (2008) LaNasa, Cabrera, & Trangsrud (2009) Pike (2012) Porter (2011)
	CFA Study on NSSE
	Campbell & Cabrera (2011) LaNasa, Cabrera, & Trangsrud (2009) Lutz & Culver (2010) Rugutt & Chemosit (2005) Tendhar, Culver, & Burge (2013)
	Transfer Student Engagement using NSSE
	Ishitani & McKitrick (2010) Kinzie, Thomas, Palmer, Umbach, & George (2007) NSSE (2014) Risley & King (2012)
	NSSE 2.0
	NSSE (2014) Pike (2013) Miller, Sarraf, Dumford, & Rocconi (2016)

Transfer Students

Recent studies with regards to transfer students have focused on understanding transfer decisions, institutional transfer partnerships, and transfer pathways (Fink & Jenkins, 2017; Hodara, Martinez-Wenzl, Stevens, & Mazzeo, 2017; Taylor & Jain, 2017). Taylor and Jain (2017) indicated that based on the literature within student departure, students transfer from their original institution for reasons unrelated to academic purposes. The reasons that students transfer varied by level of institutions. Data

suggested that reasons for horizontal transfers are due to social circumstances, relocation, fit, proximity to home, and strategic move (Taylor & Jain, 2017). Since many students transferred for personal reasons, student behavior does not always follow linear transfer pathways (Taylor & Jain, 2017).

Transfer pathways and credit mobility can be barriers to bachelor's degree completion and are important issues to investigate across the country (Hodara et al., 2017). Delay in major selection or changing major can cause students to accumulate credits that do not apply or experience credit loss to the degree program of interest at the four-year university (Hodara et al., 2017). Acknowledging that students' decision or reasoning to transfer are different, transfer pathways and policies need to be flexible and accommodating (Taylor & Jain, 2017). Fink and Jenkins (2017) found that practices for effective institutional partnerships included making the transfer student a priority, creating clear programmatic pathways, and providing transfer advising. These strong institutional partnerships showed a strong commitment to transfer students to drive transfer student success (Fink & Jenkins, 2017).

Transfer Student Characteristics

Transfer students are a significant population in many large four-year public institutions (Lester et al., 2013). The characteristics of transfer students varied in terms of gender, ethnicity, and socioeconomic status. Based on these different characteristics, transfer student experiences differed from the theoretical models of student success and must be considered (Lester et al., 2013). According to the Transfer Mobility report in 2015, the transfer rate for women was 38% and was higher than transfer rate for men at

36.8% (Shapiro et al., 2015). The same report also indicated that 45% of transfer students changed institution more than once.

Community college students made up approximately 43% of all first-time undergraduates (NCES, 2014). These students persisted through academic, personal, and institutional challenges in the community college setting in order to reach the four-year setting. The student transfer rate from a public two-year institution to a four-year institution was 39.5%, in which 3.9% of individuals graduate with a degree (Shapiro et al., 2015). In looking at all community college students that transferred to a four-year institution, only 42% earned a bachelor's degree within six years of entering postsecondary education (Jenkins & Fink, 2016). In contrast, the transfer rates of students who started at a four-year public, a four-year private non-profit, and four-year private for-profit institutions were 36.5%, 34.3%, and 22.9%, respectively (Shapiro et al., 2015). Based on the National Student Clearinghouse Snapshot 20 data, only 11% of students who transfer from a four-year to another four-year institution completed their bachelor's degree (SAM, n.d.).

Student Engagement

Both student involvement and engagement center on student behaviors; however, student engagement focuses on those behaviors are associated with positive learning and personal development outcomes (Bahr, Toth, Thirolf, & Masse, 2013; Kuh, 2009).

Involvement. For the purposes of this study, student involvement is described as activities within organizations, campus publications, student government, fraternities or sororities, intercollegiate sports, and intramural sports (NSSE, 2014). College student success has been proven to be positively associated with student engagement and student

involvement. Previous studies have shown the importance of student involvement in the college setting and are grounded in the seminal work of Astin's (1984) Theory of Student Involvement. Astin (1984) referred to involvement as "the amount of physical and psychological energy that the student devotes to the academic experience" (p. 297). Though Astin acknowledged the importance of the motivation of the student, the theory focused on behaviors and active participation of students in his conceptualization of involvement. Astin emphasized that student development and learning are dependent on how involved or invested a student is in their college setting and environment. Colleges can provide various opportunities that foster student involvement through frequent interaction with faculty, clubs and organizations, or athletics.

The previous theories provided perspectives on student involvement that have repeatedly been used when exploring the student experiences in the four-year college setting. Astin (1993) pointed out that studies of student involvement have shown to positively affect a student's grade point average (GPA), satisfaction with the college campus environment, and adjustment to their new setting. The need for and value of student involvement and engagement has also been applied to the community college setting. The literature on student involvement for four-year colleges far exceeded the amount of literature for student involvement in community college settings.

Engagement. Engagement can be defined as a state of being that combines high effort, participation, and attention with enthusiasm and interests (Schuetz, 2008). Student engagement can be divided into two critical components. The first is the amount of time and effort students put into their studies and other educational activities. The second component of student engagement is how the institution deploys its resources and

organizes the curriculum, other learning opportunities, and support services to induce students to participate in activities that lead to the experiences and desired outcomes such as persistence, satisfaction, learning, and graduation (Harper & Quaye, 2009).

Student engagement is usually used to represent constructs such as quality of effort and involvement in productive learning activities (Kuh, 2009), both inside and outside the classroom. Activities and practices are mechanisms that create engagement opportunities and thereby lead to learning in some capacity, ranging from faculty interaction, experiential learning, and student clubs and organizations (Kezar & Eckel, 2002). Students who are actively engaged in educational and purposeful activities, both outside and inside the classroom, are more likely than disengaged students to persevere through graduation (Braxton & Hirschy, 2004). Likewise, institutions that are committed to the goal of increasing student success seem to find a way to achieve that success (Tinto, 2006). Institutions are responsible for creating programs and services that help increase student engagement, and thereby increase the chances that students will reach their desired educational goal (Junco, Heiberger, & Loken, 2011).

Academic and Social Integration

Tinto's Longitudinal Model of Institutional Departure explained that student experiences are necessary for the success of a student's integration into the college environment, and this integration increases the probability of retention and persistence (Tinto, 1993). This theory describes academic and social forms of integration and how they influence a student's college departure decision (Tinto, 1993). Academic integration referred to the interactions and activities that students experience as part of their formal education inside and outside of the classroom. Social integration differs from academic

integration in that it refers to the student's personal needs (Tinto, 1993). Though academic and social integration are different, these concepts are highly interconnected and can exhibit mutual influence. For example, creating social integration through development of peer networks can positively affect a student's academic achievement. Students who become successfully incorporated into the college environment can be described as having moved away from the norms and behavioral patterns of past associations (Milem & Berger, 1997).

Academic integration. Community college transfer students typically see a dip in academic performance and see a lower GPA at the four-year institution as compared to their previous institution (Hills, 1965). This tendency is referred to as "transfer shock" (Hills, 1965). For most this low performance is temporary, however, there are times this shock may be so severe that students drop out (Rhine, Milligan, & Nelson, 2000).

Due to the high percentage of community college students planning to attend four-year institutions, it is important to adequately prepare students for transition. Transfer shock has been seen primarily in students majoring in business, math, and science (Rhine et al., 2000). However, students majoring in education, humanities, and social sciences have generally reported an increase in their grade point average (GPA) following transfer to a four-year institution (Rhine et al., 2000). This increase is described as "transfer ecstasy" (Mintrop & Sunderman, 2009). This transfer ecstasy appears to combat the belief that all students transferring from community colleges are academically less prepared than students at four-year colleges and universities (Rhine et al., 2000).

Social integration. Social integration is similar to academic integration; however, the focus shifts to interactions between students, faculty, staff, and peers in

social contexts, such as peer interactions, involvement in student organizations, and informal contact with faculty. Ose (1997) examined transfer students' motivation to engage in extracurricular activities at the four-year level. This study indicated the biggest differences between involved transfer students and uninvolved transfer students centered on individual motivation. The study also showed that students who choose to engage were interested in fitting in, meeting people, and had a significant experience that caused them to commit to the overall campus community. The unengaged students, on the other hand, were more focused on academic achievement, work responsibilities, and off campus commitments. Transfer students showed the fewest differences in areas of satisfaction (Ose, 1997).

Adjustment to college life involves more than performing inside the classroom; there is a wide range of academic and social interactions and outcomes that must be considered in a comprehensive view of the college adjustment process. It is important to consider how well students adjust to and fit in with the academic and social environments of a campus to have a more complete understanding of how well transfer students adjust to a four-year university (Berger & Malaney, 2003). Research indicated that vertical transfer students from two-year institutions interact less with faculty and participated in fewer educationally enriching activities (Kuh, Kinzie, Buckley, Bridges & Hayek, 2011). Lateral or horizontal transfer students from four-year institutions are active within collaborative learning, participated in fewer educational activities, viewed the campus as less supportive, gained less during college, and were less satisfied overall with college (Kuh et al., 2011).

A significant portion of college students must work to at least some extent during their time in college in order to pay for their tuition and stay in school (Pascarella & Terenzini, 2005). This makes their time spent on campus even more limited and therefore must maximize their time. Motivation to make steady progress toward graduation and to graduate from college is a necessary personality trait. Therefore, motivation to graduate from college exerts a positive influence on student persistence (Braxton & Hirschy, 2004).

Students have been able to identify and adopt new norms and behavioral patterns that are appropriate to the context of their college environment (Milem & Berger, 1997). Tinto (1993) suggested institutional programs such as student union activities, contact with faculty, intramural sports, and both co-curricular and extracurricular activities will assist with a student's integration. Pace (1984) supported the need for involvement and operationalizes the term by accounting for the quality of effort the student exhibits. Pace (1984) reported that participation is not solely sufficient for engagement, but instead, the investment of time and effort must be considered. The investment of time is defined and measured by the frequency of the student's activity.

Even for the students that do persist, their interaction and contact with faculty, especially outside of the classroom, is associated with increased intellectual and social development or a predictor of growth (Tinto, 1993). Tinto (1997) further explained that if social integration is going to occur, it must do so in the classroom, because the classroom functions as a gateway for student involvement in the academic and social communities of college. Thus, the college classroom serves as one possible source of influence on social integration, subsequent institutional commitment, and college

departure (Braxton, Milem, & Sullivan, 2000). Tinto (2006) summarized that students are more likely to succeed in settings that:

- are committed to their success;
- hold high expectations for their success;
- provide needed academic, social, and financial support;
- provide frequent feedback; and
- actively involve them, especially with other students and faculty.

Pascarella and Terenzini (2005) explained that the impact of college is largely determined by individual effort and involvement in the academic, interpersonal, and extracurricular offerings on a campus.

A recent study utilized Tinto's (1993) Longitudinal Model of Institutional Departure as the framework to explore academic and social integration for community college transfer students (D'Amico, Dika, Elling, Algozzine, & Ginn, 2014). This study examined the relationship between demographic and background variables of interest and perceived academic and social integration following the first six weeks, post-transfer. A key outcome of the study is that perceived academic fit served as the most consistent predictor of outcome and shows that academic integration for transfers students is important (D'Amico et al., 2014). A study by Lester and colleagues (2013) discussed that their NSSE data results show transfer students are only modestly involved in campus activities; however, this did not deter from their overall engagement or sense of belonging. This study suggested that attention to strong teaching and active learning pedagogies may be a better investment for transfer student engagement than student involvement activities (Lester et al., 2013).

Transfer Student Engagement

There was an abundance of studies regarding student engagement for vertical transfer students. Most of this literature focused on the factors that lead students to transfer, but not their experiences post-transfer. Studies of horizontal transfer students in the four-year university are limited, however indicated that students who transfer from community colleges tend to perceive engagement as being related primarily to academic support.

One study that focused on the success of transfer students at a four-year university found that they may not make as many social connections because they are often much older than their peers (Townsend & Wilson, 2006). Community college students are accustomed to seeing the classroom as a site for social and academic engagement. Ishitani and McKitrick (2010) compared community college transfer students on one four-year campus with students who began their college experience at the same institution only to learn that the former was less engaged in the four-year college. Lester and colleagues (2013) offered the view that social engagement happened in the context of family and community as opposed to traditional activities related to college life. This study, which included vertical and horizontal transfer students, found that transfer students, who felt academically integrated, also felt socially engaged and had little desire to be active with student involvement or extracurricular activities (Lester et al., 2013).

Although transfer students' level of social engagement may be lower by traditional definitions of engagement, these students may still feel a high level of engagement. However, several studies supported traditional engagement, which says the more students are involved, both academically and socially, the more successful they are

in their transfer transition and better overall student experience will be (Flaga, 2006; Laanan, 2006).

National Survey of Student Engagement

The focus of the review of literature on the National Survey of Student Engagement (NSSE) was to review the survey design and psychometric quality of the instrument across the two versions, original and NSSE 2.0.

Original NSSE Survey

The National Survey of Student Engagement (NSSE) was piloted in 1999 and launched in 2000 at Indiana University (NSSE, 2014). This survey instrument was designed to collect information of four-year college students and their level of engagement with respect to their learning and personal development (NSSE, 2014). The NSSE questionnaire collects information in five different categories: student behaviors, institutional actions and requirement, reactions to college, student background information, and the student's estimate of educational and personal growth (Kuh, 2009). The NSSE was designed for three core purposes: provide high-quality data that institutions can use to improve the undergraduate experience, to discover and document effective educational practice in postsecondary settings, and to advocate for public acceptance and use of empirically derived conceptions of collegiate quality (Kuh, 2009).

The creation of NSSE provided a great resource for four-year colleges and created a need for a similar assessment tool for the community college setting. CCSSE was launched in 2001 at the University of Texas at Austin (CCSSE, 2014). The CCSSE assessment tool was designed to obtain an annual report that provided information about community college student participation in educationally purposeful activities

(McClenney, 2007). The results of the CCSSE are divided into five sections: the frequency of a student's engagement in active and collaborative learning; level of student effort applied to educational pursuits; the degree of academic challenge students experience at their college; the amount of student-faculty interaction that occurs in class, out-of-class, or online; and, support for learners provided through the institution's services (McClenney, 2007). This in-class survey is administered to community college students in a randomly selected credit course sections during the spring term (McClenney, 2007).

Validity of NSSE Five Original Benchmarks

The NSSE five original benchmarks of effective educational practice reflected both sides of student engagement: what the institution does to create meaningful engagement experiences for students and what students do to engage with the college community or become involved (Campbell & Cabrera, 2011). Though these benchmarks of the NSSE have strong theoretical foundation, minimal investigation of the benchmarks construct validity and their predictive student outcomes has occurred and have mixed results (Pike, 2013b; Porter, 2011). Porter (2011) argued that the domain specification for the NSSE is broad and driven by empirical evidence instead of theoretical foundation. Furthermore, Porter (2011) indicated that the NSSE relies on human cognition and that the vaguely worded questions often have low reliability. However, Pike's (2012b) study revealed that NSSE benchmarks could produce dependable results for student engagement with a small sample size of 50. This study also used multiple regression to indicate that the NSSE benchmarks were significantly related to retention and graduation rates (Pike, 2013b).

The major concern is the lack of research with regards to NSSE benchmark's reliability and validity on an institutional level (Gordon, Ludlum, & Hoey, 2008; LaNasa, Cabrera, & Trangsrud, 2009). LaNasa et al. (2009) implied that recent analysis has suggested that five benchmarks or NSSE need to be decomposed to sub-scales and de-emphasize student engagement as a construct.

Confirmatory Factor Analysis (CFA) Study on NSSE

In searching for literature, there was a handful of articles that provided insight on utilizing confirmatory factor analysis with NSSE data. The common thread throughout the literature was the usage of confirmatory factor analysis to test the model fit of the NSSE data provided. Tendhar, Culver, and Burge (2013) examined the NSSE 2008 senior cohort dataset from Virginia Tech. Based on the inadequate loading values and the high root mean square error approximation (RMSEA), the results of the confirmatory factor analysis of the NSSE five benchmark model indicated that the model was not a good fit.

Another study of NSSE 2009 data at a large, public, research-extensive university only examined non-transfer senior data to capture the full four-year student experience and their engagement with the institution (Campbell & Cabrera, 2011). The examination of the data for this study revealed that there was a substantial correlation among the latent variables representing the five benchmarks. Due to the substantial correlation and overlap of the latent variables, using confirmatory factor analysis, the five-benchmark model did not hold for this institution (Campbell & Cabrera, 2011).

The review of other studies that examined the NSSE data utilizing confirmatory factor analysis provided mixed results. Lutz and Culver (2010) utilized NSSE data at a

large, land-grant university in the Southeast and tested it using confirmatory factor analysis three times: on the combined data for the university, senior data, and first-year level data. The confirmatory factor analysis on the NSSE benchmark model resulted in a high value for the chi-square test and the RMSEA, which indicated a bad model fit for all three datasets. However, the CFA on the undergraduate senior NSSE data from a Midwestern doctoral university yielded a good model fit (Rugutt & Chemosit, 2005). This study yielded an acceptable RMSEA value of 0.048 and the latent variables were not highly correlated.

LaNasa, Cabrera, and Trangsrud (2009) conducted a study using the original NSSE five benchmarks. In conducting the confirmatory factor analysis (CFA), the latent variables were the five benchmarks and the observed variables were the survey questions associated with each benchmark. The analysis revealed that the model was not a good fit. Therefore, an exploratory factor analysis (EFA) was conducted to determine the new factors or latent variables and then conducted another CFA to test the model fit based on the new factors (LaNasa Cabrera, & Trangsrud, 2009).

Based on the previous research on utilizing confirmatory factor analysis to examine the NSSE five benchmark model fit with institution data, there are noticeable inconsistencies. However, the methodology of these selected studies served to help guide the research design and analysis for the current study.

Transfer Student Engagement Using NSSE

An in-depth literature search indicated that little empirical research has been conducted on transfer student engagement using the NSSE. However, a study conducted by Ishitani and McKitrick (2010) at a Carnegie doctoral-intensive university; with a total

enrollment of approximately 11,000 students and about 700 new transfer students annually; provided some interesting conclusions regarding the NSSE survey with five benchmarks and transfer students. Based on the NSSE benchmarks related to institutional engagement (active and collaborative learning, student faculty interaction, and enriching educational experiences), the results showed native students scored higher as compared to community college transfer students. The authors also found that community college transfer students were less likely to be engaged at a four-year institution than native students. Using the NSSE benchmarks yielded that transfer freshman students and native freshman students were not significantly different. This alludes to the fact that the earlier a student transfers, the more likely they are to be engaged in their new institutional setting. Ishitani and McKitrick (2010) also pointed out that using the NSSE allowed the institution to move past just looking at GPA, retention rates, and graduation rates, and move more towards actual student experiences and their level of engagement.

The review of other studies that examined transfer student engagement using NSSE data provided little additional context. One of the studies examined NSSE data to compare the experiences of women at women's colleges and women at other four-year institutions (Kinzie, Thomas, Palmer, Umbach, & George, 2007). Using hierarchical linear modeling (HLM), the authors found that women who attended a women's college were more engaged than their counterparts at coeducational institutions and that transfer students at women's colleges were as engaged or more engaged than students who start at and graduate from the same school (Kinzie et al., 2007). Another study compared the engagement levels of transfer students that were National Winners of the 2006 All-USA Community College academic team to the general population of community college

transfer students (Risley & King, 2012). The findings showed that the transfer students that were on the 2006 All-USA Community College Academic Team had higher levels of engagement for each of the NSSE five benchmarks than general community college transfer students (Risley & King, 2012).

Due to the fact that the NSSE survey was designed to survey first-time, first-year students and senior students, the survey design does not lend well in examining student engagement of transfer students (NSSE, 2014). However, there is an opportunity to capture student experiences with the sample data of senior students that identify as having started at another institution. Based on lack of past and current research with respect to transfer student engagement and NSSE, there seems to be a potential gap in literature.

NSSE 2.0

As noted previously, the updated version of the NSSE survey, launched in 2013, grew out of feedback from participating institutions, research on the survey, and recognition that the terminology needed to be updated (Pike, 2013a). According to NSSE (2014), 23 of the items remained unchanged, 30 of the items were rewritten with minor changes in wording, 29 of the items were rewritten with major changes in wording, 24 of the items were new, and 24 of the items were deleted. An example of a minor change of a question can be seen in question 1b. The 2012 survey question is "How often…Made a class presentation," however the 2013 survey question is "How often…Gave a course presentation" (NSSE, 2014). In order to highlight the key changes, NSSE mapped the old benchmarks to the new themes with a subset of engagement indicators (NSSE, 2014). An example of a major change of a major change of a question can be seen in question 1u

of the 2012 instrument and question 9a in the 2013 instrument. The 2012 survey question is "How often…Had serious conversations with students of a different race or ethnicity than your own. 2013 question is "How often have you had discussions with people from the following groups?...People of a race or ethnicity other than your own" (NSSE, 2014).

The Level of Academic Challenge benchmark was expanded to focus on dimensions of academic effect and is mapped to a new theme called Academic Challenge with four engagement indicators (NSSE, 2014). The Active and Collaborative Learning benchmark was modified to emphasize student-to-student collaboration and mapped to a new theme called Learning with Peers with two engagement indicators (NSSE, 2014). The Student-Faculty Interaction benchmark added a second measure around effective teaching practices and mapped to a new theme called Experiences with Faculty with two engagement indicators (NSSE, 2014). The Supportive Campus Environment benchmark was expanded to focus on interactions with people and perceptions of the learning environment and mapped to a new theme called Campus Environment with two engagement indicators (NSSE, 2014).

The four engagement themes and ten related engagement indicators include (NSSE, 2014):

Table 4.

NSSE Engagement Themes and Indicators

Engagement Themes	**Engagement Indicators**
Academic Challenge	Higher-Order Learning
	Reflective & Integrative Learning
	Learning Strategies
	Quantitative Reasoning
Learning with Peers	Collaborative Learning
	Discussions with Diverse Others

Experiences with Faculty	Student-Faculty Interaction
Campus Environments	Effective Teaching Practices Quality Interactions Supportive Environments

There is limited research regarding the updated NSSE 2.0 and its validity and reliability. An early study by Zilvinskis, Masseria, and Pike (2017) comparing data from 2011 and 2013 has shown important positive implications of the instrument. Preliminary analysis of the new NSSE showed that the pattern of relationships between engagement indicators and self-reported learning outcomes provided strong evidence of the discriminant validity of the NSSE engagement indicators, and that compared with its predecessor, the NSSE 2.0 was more successful in achieving measures clearly linked to student learning outcomes. The results indicated that the engagement indicators within the NSSE 2.0 survey appear to be more useful than the previous NSSE benchmarks in identifying institutional actions that can enhance learning outcomes (Zilvinskis et al., 2017).

The NSSE organization provided multiple studies on their website that address response process validity, content validity, construct validity, and predictive validity for the NSSE 2.0. With respect to content validity, NSSE (2018) discussed the conceptual framework of the NSSE update, NSSE 2.0. This article outlined the new engagement indicators and the corresponding survey questions within the updated survey and the engagement indicators were grouped thematically into four themes closely tied to the original NSSE benchmarks (NSSE, 2018). This study provided a framework for conducting the confirmatory factor analysis (CFA) for this study. The key takeaway of

this article was that the model of NSSE 2.0 for CFA utilized the ten engagement indicators as latent variables as compared to the five benchmarks of the previous NSSE.

Miller, Sarraf, Dumford and Rocconi (2016) provided a framework for a quantitative analysis that provided evidence of construct validity for the ten engagement indicators of NSSE 2.0. This study utilized both exploratory factor analysis (EFA) and confirmatory factor analysis (CFA) to provide evidence that the new engagement indicators have strong construct validity evident to support their use for colleges and universities (Miller et al., 2016).

Summary

This literature review provided contextual and background information that helps to better understand transfer students, transfer student engagement, the NSSE, and utilizing the confirmatory factor analysis as a method to examine model fit for varying demographics of the NSSE data. This review pinpointed the gaps in literature and research that will guide this study. This research study will focus on the use confirmatory factor analysis as a statistical method to examine the fit of the four themes and ten engagement indicator model to the NSSE data from transfer students at a single institution in the Southeast.

CHAPTER 3: METHOD

This study utilized a confirmatory factor analysis approach to understand the fit of the NSSE four-themed engagement indicator model for transfer students at a single four-year institution. To facilitate comparison of the results for this transfer student sample to those of a national sample, the researcher employed a similar analytic approach to that used by Miller and colleagues (2016) in their construct validity analysis for the ten engagement indicators and four engagement themes.

This chapter outlines the sample dataset and the design for statistical analysis. The data of interest included the NSSE senior student responses from two administrations (2014 and 2016) at a public, urban, research university in the Southeast. An initial agreement with the primary investigator of the NSSE dataset was made at an earlier date. An Institutional Review Board (IRB) request was submitted at the appropriate time to conduct the study. The NSSE data for transfer seniors for 2014 and 2016 was combined to provide the largest sample possible.

Setting

The sample institution has an overall student population of nearly 30,000 across eight colleges. The student body of the institution is roughly balanced by gender (48.6% women, 51.4% men), with a relatively small proportion of international students (6.4%). The undergraduate student population (around 24,000) is racially diverse, with 56.5% White, 16.4% African American, 10.1% Hispanic, 7.3% Asian, 4.6% two or more races, 2.7% non-resident alien, 2% unknown, 0.3% American Indian, and 0.1% Pacific Islander. The institution is unique in the sense that over the last five academic years, the transfer

student enrollment outpaces the first-time student enrollment as shown in Table 5, as reported by the institution. This table includes both fall and spring enrollment.

Table 5.

Institution Transfer Student Enrollment

	Entering First-Time	Transfers
2013-2014	3,202	3,813
2014-2015	3,472	3,878
2015-2016	3,646	3,965
2016-2017	3,675	4,110
2017-2018	3,567	3,945

Transfer Center

Due to the significant transfer student enrollment, this sample institution launched and created a Transfer Student Center in 2017. The Transfer Center was designed to serve prospective, newly enrolled, and continuing transfer student in a variety of ways. The center focuses on academic advising, transfer student advocacy, first semester and first year programming, transfer credit clarification and analysis, and transfer student outreach.

- **Academic advising**
    - The transfer student center serves as the primary advising unit for the institution's undeclared transfer student population.
    - This center also provides supplemental and secondary advising for the campus-wide transfer student populations, pre-majors, and declared students.

  - The staff also works with community college transfer pathways and reverse transfer programs.

- **Advocacy role**
  - Identify and address actionable issues for transfer students.
  - Guide students with transfer credit articulation questions, academic policy issues, and other barriers to appropriate resources.
  - Partner with colleges and departments on assessment of course needs and availability.
  - Serve as a clearinghouse for information on transfer pathways.
  - Collect information about factors that influence transfer student success and share with community college partners.
- **First semester and first year programming**
  - The transfer center also provides support for transfer student orientation, advising, and registration.
  - The staff is also responsible for coordinating the Transfer Learning Community, hosting transfer student specific welcome week event, and advising Tau Sigma, National Honor Society for university transfer students.
  - The center is also charged with developing new programming with the goal of increasing transfer student connections and engagement.
- **Transfer credit clarification and analysis**

  - The transfer center collaborates with the Office of Undergraduate Admissions, Registrar's Office, and academic departments in support of transfer students understanding of the credit evaluation process.
  - The center also assists students and departments with unique inquires and challenging issues related to transfer credits and guides them to the appropriate contacts for a supportive resolution.

- **Student outreach**
  - The transfer center provides student outreach by offering extended advising hours, providing online advising and maintaining a consistent social media presence.

Source of Data and Sample

Sampling Strategy

The sample institution recruited NSSE participants via email in the spring semesters of each administration year (2014 and 2016). Email recruitment for NSSE includes five electronic messages containing individualized links allowing for student log into the survey. The five email messages included the invitation sent to all first-year and senior students and four reminders to nonresponding students. This sample institution chose to send the NSSE invitations after the census date in order to capture the most accurate enrollment. The invitation was sent to all first-year and senior baccalaureate degree-seeking students. NSSE allows institutions to determine their own graduating senior guidelines. For most schools, graduating seniors are typically within 12-24 hours (6-8) courses at the start of the spring semester.

Sample

This study examined data that included the senior NSSE responses from 2014 and 2016 from the sample institution mentioned in the previous section. Transfer students were extracted from the dataset based on verification of transfer status with student records as provided by the institutional research office. This study examined persisting vertical transfers, horizontal transfer, and students that indicated attending both a two-year and another four-year institution as a combined dataset. A breakdown of the sample and the subgroups are outlined in Table 6.

Table 6.

NSSE Data (After Institution Confirmation of Transfer)

	2014 NSSE	2016 NSSE	Combined Dataset
Attended a community or junior college (vertical transfer)	316	179	495
Attended another four-year college or university (horizontal transfer)	130	76	206
Indicated attended comm. college & four-year institution	120	76	196
Indicated did not transfer	8	6	14
No Answer	157	101	258
Total Transfer / Sample Size	N_{t1}=731	N_{t2}=438	N= 1,169

Research Question

As stated in Chapter 1, the interest of this researcher was to examine post-transfer student engagement using NSSE data. Specifically, the researcher intended to examine the model fit of the four-themed 2013 NSSE with respect to the persisting transfer population at the sample institution. This dissertation study was guided by the following

primary research question: How well does the model of the NSSE engagement indicators organized by content themes fit to the empirical data for persisting transfer students at a public urban research university? The examination of this research question included the entire transfer student sample, followed by analysis by three transfer student subgroups including vertical, horizontal, and swirling transfer students.

Research Design and Data Analysis Procedure

This quantitative research study utilized confirmatory factor analysis (CFA), a multivariate statistical procedure, to examine the NSSE data. All data was thoroughly examined using data processing and cleaning methods prior to analysis. Little's Missing Completely at Random (MCAR) test was conducted for each variable of the dataset. This test determined that the missing data points were missing at random, thus there was not a need for imputation of data. The NSSE instrument consisted of multiple observed variables (47 designated NSSE questions) and multiple underlying latent constructs (ten engagement indicators) organized by four content area themes of academic challenge, learning with peers, experiences with faculty, and campus environment. Therefore, the CFA was used to test the relationship between the observed variables and their respective latent variables. The approach outlined in the Miller et al. (2016) study was used to ensure comparability of the current study results to the NSSE construct validity study. Thus, a CFA was conducted for the entire transfer sample then for each subgroup for each of the four engagement themes of the NSSE survey. For the purposes of this study, analysis of the chi-square test (< 5.0), comparative fit index (CFI > 0.9), and the root mean square error approximation (RMSEA $< .08$) were used to examine the NSSE model fit for the transfer student model and subgroup models (Hu & Bentler, 1999).

A confirmatory factor analysis (CFA) was conducted to determine the model fit of the ten engagement indicators organized by the four primary content theme areas indicated in the NSSE survey for the persisting transfer student data. The model test utilized the ten engagement indicators within the four themes as the main latent variables and the 47 survey questions associated with the four engagement themes as the observed variables, as identified by NSSE. IBM SPSS AMOS software was used to conduct the CFA analysis to test the model fit for the specified sample. The CFA analysis included a model diagram, standardized regression weights for each observed variable, and model fit indices to determine goodness of fit.

Next, a confirmatory factor analysis was conducted for each subgroup model. Similar to approach used by Miller et al. (2016), a CFA was conducted for each subgroup for each of the four engagement themes of the NSSE survey; Academic Challenge, Learning with Peers, Experiences with Faculty, and Campus Environment. The CFA analysis included a model diagram, standardized regression weights for each observed variable, and model fit indices to determine the goodness of fit for each subgroup and engagement theme.

Variables

The four engagement themes, ten engagement indicators, and related survey questions are listed in Table 7 (National Survey of Student Engagement, 2014).

Table 7

NSSE 2.0 (Engagement Themes, Engagement Indicators, Survey Questions

Theme 1: Academic Challenge	Higher-Order Learning
	Applying facts, theories, or methods to practical problems or new situations
	Analyzing an idea, experience, or line of reasoning in depth by examining its parts
	Evaluating a point of view, decision, or information source

	Forming a new idea or understanding from various pieces of information
	Reflective & Integrative Learning
	Combined ideas from different courses when completing assignments
	Connected your learning to societal problems or issues
	Included diverse perspectives (political, religious, racial/ethnic, gender, etc.) in course discussions or assignments
	Examined the strengths and weaknesses of your own views on a topic or issue
	Tried to better understand someone else's views by imagining how an issue looks from his or her perspective
	Learned something that changed the way you understand an issue or concept
	Connected ideas from your courses to your prior experiences and knowledge
	Learning Strategies
	Identified key information from reading assignments
	Reviewed your notes after class
	Summarized what you learned in class or from course materials
	Quantitative Reasoning
	Reached conclusions based on your own analysis of numerical information (numbers, graphs, statistics, etc.)
	Used numerical information to examine a real-world problem or issue (unemployment, climate change, public health, etc.)
	Evaluated what others have concluded from numerical information
Theme 2: Learning with Peers	**Collaborative Learning**
	Asked another student to help you understand course material
	Explained course material to one or more students
	Prepared for exams by discussing or working through course material with other students
	Worked with other students on course projects or assignments
	Discussions with Diverse Others
	People from a race or ethnicity other than your own
	People from an economic background other than your own
	People with religious beliefs other than your own
	People with political views other than your own
Theme 3: Experiences with Faculty	**Student-Faculty Interaction**
	Talked about career plans with a faculty member
	Worked w/faculty on activities other than coursework (committees, student groups, etc.)
	Discussed course topics, ideas, or concepts with a faculty member outside of class
	Discussed your academic performance with a faculty member
	Effective Teaching Practices
	Clearly explained course goals and requirements
	Taught course sessions in an organized way
	Used examples or illustrations to explain difficult points
	Provided feedback on a draft or work in progress
	Provided prompt and detailed feedback on tests or completed assignments

Theme 4: Campus Environments	Quality Interactions
	Students
	Academic advisors
	Faculty
	Student services staff (career services, student activities, housing, etc.)
	Other administrative staff and offices (registrar, financial aid, etc.)
	Supportive Environments
	Providing support to help students succeed academically
	Using learning support services (tutoring services, writing center, etc.)
	Encouraging contact among students from diff. backgrounds (soc., racial/eth., relig., etc.)
	Providing opportunities to be involved socially
	Providing support for your overall well-being (recreation, health care, counseling, etc.)
	Helping you manage your non-academic responsibilities (work, family, etc.)
	Attending campus activities and events (performing arts, athletic events, etc.)
	Attending events that address important social, economic, or political issues

The latent variables in the model are the ten engagement indicators, organized by the four themes as shown in Table 7. The observed variables are the 47 survey items identified by NSSE. CFA analysis was first conducted for the entire transfer student sample, then separately for the samples of horizontal transfer, vertical transfer, and swirling transfer (students that indicated they attended a community college and another four-year college). This approach was similar to the one conducted by Miller and colleagues (2016) to facilitate discussion of the results of this study in relation to national survey data.

Summary

This chapter discussed the research design and methodology that was used to conduct the study. Sampling, data sources, and analysis methods were described in detail. The results of the data analysis are presented in chapter 4, and then discussed along with relationship to the literature and implications in chapter 5.

CHAPTER 4: ANALYSIS OF DATA

This study utilized a confirmatory factor analysis approach to determine the fit of the 2013 NSSE engagement indicator model organized by four content themes to data from transfer students at one four-year institution. An agreement was made with the institutional research office to assist with validating transfer status based on institutional admission record rather than self-reported survey data. As shown in Chapter 1 (Table 2), the sample of confirmed transfer students was smaller than the sample who indicated starting their studies elsewhere. The final analytic sample was determined after examining missing data. Confirmatory factor analysis was conducted for all transfer students, then for horizontal transfer students, vertical transfer students, and students that indicated they attended a community college and a four-year college.

Procedure Summary

In preparation for conducting the statistical analyses, the dataset was analyzed for discrepancies and missing data concerns. Each of the 47 observed variables was checked for univariate outliers and normality by examining the skewness and kurtosis of each of the variable's distributions. Multivariate outliers were checked by utilizing the Mahalanobis distance method. In order to address the missing data points, a threshold of unanswered questions for each case was established at 20%. If a participant did not complete at least 80% of the survey, the case was eliminated from the sample. Based on this threshold, 183 cases were deleted and the new sample size for all transfer students was 986 (490 vertical, 206 horizontal, 195 swirling, 14 indicated did not transfer, and 81 no answer). Table 8 provides a comparison of the demographic characteristics of the

final sample of transfer students to the institutional population of transfer students (Fall 2018). Though the NSSE survey is designed to survey only first-year and senior students, it is interesting to note freshman, sophomore, juniors, and seniors are represented in the NSSE transfer student sample. This draws concern to the sampling methods of the institution and NSSE. In comparing the sample to the institutional transfer students, multiple characteristic categories are overrepresented in the sample: female, white, and senior. In contrast, hispanic/latino and full-time students are underrepresented.

Table 8.

Comparison of sample characteristics to institutional population characteristics

Characteristic	Category	Institutional transfer population (n=2,970)	NSSE transfer student sample (n=986)
Gender	Female	49.2	59.3
	Male	50.8	40.7
Race and ethnicity	American Indian	0.2	0.4
	Black or African American	18.4	17.2
	Hispanic or Latino	12.8	7.9
	White	52.1	60.1
	Foreign or Nonresident alien	2.7	2.6
	Two or more races/ethnicities	5.2	3.2
	Unknown	1.6	3.4
Class level	Freshman (1st year)	15.1	11.5
	Sophomore (2nd year)	43.2	12.7
	Junior (3rd year)	36.0	12.6
	Senior (4th year)	2.7	63.3
	Special Status	3.0	--
Enrollment status	Not full-time	15.6	21.5
	Full-time	84.4	78.5

As described in Chapter 3, the latent variables were identified as the ten engagement indicators: Higher-Order Learning, Reflective & Integrative Learning, Learning Strategies, Quantitative Reasoning, Collaborative Learning, Discussions with Diverse Others, Student-Faculty Interaction, Effective Teaching Practices, Quality Interactions, and Supportive Environments. The observed variables are the 47 survey questions identified by NSSE for each latent variable. The descriptive summary of the observed variables is listed in Table 9.

Table 9.

Descriptive statistics for observed variables (n=986)

Variables	Mean	SD
CLaskhelp: Asked another student to help you understand course material	2.41	0.89
CLexplain: Explained course material to one or more students	2.69	0.83
CLstudy: Prepared for exams by discussing or working through course material with other students	2.42	1.00
CLproject: Worked with other students on course projects or assignments	2.80	0.90
RIintegrate: Combined ideas from different courses when completing assignments	2.87	0.87
RIsocietal: Connected your learning to societal problems or issues	2.78	0.94
RIdiverse: Included diverse perspectives (political, religious, racial/ethnic, gender, etc.) in course discussions or assignments	2.59	1.01
RIownview: Examined the strengths and weaknesses of your own views on a topic or issue	2.84	0.85
RIperspect: Tried to better understand someone else's views by imagining how an issue looks from his or her perspective	2.97	0.86
RInewview: Learned something that changed the way you understand an issue or concept	2.95	0.84
RIconnect: Connected ideas from your courses to your prior experiences and knowledge	3.21	0.77
SFcareer: Talked about career plans with a faculty member	2.24	0.96
SFotherwork: Worked with a faculty member on activities other than coursework (committees, student groups, etc.)	1.68	0.92
SFdiscuss: Discussed course topics, ideas, or concepts with a faculty member outside of class	2.03	0.94
SFperform: Discussed your academic performance with a faculty member	2.19	0.91

HOapply: Coursework emphasized: Applying facts, theories, or methods to practical problems or new situations	3.13	0.82
HOanalyze: Coursework emphasized: Analyzing an idea, experience, or line of reasoning in depth by examining its parts	3.13	0.82
HOevaluate: Coursework emphasized: Evaluating a point of view, decision, or information source	2.99	0.88
HOform: Coursework emphasized: Forming a new idea or understanding from various pieces of information	2.98	0.89
ETgoals: Instructors: Clearly explained course goals and requirements	3.19	0.80
ETorganize: Instructors: Taught course sessions in an organized way	3.12	0.83
ETexample: Instructors: Used examples or illustrations to explain difficult points	3.13	0.86
ETdraftfb: Instructors: Provided feedback on a draft or work in progress	2.78	1.03
ETfeedback: Instructors: Provided prompt and detailed feedback on tests or completed assignments	2.87	0.94
QRconclude: Reached conclusions based on your own analysis of numerical information (numbers, graphs, statistics, etc.)	2.59	0.96
QRproblem: Used numerical information to examine a real-world problem or issue (unemployment, climate change, public health, etc.)	2.43	1.01
QRevaluate: Evaluated what others have concluded from numerical information	2.38	0.96
DDrace: Had discussions with people of a race or ethnicity other than your own	3.22	0.90
DDeconomic: Had discussions with people from an economic background other than your own	3.14	0.91
DDreligion: Had discussions with people with religious beliefs other than your own	3.03	0.97
DDpolitical: Had discussions with people with political views other than your own	3.00	0.98
LSreading: Identified key information from reading assignments	3.21	0.79
LSnotes: Reviewed your notes after class	3.06	0.87
LSsummary: Summarized what you learned in class or from course materials	3.00	0.88
QIstudent: Quality of interactions with students	5.41	1.47
QIadvisor: Quality of interactions with academic advisors	5.16	1.84
QIfaculty: Quality of interactions with faculty	5.40	1.45
QIstaff: Quality of interactions with student services staff	4.91	1.77
QIadmin: Quality of interactions with other administrative staff and offices	4.94	1.77
SEacademic: Institutional emphasis: Providing support to help students succeed academically	2.94	0.90
SElearnsup: Institutional emphasis: Using learning support services (tutoring services, writing center, etc.)	2.94	0.92
SEdiverse: Institutional emphasis: Encouraging contact among students from different backgrounds (social, racial/ethnic, religious, etc.)	2.59	1.01

SEsocial: Institutional emphasis: Providing opportunities to be involved socially	2.83	0.93
SEwellnes: Institutional emphasis: Providing support for your overall well-being (recreation, health care, counseling, etc.)	2.78	0.95
SEnonacad: Institutional emphasis: Helping you manage your non-academic responsibilities (work, family, etc.)	2.11	1.03
SEactivities: Institutional emphasis: Attending campus activities and events (performing arts, athletic events, etc.)	2.70	0.98
SEevents: Institutional emphasis: Attending events that address important social, economic, or political issues	2.42	1.01

Results

Confirmatory factor analyses (CFA) were conducted on the model for the entire sample and for the transfer subgroups: horizontal transfer student data, vertical transfer student data, and swirling transfer student data. The results are organized based on the original research question.

As noted in chapter 3, a CFA was conducted for each subgroup for each of the four engagement themes of the NSSE survey; Academic Challenge, Learning with Peers, Experiences with Faculty, and Campus Environment. These analyses included a conceptual model diagram for each engagement theme, standardized regression weights for each observed variable, and model fit indices were compiled to determine the level of good model fit for each subgroup and engagement theme.

Engagement Theme – Academic Challenge. Confirmatory Factor Analysis (CFA) results for Academic Challenge theme are supplied by the portion of the model that represent the engagement indicators of Reflective & Integrative Learning, High-Order Learning, Quantitative Reasoning, and Learning Strategies. The Academic Challenge theme conceptual model is shown is Figure 1.

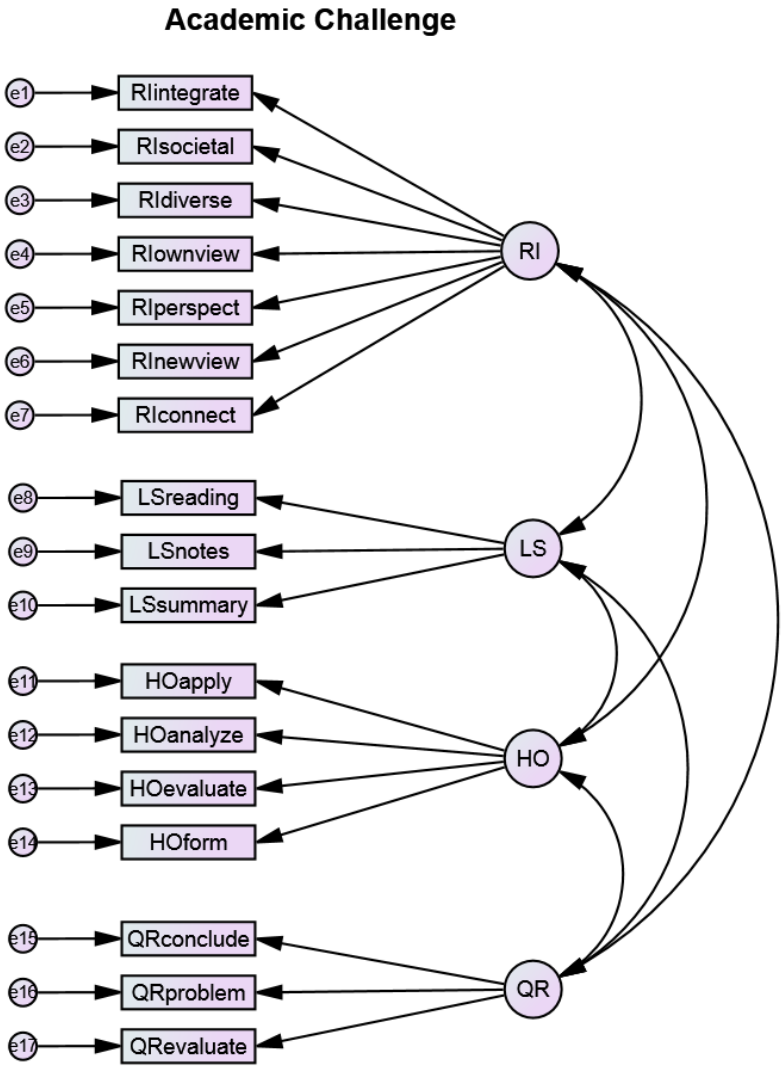

Figure 1. CFA Engagement Theme - Academic Challenge

Data for the overall sample of all transfer students does demonstrate a good model fit overall. The CFI index greater than 0.9 and the RMSEA less than .08 satisfy the model fit indices, however, the X^2/df is not satisfactory. In examining the subgroups, the horizontal transfer subgroup failed to meet two out of the three fit indices. There were a few standardized regression weights for an observed variable that straddled the criteria of being greater than 0.6 and could be issues for the model. That observed variable was RIintegrate.

Table 10.

Model-fit Indices for Ten Engagement Indicator Models - Academic Challenge Theme

Model	X^2/df	CFI	RMSEA
1. NSSE 2014 & 2016 (All Transfers)	5.879	0.936	0.070
2. NSSE 2014 & 2016 (Horizontal Transfers)	2.719	0.893	0.092
3. NSSE 2014 & 2016 (Vertical Transfers)	3.435	0.935	0.071
4. NSSE 2014 & 2016 (Swirl Transfers)	2.255	0.915	0.800

Table 11.

Academic Challenge: Standardized Regression Weights

	NSSE 2014 & 2016 (All Transfers)	NSSE 2014 & 2016 (Horizontal Transfers)	NSSE 2014 & 2016 (Vertical Transfers)	NSSE 2014 & 2016 (Swirling Transfers)
Reflective & Integrative Learning				
RIintegrate	0.605	0.571	0.626	0.537
RIsocietal	0.756	0.769	0.763	0.760
RIdiverse	0.744	0.779	0.732	0.761
RIownview	0.783	0.749	0.775	0.800
RIperspect	0.745	0.705	0.733	0.791
RInewview	0.713	0.727	0.690	0.718
RIconnect	0.734	0.701	0.742	0.722
Higher-Order Learning				
HOapply	0.699	0.676	0.694	0.706
HOanalyze	0.815	0.737	0.842	0.785
HOevaluate	0.798	0.796	0.807	0.788
HOform	0.798	0.738	0.815	0.793
Quantitative Reasoning				
QRconclude	0.768	0.792	0.767	0.751
QRproblem	0.892	0.870	0.906	0.901
QRevaluate	0.811	0.827	0.799	0.796
Learning Strategies				
LSreading	0.647	0.626	0.654	0.614

LSnotes	0.778	0.837	0.763	0.777
LSsummary	0.863	0.915	0.833	0.874

Engagement Theme – Learning with Peers. CFA results for Learning with Peers theme include the engagement indicators of Collaborative Learning and Discussions with Diverse Others. The Learning with Peers theme conceptual model is shown is Figure 2.

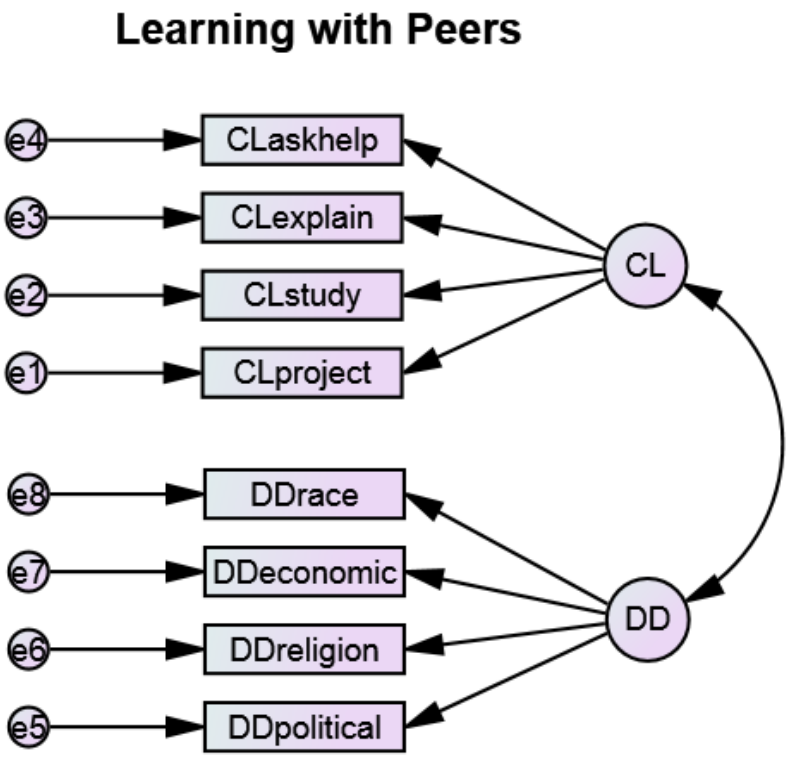

Figure 2. CFA Engagement Theme – Learning with Peers

The data from overall sample of all transfer students does not demonstrate an overall good model fit. The CFI index greater than 0.9 satisfies the model fit index, however the RMSEA and the X^2/df indices are not satisfactory. The vertical transfer subgroup failed to meet two out of the three fit indices. The standardized regression weights for all factors across the subgroups were strong and were all above 0.6.

Table 12.

Model-fit Indices for Ten Engagement Indicator Models - Learning with Peers Theme

Model	X^2/df	CFI	RMSEA
1. NSSE 2014 & 2016 (All Transfers)	12.353	0.948	0.107
2. NSSE 2014 & 2016 (Horizontal Transfers)	3.748	0.938	0.116
3. NSSE 2014 & 2016 (Vertical Transfers)	5.325	0.96	0.094
4. NSSE 2014 & 2016 (Swirl Transfers)	3.891	0.932	0.122

Table 13.

Learning with Peers: Standardized Regression Weights

	NSSE 2014 & 2016 (All Transfers)	NSSE 2014 & 2016 (Horizontal Transfers)	NSSE 2014 & 2016 (Vertical Transfers)	NSSE 2014 & 2016 (Swirling Transfers)
Collaborative Learning				
CLaskhelp	0.684	0.670	0.680	0.697
CLexplain	0.647	0.600	0.663	0.692
CLstudy	0.839	0.804	0.865	0.785
CLproject	0.630	0.683	0.579	0.704
Discussions with Diverse Others				
DDrace	0.840	0.877	0.831	0.781
DDeconomic	0.877	0.901	0.870	0.838
DDreligion	0.863	0.827	0.891	0.861
DDpolitical	0.850	0.807	0.865	0.892

Engagement Theme – Experiences with Faculty. CFA results for Experiences with Faculty theme include the engagement indicators of Student-Faculty Interactions and Effective Teaching Practices. The Experience with Faculty theme conceptual model is shown is Figure 3.

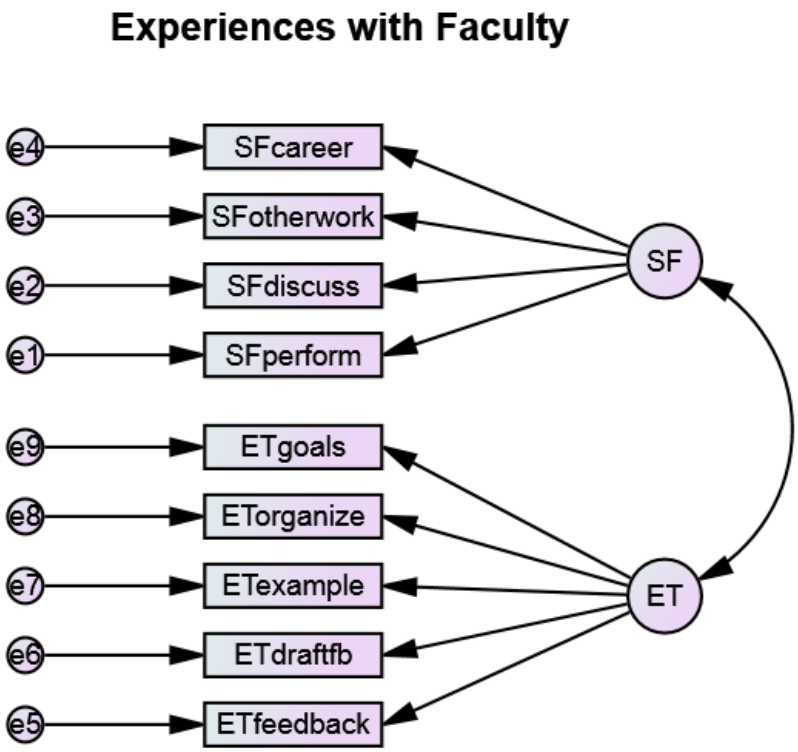

Figure 3. CFA Engagement Theme – Experiences with Faculty

The data from overall sample for all transfer students does not demonstrate a good model fit overall. The CFI index greater than 0.9 satisfies the model fit index; however, the RMSEA and the X^2/df indices are not satisfactory. The vertical transfer and swirl transfer subgroups failed to meet two out of the three fit indices. The standardized regression weights for all factors across the subgroups were strong and were all above 0.6, except ETdraftfb for swirl transfer subgroup.

Table 14.

Model-fit Indices for Ten Engagement Indicator Models - Experiences with Faculty Theme

Model	X^2/df	CFI	RMSEA
1. NSSE 2014 & 2016 (All Transfers)	10.945	0.933	0.100

2. NSSE 2014 & 2016 (Horizontal Transfers)	2.914	0.942	0.097
3. NSSE 2014 & 2016 (Vertical Transfers)	5.847	0.937	0.100
4. NSSE 2014 & 2016 (Swirl Transfer)	4.099	0.885	0.126

Table 15.

Experiences with Faculty: Standardized Regression Weights

	NSSE 2014 & 2016 (All Transfers)	NSSE 2014 & 2016 (Horizontal Transfers)	NSSE 2014 & 2016 (Vertical Transfers)	NSSE 2014 & 2016 (Swirling Transfers)
Student-Faculty Interaction				
SFcareer	0.728	0.709	0.693	0.753
SFotherwork	0.664	0.637	0.644	0.705
SFdiscuss	0.808	0.834	0.775	0.851
SFperform	0.743	0.780	0.736	0.746
Effective Teaching Practices				
ETgoals	0.762	0.769	0.799	0.728
ETorganize	0.805	0.804	0.835	0.788
ETexample	0.807	0.813	0.818	0.783
ETdraftfb	0.695	0.713	0.738	0.543
ETfeedback	0.723	0.803	0.736	0.603

Engagement Theme – Campus Environment. CFA results for Campus Environment theme include the engagement indicators of Quality of Interactions and Supportive Environment. The Campus Environment theme conceptual model is shown in Figure 4.

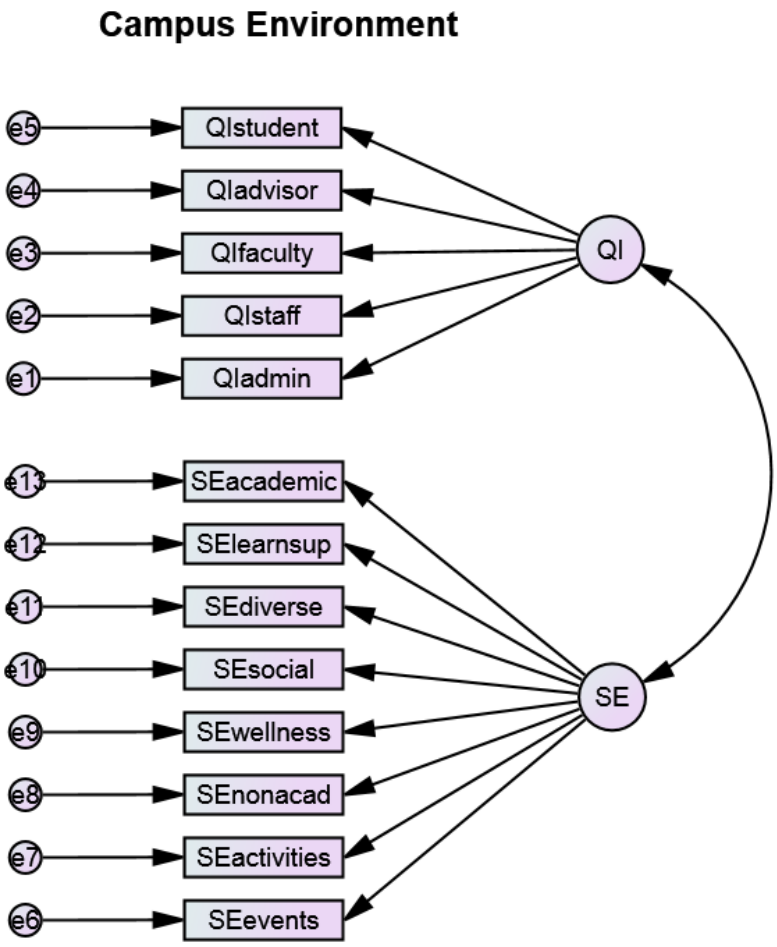

Figure 4. CFA Engagement Theme – Campus Environment

Data from the overall sample of all transfer students does not demonstrate a good model fit overall. The CFI index is greater than 0.9 satisfy the model fit index, however the RMSEA and the X^2/df indices are not satisfactory. The horizontal transfer and swirl transfer subgroups failed to meet two out of the three fit indices, while the vertical transfer subgroup failed to meet all three of the fit indices. The standardized regression weights for all factors across the subgroups were for the most part strong. However, the QIstudent engagement indicators were below 0.6 for all transfers and all subgroups.

Table 16.

Model-fit Indices for Ten Engagement Indicator Models - Campus Environment Theme

Model	X^2/df	CFI	RMSEA
1. NSSE 2014 & 2016 (All Transfers)	9.443	0.905	0.093
2. NSSE 2014 & 2016 (Horizontal Transfers)	3.372	0.888	0.108
3. NSSE 2014 & 2016 (Vertical Transfers)	5.733	0.891	0.098
4. NSSE 2014 & 2016 (Swirl Transfers)	2.637	0.913	0.092

Table 17.

Campus Environment: Standardized Regression Weights

	NSSE 2014 & 2016 (All Transfers)	NSSE 2014 & 2016 (Horizontal Transfers)	NSSE 2014 & 2016 (Vertical Transfers)	NSSE 2014 & 2016 (Swirl Transfers)
Quality Interactions				
QIstudent	0.505	0.540	0.542	0.488
QIadvisor	0.663	0.699	0.630	0.669
QIfaculty	0.765	0.801	0.752	0.761
QIstaff	0.805	0.813	0.803	0.822
QIadmin	0.805	0.835	0.799	0.788
Supportive Environment				
SEacademic	0.685	0.723	0.661	0.730
SElearnsup	0.665	0.682	0.653	0.705
SEdiverse	0.707	0.777	0.675	0.695
SEsocial	0.811	0.788	0.781	0.864
SEwellnes	0.788	0.757	0.773	0.827
SEnonacad	0.667	0.673	0.649	0.686
SEactivities	0.665	0.655	0.690	0.646
SEevents	0.750	0.792	0.741	0.718

Summary

This chapter provided an organization of the data analysis process and the results of the analysis. In preparation for conducting the statistical analyses, univariate outliers, normality, and multivariate outliers were analyzed for the sample. Before conducting any analyses, all cases were eliminated for those participants that did not complete at least 80% of the NSSE survey. Based on this threshold, 183 cases were deleted from the sample and a new sample size for all transfer students was 986. Little's MCAR test revealed that data were missing completely at random, so imputation was not necessary for missing data on the variables under study. The CFA results for each of the four conceptual themes showed mixed results. Table 18 provides a snapshot of the model-fit indices that showed good model-fit for each of the engagement themes with respect to the transfer student sample and respective subgroups. Based on this table, the CFI and X^2/df model fit indices were satisfied much more frequently than the RMSEA model-fit index.

Table 18.

Good Model-fit Indices for Engagement Themes

	Academic Challenge	Learning with Peers	Experiences with Faculty	Campus Environment
1. NSSE 2014 & 2016 (All Transfers)	CFI, RMSEA	CFI	CFI	CFI
2. NSSE 2014 & 2016 (Horizontal Transfers)	X^2/df	X^2/df, CFI	X^2/df, CFI	X^2/df
3. NSSE 2014 & 2016 (Vertical Transfers)	X^2/df, CFI, RMSEA	CFI	CFI	---
4. NSSE 2014 & 2016 (Swirl Transfers)	X^2/df, CFI	X^2/df, CFI	X^2/df	X^2/df, CFI

Academic Challenge

For the overall sample, good model fit was evidenced by CFI and RMSEA, however, X^2/df is not satisfactory. Subgroup analyses indicated that the horizontal transfer subgroup failed to meet two out of the three fit indices. In contrast, vertical and swirling transfer student subgroups demonstrated good model fit. There were few standardized regression weights for an observed variable, RIintegrate, that straddled the criteria of being greater than 0.6 and could be issues for the model.

Learning with Peers

The overall sample of all transfer students does not demonstrate a good model fit overall. The CFI index was greater than 0.9 satisfy the model fit index, however the RMSEA and the X^2/df indices were not satisfactory. The vertical transfer subgroup failed to meet two out of the three fit indices. The standardized regression weights for all factors across the subgroups were strong and were all above 0.6.

Experiences with Faculty

The overall sample of all transfer students does not demonstrate a good model fit overall. The CFI index was greater than 0.9 satisfy the model fit index, however the RMSEA and the X^2/df indices are not satisfactory. The vertical transfer and swirl transfer subgroups failed to meet two out of the three fit indices. The standardized regression weights for all factors across the subgroups were strong and were all above 0.6, except ETdraftfb for swirl transfer subgroup.

Campus Environment

The overall sample of all transfer students does not demonstrate a good model fit overall. The CFI index is greater than 0.9 satisfy the model fit index, however the

RMSEA and the X^2/df indices are not satisfactory. Horizontal transfer and swirl transfer subgroups failed to meet two out of the three fit indices. The vertical transfer subgroup failed to meet all three of the fit indices. The standardized regression weights for all factors across the subgroups were for the most part strong. However, the QIstudent engagement indicators was below 0.6 for all transfers and all subgroups.

Chapter 5 will focus on the synthesis of the data and further discussing the results. Chapter 5 will also address the impact of this study and how it informs future studies.

CHAPTER 5: SUMMARY, CONCLUSIONS, AND RECOMMENDATIONS

The opportunity to transfer between higher education institutions has presented challenges related to transitions, academic and social integration, and transfer credits; however, transfer also provides an opportunity for students to expand their choices of institutions and educational experiences. With approximately 2.4 million student transitions from one institution to another between 2008 and 2014, only 11% of those students who transferred from a four-year to another four-year institution completed their bachelor's degree (National Student Clearinghouse Research Center, 2015; SAM, n.d.). In contrast, out of the 33% of community college students that transfer to a four-year institution, only 42% earn a bachelor's degree within six years of entering postsecondary education (Jenkins & Fink, 2016).

Given the low levels of success that transfer students experience at four-year institutions, the main goal of this study was to better understand the post-transfer student engagement experience. NSSE is a popular instrument that many institutions use to assess level of student engagement, thus it was selected for this study. The purpose of this study was to explore the model fit of the 2013 NSSE, NSSE 2.0, ten engagement indicator model as applied to persisting transfer students at a single four-year higher education institution. Based on the purpose, the research question guiding the study was: How well does the model of the NSSE engagement indicators organized by content themes fit to the empirical data for persisting transfer students at a public urban research university? Further, the study examined the fit for all transfer students, then for transfer student subgroups including vertical, horizontal, and swirling transfers.

To better understand transfer student experiences, it was important to examine literature regarding student engagement and involvement theory, academic and social integration, and transfer student engagement. It was critical to review literature on the NSSE's original five benchmarks, any studies that utilize confirmatory factor analysis on NSSE data, research that focuses on understanding transfer student engagement using NSSE and show any studies that provide information and analysis for the updated NSSE released, NSSE 2.0. Examining the literature with respect to NSSE guided the methodology and design of the study.

The data examined for the present study consisted of the NSSE results from the 2014 and 2016 administrations at the institution described previously in this paper. The 2014 and 2016 NSSE dataset, with confirmed transfer student status, was used with the permission of the institution's offices of student affairs research and assessment, institution research, and research compliance.

As noted in Chapter 3, the research methodology was to utilize confirmatory factor analysis (CFA) to examine the model fit of the ten-engagement indicator model with respect to the NSSE transfer student data. To address the research question, a CFA was conducted for the entire sample and for each subgroup. Specifically, a CFA was conducted for the engagement indicators organized by the four engagement themes of the NSSE survey: Academic Challenge, Learning with Peers, Experiences with Faculty, and Campus Environment. Model fit was determined by the analysis of the chi-square test, comparative fit index (CFI), and the root mean square error approximation (RMSEA).

This chapter discusses the findings from the study. Then the researcher provides a discussion about policy and practice implications and provides suggestion for future research on the topic of looking at transfer student engagement using the NSSE survey.

Summary and Discussion

As noted in Chapter 4, the percentage of female participants is inversely proportional to the institution demographic and as expected, 62.3% of the survey participants were seniors. However, almost 24% of survey participants were institutionally verified as being a freshman or sophomore. Knowing that the NSSE instrument is designed to only sample first-time, full-time freshman and graduating senior, sampling issues becomes a concern to note.

Summary of Findings

To address the research question, a confirmatory factor analysis (CFA) was conducted on the model based on each of the different subgroups of the dataset listed: the all transfer student data, horizontal transfer student data, vertical transfer student data, and data for students that indicated they attended a community college and four-year college or swirl transfer. To further explore the research question, the approach outlined in the Miller, Sarraf, Dumford and Rocconi's (2016) study was used. A CFA was conducted for each subgroup for each of the four engagement themes of the NSSE survey. In investigating the subgroups with respect to the four engagement themes, issues arose. The good model fit indices were not consistent and some of the standardized regression weights of the observed variable show possible issues with the model.

In examining the Academic Challenge theme, the overall transfer student sample showed a good model fit; however, the horizontal transfer subgroup did not and failed to meet two of the three fit indices. The observed variable RIintegrate was close to the standardized regression weight threshold. This variable is described as a student's ability to combine ideas from different courses when completing assignments. This variable could pose an issue within this portion of the model.

For the Learning Peers and Experience theme, the all transfer student and vertical transfer subgroup did not demonstrate a good model fit and failed to meet two of the three fit indices. However, all of the observed variables showed acceptable and strong standardized regression weights for this portion of the model.

The Experience theme showed that the all transfer student, vertical transfer, and swirl transfer subgroups did not demonstrate a good model fit and failed to meet two of the three fit indices. In reviewing the standardized regression weights, most of the values show strong and acceptable values. However, in examining the swirl transfer subgroup, a potential weakness in the model is shown with the observed variable ETdraftfb. This variable is described as a student's experience with an instructor's feedback on a draft of work in progress.

Review of the CFA for the Campus Environment theme also showed that the all transfer student, horizontal transfer, and swirl transfer subgroups did not demonstrate a good model fit. However, the vertical transfer subgroup was a worse fit than any of the other subgroups. The vertical subgroup failed to meet any of the three fit indices examined. Like most of the other engagement themes, the CFA revealed that the standardized regression weights were acceptable and strong. However, the QIstudent

engagement indicator was below 0.6 for all transfers students and subgroups. This variable is described as a student's quality interaction with other students.

Based on the CFA results for each of the themes, it is interesting to note that only one of the four engagement themes showed a good model fit for the all transfer student group and the subgroups. None of the subgroups necessarily demonstrated overwhelming good model-fits across the four engagement themes. A closer look shows each subgroup did not demonstrate a good fit across two of the four themes. Anecdotally, the vertical transfer subgroup did not meet any of the fit indices for the Campus Environment engagement theme and can be viewed as the subgroup with the worst model fit. However, indication of which subgroup shows a better model fit cannot be determined.

Discussion

In reviewing the model fit indices for each model and engagement theme, the results are mixed. While utilizing CFA as the method of statistical analyses, the hope was to provide information on model fit of NSSE with regards to transfer students and different transfer types. Due to the inconsistent results, more questions arose as to whether the NSSE is the appropriate measurement tool for transfer student engagement. NSSE was designed to measure levels of student engagement; however, the survey is administered to first-year and senior students, while the majority of transfer students in the state in which this study was conducted transition during the second or third year. Considering the mixed findings of survey fit among transfer subgroups, it is important to question both the appropriateness of the instrument for post-traditional students such as transfers as well as the timing of typical NSSE administration—relevant for both future

research as well as the relevance of findings to shape campus-based interventions for transfers.

While addressing the research questions of this study, a few issues arose that could help with this particular study. The first issue observed is that the NSSE instrument relies on the participant's self-reporting of transfer status. While the transfer status was confirmed by the institution, the categorization of horizontal, vertical, or swirl transfer was not confirmed. Therefore, much of the study relied on the participant reporting of transfer status. Another related issue occurred when participants indicated they were not a transfer student, but the institution categorized them as a transfer student. This indicates that either there was a student reporting mistake, or the definition of a transfer student is not consistent from the perspective of the student and institution. In retrospect, if the institution has the capability of categorizing horizontal, vertical, and swirl transfer status, then requesting confirmation of each status could have provided confidence and validity of the classification of transfer student status.

This study resembled and drew parallel to the LaNasa, Cabrera, and Trangsrud (2009) study. Both studies focused on a single urban institution and utilized CFA for the analysis of model fit, however, this study focused on the subgroups of horizontal, vertical and swirling transfer students. Another difference is the analysis for this study was organized by the four engagement themes as compared to the five original benchmarks. The LaNasa, Cabrera, and Trangsrud (2009) study revealed that the original five benchmarks were not a good model fit for the data, while this study revealed that the model fit varies based on the subgroups.

Many of the studies examining transfer students using NSSE used different techniques for analysis. Kinzie, Thomas, Palmer, Umbach, and George (2007) utilized hierarchical linear modeling techniques for their analysis, while Ishitani and McKitrick (2010) used an independent two-sample t-test for their statistical analysis. This study is unique in that a confirmatory factor analysis was used as the statistical analysis method to determine model fit for the NSSE 2.0.

There is limited research regarding the updated NSSE 2.0, however, emerging studies that examine the construct validity of the model. As previously outlined, an early study by Zilvinskis, Masseria, and Pike (2017) comparing data from 2011 and 2013 has indicated that the engagement indicators within the NSSE 2.0 survey appear to be more useful than the previous NSSE benchmarks in identifying institutional actions that can enhance learning outcomes. The NSSE organization also outlined the new engagement indicators and the corresponding survey questions within the updated survey and the engagement indicators were grouped thematically into four themes closely tied to the original NSSE benchmarks (NSSE, 2018). Similarly, Miller, Sarraf, Dumford and Rocconi's (2016) study provided a framework for a quantitative analysis that provided evidence of construct validity for the engagement indicators organized by the four engagement themes of NSSE 2.0

In comparing this study with the Miller, Sarraf, Dumford and Rocconi (2016) study, there are parallels and difference that can be extracted. Each study does examine subgroups. However, the subgroups for the Miller et al. (2016) study are all seniors, all first-year students, online seniors, and online first-years, compared to this study's subgroups of all transfers, horizontal, vertical, and swirling transfer students. A salient

theme for both studies is that most of the standardized regression weights for all models were strong and indicated good model design. Reviewing the CFA results for each engagement theme, for both studies, can be difficult to compare because of the different subgroups for each study. The NSSE study revealed either very good model fit or adequate fit for all engagement themes of the model, while this study showed that there was only good model fit for Academic Challenge.

Recommendations for Policy and Practice

The findings of this study have important implications for administrators, faculty, and other stakeholders interested in transfer student engagement. Results of the NSSE can guide policy and dictate resources that assists with transfer student engagement. Because the study revealed the data did not fit well with the NSSE 2.0 engagement, when isolated, then the institution needs to review to determine possible changes to services directly related to the engagement indicators within each engagement theme.

Based on the model fit for each of the engagement themes, further evaluation of programs and services is recommended. In reviewing the subgroup model fit for each theme, the vertical, horizontal, and swirl transfer subgroup model fit varied. For example, vertical student transfer subgroup demonstrated a good model fit for Academic Challenge and Campus Environment. Therefore, it would be recommended to re-examine the programs and services associated with the indicators within Learning with Peers and Experiences with Faculty for vertical transfer students. For the horizontal transfer student subgroup, re-examination for programs and services associated with the indicators within the engagement themes Academic Challenge and Campus Environment

are needed. Subsequently, for the swirling transfer subgroup, Experiences with Faculty and Campus Environment need further evaluation.

For policies and resources at the institution level, this institution recently created and opened a new transfer center. The center focuses on academic advising, transfer student advocacy, first semester and first year programming, transfer credit clarification and analysis, and transfer student outreach. In using the NSSE 2.0, these services can be assessed for effective and program and initiative improvement can be on-going. Even more services such as transferred focused orientation and peer mentoring programs can be established.

The institution is unique in the sense that over the last five academic years, the transfer student enrollment outpaces the first-time freshman student enrollment. With such large number of transfers, resources for better transfer student tracking and progress need to be provided. If resources are scarce, then campus collaborations need to be established across the campus. Recommended collaborations can include, but not limited to, the Dean of Students Office for conduct issues, Student Engagement for identifying ways to get involved or engaged with on-campus organizations or community agencies, and Veteran Services to assist transfer students that identify as veterans. These types of collaboration assist with transfer students finding and building a community for themselves to academically and socially engage.

Based on the questions discussed earlier in the chapter regarding concerns of the NSSE instrument and transfer student engagement, I offer a consideration for future related research and use of the NSSE instrument. The findings of the present study suggest that either changes to the instrument for transfer students and/or a survey

administration schedule in the middle years of college could be worthy of exploration. Regarding the former, NSSE could consider modifying the survey to better examine student engagement for the varying demographics, such as transfer students, or a transfer-specific instrument may be considered, understanding the prevalence of transfer and an understanding of how their experiences differ during the college years (see, e.g., Lester et al., 2013). Another recommendation would be to expand the sampling criteria for year of study. With regards to transfer students, senior responses could be used for analysis, as done for this study, but not the first-year responses. One challenge with administration during the first-year and senior year is that the field is unable to capture the transfer engagement experiences during the two most predominant years of transfer, thus limiting samples to smaller numbers of mostly persisting transfer students near the end of their college careers. Varying students in different years of study would augment the transfer student response; thus, NSSE administration would also be much more inclusive of those not following linear, traditional, and four-year institution-centric approaches to understanding college students. In addition, many institutions would benefit from an instrument that focused on transfer student engagement to design appropriate interventions. Due to the results and the model fit of the NSSE with respect to transfer students, areas of improvement will be difficult to pinpoint and there will be missed opportunities for programs and resources that would assist with transfer student engagement.

Recommendations for Future Research

This study contributes to the literature uniquely by providing research focused using a confirmatory factor analysis to examine model fit of the NSSE 2.0 for transfer

students. Literature around this particular topic is limited in scope and further research is critical. Hopefully, this study will inspire future research on the topic of NSSE 2.0 and transfer student engagement.

It is recommended to extend this study beyond this one institution. Institutions with similar enrollment and transfer rates should be considered. Examining more than one institution will allow the researcher to compare the model fit per institution. This will provide much context and potentially provide overarching themes around transfer student engagement at these types of institutions. Another potential opportunity would be to use the entire NSSE dataset from all participating institutions. This can provide transfer student trends based on institution type, location, or any other institution discriminant. Issues may arise with getting institution transfer status confirmation, therefore, a reliance on self-selected inputs can be problematic.

Other types of research methods, such as qualitative or mixed-methods studies can further contribute to the conversation and provide different perspectives. These types of studies can provide direct student perspectives and can provide a narrative to complement this quantitative study. This further analysis can allow respondents to elaborate on their experiences and clarify discrepancies with the NSSE instrument answers.

Lastly, a future research recommendation would be to continue testing for model fit for subsequent NSSE years for the institution and providing analysis for identity cross section subgroups. For future research, measurement invariance is critical and measurement parameters must be invariant across time when considering longitudinal studies and for comparisons across groups within the population. (Steinmetz, Schmidt,

Tina-Booh, Wieczorek, & Schwartz (2009). A replication of the present study using a more recent dataset from the NSSE will further validate or dispute the findings of this study. Furthermore, a longitudinal study of transfer student engagement can provide analysis for services offered and their impact from year to year. Further analysis for identity cross section subgroups can be studied as well. For example, a future study can focus on the model fit of vertical transfer students with respect to race. There are an infinite number of identity cross section subgroups with the transfer student population that can be studied. This type of research will need to consider test measurement invariance similar to the study conducted by Steinmetz et al. (2009).

Summary

The intent of this research study was to address the research question: How well does the model of the NSSE engagement indicators organized by content themes fit to the empirical data for persisting transfer students at a public urban research university? Further, the study examined the fit for all transfer students, then for transfer student subgroups including vertical, horizontal, and swirling transfers. This study has addressed the research question utilizing a quantitative method, confirmatory factor analysis. The study affirms that examining model fit based on the vertical, horizontal, or swirl transfer student subgroups, provided mixed results in terms of model fit and are deemed inconclusive. Therefore, practical recommendations for institutional administrators with regards to measuring and improving transfer student engagement cannot be made confidently. Further analysis methods will need to be explored.

As institutions continue to focus efforts toward improving transfer student engagement, it is important that institutions develop and provide programs and services.

The transfer opportunities within higher education have allowed students different options to address their concerns and needs. This study can provide some context and feedback to the programs and services offered by institutions. This study intends to spark more discussion on the topic and the change needed in order to see transfer students succeed.

REFERENCES

Astin, A. W. (1984). Student involvement: A development theory for higher education. *Journal of College Student Personnel, 25*(1), 297-308.

Astin, A. W. (1993). *What matters in college? Four critical years revisited.* San Francisco, CA: Jossey-Bass.

Bahr P. R., Toth C., Thirolf K., Massé J. C. (2013) A review and critique of the literature on community college students' transition processes and outcomes in four-year institutions. In: Paulsen M. (Eds) *Higher Education: Handbook of Theory and Research, 28*. Springer, Dordrecht.

Berger, J. B., & Malaney, G. D. (2003). Assessing the transition of transfer students from community colleges to a university. *NASPA Journal, 40*(4), 1-23.

Braxton, J. & Hirschy, J. (2004). *Reconceptualizing antecedents on social integration in student departure*. Great Britain: MPG Books.

Braxton, J. M., Milem, J. F., & Sullivan, A. S. (2000). The influence of active learning on the college student departure process: Toward a revision of Tinto's theory. *Journal of Higher Education, 71*(5) 569-590.

Campbell, C. M., & Cabrera, A. F. (2011). How sound is NSSE Investigating the psychometric properties of NSSE at a public, research-extensive Institution. *Review of Higher Education, 35*(1), 77-103.

Center for Community College Student Engagement. (2014). *2014 Cohort data*. Retrieved from http://www.ccsse.org/survey/reports/2014/reports.cfm.

Cohen, A. M., Brawer, F. B., & Kisker, C. B. (2014). *The American community college* (6th Ed.). San Francisco, CA: Jossey-Bass.

D'Amico, M. M., Dika, S. L., Elling, T. W., Algozzine, B., & Ginn, D. J. (2014). Early integration and other outcomes for community college transfer students. *Research in Higher Education, 55*(4), 370-399.

Flaga, C. T. (2006). The process of transition for community college transfer students. *Community College Journal of Research and Practice, 30*, 3-19.

Fink, J., & Jenkins, D. (2017). Takes two to tango: Essential practices of highly effective transfer partnerships. *Community College Review, 45*(4), 294–310. doi:10.1177/0091552117724512

Fink, J. E., McShay, J. C., & Hernandez, P. (2016). Supporting vertical transfer: The role of a student union learning community. *Journal of Student Affairs Research and Practice, 53*(1), 65-77.

Ginder, S. A., Kelly-Reid, J. E., & Mann, F. B. (2014). *Enrollment in postsecondary institutions, fall 2013; financial statistics, fiscal year 2013; and employees in postsecondary institutions, fall 2013* [Report], NCES 2015-012. Washington, DC: National Center for Education Statistics.

Gordon, J., Ludlum, J., & Hoey, J. J. (2008). Validating NSSE against student outcomes: Are they related? *Research in Higher Education, 49*(1), 19–39.

Harper, S. R., & Quaye, S. J. (2009). *Student engagement in higher education: Theoretical perspectives and practical approaches for diverse populations*. New York, NY: Rutledge.

Hills, J. R. (1965). Transfer shock. *The Journal of Experimental Education, 33*(3), 201-215.

Hodara, M., Martinez-Wenzl, M., Stevens, D., & Mazzeo, C. (2017). Exploring credit mobility and major-specific pathways: A policy analysis and student perspective on community college to university transfer. *Community College Review*, *45*(4), 331–349. doi:10.1177/0091552117724197

Horn, L., & Skomsvold, P. (2011). *Web tables: Community college student outcomes: 1994–2009* (NCES 2012-253). Washington, DC: U.S. Department of Education, Institute of Education Sciences, National Center for Education Statistics. Retrieved from https://nces.ed.gov/pubs2012/2012253.pdf

Hosler, D., Shapiro, D., & Dundar, A. (2012). *Transfer and mobility: A national view of pre-degree student movement in postsecondary institutions* (Signature Report 2). Herndon, VA: National Student Clearinghouse Research Center.

Hu, L.T., & Bentler, P.M. (1999). Cutoff criteria for fit indices in covariance structure analysis: Conventional versus new alternatives. *Structural Equation Modeling, 6*, 1-55.

Ishitani, T. T., & McKitrick, S. A. (2010). After transfer: The engagement of community college students at a four-year collegiate institution. *Community College Journal of Research and Practice, 34,* 576-594.

Jacobs, B. (2004). Today's transfer students: Trends and challenges. In B. C. Jacobs, B. Lauren, M. T. Miller, & D. P. Nadler (Eds.), *The college transfer student in America: The forgotten student* (pp. 87-108). Washington, DC: American Association of Collegiate Registrars and Admissions Officers.

Jenkins, D., & Fink, J. (2016) *Tracking transfer: New measures of institutional and state effectiveness in helping community college students attain bachelor's degrees.* New York, NY: Community College Research Center, Teachers College, Columbia University.

Junco, R., Heiberger, G., & Loken, E. (2011). The effect of twitter on college student engagement and grades. *Journal of Computer Assisted Learning, 27*(2), 119-132.

Kezar, A., & Eckel, P. (2002). Examining the institutional transformation process: The importance of sensemaking, interrelated strategies, and balance. *Research in Higher Education, 43*(3), 295-328.

Kinzie, J., Thomas, A., Palmer, M., Umbach, P., & Kuh, G. (2007). Women students at coeducational and women's colleges: How do their experiences Compare? *Journal of College Student Development, 48*(2), 145–165. https://doi.org/10.1353/csd.2007.0015

Kirk-Kuwaye, C., & Kirk-Kuwaye, M. (2007). A student engagement patterns of lateral and 145 vertical students during their first semester at a public research university. *Journal of the First Year Experience and Students in Transition, 19*(2), 9-27.

Kuh, G. D. (2003). What we're learning about student engagement from NSSE: Benchmarks for effective educational practices. *Change, 35*(2), 24-32.

Kuh, G. D. (2009). What student affairs professionals need to know about student engagement. *Journal of College Student Development, 50*(6), 683-706.

Kuh, G. D., Kinzie, J., Buckley, J. A., Bridges, B. K., & Hayek, J. C. (2011). *Piecing together the student success puzzle: Research, propositions, and recommendations: ASHE Higher education report* (Vol. 116): San Francisco, CA: Jossey-Bass.

Laanan, F. S. (Ed.). (2006). *Understanding students in transition: Trends and issues* (New Directions for Student Services, No. 114). San Francisco, CA: Jossey-Bass.

LaNasa, S., Cabrera, A. F., & Trangsrud, H. (2009). The construct validity of student engagement: A confirmatory factor analysis. *Research in Higher Education, 50*(4), 313–352.

Lester, J., Leonard, J. B., & Mathias, D. (2013). Transfer student engagement: Blurring of social and academic engagement. *Community College Review, 41*(3), 202-222.

Lutz, M. E., & Culver, S. (2010). The national survey of student engagement: A university-level analysis. *Tertiary Education and Management, 16*(1), 35-44.

McClenney, K. M. (2007). The community college survey of student engagement. *Community College Review*, *35*(2), 137-146.

Milem, J. F., & Berger, J. B. (1997). A Modified model of college student persistence: Exploring the relationship between Astin's theory of involvement and Tinto's theory of student Departure. *Journal of College Student Development*, *38*(4), 387-400.

Miller, A.L., Sarraf, S.A., Dumford, A.D., & Rocconi, L.M. (2016). *Construct validity of NSSE engagement indicators-NSSE psychometric portfolio* [Report]. Bloomington, IN: Center for Postsecondary Research, Indiana University, School of Education.

Miller, M. T., & Hillis, S. R. (2006). Transfer students. In L. A. Gohn & G. R. Albin (Eds.), *Understanding College Student Subpopulations: A Guide for Student Affairs Professionals* (pp. 295-311): NASPA Student Affairs Administrators in Higher Education.

Mintrop, H., & Sunderman, G. (2009). Predictable failure of federal sanctions-driven accountability for school improvement--And why we may retain it anyway. *Educational Researcher*, *38*(3), 353-364.

National Survey of Student Engagement. (2014). *Bringing the institution into focus-Annual results 2014* [Report]. Bloomington, IN: Indiana University Center for Postsecondary Research.

National Survey of Student Engagement. (2018). *NSSE conceptual framework*-NSSE psychometric portfolio [Report]. Bloomington, IN: Center for Postsecondary Research, Indiana University, School of Education.

National Student Clearinghouse. (2015). *Snapshot report: Contribution of two-year institutions to four-year completions*. Herndon, VA. Retrieved from http://nscresearchcenter.org/wpcontent/uploads/ SnapshotReport17-2YearContributions.pdf.

Ose, K. (1997). Transfer student involvement: Differences between participators and nonparticipators in extracurricular activities. *College Student Affairs Journal, 16*(2), 40- 47.

Pace, C. R. (1984). *Measuring the quality of college student experiences: An account of the development and use of the college student experiences questionnaire*. Los Angeles, CA: University of California, Higher Education Research Institute.

Pascarella, E. T., & Terenzini, P. T. (2005). *How college affects students: A Third decade of research* (Vol. 2). San Francisco, CA: Jossey-Bass.

Pike, G. R. (2013a). Assessment measures: The updated national survey of student engagement (NSSE). *Assessment Update*, *25*(4), 10–11.

Pike, G. R. (2013b). NSSE benchmarks and institutional outcomes: A note on the importance of considering the intended uses of a measure in validity studies. *Research in Higher Education, 54*(2), 149-170.

Rhine, T. J., Milligan, D. M., & Nelson, L. R. (2000). Alleviating transfer shock: Creating an environment for more successful transfer students. *Community College Journal of Research & Practice, 24*, 443-453.

Risley, R., & King, S. (2012). Engagement of national winners of the 2006 all-USA community college academic team while attending senior colleges. *Community College Journal of Research and Practice*, *36*(4), 317–319. https://doi.org/10.1080/10668926.2012.637873

Rugutt, J. K., & Chemosit, C. C. (2005). A study of factors that influence college academic achievement: A structural equation modeling approach. *Journal of Educational Research & Policy Studies, 5*(1), 66-90.

Schuetz, P. (2008). Developing a theory-driven Model of Community College Student Engagement. *New Directions for Community Colleges*, (144), 17-28.

Shapiro, D., Dundar, A., Wakhungu, P. K, Yuan, X., & Harrell, A. (2015). *Transfer and mobility: A national view of student movement in postsecondary institutions, Fall 2008 cohort* (Signature Report No. 9). Herndon, VA: National Student Clearinghouse Research Center.

Simone, S. A. (2014). *Transferability of postsecondary credit following student transfer or coenrollment* (NCES 2014-163). U.S. Department of Education. Washington, DC: National Center for Education Statistics.

Steinmetz, H., Schmidt, P., Tina-Booh, A., Wieczorek, S., & Schwartz, S. (2009). Testing measurement invariance using multigroup CFA: differences between educational groups in human values measurement. *Quality & Quantity*, *43*(4), 599–616. https://doi.org/10.1007/s11135-007-9143-x

Student Achievement Measure (n.d.). Student achievement measure (SAM): National first-time, full-time bachelor's model. Washington, DC. Retrieved from http://www.studentachievementmeasure.org/

Taylor, J., & Jain, D. (2017). The multiple dimensions of transfer: Examining the transfer function in american higher education. *Community College Review, 45*(4), 273–293. doi:10.1177/0091552117725177

Tendhar, C., Culver, S. M., & Burge, P. L. (2013). Validating the national survey of student engagement (NSSE) at a research-intensive university. *Journal of Education and Training Studies, 1*(1), 182-193.

Tinto, V. (1993). *Leaving college: Rethinking the causes and cures of student attrition* (2nd ed.). Chicago, IL: University of Chicago Press.

Tinto, V. (1997). Classrooms as communities: Exploring the educational character of student persistence. *Journal of Higher Education, 68*(6), 99-623.

Tinto, V. (2006). Research and practice of student retention: What's next*? Research and Practice of Student Retention, 6*(1), 1-19.

Townsend, B. K., & Wilson, K. (2006). "A hand hold for a little bit": Factors facilitating the success of community college transfer students to a large research university. *Journal of College Student Development, 47*, 439-456.

U.S. Department of Education, National Center for Education Statistics. (2014). Integrated Postsecondary Education Data System (IPEDS), Fall 2001 and Spring 2007 through Spring 2014, Graduation Rates component.

U.S. Department of Education, National Center for Education Statistics. (2018). *Digest of Education Statistics, 2016* (NCES 2017-094).

U.S. Government Accountability Office. (2017). *Students need more information to help reduce challenges in transferring college*, GAO-17-574 [Report]. Washington, DC. Retrieved from https://www.gao.gov/assets/700/691070.pdf.

Zilvinskis, J., Masseria, A. A., & Pike, G. R. (2017). Student engagement and student learning: examining the convergent and discriminant validity of the revised national survey of student engagement. *Research in Higher Education, 58*(8), 880-903.