

DOES MATTERING REALLY MATTER TO GRADUATE STUDENTS?

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DOCTOR OF PHILOSOPHY

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ABSTRACT

As graduate student attrition hovers around 50%, scholars are beginning to study what is leading to these high attrition rates (Wao, 2010). As there has been little theoretical work done on graduate student retention, a review of the literature related to undergraduate student engagement and retention provides a starting point for developing theories of graduate student engagement and retention. One theory of undergraduate student engagement and retention relates to feelings of mattering. Mattering is a sense that other people care about you as it involves facets of feeling important to others, being noticed by others, that others are proud of you, and that others rely on you (Elliot, et al., 2004; Rosenberg and McCullough, 1981). Undergraduate student theories on engagement and retention have found that as students' sense of mattering increases, they are more likely to be engaged in their education and more likely to complete their degrees (Elliott, et al., 2004; Rosenberg and McCullough, 1981).

The purpose of this study is to apply the theory of mattering to a graduate student population by using a survey tool to measure mattering developed by France (2011). While the tool was developed for use with undergraduate students, it holds promise as a tool to be used with graduate students. Along with testing France's (2011) mattering survey tool with graduate students, this study explores the influence of mattering on three persistence variables: the importance to finish, the inclination to transfer, and the inclination to dropout. In addition to the mattering survey, the survey instrument included a brief satisfaction survey (Judge, et al., 1998) and part of the Copenhagen Burnout Inventory (CBI; Kristensen, et al., 2007).

The application of a CFA led to the finding that France's UMUM15 (2011) need to be reduced to 12 items along with allowing for three correlations errors resulting in a new survey,

the GSUMUM-12. Using a GSEM analysis, mattering was found to either directly or indirectly affect the three persistence variables for the graduate students participating in the survey.

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When my doctoral journey began, I really had no idea where the path would lead, nor did I understand that there would be key individuals along the way that would support me at critical times throughout the journey.

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considered a Ph.D. in history. I came into the Educational Doctoral Program with a Masters in American History so my instinct was to find a member of the NDSU history department to be on my committee. Thank you for responding to my “cold-call” email to be on my committee.

I need to give a huge thank you to Kay Hopkins who was the person who introduced me to the theory of mattering. Kay and I worked together on a project for our survey research class that built the foundation for the instrument used in this study. Thank you for your support, kindness, and collaboration throughout my doctoral journey.

Throughout this journey, everyone needs that person with which they can share the joys, but more importantly, the frustrations and that person for me was Felisa Mastel. Thank you for sharing this journey with me, for listening, for supporting, and for inspiring me to push on.

Finally, a thank you to my husband Ernest Roder, my stepson Eliot Roder, and my extended Ost family. Your support has carried me through this journey, and I know you will joyously and whole-heartedly celebrate this accomplishment with me.

DEDICATION

This dissertation is dedicated to my parents, Marvin and Dorene Ost, who always supported my educational goals even though they did not truly understand the journey I was embarking upon. While neither of my parents graduated from high school, they understood the drive inside me to pursue knowledge, to grow and expand my mind, and to discover new truths.

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CHAPTER 1: INTRODUCTION

New graduate students enter their programs excited and ready to begin the journey of becoming experts in their fields. Unfortunately, many of these graduate students do not realize that 50% of them will fail to complete their degree (Wao, 2010). While undergraduate attrition has been examined thoroughly (Reason, 2003), very few studies have addressed graduate student attrition. High school GPA, ACT/SAT scores, and demographic characteristics like gender, socio-economic status, and first-generation status have been identified as strong indicators in relation to college completion for undergraduates (Reason, 2003). The high attrition rate for graduate students seems to indicate these same types of factors do not as strongly predict completion of graduate programs. Graduate students have excelled academically in their undergraduate studies, tested high on the GRE, and completed an undergraduate degree to gain entrance into a graduate program. One would expect that having successfully journeyed through an undergraduate program would be a stronger indicator for the successful completion of a graduate program, but this is not true. There is something else driving high attrition rates in graduate programs and that variable may very well be more relational and harder to measure than test scores and demographic characteristics. Feeling as if they matter to people in the academic community (peers, faculty members, advisors, and other college/university staff members) may be a stronger predictor of graduate student completion as graduate programs require students to go through a process of scholarly development within an academic community.

While there are few studies that address graduate program attrition, Wao's (2010) study provided some interesting results that should spark further research into graduate student attrition. In a study of archival data of 1,028 graduate students that attended a Southeastern research university between 1990 and 2006, Wao (2010) noted that less than 50% of students

completed their degree. Wao (2010) analyzed a variety of student variables such as gender, age at admission, master's GPA, GRE verbal and quantitative score, and program variables such as size of program, size of the department, racial/ethnic diversity of the program, and proportion of females in the program. In studies of undergraduate student attrition, characteristics like high school GPA, ACT scores, and gender are often identified as predictors of college completion (Reason, 2003). The data in Wao's (2010) study did not demonstrate a correlation between attrition and similar graduate student characteristics of master's GPA, GRE score, and gender. Wao's (2010) study did not identify a potential cause for the high percentage of graduate student withdrawals, but it did demonstrate a need for further research into the underlying cause of high rates of graduate student attrition.

Statement of the Problem

A starting point for identifying the factors related to graduate student attrition can be found in the research and theory development of studies focused on undergraduate attrition and improving student completion rates at undergraduate institutions. Undergraduate retention has been studied using a variety of variables including demographic and student specific variables (Reason, 2003). While a large amount of research in undergraduate retention is focused on identifying variables that predict retention and completion, there is widespread research on how student engagement and mattering at the undergraduate level improves student retention and completion. Leading researchers in the field of student development such as Schlossberg, et al. (1989), emphasized the importance of mattering in student persistence. Creating a connection is central to a student feeling like they matter. The connection does not have to be made with a particular person such as an advisor. Mattering occurs when the student feels connected to *someone* or *some group* at their institution (France, 2011).

While theories of student engagement and mattering are used by student affairs professionals to develop and implement undergraduate retention programs, there has been limited application of these theories to the experience of graduate students. While the educational experience is quite different at the graduate level, the construct of mattering (or lack of mattering) has the potential to highlight some of the reasons why graduate students leave their programs. In fact, research could demonstrate that mattering is very relevant to graduate students. As graduate students progress through their program, relationships with advisors, other faculty members, their peers, and other scholars create a support system for making it through the disciplined inquiry process (Lovitts, 2005, 2008). Without the support of these key relationships, graduate students may choose to withdraw when they begin to feel overwhelmed by the requirements of scholarly research.

Purpose of the Study

This study will focus on investigating the application of the university mattering construct to the graduate student experience and the potential of this concept to impact practices in improving graduate program attrition rates. This analysis will continue expanding scale research on the measurement of university mattering.

Research Questions

This study was guided by the following two major research questions.

Research Question 1

Is France's (2011) Unified Measure of University Mattering (UMUM-15) survey (based upon a unidimensional model) a valid instrument for measuring mattering with graduate students?

Research Question 2

The second piece of this study revolves around a theoretical model of causality involving mattering, burnout, program satisfaction, and persistence. This is more appropriately expressed through the following two sub-questions.

Research Question 2a

Does mattering have direct influences on program satisfaction, burnout, and persistence with graduate students?

Research Question 2b

Does mattering have an indirect influence on persistence with graduate students (using program satisfaction and burnout as mediators)?

Significance of the Study

Higher education institutions around the nation should be interested in measuring and improving university mattering in an effort to demonstrate that students at every level are valued members of the university community, thus resulting in improved retention and graduation rates for undergraduate and graduate students. The purpose of this survey is to collect information about whether graduate students feel they matter to their program of study at North Dakota State University (NDSU). The UMUM-15 (France, 2011) will be administered to NDSU graduate students. The UMUM-15 will be used as earlier scales for measuring university mattering were not aligned with the foundational theory of mattering by Rosenberg and McCullough (1981), were not specific to the higher education context, and/or were too focused on mattering to specific people on campus.

In 2011, France wrote her doctoral dissertation around a newly created measure, the UMUM-15. France (2011) postulated that it does not necessarily matter how or to whom a

student feels they matter to/at a university, but simply that they do. This short 15-item scale therefore measures university mattering as a single construct, so there are no measurement issues with correlations among the four facets (awareness, importance, reliance, and ego-extension). Results of four independent samples support a unidimensional factor. Items from each of the four facets were retained in order to cover the full scope of university mattering. Thus far, the scale has only been published in a dissertation format. France (2011) acknowledged that further studies are needed in different populations and across time to better check reliability and validity. As graduate students are a separate and unique subpopulation at universities, this study will explore the application of the UMUM-15 to graduate students at NDSU building upon France's work in developing a reliable and valid scale for measuring university mattering.

Conceptual Framework

Feeling like you matter to someone at your college/university influences how you feel about yourself and the institution. Mattering builds loyalty to the institution and provides the student with a support network at their college/university. Mattering has been widely explored for undergraduates (Butcher, 1997; Dixon et al., 2007; Dixon & Robinson Kurpius, 2008; France, 2011; Gomez, 2008; Isaacson, 2008; Klug 2008; Mullen, 2016; Rosenberg & McCullough, 1981; Sumner, 2012; Schlossberg et al., 1989; Schneider, 2015; Williams, 2018) but has been applied to graduate students in a handful of studies (Schneider, 2015; White & Nonnamaker, 2009). This study will explore the relationships between mattering and the concepts of satisfaction with their program of study and the feelings of burnout.

I believe that if graduate students experience mattering their overall satisfaction with their program of study increases. I believe they develop a sense of loyalty to their program and feel like they have people in the academic community who care about their success. This increase in

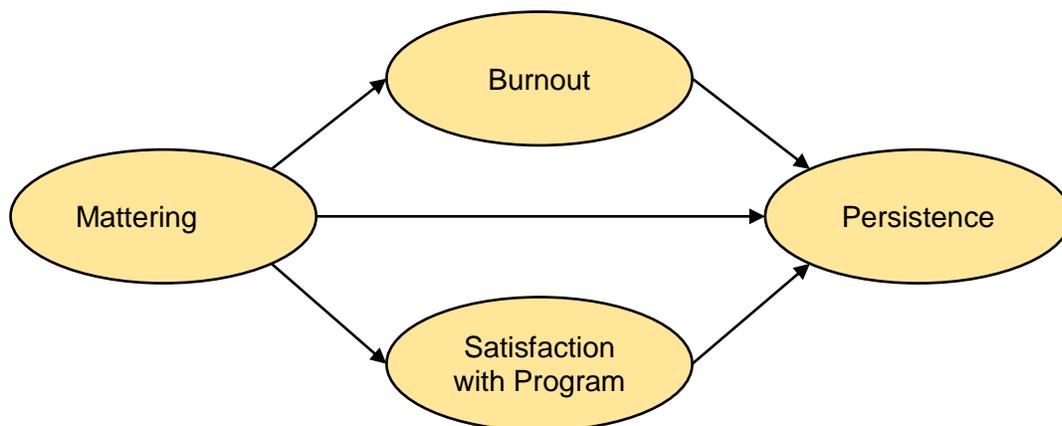
satisfaction with their program leads to a stronger likelihood that they will complete their program. The overall graduate student experience of becoming a scholar does not happen in a bubble around the student despite all the descriptions of the independent researcher/scholar (Lovitts, 2005, 2008). To be successful, a graduate student needs to have positive interactions with their fellow students, advisors, mentors, and program faculty members to explore and develop their ideological, philosophical, and scholarly dispositions. When this occurs in an environment of mattering, the graduate students excel.

The inverse of an environment of mattering is that of marginalization. When people have the perception that they do not matter to the people around them, they experience marginalization. This marginalization will stifle the growth and development of the scholar as they begin to believe in that image of the independent and lonely researcher. They feel as if they have to go it on their own. I believe these feelings of marginalization and having to go it on their own leads to burnout and ultimately the graduate student transfers or withdraws.

A graphical depiction of this overall conceptual model is shown in Figure 1.1.

Figure 1.1

Conceptual Framework



Mattering

Rosenberg and McCullough's (1981) general theory of mattering remains the foundational theory for this construct. Their general theory of mattering defines three facets: awareness, importance, and reliance. These three facets appear in two forms—interpersonal mattering and societal mattering. Mattering acts as a motivator, leading one to act with positive or socially acceptable and desired behaviors, such as involvement, academic success, and dedication, and avoid negative or socially unacceptable, behaviors, such as acting out, stopping out, and not returning to higher education (Rosenberg and McCullough, 1981).

Mattering has been defined as a distinct construct, which “falls under the large umbrella of relatedness constructs, such as the need to belong, sense of belonging, social support, and interpersonal relationships” (France, 2011, p. 24). This construct has since been refined to consist of four facets: awareness, importance, ego-extension, and reliance (Elliott, et al., 2004). These facets differ in that some are related to cognition and others are about feelings or affect. *Awareness* deals with recognition or acknowledgement. *Importance* considers the care, concern, and interest others have in and for us and *reliance* is simply the belief that others depend or rely on us. The final facet, *ego-extension*, is about feeling that we matter when others are empathetic or sympathetic toward us or proud of us.

Awareness

“We matter because other people acknowledge our existence” (France 2011, p. 18). The key to this facet is recognition and/or acknowledgement. It is a simple matter to call your classmate by name when you see them on campus. It takes little effort to notice your classmate missed class, but the simple gesture of saying, “missed you in class last week,” affirms your

classmate's sense of awareness. When faculty and staff personalized examples, plans, and lessons, they increased awareness.

Importance

The facet of importance is defined as other people caring or being concerned about our wellbeing (Elliott et al., 2004; France, 2011; Rosenberg & McCullough, 1981). The key is for a student to feel supported as an individual. Creating an environment of caring fosters importance.

Reliance

In mattering, the facets of reliance and importance counterbalance each other. Reliance is defined as others relying on or needing us. France and Finney (2009) describe importance and reliance as the opposite sides of a relationship, give and take. While it is important to foster an environment of caring on campus, students need avenues to participate and be involved so their voices can be heard.

Ego-extension

The facet of ego-extension "is the idea that our actions reflect on those who we matter to most" (France 2011, p. 21). While a student can feel pride in completing a significant project, the feeling of pride is amplified when people take pride in their accomplishment. The pride of an advisor acknowledging the work of their advisee or the pride of team members in acknowledging what talents each other brought to the project are examples of ego-extension.

University Mattering

Since its conception, mattering has been measured in several contexts and with a wide diversity of populations. One recent context is that of mattering to a higher education institution or university mattering. Rosenberg and McCullough (1981) would categorize this form as societal mattering experienced by a student at a university. If a student feels they matter to

someone at a university, they are more likely to feel connected and behave positively toward the university community, including being more academically successful, engaged and involved in the community, and perhaps even giving back.

I believe an exploration of university mattering with a graduate student population will show that mattering does really matter to graduate students. In fact, the type of relationships and interactions needed to become a scholar may demonstrate that mattering is actually more important to graduate students than to undergraduate students. Becoming a scholar is a personal journey that develops in a caring, academic community.

CHAPTER 2: LITERATURE REVIEW

The selection of references for this literature review come from a variety of sources, largely out of the social sciences including sociology and psychology journals. Additionally, several contextual resources of primary research come out of counseling, adolescent academic research, and higher education. The construct of university mattering is relatively new, so the oldest references are from the early 1980s. Since that time, university mattering has seen a spike in interest; articles related to this specific context of the construct are primarily written in the 2000s. Criteria selection for included references is namely chronological in nature and more generally focused on university mattering versus general mattering. Literature about graduate student persistence intentions is largely from related undergraduate or workplace intent scales. Key words and phrases, searched individually and in combinations, such as “mattering,” “university mattering,” “doctoral,” “attrition,” “withdraw”, “dropout”, “graduate education”, “completion,” “graduate students,” “masters students,” “doctorate,” “intent to leave,” “intent to complete,” and “intent to persist” were searched on both Google Scholar and EBSCO.

Graduate Student Attrition

Wao’s (2010) study demonstrated the need for additional research into the potential causes of high attrition rates in graduate programs. One way to address this identified need for advancing research into graduate student attrition is through enhanced assessment of graduate programs. The assessment of attrition rates for undergraduate programs has greatly increased in the past several decades in response to calls by external stakeholders for greater accountability and transparency in undergraduate education. Assessment has greatly affected undergraduate education, while having little effect on the structure of graduate education. Borkowski (2006) summarized the pressures that are building for greater assessment of graduate education, which

include the decline in the prestige of receiving a doctorate from an American university, dwindling resources available at institutions to support graduate students, and declining number of American students, especially from under-represented groups, pursuing doctorates in science. In response to these pressures, scholars are beginning to investigate processes and structures of graduate programs, and issues like graduate program attrition rates are receiving greater attention and consideration.

While some studies have reported graduate student attrition rates of 50% (Lovitts, 2005; Wao, 2010), other studies have reported attrition rates from 24% to 67% (King, 2008). This great discrepancy in rates of attrition can be contributed to the fact that the studies that have been conducted are small and there has not been consistency across the studies in how attrition rates were calculated. The Council of Graduate Schools (CGS) recognized the need for a nationwide longitudinal study of graduate school attrition, so in 2004 it launched its grant-funded Ph.D. Completion Project (King, 2008).

The Ph.D. Completion Project received 46 proposals from universities from across the country that wanted to participate in the first phase of the study (2004-2007) of which 21 served as Research Partners (King, 2008). The remaining 25 were Project Partners of which 9 voluntarily submitted their data to the project and participated in many of the sessions and events held by the project. The 30 institutions submitted data for 12 academic years from 1992-93 to 2004-205 which covered 330 programs and 49,113 students in 62 disciplines. From the first phase of the project, completion rates were calculated at 45.5% after 7 years. As many programs allow for up to ten or more years for the completion of a doctoral degree, the study reported all of its data using ten-year completion rates. Looking at ten-year completion rates, 56.6% of

students completed their doctoral degree, which demonstrated a significant growth in completion rates, 11.1%, in those last three years.

While the overall completion rate of 56.6% was somewhat expected based on the findings of previous smaller studies, when the ten-year completion rates are compared for five board fields dramatic differences in completion rates are exposed (King, 2008). The ten-year completion rate for the field of engineering is 63.6% compared to the lowest of 49.3% in the humanities. The other three fields fall between at 62.9% for life sciences, 55.9% for social sciences, and 54.7% for mathematics and physical sciences. The Ph.D. Completion Project does not address the causes behind the differences in completion rates but offers some things to consider such as differences in the amount and duration of financial support for students, in dissertation requirements, in the quality of advising and mentoring, and in future job prospects.

The Ph.D. Completion Project demonstrated that attrition rates are the highest in the first three years of a doctoral program with 6.6% leaving during the first year rising steadily to 23.6% in the fourth year (King, 2008). Attrition rates then grow more slowly reaching 30.6% at the ten-year mark. The attrition rates do inversely mirror the completion rates as mathematics and physical science has the greatest attrition rate at over 35% and the life sciences has the lowest rate at about 26%. Engineering and social sciences are just slightly higher than life sciences with humanities at over 30%. An interesting factor in the data for attrition rates is that the overall attrition rate of 30.6% is almost identical for public and private universities, with public being just slightly higher.

At the ten-year mark, the Ph.D. Completion Project showed that 56.6% have completed their degree and 30.6% have left their programs (King, 2008). At the ten-year mark, 12.8% of the students were continuing their degree. The conclusion of the Ph.D. Completion Project

report did not address the future of the continuing cohort. Are these students truly still continuing or have their programs lost touch with them? Has the student just never officially withdrawn from the program? When one looks at the 30.6% that have withdrawn and the 12.8% continuing, the need for greater assessment of graduate programs becomes evident. Why is it taking some students over 10 years to complete a doctorate and why are many students leaving their programs without completing a degree?

The significant amount of research, theory development, and resources allocated to understanding undergraduate attrition and improving student completion rates at undergraduate institutions provides a starting point for theory development related to graduate student attrition. Undergraduate retention has been studied using a variety of variables including demographic and student specific variables (Reason, 2003). Reason (2003) noted that studies have explored how student diversity is related to undergraduate retention by researching the correlations between race and ethnicity, gender, age, and socio-economic level in predicting student persistence. Other studies have explored student specific variables such as high school achievement, ACT or SAT scores, first-year college GPA, and first-generation status (Reason, 2003). Other studies have explored the concept of college readiness (Harvey, et al., 2013). This concept integrates academic achievement with having the cultural capital to succeed. The students' socio-economic level and the education levels for their parents are variables for predicting student retention and completion. Undergraduate retention studies have explored if institutional characteristics affect student retention (Burns, 2010). Burns (2010) reviewed studies that focused on community colleges and the variety of interventions implemented to support students including: early or late registration, partnerships with K-12, developmental education, collaboration between student affairs and academic affairs, performance-based scholarships, advising and counseling, learning

communities, first-year seminars, academic success skills workshops, classroom management structures, and undergraduate research programs.

While a large amount of research in undergraduate retention is focused on identifying student specific demographic variables that predict retention and completion, there is widespread research on how student engagement and mattering at the undergraduate level improves student retention and completion. Leading researchers in the field of student development such as Schlossberg, et al. (1989), emphasized the importance of mattering in student persistence. Creating a connection is central to a student feeling like they matter. The connection does not have to be made with a particular person such as an advisor. Mattering occurs when the student feels connected to *someone* or *some group* at their institution (France, 2011). While theories of student engagement and mattering are used by student affairs professionals to develop and implement undergraduate retention programs, there has been limited application of these theories to the experience of graduate students. While the educational experience is quite different at the graduate level, the construct of mattering (or lack of mattering) has the potential to highlight some of the reasons why graduate students leave their programs. In fact, research could demonstrate that mattering is very relevant to graduate students.

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Awareness

“We matter because other people acknowledge our existence” (France 2011, p. 18). The key to this facet is recognition and/or acknowledgement. It is a simple matter to call your classmate by name when you see them on campus. It takes little effort recognize a fellow classmate outside of class. A simple smile, nod, and “hello” affirms your classmate’s sense of awareness. Personalized examples, plans, and lessons used in class, increase awareness among students and faculty.

Importance

The facet of importance is defined as other people caring or being concerned about our wellbeing (Elliott et al., 2004; France, 2011; Rosenberg & McCullough, 1981). The key is for a student to feel supported as an individual. Creating an environment of caring fosters importance.

Reliance

In mattering, the facets of reliance and importance counterbalance each other. Reliance is defined as others relying on or needing us. France and Finney (2009) describe importance and reliance as the opposite sides of a relationship, give and take. While it is important to foster an environment of caring on campus, students need to feel that they are contributing to the classes, clubs, teams, and programs they are participating in. Others would suffer if they were not there to do their part.

Ego-extension

The facet of ego-extension “is the idea that our actions reflect on those who we matter to most” (France 2011, p. 21). While a student can feel pride in completing a significant project, the feeling of pride is amplified when people make note of their accomplishment. The pride felt when a classmate, advisor or other faculty member acknowledges your work or contribution is an example of ego-extension.

What Mattering Is Not

While the construct of mattering can appear to overlap with several other related constructs, mattering is a distinct construct. To better understand mattering, one needs to explore what it is not in comparison to other relational constructs such as the need to belong, social support, and self-esteem.

Belonging

In 1970, Maslow first defined belonging as an essential human need. In the hierarchy of needs, belonging and the need for love become relevant once a person’s basic needs for food, water, and shelter have been met. Baumeister and Leary (1995) reviewed the vast amount of literature on the concept of belonging, built upon Maslow’s first definition, and synthesized a

construct of belonging that demonstrates the need to belong impacts the thought processes and emotional reactions of people. The construct of belonging having impacts on thoughts and emotions aligned with the two dimensions of belonging developed by Hagerty, et al. (1992). The first dimension of valued involvement and the second dimension of fit. While the first dimension related to feelings of being needed and accepted, the second dimension related to a person's perception that they are like others in their environment. Both dimensions must be present for a person to feel they belong. Hagerty et al. (1992) defined belonging "as the experience of personal involvement in a system or environment so that persons feel themselves to be an integral part of that system or environment" (pp. 173).

In applying the model of Hagerty et al. (1992) to the experiences of students, one can see how a student may lack belonging because they are experiencing only one dimension of the model. A student valued by the members of their university/college community may lack fit because they differ demographically from their peers or in that they have different goals in pursuing a graduate degree than their peers. Another student may have fit because they are very similar to their peers in personal background, major of study, and place of residence, but not belong because they do not feel valued by their peers.

More recent research on belonging has moved away from the conceptual framework of belonging having two dimensions of valued involvement and fit (Brown 2015, 2017). Brown's (2015) definition of belonging.

Belonging is the innate humane desire to be part of something larger than us. Because this yearning is so primal, we often try to acquire it by fitting in and by seeking approval, which are not only hollow substitutes for belonging, but often barriers to it. (p. 145)

Brown (2015) described true belonging as occurring when we present our true self, and we are accepted. Changing who we present to others to "fit in" is not true belonging. Brown (2015) described belonging as an expression of connection. As humans, we seek connection which is

the energy created between people. Connection develops when people feel seen, heard, and valued. Brown (2017) builds upon earlier work on belonging by describing how true belonging is not passive. True belonging requires people to be vulnerable and uncomfortable with people without sacrificing their true selves. For Brown (2017) we cannot belong in the larger world until we belong to ourselves. Belonging is a deeply personal experience for Brown (2015, 2017).

Studies of the effects of not belonging for graduate students align with the theory of belonging developed by Baumeister and Leary (1995), Brown (2015, 2017), and Hagerty et al. (1992). Clegg (2006) conducted a phenomenological study to explore the experience of not belonging. In the study, Clegg (2006) interviewed eight people including four fellow students from the psychology department. Clegg (2006) noted that not belonging began with a feeling of being different. This aligns with Brown (2015) as these students presented their true self and they were not accepted. The students felt that they had to be something different from their true selves to be able to belong. The sense of being different aligns with the Hagerty et al. (1992) model in which the dimension of fit must be met for there to be a sense of belonging. While Brown (2015, 2017) and Hagerty et al. (1992) present different conceptual frameworks of belonging, the sense of being different and/or trying to fit-in is a barrier to belonging in both models and this is reflected in Clegg's (2006) study. Clegg (2006) summarized that not belonging leads to feelings of discomfort and insecurity, which resulted in self-conscious behavior.

Baumeister and Leary (1995) defined belonging as “a need to form and maintain at least a minimum quantity of interpersonal relationships” (pp. 499). To build this sense of belonging, Baumeister and Leary (1995) stated that frequent and positive personal contacts are required. If the need to belong is not met, the individual will suffer stress and depression. Baumeister and

Leary's (1995) emphasis on negative effects from not belonging aligned with the study of Clegg (2006) in which participants reported feeling sad, anxious, angry, embarrassed, and physically exhausted from experiencing not belonging. The study of Hagerty, et al. (1996) demonstrated that belonging and anxiety were inversely related. The anxiety of not belonging can lead to a variety of mental and physical concerns (Hagerty et al, 1996). The emotional effects of belonging noted by Baumeister and Leary (1995) are similar to mattering as positive feelings result from belonging and mattering and negative feelings develop when we do not belong or do not matter.

Mattering aligns with Brown's (2015) description of connection, which is an energy between people created by feeling seen, heard and valued. Being seen is the mattering facet of awareness/acknowledgement, being heard is the mattering facet of reliance and being valued is the mattering facet of ego-extension and importance. Mattering is another expression of Brown's concept of connection. Mattering is not belonging by Brown's (2015, 2017) conceptual framework as belonging is deeply personal and requires true self-acceptance to truly belong. Mattering is not centered on an individual accepting themselves and presenting that self to others. Mattering is the positive feelings or energy created when a person perceives a connection with another person.

Elliott (2009) noted four ways that belonging and mattering differ. First, belonging requires an emotional bond while mattering does not. Mattering involves caring, but not to the level needed to belong. Second, Mattering does not require frequent personal contact as belonging does (Baumeister and Leary, 1995). Mattering is a stable construct in that once it is established it continues. Third, the need to belong pushes people to seek out interactions with others while mattering is developed in response to other's actions and words towards us. Finally,

the fourth way mattering and belonging are different according to Elliott (2009) is that in trying to belong, people will conform their behavior to fit in while when people feel like they do not matter they will act out to be noticed (Rosenberg & McCullough, 1981).

Social Support

Social support is most like the mattering facet of importance as both provide some sort of assistance be it advice, comfort, time, and/or energy to see that our needs are met (Elliott et al., 2004). “This sense of support is a fundamental precursor to importance: if we believe that others are available to provide us with the support that we need, then we understand that we are important to them; we know that we matter” (Elliott et al., 2004, pp. 342). While social support is a precursor to importance, Elliott (2009) distinguished that importance is more general than social support as a specific form of support is not needed for the importance facet. We can feel important even if we do not have an immediate need. In addition, the feeling of mattering will not develop if we feel that support is given for ulterior reasons.

Self-Esteem

Definitions of self-esteem noted the importance of self-evaluation in determining self-worth (Leary and Baumeister, 2000). Self-esteem can be described as self-acceptance, self-respect, and liking oneself (Rosenberg, 1985). Much like the sense of belonging, self-esteem is inversely related to anxiety, depression, and negative feelings towards oneself (Rosenberg, 1985). Mattering is different from self-esteem as mattering involves one’s relations with others and is not connected to self-evaluation of worth. Mattering can be a precursor to self-esteem (Elliott, 2009; Rosenberg & McCullough, 1981). Feeling like you matter can create a higher level of self-esteem.

University Mattering

Mattering has been applied to a wide variety of populations in varying contexts and one of the more recent contexts is that of higher education institutions. University mattering as characterized by Rosenberg and McCullough (1981) is a form of societal mattering experienced by a student in a college or university setting.

...[I]nstitutions that focus on mattering and greater student involvement will be more successful in creating campuses where students are motivated to learn, where their retention is high, and ultimately, where their institutional loyalty for the short- and long-term future is ensured. (Schlossberg, et al., 1989, p. 14)

If a student feels they matter to someone at a university, they are more likely to feel connected and behave positively toward the university community by being more attentive to their academic studies, being more involved in campus activities, and being more willing to be an ambassador for their university/college. In today's atmosphere of accountability, college and universities are offering a variety of services to students in an effort to increase student retention and completion. Those services include tutoring, writing centers, career advising, counseling centers, activities to promote diversity, academic advising, and student success centers. While these services provide needed assistance to many students, the utilization of the services does not necessarily result in students feeling like they matter. Rosenberg and McCullough's (1981) foundational theory of mattering states that feelings of mattering develop from personal experiences/interactions with others. Mattering is subject to the perception of the individual. A student could use a variety of services provided by the college/university and still feel like they do not matter to others at their institution.

Rosenberg and McCullough's (1981) theory of mattering aligns with other theories of student engagement/involvement like Astin's (1984) theory of student involvement. Astin (1984) suggests that students who more frequently demonstrate participation behaviors related to

the academic experience are more likely to be successful students who persist and graduate. Astin (1984) defined student involvement as “the amount of physical and psychological energy that the students devotes to the academic experience” (pp. 297). This expenditure of involvement energy occurs in many environments on campus as students go to class, work on campus, join study groups, participate in social events, live in dorms, and interact with faculty and staff across campus. France (2011) posits that the relationship between mattering and involvement is recursive. Students that feel like they matter are more involved and greater involvement leads to an increased sense of mattering.

While Astin (1984) emphasized how involvement leads to greater likelihood to persist to graduation, Tinto’s (1987) theory of student departure addresses just the opposite. If a student does not feel connected to the campus community, they are more likely to leave the institution. When students enter college/university they leave behind their support network and they need to rebuild this network with relationships with faculty, staff, and peers to persist to graduation. Mattering and belonging become the foundational steps to building these new social support networks.

While Astin (1984) and Tinto (1987) have focused on the existence of or lack of involvement in the university community or feeling connected to the university community, Schlossberg (1989) put mattering in a slightly different framework in which a lack of mattering or marginality is on a continuum contrasting mattering. The risk of withdrawal would increase as a student’s feelings placed them on the continuum further away from feeling like they mattered. Schlossberg (1989) noted that any time a person experiences a transition; there is the potential to feel marginal. Entering a college or university is a transition that can create feelings of marginality in students. This stems from the great difference in the roles students experience

from leaving home and their high schools for the campus environment of a college or university. The experiences a student has in their university environment can move a student from feeling marginal to feeling as if they matter. Schlossberg (1989) noted the need to matter is not age specific. The need to feel like we matter does not decrease with age. The concept of mattering is important to consider in the relationships fostered in the university environments for students of all ages.

While Schlossberg (1989) proposed that mattering is a continuum with mattering and marginality at the opposing ends, Flett (2018) proposed that mattering is not a continuum. Flett (2018) noted that overall the research on mattering has been framed in positive terms. An increase in positive experiences of awareness, reliance, importance, and ego-extension results in increased feeling of mattering which in turns generates positive things like engagement, participation, retention, and graduation. Flett (2018) developed a theory of antimattering in which the research is focused on the negative effects of not mattering. Antimattering is a distinct theoretical framework from mattering as antimattering occurs when there has been prolonged and multiple-faceted experiences of not mattering to the point where a person feels invalidated, forgotten, and insignificant (Flett, 2018). The repeated experiences of not mattering leads to a deep internalization of negative feelings in which the feeling of antimattering leads to behaviors that are more than just the opposite of engagement, participation, retention, and graduation.

Measuring University Mattering

With the construct of university mattering being relatively new, there is a large gap in research resulting in a reliable, valid, and efficient scale, specific to the higher education context. Thus far, only four scales have been published, each of which is outlined below.

Mattering Scale for Adult Students in Higher Education (MHE)

The first published scale specific to the university context is the Mattering Scale for Adult Students in Higher Education (MHE) created by Schlossberg, et al. (1988). While it is a positive attribute that this scale was a pioneer in this arena and did bring to the forefront the recognition for and relevancy of the need for a contextual scale on university mattering, this particular scale has a number of limitations. The MHE is not aligned with the foundational Rosenberg and McCullough (1981) theory of mattering. The subscales were seemingly randomly selected. The measure was intended for “adult” students, over the age of 25 – nontraditional students. One would think this would capture the population of graduate students, but instead potentially creates unnecessary overlap in populations and thus, errors in measurement.

General Mattering Index

In 2004, Elliott and his colleagues published a 24-item general mattering index. This measure contributed to the literature in that the index is short, so it is convenient for individuals to take. Additionally, it is aligned with the four facets of Rosenberg and McCullough’s (1981) original theory of mattering. The unfortunate characteristic of the index is that it measures general mattering and is not specific to the university/higher education context.

College Mattering Inventory (CMI)

The next chronologically published scale is the College Mattering Inventory or CMI (Tovar, et al., 2009). This measure did use traditional age undergraduate students in sampling to test reliability and validity. However, the subscales for this measure are called into question (Olsen, 2015) as the authors focused most of their efforts on students mattering to certain entities or individuals on campus instead of focusing on Rosenberg and McCullough’s (1981) form of

societal mattering. For that reason, it is not thought to align with the original four-facet theory of mattering.

The University Mattering Scale (UMS) and the Revised UMS (RUMS)

In 2010, France and Finney published the UMS: University Mattering Scale and later the RUMS, Revised UMS, in an effort to fill the need to follow the original Rosenberg and McCullough (1981) theory and to test a measure with a typical undergraduate population. A positive characteristic of this 34-item scale is that it does follow the original Rosenberg and McCullough (1981) theory of mattering as it is based upon Elliott's (2004) General Mattering Index, but with adjusted items to pertain specifically to the higher education context. After several reliability and validity tests, the four factors from the model were found to have very high correlations. While we would assume that because the factors are related that they would correlate, the correlations for them were so high that one could not reasonably say the factors were distinct.

Unified Measure of University Mattering 15

In a continued effort to correct the downfalls of previous measures, France (2011) wrote her doctoral dissertation around a newly created measure, which she named the Unified Measure of University Mattering 15 (UMUM-15). France postulated that it does not necessarily matter how or to whom a student feels they matter to/at a university, but simply that they do. This short 15-item scale therefore measures university mattering as a single construct, so there are no measurement issues with correlations among the four facets. Results of four independent samples supported a unidimensional factor. Items from each of the four facets were retained in order to cover the full scope of university mattering. Thus far, the scale has only been published

in a dissertation format. France (2011) acknowledged that further studies are needed in different populations and across time to better check reliability and validity.

Published Studies on University Mattering

Building upon Schlossberg's (1989) conceptual framework of mattering and marginality during periods of transition, Dixon Rayle and Chung (2007) explored mattering and first-year college student academic stress by sampling 533 first-year undergraduate students from a large, four-year college in the Southwestern United States. The study focused on mattering to the college environment and to college friends and how that related to the students' social support and academic stress (Dixon Rayle and Chung, 2007). For the study, academic stress was defined as completing assignments under tight deadlines, handling large loads of projects and exams, managing multiple assignments with similar deadlines, failing to complete academic assignments on time, and challenges in interacting with instructors. The study sought to validate Schlossberg's (1989) concept of mattering to the college environment and its relation to the levels of academic stress and social support of family and friends experienced by first-year students (Dixon Rayle and Chung, 2007). It was expected that if students had a strong sense of mattering to their college, they would have strong social support and less academic stress. Participants in the study were from 29 freshman level College of Education courses in which the participants completed a survey packet during a scheduled class session. The survey packet included the Perceived Social Support Inventory developed by Procidano and Heller, the Daily Hassles Index for College Stress developed by Schafer, and the Interpersonal and General Mattering Assessment developed by Dixon Rayle (Dixon Rayle and Chung, 2007). The study found that only social support from college friends was significant in predicting the student's perception of mattering to the college environment (Dixon Rayle and Chung, 2007). When the

first-year students made friends at college that supported them, they had a greater sense of mattering to their college environment. When students felt as if they mattered to their college and felt supported by family and friends, they experienced less academic stress. Dixon Rayle and Chung (2007) found that their study supported Schlossberg's (1989) theory of mattering and academic stress and noted that their study showed that Schlossberg's concept of mattering in the university setting was a valid concept with a new generation of students.

In another study exploring mattering and academic stress, Dixon and Robinson Kurpius (2008) examined the relationship between two intrapersonal variables, self-esteem and mattering, and college stress and depression. Dixon and Robinson Kurpius (2008) noted that there is extensive literature supporting the interrelatedness of stress, depression, and self-esteem. As Elliot (2009) and Rosenberg and McCullough (1981) have conceptualized that mattering is positively related to self-esteem, Dixon and Robinson Kurpius (2008) included mattering in their study of college stress and depression in relation to self-esteem. The study included 455 students from 31 lower level, general education courses at a large, public university in the Southwestern United States. Students completed a survey packet that included the Daily Hassles Index for College Stress developed by Schafer, the Self-Rating Depression Scale developed by Zung, the Rosenberg Self-Esteem scale, and the General Mattering Scale developed by Marcus (Dixon and Robinson Kurpius, 2008). The proposed hypotheses of Dixon and Robinson Kurpius (2008) incorporated gender, mattering, and self-esteem in predicting levels of depression and college stress. Dixon and Robinson Kurpius (2008) found, as expected, that self-esteem and mattering were positively related. The study also supported the hypotheses that gender, mattering, and self-esteem would predict levels of depression. Dixon and Robinson Kurpius (2008) noted that they found it interesting that mattering and self-esteem predicted college stress, but they found it

more important that the study showed that mattering and self-esteem enhanced the ability of college stress to predict depression. Mattering, self-esteem, and college stress accounted for almost 50% of the variance in depression (Dixon and Robinson Kurpius, 2008). The study enhanced understanding into the factors related to depression and could influence the therapies used to address depression among college students.

While the studies of Dixon and Robinson Kurpius (2008) and Dixon Rayle and Chung (2007) focused on mattering and undergraduate students, the study of White and Nonnamaker (2008) is unique in the fact that it explored mattering and doctoral students. White and Nonnamaker (2008) noted that the doctoral student experience is complex and quite different from the undergraduate experience. Building on Tinto's (1993) conceptual framework that mattering and belonging are essential to integrating into academic and social environments of a college campus, White and Nonnamaker (2008) conducted a longitudinal study of doctoral students to find where they belong and matter in the doctoral community. In this qualitative study, 60 doctoral students (30 at each institution) in science disciplines were interviewed at Oregon State University and the Massachusetts Institute of Technology. White and Nonnamaker (2008) recognized that their study is limited in the sense that doctoral students in the sciences (chemistry, mathematics, physics, and closely related fields) have some of the highest completion rates and shortest times to degree. Two rounds of interviews, one year apart, were conducted with 57 of the original 60 completing both interviews. White and Nonnamaker (2009) identified five communities of influence for doctoral students that formed expanding rings around the student. The closet ring is advisor followed by lab, department, institution, and finally professional field/discipline. White and Nonnamaker (2009) described a need for doctoral students to develop a sense of belonging and mattering. Doctoral students felt a

minimal connection to their institutional community and White and Nonnamaker (2009) suggested that student affairs professionals should build programs to bridge that lack of connection between doctoral students and the institution. White and Nonnamaker (2009) pushed student affairs professionals to search for/develop best practices for engaging doctoral students to increase their sense of belonging and mattering in all the communities that influence their doctoral journey.

Doctoral Studies on University Mattering

As university mattering is a developing theoretical framework, the number of published studies that explored university mattering is limited (Dixon and Robinson Kurpius, 2008; Dixon Rayle and Chung, 2007; White and Nonnamaker, 2008). Much of the scholarly work and research on the concept of university mattering has been completed by doctoral students (Butcher, 1997; France, 2011; Gomez, 2008; Isaacson, 2008; Klug 2008; Mullen, 2016; Sumner, 2012; Schneider, 2015; Williams, 2018).

Butcher (1997) administered the MHE developed by Schlossberg, et al. (1988) to students “at a commuter-oriented coeducational institution of 6,500 students that offers associate and bachelors level degree programs” (pp. iii). The survey included measures added for involvement and persistence and 67 nontraditional and 222 traditional students participated. Butcher noted that the study was inconclusive as perceptions of mattering were independent of their perceived levels of involvement and persistence and suggested that there was a need for further testing of the conceptual model of mattering.

After Butcher (1997), a decade passed before interest in university mattering as a research topic begin to grow among scholars. In 2008, Isaacson explored the impact that first-year seminar classes had on student perceptions of mattering by comparing students that

participated in the first-year seminar and those that did not in their first semester of enrollment. The study included an exploration of the impact of mattering on second-term persistence. Students at Great Plains University served as the sample group and 205 students participated in the treatment group (attended the first-year seminar) and 64 students were in the control group (did not attend the first-year seminar). Isaacson (2008) administered the Interpersonal and General Mattering Assessment, an unpublished instrument designed by Dixon Rayle (2005), to students in September and December of 2007. Isaacson (2008) unexpectedly found that changes in mattering scores did not influence persistence and noted that the review of the literature and previous research indicated that mattering should have influenced persistence.

As Isaacson (2008) had explored mattering in first-year seminar classes, Gomez (2008) explored mattering in another type of first-year intervention program, the ACT 101. ACT 101 is a program started by the Pennsylvania State Legislature to assist economically and academically disadvantaged students in accessing higher education (Gomez, 2008). When ACT 101 students attend college, they receive one-on-one attention through mentoring, tutoring, counseling, and academic support. Gomez (2008) explored the impact of mattering on students who participated in ACT 101 to those who did not. Students from two private institutions in Northeastern Pennsylvania participated resulting in a sample size of 131. The students completed the Mattering Scale Questionnaire for College Students (MSQCS), which asked students about their relationships to specific people on campus: administrators, faculty, advisors, and peers. Gomez designed the MSQCS by adapting the MHE, designed for nontraditional, adult learners, to assess traditional undergraduate students. Gomez (2008) found that the ACT 101 significantly influenced mattering to administrators and advisors. Gomez (2008) noted the importance of

engaging with students early in their academic career to foster feelings of mattering to administrators, advisors, faculty, and peers, which in turns fosters loyalty to the institution.

As previous research on university mattering was quantitative and focused on survey instrument development, Klug (2008) noted a gap in exploring what behaviors, acts, and practices by individuals have actually influenced student perceptions of mattering. In a phenomenological study of 11 senior students from a public, Midwestern university, Klug (2008) identified five themes that described the experience of mattering. The five themes were nurturing, recognition (of the little things), student involvement, campus environment (not a number), and that mattering is cyclical. The students participating in the study were identified by administrators, as being students that mattered and that they thought would feel they mattered to the institution. The study interview questions asked the students who made them feel like they mattered, what acts and behaviors had they experienced that made them feel like they mattered, how did they feel when the practice of mattering occurred, and in what context did mattering practices occur (Klug, 2008). Klug (2008) found that nurturing had two sub-themes: verbal feedback and tough love. The tough-love fostered a sense of accountability in the students. Klug's (2008) theme of mattering being cyclical explores how a student who has experienced mattering can affect the sense of mattering in others. In the discussions of their activities on campus, students noted how their sense of mattering increased when they were invited and encouraged to participate in an activity and this sense of mattering led them to reach out and bring others into the activity (Klug, 2008). These upperclassmen felt a responsibility to reach out to and involve underclassmen in campus activities.

Building on the work of Klug (2008), Sumner (2012) conducted a phenomenological study of mattering by interviewing 16 senior students from a Midwestern, private, faith-based

institution. Sumner replicated Klug's study at a different type and sized institution. Sumner (2012) asked participants the same questions as Klug with one additional question: in what context are students likely to experience spiritual mattering. The participants were invited through an email sent to seniors at the University of Sioux Falls. Sumner's themes (2012) mirrored Klug's (2008) with the addition of a sixth theme of spiritual connection. Sumner further developed Klug's theme of mattering is cyclical by highlighting the way leadership opportunities allow students to pay it forward.

Building upon Klug's (2008) and Sumner's (2012) qualitative studies that explored the activities and behaviors that created and fostered mattering in undergraduate students, Schneider (2015) explored the sense of mattering among doctoral students in relation to their advising experience at a large, four-year, research institutions. Schneider (2015) conducted a qualitative study to explore two research questions. First, how do doctoral students perceive they matter to their advisor and second, what is the relationship between their perception of mattering and degree completion. Schneider (2015) focused on three of the four facets of mattering: attention (awareness), importance, and dependence (reliance). Students within two departments in the College of Science and three departments in the College of Liberal Arts were invited to participate in the study. Schneider (2015) interviewed four students from the College of Science and six students from the College of Liberal Arts, observed two sponsored events from each department, and reviewed departmental documents such as handbooks, program requirements, and other relevant items. Schneider treated the two colleges as two separate case studies. For the College of Science, Schneider (2015) found that attention was the most prominent facet in the perception of mattering and that mattering was not strongly tied to commitment to complete. In the analysis of the College of Science, Schneider found another theme emerging, marginality.

The continuum of marginality and mattering defined by Schlossberg (1989) aligns with the marginality theme identified by Schneider (2015). At times a lack of attention and not feeling valued lead to a lower perceived sense of mattering. The sense of marginality was only persistent for one student as the study showed overall that the students felt they mattered to their advisor. For the College of Liberal Arts, attention and importance were prevalent in influencing mattering (Schneider, 2015). In the College of Liberal Arts, the perception of mattering to their advisor confirmed their commitment to complete their degree for five of the six students interviewed and the theme of marginality did not emerge (Schneider 2015).

While there was a period in which several qualitative studies were conducted in relation to university mattering, research shifted back to quantitative methods with a focus on instrument development. In 2011, France focused on creating a more reliable and valid mattering survey instrument for measuring university mattering. The Revised University Mattering Scale (RUMS) was administered to compare mattering for transfer students and native students (students who began their academic career at the institution). France (2011) chose to implement her study with transfer students as over 40% of students obtaining a bachelor's degree have attended more than one institution and there has been a lack of research into the transfer experience. France (2011) conducted the study at a large, Mid-Atlantic university in which students completed the survey as entering students and again when they have completed 45-70 credits (typically spring of sophomore year). This provided the opportunity for France to administer the survey to a large number of students. Over 4,800 students were administered the mattering survey in the spring of 2009 and 2010. France (2011) was able to sub-divide this data pool into three samples of 830 native students and a sample of 708 transfer students (24 or more transfer credits). France (2011) found that transfer students had a lower perceived sense of

matter than native students and the study used confirmatory factor analysis to find the best model fit for the 34 items of the RUMS leading to the development of the 15-item Unified Measure of University Matting 15 (UMUM15).

Williams (2018) used the UMUM-15 to explore the influence of living and learning communities on the sense of mattering and persistence for Black males at a predominately White institution. Williams (2018) specifically looked at the facet of ego-extension, the influence of one's success on the larger group, in the context of Black living and learning communities and the Black Male Mentoring Program (BMP). The Black living and learning community and the BMP were designed with the concept that ego-extension contributes to success in a community as it allows individuals to hold each other accountable. The study compared the mattering scores and demographics of groups of students in the BMP, the living and learning communities, and the overall Black male student population on campus in relation to persistence and completion. Williams (2018) identified a regional university in the Southwest United States that had at least 25% or more enrollment of Black male students, had a BMP, and had a Black male living and learning community. The UMUM-15 designed by France (2011) was administered to three groups of Black male students and for the purpose of the study, Williams (2018) focused on the four questions related to ego-extension. The number of surveys completed was slightly less than hoped for with 194 Black male students, 17 Black males in BMP, and 22 Black males in living and learning communities responding to the survey invitation. Williams's (2018) analysis of the ego-extension questions of the UMUM-15 did not find any statistically significant differences between the scores of the three groups which Williams noted as an unexpected finding based upon previous research regarding the importance of Black organizations and mentoring programs on Black student persistence. The study did find a significant correlation between ego-extension

feelings of mattering and the intent to enroll the following semester. Williams (2018) concluded that the study demonstrated a need to create environments that grow a students' sense of ego-extension mattering as it is a strong predictor of students' ability to persist.

While much of the previous research focused on identifying mattering in certain groups of students and/or in comparing mattering within certain groups of students to mattering in the overall student population, Mullen (2016) examined mattering among three categories of nontraditional students. Nontraditional students defined as having at least one of the following characteristics: financially independent, delayed enrollment, employed full-time, enrolled part-time, has children, obtained a GED or high school certificate, or is a single parent. As these characteristics tend to put nontraditional students at greater risk for attrition, Mullen sought to build-upon the work of Schlossberg, et al. (1988) by using the MHE to compare groups of nontraditional students. Mullen (2016) looked to explore the sense of mattering for categories of nontraditional students as defined as minimally (one characteristic), moderately (two to three characteristics), or highly (four or more characteristics) nontraditional. Mullen (2016) proposed that, as students move across the continuum from minimally to highly nontraditional, the risk for attrition increased and that mattering scores would significantly vary. Study participants were from three Catholic, four-year institutions of 2,000 to 3,500s students, primarily residential students, in Pennsylvania. Participants had to have at least one of the nontraditional student characteristics to be eligible for the study. As the institutions did not track nontraditional student status, participants for the study were identified through self-reporting of nontraditional student characteristics in survey responses. The Nontraditional Student Mattering Survey (NTSMS) is a combination of the MHE and the independent variables of the nontraditional student characteristics. The NTSMS was distributed to the undergraduate student populations of the

participating institutions through an online invitation. Students who completed the survey, but did not self-report nontraditional student characteristics, were removed from the study sample. The final sample size was 155 participants with 83 categorized as highly, 44 moderately, and 28 as minimally nontraditional. Mullen (2016) found that minimally, moderately, and highly nontraditional students did not differ significantly in their mattering scores of the five subscales of the MHE: administration, advising, peers, multiple roles, and faculty. Mullen (2016) noted that the prevalence of juniors and seniors participating in the study might have influenced the results, as these students would have had more exposure to the educational environment allowing for the development of coping mechanisms.

While research on mattering has been conducted across the United States, the Master of Arts in Higher Education Administration program at Rowan University has produced a cluster of theses that explored mattering within various subpopulations of the university's enrolled students (Blazie, 2013; Cattell, 2017; D'Angelo, 2010; Dahan, 2008; Diaz, 2017; Ditzel, 2019; Israel, 2018; Kurz, 2013; Olsen, 2015; Shaginaw, 2018; Sullivan, 2019). Rowan University is predominately White and located in New Jersey with 10 colleges and schools offering 19 types of degrees (Olsen, 2015). Average enrollment is over 13,000 with over 3,000 living on campus (Olsen, 2015). The studies used the CMI (Tovar et al., 2009), the MHE (Schlossberg et al., 1989) or the Veteran Student Survey on Transition to College designed by Dahan (2008) which used 19 items from the MHE. The studies explored mattering within the subpopulations of students in the Rowan After Hours Program, transfer students, students with disabilities, students in the Bantivoglio Honors Concentration Program, students that were veterans, graduate students, Latino/a students, LGBTQIA students, students that were active military service members, deaf students, and international students. One study duplicated the study of Dahan

(2008) with women veterans at Richard Stockton College of New Jersey (Kurz, 2013). Overall, the studies found the various student subpopulations felt like they mattered at Rowan University, while noting that there were certain subscales of the MHE that demonstrated lower feelings of mattering to administration and/or advising/faculty for certain subpopulations (Blazie, 2013; Cattell, 2017; D'Angelo, 2010; Dahan, 2008; Diaz, 2017; Ditzel, 2019; Israel, 2018; Olsen, 2015; Shaginaw, 2018; Sullivan, 2019). Only the study related to LGBTQIA noted that this subpopulation had feelings of mattering and marginality at Rowan University (Ditzel, 2019). None of the studies compared these student subpopulations to a control group or random sample group of Rowan University students. Studies that found the Rowan University student subpopulation group to have a higher level of mattering were comparing the subpopulation group to the normative sample of Tovar, et al. (2009) or to the data of another Rowan University subpopulation from a study recently completed in the program.

The graduate student population has been essentially left out of the university mattering literature with Schneider (2015) and White and Nonnamaker (2008) the noted exceptions. There are several characteristics in which graduate students may differ from undergraduate students such as age, time since returning to school, time-to-degree, career goals and other obligations, and outside pressures like financial, work/employment, family (partner and/or child/ren), and home ownership. These qualities make graduate students a separate and unique subpopulation at universities. While Mullen's (2016) study of categories of nontraditional students did not produce the outcomes expected by Mullen, the study could provide insight into mattering among graduate students, as many graduate students would be identified as nontraditional in the Mullen study. While graduate students are a unique subpopulation, the social aspects of the graduate student experience align with the theory of university mattering as presented by Rosenberg and

McCullough (1981) that described university mattering as a form of societal mattering experienced by a student. As Schlossberg (1989) noted, the need to matter is not age specific. At all points in our lives, we need to matter. Exploring mattering in relation to the graduate student experience could bring new insights into graduate student attrition.

Graduate Students

How Are Graduate Students Different From Undergraduate Students?

When considering why student characteristics like previous GPA, scores on academic tests, and gender are not stronger indicators for success as a graduate student, one needs to consider how graduate students are different from undergraduate students. Offerman (2011) examined how the demographic profile of graduate students has changed since 1960. Prior to 1960, graduate students were typically white men, 22 to 30 years old, single with no children, immersed in their studies, and studying full-time through tuition waivers/stipends (Offerman, 2011). Since 1960, the demographic profile has shifted dramatically to the majority of graduate students being from diverse ethnic/racial groups, with women exceeding the number of men, being over 30 years of age, married with children, and studying part-time while working full-time to self-fund their degrees (Offerman, 2011). While the demographic profile of undergraduate students has become more diverse, the majority of undergraduate students are still enrolled full-time, working limited hours, single with no children, and under 24 years old (U.S. Department of Education, 2019). These differences in demographics have affected graduate students in substantial ways (Offerman, 2011). Graduate students have limited availability to interact with faculty, their peers, and advisors, as they need to balance work, home, and school commitments. They carry a heavier financial burden due to part-time status, and they often are directly applying their coursework to their professional position. As graduate students and

undergraduate students vary greatly in demographics, indicators for success developed for undergraduates will not apply to graduate students. There is a need to research and explore factors beyond demographics to identify the factors influencing graduate student completion rates.

Apprenticeship

In addition to the various demographic differences between undergraduate and graduate students, graduate students enter a very different learning environment when they become graduate students. It is no longer large lecture rooms filled with students or tests where there is one right answer. Graduate education is filled with areas of gray and answers like, “it depends”. The most important moments of learning come during one-on-one interactions between student and faculty member/advisor or between graduate students and their peers. “Indeed, it can fairly be said that apprenticeship is the signature pedagogy of doctoral education” (Walker, 2008, p. 89). Apprenticeship requires deep and meaningful interactions between student and mentor to produce new scholars. The apprenticeship relationship can build life-long bonds, but it can also lead to a loss of interest in the field of study and student attrition. When paired together, the advisor and student do not always mesh. Personality conflicts can lead to students feeling unsupported, as if they do not matter. Walker (2008) presented the apprenticeship relationship as one of collective responsibility. The mentor has a responsibility to guide, support, and encourage and the student has the responsibility to take ownership of their learning and progress. The collective responsibility goes beyond the student and faculty member relationship to include students being accountable to each other. Support and accountability need to come from various members of the scholarly community for the apprenticeship model to work effectively. The idea of collective responsibility aligns with the mattering factors of reliance and importance. As

students' progress throughout their degree program, there are times when they will need to give support to others, the factor of reliance, and there are times when they will need the support of their advisor, other faculty members, and their peers, the factor of importance. Walker (2008) noted that recognition plays an important role in the apprenticeship relationship. "When faculty members invest in their relationships with students they reap direct benefits from their students' scholarship, as well as enormous amounts of reflected glory" (Walker, 2008, p. 100). The apprenticeship relationship can bring recognition to both the student and the faculty mentor, which aligns with the mattering factor of ego-extension. Both the faculty mentor and the student experience the mattering facet of ego-extension when other members of the scholarly community recognize their work. A positive apprenticeship relationship increases the feeling of mattering through reliance, importance, and ego-extension and the increase in mattering in return strengthens the apprenticeship relationship.

Developing Graduate Students

In a study of graduate student persistence, Lovitts (2005, 2008) theorized that the individual characteristics a student brings to the program could be nurtured in the doctoral environment. Lovitts (2005) provided a model in which the individual resources of intelligence, motivation, personality, thinking style, and knowledge are located within a microenvironment of the advisor, department, peers and other faculty and location, and a macro environment of the culture of graduate education and the culture of the discipline. Lovitts (2005) suggested that changing the social structure and organizational culture of graduate education to align with the individual characteristics would provide an environment in which more students can succeed in completing the degree process. The relationships created between the student and other members of the graduate community contributed to the overall success and persistence of the

student. Lovitts' (2005) theory parallels the theory of university of mattering by Rosenberg and McCullough (1981) in which the social relationships of the student creates a sense of mattering in which the student seeks to behave in a positive manner that includes succeeding academically.

Lovitts (2008) conducted a series of focus groups with 55 faculty members in 2002-2003 who she deemed to be high-Ph.D. producing faculty members. The faculty were asked to discuss the factors they felt facilitated or impeded the transition to independent researcher. In the analysis of the focus groups, Lovitts (2008) applied a developed model with six theoretical constructs that influence creativity: intelligence, knowledge, thinking styles, personality, motivation, and environment (macro, micro). The study demonstrated that high-Ph.D. producing faculty understood the importance of the microenvironment in supporting the doctoral student.

A faculty member from the history department stated

[What] is really crucial for graduate student success is having a good cohort and having a good cohort – I mean really strong relations with that cohort. It just makes a world of difference. I have seen good students do great work, [and] I have seen mediocre students do good work as a result of having that kind of support and interchange. (Lovitts, 2008, p. 316)

A biology faculty member stated

I view it as part of my mentoring responsibility to see when a student has hit one of those walls, and if temperamentally they're just not going to be able to move forward, to find a way to help them out of it. (Lovitts, 2008, p. 317)

The comments of these two advisors highlights the importance of societal mattering in the graduate student community. Feeling as if they matter can make the difference in a student overcoming a challenge and continuing on to complete independent scholarly research or conversely deciding to withdraw from the program.

Aligning with Lovitts's (2005, 2008) theories for the development of doctoral students, Gardner (2009) presented a three-phase model of graduate student development that recognizes that graduate students not only develop professionally, they also develop personally and

interpersonally. Over the last several decades, research on student development has largely been focused on undergraduate students despite the fact that graduate students make up a significant portion of the overall student population at around 3 million graduate students (Gardner, 2009). Gardner (2009) argued there are four reasons that the study of graduate student development in relation to graduate student attrition is greatly needed. First, it is expensive for institutions to lose graduate students due to attrition. Secondly, there are social consequences as individuals holding doctorate degrees become the leaders of society and the underrepresentation of culturally diverse populations is becoming an increasing concern. Lovitts (2005, 2008) and Gardner (2009) are raising the attention of the third reason by highlighting the personal cost to individuals who do not complete their graduate programs. Many of the students who leave doctoral programs do not do so on a positive note and often feel like failures. Finally, research needs to be conducted on graduate student development because understanding how the graduate experience affects doctoral students may be the key to reducing doctoral student attrition.

While Gardner (2009) presented four reasons for studying graduate student development, graduate students continue to be left out of the majority of the studies on student development. There is an assumption that graduate students are fully self-aware and wholly developed when entering graduate school. They have completed their period of self-discovery when they were undergraduates (Gardner, 2009). The majority of graduate students are either working as graduate/research assistants or as full-time professionals outside the graduate school. This leads to graduate students being viewed as colleagues, professionals, and that view overshadows their role as student still in development. There is a lack of homogeneity across the graduate student population unlike the large amount of homogeneity across the undergraduate student population (Gardner, 2009). Theories on undergraduate student development are not as accurate when

applied to a variety of variables present in the graduate student population. The lack of research on graduate student development is representative of the lack of research on graduate education in general.

Gardner (2009) developed the three phases of doctoral student development through multiple qualitative studies with 177 doctoral students across the United States. Gardner (2009) used phases instead of stages of doctoral student development to call attention to the fact that the model is not based on a structure of three stages of programmatic steps such as admission, coursework, and candidacy. While the three phases align with these three steps in programmatic progression, the model of doctoral student development is fluid allowing the student to visit and revisit issues and opportunities throughout their program. The model allows for the incorporation of personal and interpersonal development with professional development. The supportive relationships developed in the admission and early program work needs to deepen with faculty and peers in phase II for the doctoral student to successfully complete their degree. When doctoral students move into phase III, they begin their independent research and writing of the dissertation and may feel like they lose the support they have developed through close-peer relationships built through coursework and the support of faculty built through daily interaction. The feeling of losing support heightens stress felt in meeting the professional development needs during this phase. Gardner (2009) noted that while doctoral students successfully faced development challenges as undergraduates, the new environment of graduate schools brings development challenges that makes doctoral students cycle back through the same developmental challenges they faced as undergraduates.

Theoretical Models of Turnover

As much of business research will show, it is much more effective and efficient, and frankly a more monetarily sound practice, to retain current “customers” than it is to gain new ones. This principal equally applies to universities. Universities invest large amounts of money in recruiting graduate students and providing full-time graduate students with assistantships for tuition and/or stipends (Gardner, 2007). The time, effort, and money committed to onboard graduate students is squandered when graduate students leave before completing their degree. The University Of Notre Dame found that if it reduced graduate student attrition by 10%, it would save \$1 million annually in stipends (Gardner, 2007). While it is highly expensive to lose graduate students, graduate student retention rates at most universities across the country are quite abysmal. For doctoral students, a 2013 article in the Chronicle of Higher Education reported attrition rates of about 50% (Cassuto, 2013).

While the case has been made that it is beneficial to universities to retain graduate students, many studies measuring persistence and retention once again focus on undergraduate students (Girves & Wemmerus, 1988). While undergraduate persistence and retention theory provide a theoretical base for exploring graduate student persistence and retention, undergraduate research has been largely focused on tracking the persistence rates of full-time, first-time, students. To get an accurate picture of graduate student persistence, or the lack thereof, concepts from the field of business such as intention to leave, job satisfaction, and burnout may provide measurements that are more in line with the graduate student experience. Especially, if one considers the graduate student experiences an “apprenticeship” in becoming a scholar. Graduate students have clear professional goals when they enroll in doctoral programs. The

years of finding themselves as undergraduates are over and the journey of developing professional expertise begins.

Satisfaction

In 1981, Bean first applied the model of turnover in work organizations to student attrition when he developed his Industrial Model of Student Attrition. Bean (1981) adjusted the concepts of job satisfaction and intent to stay from the Price/Mueller (1981) model of turnover to be satisfaction as a student and intent to leave in his model of student attrition. Student satisfaction was expected to intervene between various determinants and intent to leave/turnover (dropout). Bean (1981) developed a 98-item instrument to measure 14 independent variables: intent to leave, satisfaction, grades, practical value, development, routinization, instrumental communication, participation, integration, courses, distributive justice, campus organization, opportunity, and marriage. A longitudinal study was conducted by administering the survey in the spring term of 1979 to all freshman at a Midwestern, land-grant university followed by data collection from the registrar's office in the fall of 1979 and the spring of 1980 to determine which students dropped out. From the 1,909 responses from freshman collected in 1979, Bean (1981) focused his analysis on a subset of 876 women to align with the Price and Mueller (1981) study in which the sample of nurses was made up of all women. Bean (1981) used multiple regression and path analysis with three dependent variables of satisfaction, intent to leave, and dropout with twelve determinants. The twelve determinants accounted for 24.3% of the variance in satisfaction, 26.6% of variance in intent to leave and 17.6% of variance in dropout. When satisfaction and intent to leave were added to the twelve determinants, 48.6% of the variance in dropout was explained. Overall, Bean (1981) determined the results to be as expected, with the exception that satisfaction did not have the greatest influence on intent to leave and dropout.

Five of the determinants had greater influence on intent to leave than satisfaction. Satisfaction did not fully act as an intervening influence between the determinants and intent to leave as was expected.

The early research by Bean (1981) laid the foundation for research into the concept of satisfaction and its influence on the intent to leave a graduate program. In 2019, Hardre, et al. found satisfaction with the graduate experience to be the most significant influence on dropping out. That being satisfaction with the whole graduate student experience and not just with their academic program (Hardre et al., 2019). The student's perceptions of services and resources outside their departments affected their overall satisfaction. With that being said, the most influential satisfaction factor is the students' relationships and satisfaction with faculty mentoring and advising (Hardre et al., 2019). "...graduate students indicate that faculty characteristics such as credibility and trustworthiness (individually and collectively), accessibility and caring, helpfulness, and interest in students' individual and collective success are positive and important attributes that also support student development and satisfaction (Hardre et al., 2019, p. 107). Hardre et al. (2019) surveyed 886 graduate students from a variety of academic disciplines at a U.S. research university. The survey was used to examine how six predictive variables predicted three outcome variables. The six predictive variables were satisfaction with program of study, satisfaction with academic advising, satisfaction with academic program faculty, perceived degree value, perceived competence and identity development, and perceived graduate experience gap. The three outcome variables were satisfaction with graduate experience, self-efficacy for profession success, and dropout intent. The method used for the study was analysis conducted through Structural Equation Modeling with AMOS. The results showed that the most significant influences on dropout were

satisfaction with the graduate experience, self-efficacy for profession success, and perceived graduate experience gap. Hardre et al. (2019) noted that their study is unique in two aspects such as being one of the few modeling studies across a multi-disciplinary sample of graduate students to include the students' intention to dropout and that their analysis could breakdown the results to the subgroup of master's students. While Hardre et al. (2019) note the unique quality of having the master's subgroup, they did not report the differences between their findings for master's students versus doctoral students. It is interesting that they mention this as in much of the current research the master student is often lost within the larger sample group of graduate students, or they are not included at all, as most studies focus on doctoral students.

Burnout

Research of the past three decades in organizations has shown that burnout is wearing out at work to the point a person can no longer accomplish their daily tasks (Boren, 2013). Burnout has three parts: emotional exhaustion, cynicism, and a lack of personal accomplishment (Boren, 2013). In 2013, Boren incorporated the concept of burnout into his study of mediating factors in the emotional exhaustion of graduate students. Boren (2013) noted that burnout is highest in service-related fields in which people must interact with customers, patients, and students directly and daily. Academia has the environment that can create a high risk of burnout, especially in graduate schools (Boren, 2013). Many graduate students are carrying a heavy load of research, teaching, attending courses, and grading. Boren (2013) noted that social interactions in an organization is one of the best mediating factors in reducing psychological and physiological stress. This form of social support assists people in dealing with stressful situations. Boren (2013) focused on a form of social support called co-rumination. While co-rumination can be helpful in venting emotions to a person who understands the situation, it can

be detrimental when it becomes a cycle of negativity that is not focused on finding a solution. Boren (2103) found that co-rumination increased the emotional exhaustion of graduate students thus increasing the amount of emotional stress that could lead to burnout. The co-rumination left graduate students feeling like they had to now manage the problem of colleagues on top of their own problems.

Building on Boren's (2013) work, Peltonen, et al. (2017) explored the concept of high-quality social support from supervisors and from others in the researcher community as a main determinant in the completion of doctoral programs. Peltonen, et al. (2017) described burnout as having two parts: exhaustion and cynicism. Cynicism includes the lack of personal achievement described by Boren (2013). "...whereas cynicism is characterized by losing interest in one's work and feeling as though one's research has lost its meaning, distancing oneself from the work often results in reduced involvement and even dropping out of doctoral studies" (Peltonen, et al., 2017 p. 160). Cynicism is the necessary ingredient to turn exhaustion into burnout. Social support is associated with reduced levels of stress among doctoral students and an important factor is supporting doctoral student development while buffering the effects of stress in producing burnout and dropout (Peltonen, et al., 2017). While social support reduces academic stress, very little is actually known about the forms of social support experienced by doctoral students (Peltonen et al., 2017). For the study, 402 doctoral students from a Finnish research university participated in an online survey. The survey contained Likert-type statements and open-ended questions in the topic areas of: interest in doctoral studies, doctoral students' positive and negative key experiences, the research environment, supervision and collaboration, academic writing, burnout, and engagement and dropout intention. As expected, Peltonen, et al. (2017) found that students with an insufficient support profile experienced more

exhaustion and cynicism resulting in an increased potential to dropout. Peltonen, et al. (2017) suggested that doctoral students need to learn how to actively seek and provide support to each other.

Summary

University mattering should become a construct of interest for graduate education administrators because it has the potential to prove to be an antecedent to outcomes that have positive impacts for students, faculty, and universities alike.

...[I]nstitutions that focus on mattering and greater student involvement will be more successful in creating campuses where students are motivated to learn, where their retention is high, and ultimately, where their institutional loyalty for the short- and long-term future is ensured. (Schlossberg, et al., 1989, p. 14)

More research needs to be conducted in order to shape, assess, and utilize a valid and reliable scale to measure university mattering within the graduate student community. In measuring university mattering across different subpopulations such as graduate students, institutions of higher education can better focus resources to provide support and programming that will increase students' sense of mattering. Graduate students who feel they matter will in turn persist resulting in greater personal benefits for the students along with short-term and long-term benefits for the institution.

As more attention is drawn to the high rates of attrition from graduate programs, theories in undergraduate retention and completion offer a foundation upon which to explore graduate program attrition rates. While the graduate student experience may be significantly different than the undergraduate experience, undergraduate theories in mattering align with preliminary studies in the graduate student experience that emphasize the importance of inter-personal relationships and support structures in graduate programs (Lovitts, 2005, 2008). This study will

explore the applicability of using the mattering scale, UMUM-15, to measure graduate student perceptions of mattering.

CHAPTER 3: METHODS

The purpose of the present study explored two main areas. The first part examined the validity of the UMUM-15 (France, 2011) when adapted to be used with graduate students. The second piece involved a hypothesized causal model dealing with the possible causal pathways from graduate-student mattering to persistence outcomes using program satisfaction and burnout (work-related and personal) as mediators. This chapter provides an overview of the research design, participants, measurement instruments, and data collection procedures. The models used in both parts of this study are also formally specified.

Instruments

The questionnaire used in this study was adapted from four extant instruments: (a) the Unified Measure of University Mattering (UMUM-15), (b) the Brief Overall Job Satisfaction Measure II, (c) the Copenhagen Burnout Inventory, and (d) the Student Experience in the Research University survey.

UMUM-15

The survey contains questions adopted from UMUM-15 instrument developed by educational researcher M. K. France (2011). This study was conducted in part to test the applicability of the mattering scale designed for undergraduate students to the graduate student population. In order to preserve the integrity of the instrument for the continuation of the scale, the only thing changed on the UMUM-15 was the institution name. When France (2011) completed her study, she used “at JMU” in the items as that is the institution her sample was affiliated with. This survey has been changed to read “my degree program at NDSU” instead of simply “at NDSU” as I believe that many graduate students more strongly identify with their

programs of study than with the academic institution as a whole. Otherwise, the scale was left the same.

Student Experience in the Research University

Two subject matter experts at NDSU were identified as the survey instrument was designed and they were asked for their thoughts on administering the mattering scale to graduate students. Upon the recommendation of the subject matter experts, three questions from the undergraduate Student Experience in the Research University (SERU) instrument were adapted for use in this survey instrument. The questions are related to the importance of graduating from NDSU, how often the student has considered transferring, and how often the student has considered withdrawing from school altogether. The SERU survey instrument was developed and administered through a partnership between the Center for Studies in Higher Education at the University of California Berkeley and the University of Minnesota.

Brief Overall Job Satisfaction Measure II

Five questions were adapted from the Brief Overall Job Satisfaction Measure II (Judge et al., 1998). This unidimensional scale collects responses using a seven-point Likert-like rating scale from strongly agree to strongly disagree. Judge et al. (1998) took five items from the Brayfield-Rothe Measure of Job Satisfaction to create the Brief Overall Job Satisfaction Measure II. The five-item scale was tested with 222 university employees and recorded reliability of .88. This scale had a Cronbach's alpha of .838 in the present study.

Copenhagen Burnout Inventory

Two of three scales were adapted from the Copenhagen Burnout Inventory (CBI; Kristensen, et al., 2007). The CBI consists of three scales: personal burnout, work-related burnout, and client-related burnout. The items adapted from the CBI for this survey instrument

are from the work-related and personal burnout scales. It was determined that the client-related burnout scale would provide little relevancy to this survey as most graduate students are not involved in a client-provider like relationship as part of their graduate studies. The wording of the questions in the work-related scale were adapted slightly by changing the word work to school or school work. A five-point Likert-like scale was used to gather responses from participants. The CBI was developed out of the five-year PUMA (Project on Burnout, Motivation, and Job Satisfaction) study of 1,914 people working in the human service sector. The instrument demonstrated high internal reliability with Cronbach's alphas of (.85 to .87). The CBI has been translated into eight languages and is being used by researchers outside of the United States.

Participants

With around 2,000 graduate students attending NDSU, a response rate of 10% (200) students was expected. After three emails over a period of three weeks in March of 2021, 208 participants responded to the survey. Factoring in the screening questions and participants dropping out after reviewing the first set of survey questions, the data set was comprised of 122 completed surveys.

Recruitment

Graduate students at NDSU were invited via email to participate in this study by completing an online questionnaire (Qualtrics). The graduate student listserve was used to limit the possibility of undergraduate students accessing the survey instrument. Reminder emails were sent one week after the invitation and at two weeks after the original invitation.

The survey started with an explanation that provided greater detail in the purpose of the survey, who was conducting the survey, who to contact with questions regarding the survey, how

the survey data would be maintained and used, and the safeguards that would be used to protect their information. The message explained that there would be no penalties for choosing not to participate or for choosing not to complete the survey. By clicking on the link, graduate students gave their consent to participate.

Screening questions were asked at the start of the survey to screen-out students that were not actively seeking to complete a graduate degree at NDSU. Survey results were reviewed to determine if there were any indications that the survey was completed by unintended participants. There were a total of $n = 120$ useable records.

Demographics

Various basic demographic data were collected, such as gender, marital status, age, and ethnicity. Other academic-related demographic data were also gathered, such as program area, type of graduate degree, and current stage in the program. These data are summarized in the following tables (Tables 3.1 and 3.2).

Table 3.1*General Demographics*

Characteristic / levels	<i>n</i>	Percent
Age (<i>n</i> = 114, <i>M</i> = 30.6, <i>Mdn</i> = 28, <i>SD</i> = 7.8, <i>min</i> = 21, <i>max</i> = 58)		
20 to 29	64	56.1%
30 to 39	34	29.8%
40 to 49	13	11.4%
50 to 59	3	2.6%
Gender (<i>n</i> = 119)		
Male	45	37.8%
Female	64	53.8%
Transgender	2	1.7%
Do not wish to disclose	8	6.7%
Marital status (<i>n</i> = 118)		
Single	56	47.5%
Engaged	10	8.5%
Married	47	39.8%
Separated	2	1.7%
Divorced	3	2.5%
Employment status (<i>n</i> = 118)		
Full-time (36+ hours/week)	50	42.4%
3/4-time (30-35 hours/week)	7	5.9%
Part-time (1-29 hours/week)	42	35.6%
Not employed	19	16.1%
Race/ethnic identity (<i>n</i> = 117)		
American Indian or Alaska Native	2	1.7%
Asian	17	14.5%
Black or African American	3	2.6%
Hispanic or Latino	2	1.7%
White	81	69.2%
Multiple ethnicities	6	5.1%
Do not wish to disclose	6	5.1%

Table 3.2*Academic-Related Demographics*

Characteristic / levels	<i>n</i>	Percent
Graduate degree type (<i>n</i> = 119)		
Master's	63	52.9%
Doctoral	56	47.1%
How many credits are you taking per semester (excluding summer)? (<i>n</i> = 119)		
1 to 6 credits/semester	44	37.0%
7 or 8 credits/semester	23	19.3%
9 to 11 credits/semester	45	37.8%
12 or more credits/semester	7	5.9%
Stage in graduate program (<i>n</i> = 119)		
Coursework	53	44.5%
Preparing for comprehensive exams/portfolio	22	18.5%
Developing dissertation/thesis/creative component	44	37.0%
How do you usually attend or plan to attend class? (<i>n</i> = 119)		
Physical classroom on campus	41	34.5%
Live interactive video network	66	55.5%
Asynchronously online	12	10.1%
How often do you physically visit the campus? (<i>n</i> = 119)		
Live on-campus	12	10.1%
Live off campus and regularly visit campus	52	43.7%
Live off campus and rarely or never visit campus	55	46.2%
Does your graduate program admit students in cohorts? (<i>n</i> = 119)		
Yes	37	31.1%
No	15	12.6%
Not sure	67	56.3%
Do you plan to enroll next semester? (<i>n</i> = 119)		
Yes	95	79.8%
No	24	20.2%
International student (<i>n</i> = 119)		
Yes	18	15.1%
No	101	84.9%

Table 3.2. Academic-Related Demographics (continued)

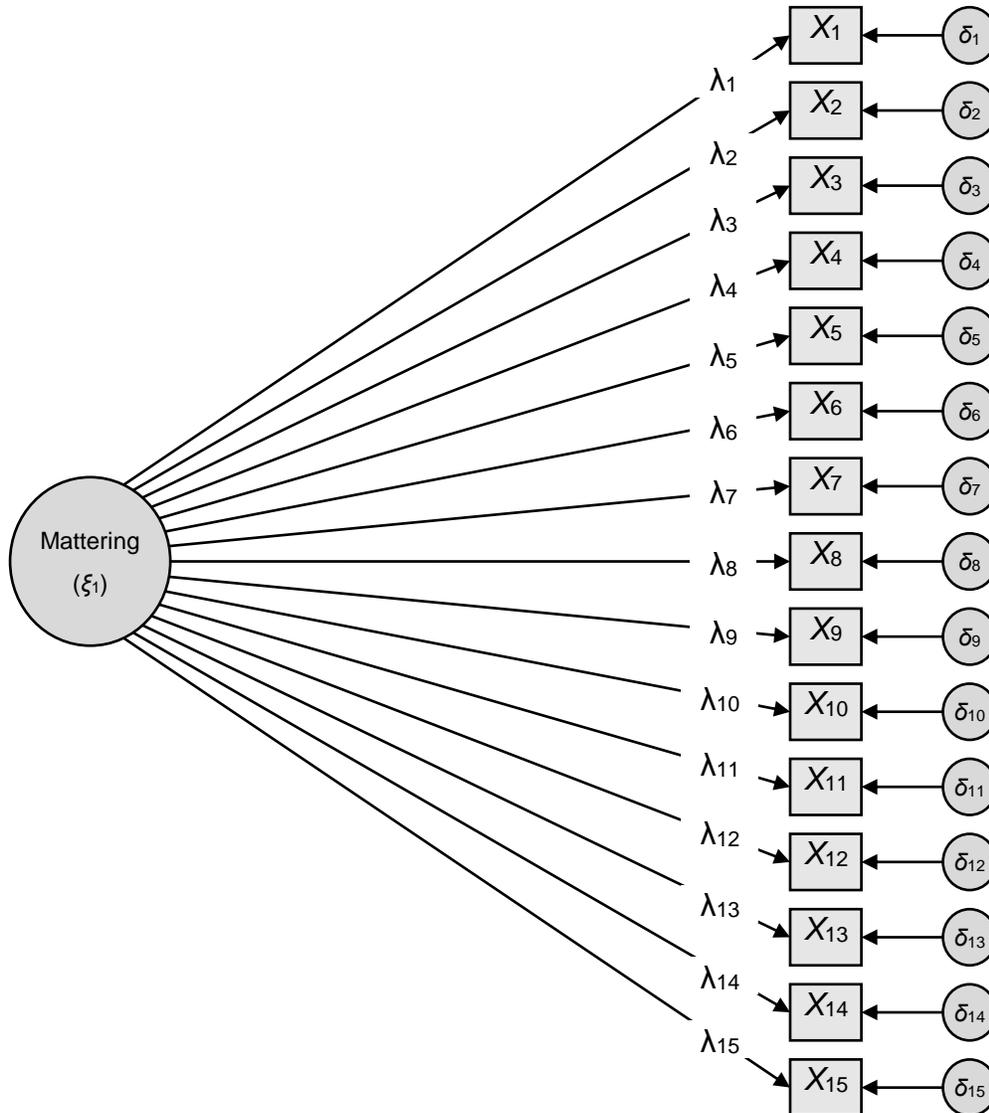
Characteristic / levels	<i>n</i>	Percent
Subject/program area (<i>n</i> = 119)		
Agricultural Sciences	11	9.2%
Allied Health	7	5.9%
Art/Humanities	12	10.1%
Biological Sciences	13	10.9%
Business	6	5.0%
Education	15	12.6%
Engineering	9	7.6%
Mathematics/Computer Science	5	4.2%
Physical Sciences	2	1.7%
Social/Behavioral Sciences	17	14.3%
Multiple areas	22	18.5%

Research Design and Model Specification

The first major part of this study (which corresponds to research question 1) tested the construct validity of France's (2011) single-dimension model in the UMUM-15 instrument applied to graduate students. Hence, relevant data were analyzed using confirmatory factor analysis (CFA). Additionally, Cronbach's alpha was used to assess reliability. The specified measurement model is shown in Figure 3.1.

Figure 3.1

Specified CFA Model for the Mattering Construct



Note. ξ_1 = mattering latent variable (only a single factor in this model); X_j = item j from the UMUM-15 instrument; δ_j = measurement error for item j ; λ_j = factor loading for item j . Although not shown in this diagram, the factor ξ_1 has variance ϕ_1 , and each error term δ_j has variance θ_j . This model implies that each observed variable (item) is directly influenced by the common factor (mattering). The strength of association between the mattering latent variable and each item is the loading, which is in fact a standardized regression weight. So, the observed scores for each item can be considered as a function of the factor and the item's loading: $X_j = \lambda_j \xi_1 + \delta_j$.

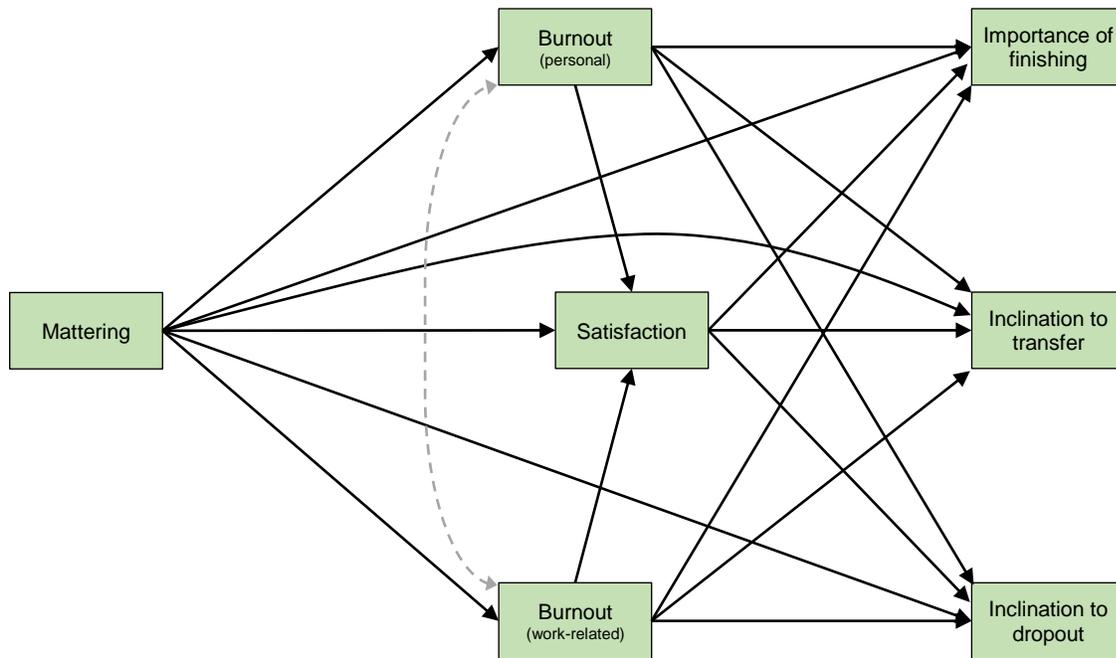
The second major piece of this study (which corresponds to research question 2) focuses on a theoretical model dealing with the causal pathways from graduate-student mattering to

persistence outcomes. This is a mediation model using program satisfaction and burnout (work-related and personal) as the mediators. Hence, path analysis was the primary analytical approach.

The specified model is shown in Figure 3.2.

Figure 3.2

Specified Path Model for the Persistence Outcomes



Note. The dashed path with two arrowheads represents correlated disturbances (residuals). Variables depicted with the “double-bar” boxes are dichotomous.

CHAPTER 4: RESULTS

This chapter provides the detailed results from the data analysis described in Chapter 3. The chapter is organized by the two major analytical approaches used for this study. The first section contains the results for the CFA; the second section contains the results for the path analysis. All analyses were conducted with Stata (release 17).

Demographics

Demographic questions were added to the survey to determine if these variables would affect the level of university mattering for graduate students: gender, program of enrollment, level of graduate study, full or part time status, start of enrollment (month/year), mode of attendance (in-person, via video network or asynchronously online), plans for enrollment in the next semester, term in which they plan to graduate, enrolled as part of cohort, marital status, employment, race/ethnicity, and age. These variables provide information that will allow the formulation of a general graduate student profile and to provide insight into what types of support systems students may have outside of their programs.

The survey was designed using Qualtrics and was piloted by inviting the two subject matter experts and six potential survey participants to take the survey. All eight individuals participated in the pilot. The invitation to participate in the pilot provided a sample email of what might be sent to participants with the link for the actual survey so that they could see what the whole process would look like from start to finish. Pilot participants were asked to answer the survey as a participant might, so that they could gain the best sense of how the items read and whether they made sense or needed to be adjusted or deleted altogether. At the end of the survey, there were additional open-ended questions to gather their feedback. The eight participants in the pilot provided insightful comments on the flow and structure of the survey, the

clarity of the survey questions, and the overall content of the survey questions. The changes that were made to the survey following the pilot were in questions adapted from the SERU and to some of the demographic questions for clarity. The mattering scale remained unchanged to preserve the integrity of the instrument to measure its applicability to a new population of students. The open-ended questions were removed from the final survey instrument to be sent to graduate students.

CFA on the Modified UMUM-15

A confirmatory factor analysis (CFA) using maximum likelihood was conducted on the modified UMUM-15 (see Appendix G for the initial list of items).

Initial Measurement Model

The initial model was a standard CFA model (i.e., no correlated measurement error terms) with a single factor representing the mattering construct (see Figure 3.1). There were $N = 120$ complete and useable records available for this analysis. The goodness-of-fit statistics and the standardized estimates are given in Tables 4.1 and 4.2, respectively.

Table 4.1

Goodness-of-Fit for the Initial Model

Test	Result
Chi-squared	184.052 ^a
RMSEA	0.094
CFI	0.917
SRMR	0.061

^a $df = 90, p < .001$

The chi-squared test was significant ($p < .001$), and the RMSEA and CFI were both outside of the recommended ranges for good fit (Hu & Bentler, 1999). The SRMR was the only

global fit test to indicate an acceptable fit. Despite the relatively poor overall model fit, many of the standardized loadings had salient magnitudes ($\lambda \geq .40$).

Table 4.2

Parameter Estimates for the Initial Model (Standardized)

Parameter	Estimate	SE	z	p	95% CI
#01	0.731	.0449907	16.26	< .001	[0.643, 0.820]
#02	0.855	.0272291	31.41	< .001	[0.802, 0.909]
#03	0.746	.0429444	17.37	< .001	[0.662, 0.830]
#04	0.540	.0669751	8.07	< .001	[0.409, 0.672]
#05	0.800	.0352363	22.72	< .001	[0.731, 0.870]
#06	0.653	.0547253	11.93	< .001	[0.546, 0.760]
#07	0.731	.0448155	16.31	< .001	[0.643, 0.819]
#08	0.827	.0313107	26.42	< .001	[0.766, 0.889]
#09	0.344	.0827106	4.16	< .001	[0.182, 0.506]
#10	0.759	.0410345	18.51	< .001	[0.679, 0.840]
#11	0.820	.0323324	25.37	< .001	[0.757, 0.884]
#12	0.521	.0687763	7.57	< .001	[0.386, 0.655]
#13	0.901	.0202147	44.55	< .001	[0.861, 0.940]
#14	0.793	.0363626	21.81	< .001	[0.722, 0.864]
#15	0.146	.0915432	1.59	.112	[-0.034, 0.325]

Note. All parameters shown are loadings of the items on the mattering factor. The variance of the factor was constrained to 1.0 (UVI).

Model Modifications

There were numerous large modification indices (MIs) resulting from the initial model. While the MIs for the correlated measurement errors of item pairs #02/#03, #06/#10, and #03/#06 were not the largest of all MIs computed, the addition of these three parameters were justifiable on theoretical or practical grounds. A summary of the MI statistics for the parameters added to the model is given in Table 4.3.

Table 4.3*Parameters Added to the CFA Model*

Parameter	<i>MI</i>	<i>p</i>
Corr. error for #02 and #03	15.307	< .01
Corr. error for #06 and #10	10.164	< .01
Corr. error for #03 and #06	9.426	< .01

Note. These three parameters were entered into the model in the order listed.

The survey design may have contributed to the correlated errors by having the scale broke down into three sets of five questions in the survey instrument. The correlated errors occurred in the first and second set of questions with one correlation crossing from the first set of questions to the second set. One of the correlated errors was between two questions that might be in fact measuring a different kind of relationship.

After these parameters were added to the model, a few of the loadings remained relatively weak (as compared to other loadings), and one was even nonsignificant (item #15, $\lambda = .146, p = .112$). Hence, these loadings were omitted from the measurement model (see Table 4.4 for details).

Table 4.4*Parameters Dropped from the CFA Model*

Parameter	Rationale for removal
Loading for #15	Not statistically significant
Loading for #09	Non-salient loading ($\lambda < .40$)
Loading for #04	Relatively weak loading ($\lambda < .60$)

Note. These three parameters were removed from the model in the order listed.

Although item #12 had a slightly smaller loading than item #04 (.521 and .540, respectively), item #12 was ultimately retained (and #04 was removed) as that model had a better global fit (see Table 4.5). The model with #12 (and without #04) had the smaller chi-squared test and Akaike information criterion (AIC) values.

Table 4.5

Global Fit Statistics for Competing Measurement Models

Model	Chi-squared ^a	AIC
With loading for #04, without #12	79.32	3825.623
With loading for #12, without #04	60.50	3795.628

^a The chi-squared tests for both models had 51 degrees of freedom.

In addition, retaining #12 rather than #04 kept an item representing the reliance facet of mattering, which aided content validity. Two of the four reliance-related items were dropped from the measurement model.

Final Measurement Model

After these modifications were implemented, the chi-squared test for global fit was not significant ($p = .170$), and the other tests also indicated a very good global fit (Table 4.6). Further, this modified model had no modification indices greater than 10.

Table 4.6

Goodness-of-Fit for the Final Model

Test	Result
Chi-squared	60.498 ^a
RMSEA	0.039
CFI	0.991
SRMR	0.033

^a $df = 51, p = .170$

A diagram of the final measurement model is shown in Figure 4.1, and the standardized parameter estimates are given in Table 4.7. All standardized loadings are clearly salient with most being greater than 0.7 in magnitude. The smallest loading (item #12, $\lambda = .516$) was still moderately strong. All error correlations were relatively small but statistically significant.

Table 4.7

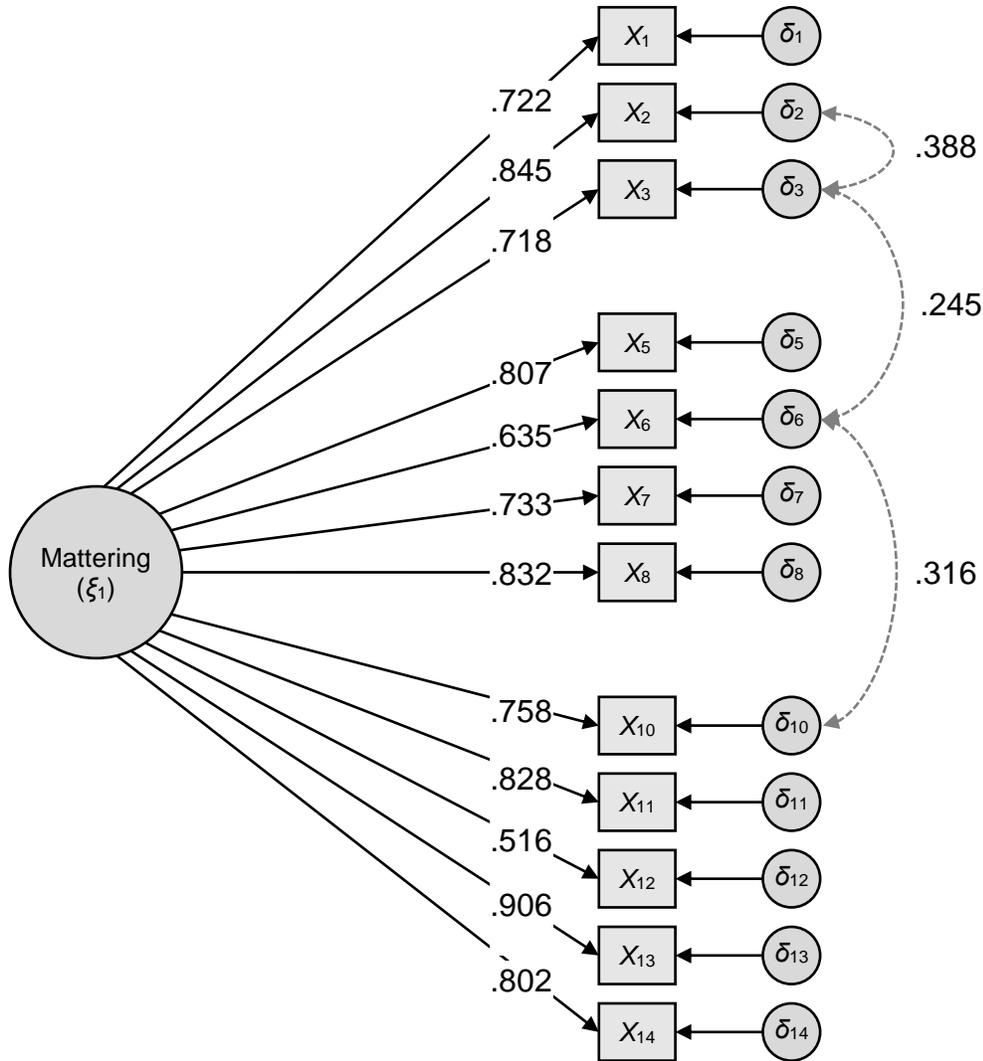
Parameter Estimates for the Final Model (Standardized)

Parameter	Estimate	SE	z	p	95% CI
Loadings					
#01	0.722	0.0463327	15.58	<.001	[0.631, 0.813]
#02	0.845	0.0288439	29.31	<.001	[0.789, 0.902]
#03	0.718	0.0466346	15.40	<.001	[0.627, 0.810]
#05	0.807	0.0344963	23.39	<.001	[0.739, 0.874]
#06	0.635	0.0567565	11.19	<.001	[0.524, 0.746]
#07	0.733	0.0446388	16.42	<.001	[0.645, 0.820]
#08	0.832	0.0307549	27.05	<.001	[0.772, 0.892]
#10	0.758	0.0413359	18.33	<.001	[0.677, 0.839]
#11	0.828	0.0313189	26.44	<.001	[0.767, 0.889]
#12	0.516	0.0691607	7.46	<.001	[0.380, 0.651]
#13	0.906	0.0197437	45.87	<.001	[0.867, 0.944]
#14	0.802	0.0352439	22.74	<.001	[0.732, 0.871]
Measurement error correlations					
#02, #03	0.388	0.0805173	4.82	<.001	[0.230, 0.546]
#03, #06	0.245	0.0750226	3.26	.001	[0.098, 0.392]
#06, #10	0.316	0.0822142	3.84	<.001	[0.155, 0.477]

Note. The variance of the factor was constrained to 1.0 (UVI). $N = 121$.

Figure 4.1

Final Version of the Measurement Model for the Mattering Construct



Note. X_j are items from the instrument, and δ_j are measurement errors. Although not shown in this diagram, the factor ξ_1 has variance $\phi_1 = 1.0$ (UVI). Correlations between two measurement error terms are shown by dashed curves with two arrowheads.

Reliability analysis was conducted on the final measurement model from the CFA, and no additional items were removed. The reliability of this final version of the modified UMUM scale ($k = 12$ items) was very good, Cronbach's $\alpha = .943$.

The final version of this measurement model retained 12 of the original 15 items. The resulting modified instrument is hereafter referred to as the 12-item Graduate Student Unified Measure of University Matting (GSUMUM-12).

Path Model for Persistence-Related Outcomes

A unified path (structural) model was constructed from the composite variables for matting (GSUMUM-12), satisfaction (Brief Overall Job Satisfaction II), personal burnout (subscale of the Copenhagen Burnout Inventory), and work-related burnout (also a subscale of the Copenhagen Burnout Inventory). These composites are summarized in Table 4.8.

Table 4.8

Summary Statistics for the Composite Variables in the Path Model

Composite variable	<i>n</i>	<i>M</i>	<i>SD</i>	<i>Min</i>	<i>Max</i>
Mattering	120	4.42	0.984	1.25	6.00
Satisfaction	119	5.09	1.187	1.40	7.00
Burnout (personal)	120	3.15	0.879	1.00	5.00
Burnout (work-related)	120	2.68	0.853	1.00	5.00

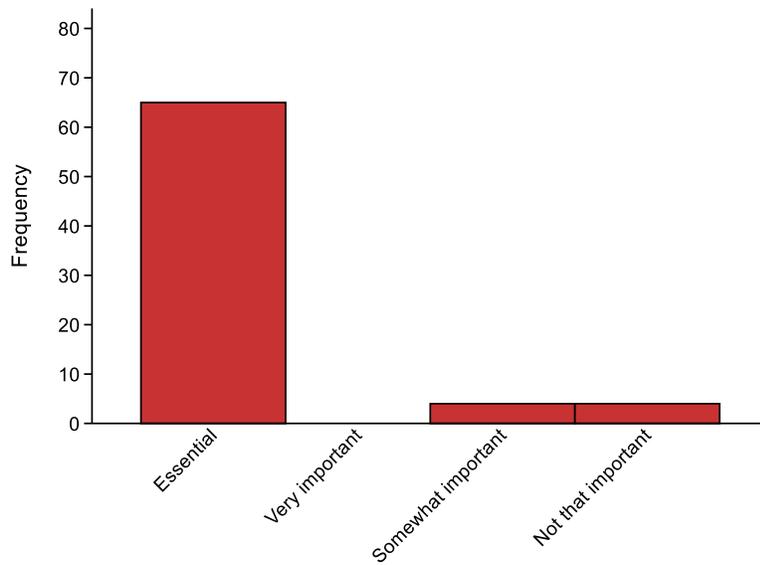
Three persistence-related response variables were also included in the path model. Each of these three variables was measured using a single Likert-type rating scale. The results for each of these are shown in Table 4.9 and Figures 4.2, 4.3, and 4.4. Note that there was a conspicuously greater item nonresponse for the importance-of-finishing question as compared to inclination to transfer and inclination to dropout.

Table 4.9*Frequencies for Persistence-Related Outcomes*

Variable/responses	<i>n</i>	Percent	Cumulative percent
Importance of finishing graduate degree (<i>n</i> = 73)			
Essential	65	89.04%	89.04%
Very important	0	0.00%	89.04%
Somewhat important	4	5.48%	94.52%
Not that important	4	5.48%	100.00%
Inclination to transfer (<i>n</i> = 120)			
Never	80	66.67%	66.67%
Once an academic year	13	10.83%	77.50%
Once a semester	12	10.00%	87.50%
Once a month	11	9.17%	96.67%
Once a week	3	2.50%	99.17%
Once a day	1	0.83%	100.00%
Inclination to dropout (<i>n</i> = 120)			
Never	68	56.67%	56.67%
Once an academic year	13	10.83%	67.50%
Once a semester	15	12.50%	80.00%
Once a month	12	10.00%	90.00%
Once a week	9	7.50%	97.50%
Once a day	3	2.50%	100.00%

Figure 4.2

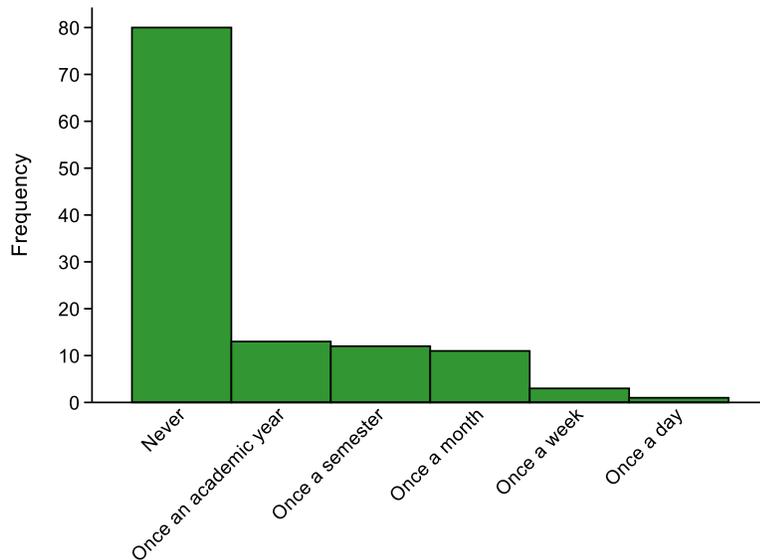
Histogram for the Importance of Finishing Graduate Degree



Note. $n = 73$.

Figure 4.3

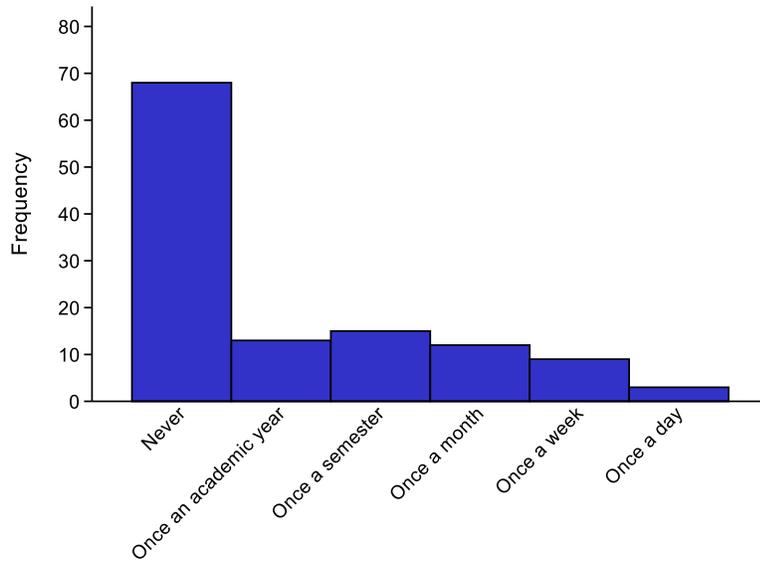
Histogram for the Inclination to Transfer



Note. $n = 120$.

Figure 4.4

Histogram for the Inclination to Dropout



Note. $n = 120$.

Diagnostic and Corrective Operations on the Data

Two issues emerged from the preliminary inspection of the data that could potentially impact the path model. First, all three of the persistence-related outcome variables were clearly not distributed normally. Second, there was still the matter regarding possible biases due to item nonresponse for the importance-of-finishing question.

Transformations of the Persistence-Related Response Variables

The importance of finishing, inclination to transfer, and inclination to dropout were all decidedly nonnormal. Box-Cox transformations of these response variables produced no feasible results. Ultimately, these variables were transformed to dichotomous (binary) data due to their nonnormality. Although dichotomizing a variable does result in some loss of information, this loss should be negligible since the original variables were severely skewed and had attenuated variability.

The transformation procedures for the variables are outlined in Table 4.10. The new importance-of-finishing variable represents the dichotomy essential/not essential. The new inclination-to-transfer variable represents the dichotomy of students who have considered transferring and those who have not, and the new inclination-to-dropout variable represents the dichotomy of students who have considered dropping out and those who have not.

Table 4.10

Transformation Map for the Persistence-Related Outcomes

Variable	Original responses	New binary values
Importance of finishing graduate degree	Essential (1)	1
	Very important (2)	0
	Somewhat important (3)	0
	Not that important (4)	0
Inclination to transfer	Never (0)	0
	Once an academic year (1)	1
	Once a semester (2)	1
	Once a month (3)	1
	Once a week (4)	1
	Once a day (5)	1
Inclination to dropout	Never (0)	0
	Once an academic year (1)	1
	Once a semester (2)	1
	Once a month (3)	1
	Once a week (4)	1

Possible Bias Due to Item Nonresponse

In order to check for possible biases arising from the relatively large proportion of nonresponse to the question regarding the importance of finishing the graduate degree, all participants were divided into two groups based upon the existence or absence of a response to

that item. This nonresponse indicator was then subjected to significance tests with each of the other outcome and demographic variables in this study. In general, there appears to be little evidence of systematic differences between those students who did and did not respond to the importance-of-finishing question. Only two variables were found to have a significant relationship with the nonresponse indicator (Table 4.11). First, the item nonresponse rate for the importance question was much lower for international students (11.1%) than domestic students (43.6%). The other significant relationship was with the dichotomized dropout response. Those reporting no inclination to dropout (30.9%) had a much lower item nonresponse rate to the importance item than those reporting some thoughts of dropping out (50.0%).

Table 4.11

Crosstabs for Variables with a Significant Relationship with Nonresponse on the Importance-of-Finishing Item

Responded to the importance-of-finishing item?	Student citizenship ^a		Inclination to dropout ^b	
	Domestic	International	No thoughts of dropping-out	Some thoughts of dropping-out
No	44 (43.6%)	2 (11.1%)	21 (30.9%)	26 (50.0%)
Yes	57 (56.4%)	16 (88.9%)	47 (69.1%)	26 (50.0%)

Note. Percentages are conditional proportions within columns.

^a Pearson $\chi^2(1) = 6.785, p = .009$

^b Pearson $\chi^2(1) = 4.520, p = .034$

Initial Path Model

Although three endogenous variables from the model have been converted to dichotomous form, the analysis still used a path model. Since the persistence-related response variables are now dichotomous, generalized structural equation modeling (GSEM) must be used.

This is a form of SEM that allows for the inclusion of categorical variables by using the generalized linear model (in this instance, logistic regression).

Model Specification

Theory suggests the path model shown in Figure 3.2. It is unclear if mattering would have a direct effect on the three persistence-related outcomes, so those three direct effects were included in the initial path model. It is reasonable to anticipate correlated disturbances for the two burnout variables. It should also be acknowledged that there could potentially be moderating (interaction) effects for mattering with satisfaction and burnout (work and personal). Ultimately, the parameters for moderating effects were excluded from the model. First, nothing in the literature suggested such differential effects. Secondly, the sample size for this study simply was not large enough to accommodate the addition of the numerous parameters for moderation effects.

Goodness of Fit

There is presently no global “absolute” goodness of fit test for use with GSEM. Only the Akaike information criterion (AIC) is available, and that is a “relative” goodness-of-fit indicator used to compare competing models. The initial path model had an AIC value of 1092.38.

Model Modifications

The eight following parameters (all of which are path coefficients) were dropped from the model due to non-significance: satisfaction to importance of finishing; burnout (work-related) to importance of finishing and inclination to dropout; burnout (personal) to importance of finishing, inclination to dropout, and satisfaction; and mattering to inclination to dropout and inclination to transfer. Note that the direct effect from mattering to inclination to transfer was marginally significant ($p = .052$). No new parameters were added to the model.

Final Path Model

The modified path model produced an Akaike information criteria (AIC) of 1088.062, which indicates a better overall fit than the initial model (AIC = 1092.38). The final parameter estimates are shown in Tables 4.12 and 4.13, and a model diagram is in Figure 4.5. Note that GSEM allows for unstandardized estimates only.

Table 4.12*Final Model Parameter Estimates (Unstandardized)*

Parameter		Estimate	SE	z	p	95% CI
Path coefficients						
Importance of finishing ^a	← Mattering	0.989 ^b	0.341124	2.90	.004	[0.320, 1.658]
Intercept		-1.792	1.269320	-1.41	.158	[-4.280, 0.696]
Inclination to transfer ^a	← Satisfaction	-0.941 ^b	0.262841	-3.58	< .001	[-1.456, -0.425]
	← Burnout (w)	-1.058 ^b	0.465415	-2.27	.023	[-1.970, -0.145]
	← Burnout (p)	1.371 ^b	0.442970	3.09	.002	[0.503, 2.239]
Intercept		2.449	1.861674	1.32	.188	[-1.200, 6.097]
Inclination to dropout ^a	← Satisfaction	-1.299 ^b	0.267265	-4.86	< .001	[-1.823, -0.776]
Intercept		6.334	1.391864	4.55	< .001	[3.606, 9.062]
Satisfaction ^c	← Burnout (w)	-0.550	0.091815	-5.99	< .001	[-0.730, -0.370]
	← Mattering	0.596	0.079596	7.48	< .001	[0.440, 0.752]
Intercept		3.937	0.506025	7.78	< .001	[2.945, 4.929]
Burnout (p) ^d	← Mattering	-0.269	0.077773	-3.46	.001	[-0.421, -0.116]
Intercept		4.333	0.352092	12.31	< .001	[3.643, 5.023]
Burnout (w) ^e	← Mattering	-0.330	0.073200	-4.51	< .001	[-0.474, -0.187]
Intercept		4.143	0.331391	12.50	< .001	[3.494, 4.793]
Covariance of disturbances						
Burnout (p)	Burnout (w)	0.485	0.074492	6.51	< .001	[0.339, 0.631]

Note. The (p) and (w) suffixes for burnout refer to personal and work-related, respectively.

^a Logistic models.

^b Corresponding odds ratios given in Table 4.13.

^c Satisfaction $R^2 = .554$ ($n = 119$)

^d Burnout (personal) $R^2 = .091$ ($n = 120$)

^e Burnout (work-related) $R^2 = .145$ ($n = 120$)

Table 4.13

Odds Ratios for Final Path Model

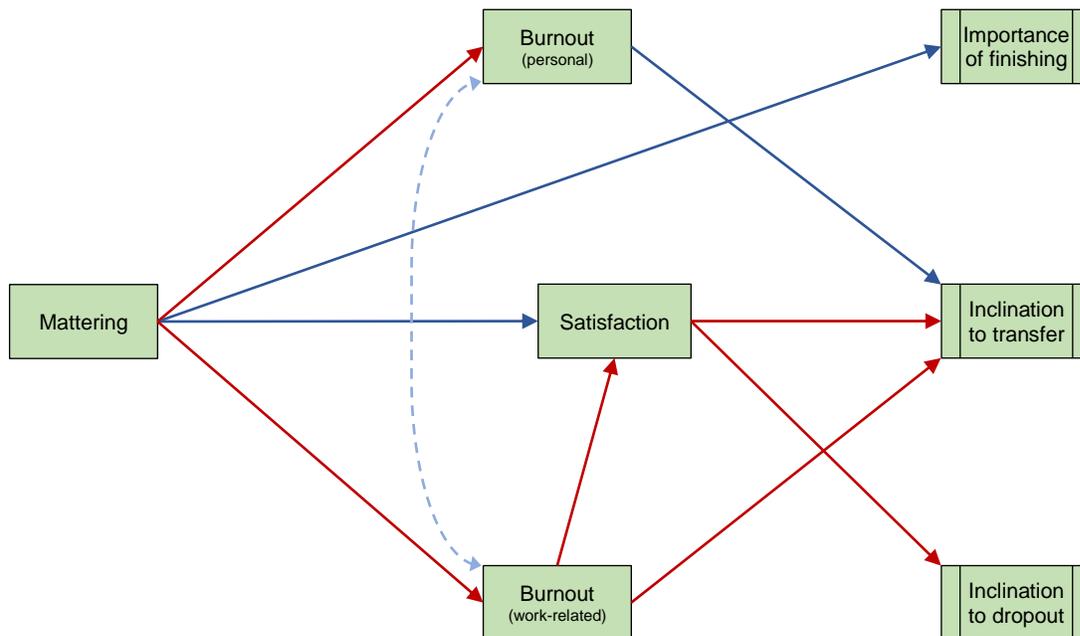
Parameter		Odds ratio	<i>p</i>	95% <i>CI</i>
Importance of finishing	← Mattering	2.689	.004	[1.378, 5.247]
Intercept		0.167 ^a	.158	[0.014, 2.006]
Inclination to transfer	← Satisfaction	0.390	< .001	[0.233, 0.653]
	← Burnout (w)	0.347	.023	[0.139, 0.865]
	← Burnout (p)	3.939	.002	[1.653, 9.385]
Intercept		11.572 ^a	.188	[0.301, 444.705]
Inclination to dropout	← Satisfaction	0.273	< .001	[0.161, 0.46]
Intercept		563.307 ^a	< .001	[36.812, 8619.883]

Note. These odds ratios have the same statistical significance as their counterparts in Table 4.12.

^a For the intercepts, these values represent baseline odds.

Figure 4.5

Final Path Model for the Persistence Outcome Variables



Note. Red path = negative (inverse) relationship, and blue path = positive relationship. The dashed path with two arrowheads represents correlated disturbances (residuals). Variables depicted with the “double-bar” boxes are dichotomous.

The only significant direct effect from mattering to a persistence outcome was for the importance of finishing the graduate degree. This showed that as the mattering score increased, the odds of a graduate student reporting that finishing was essential increase by a factor of roughly 2.7 (i.e., there was a 170% increase in the likelihood of an “essential” response). While mattering had no direct effects on either inclination to transfer or inclination to dropout, it did have an indirect effect on both through satisfaction and burnout (personal and work-related). Table 4.14 shows the estimates for these total indirect effects. The odds ratio for the indirect effect from mattering to inclination to transfer ($OR = 0.472$) suggests that the chances of any consideration of transferring decrease by more than 50% for each one-point increase in mattering. Similarly, the odds ratio for the indirect effect from mattering to inclination to dropout ($OR = 0.364$) indicates the chances of considering dropping-out decrease by more than 60% for every one-point increase in mattering.

Table 4.14

Total Indirect Effects from Mattering

Pathway	Estimate	SE	z	p	95% CI
Inclination to transfer ← Mattering	-0.750 ^a	0.2058563	-3.64	< .001	[-1.154, -0.347]
Inclination to dropout ← Mattering	-1.010 ^b	0.2345995	-4.31	< .001	[-1.470, -0.550]

a Odds ratio = 0.472.

b Odds ratio = 0.364.

Note that both total indirect effects reported in Table 4.14 are composites of elemental indirect pathways. The total indirect effect from mattering to inclination to transfer was composed of the following four specific indirect pathways:

- Transfer ← satisfaction ← mattering
- Transfer ← burnout (p) ← mattering

- Transfer ← burnout (w) ← mattering
- Transfer ← satisfaction ← burnout (w) ← mattering

The total indirect effect from mattering to inclination to dropout was composed of the two following specific indirect pathways:

- Dropout ← satisfaction ← mattering
- Dropout ← satisfaction ← burnout (w) ← mattering

CHAPTER 5: DISCUSSION

Does mattering really matter to graduate students? I was led to this question through my experiences as a graduate student. In the first session with my cohort, a faculty member told us to look around the room and then stated that half of us would not complete the program. I was a bit shocked by that statement. The first meeting should be about getting the graduate students excited about the new learning journey they were embarking upon. Instead, the message was that half of us would fail. I think we all took that as a challenge that night as I believe no one from my cohort has dropped out of the program and many have already completed their degree. The faculty member that made the statement predicting half of us would dropout was my first advisor. For the first three years that I was in the graduate program, he did not recognize me when he passed me in the hall. We exchanged emails once a semester to confirm the next class I was going to take. I am a determined person and once I start something I am going to finish it, but the lack of real meaningful interactions with my advisor had me very concerned with my ability to make it through the dissertation process. When a cohort member invited me to join her in exploring mattering as part of a survey research class project, it was like I found the answer I had been searching for in relation to my experience thus far as a graduate student.

Mattering does matter to graduate students! In fact I think it is a critical element in the environment needed to successfully support graduate students through the scholarly journey to a doctorate. While graduate students are more mature than undergraduate students and have successfully completed an undergraduate degree, the journey of the graduate student is very different than undergraduate scholarship and the hurdles and challenges of scholarly work require a caring community in which the graduate student feels supported. The need to feel like you matter does not have an age limit (Schlossberg, 1989).

The development of a scholar is apprenticeship (Walker, 2008). The mentor and mentee relationship in apprenticeship allows for growth and development in a supportive environment. Feelings of mattering to your mentor, to your peers, and other members of the academic community provides the foundation for growth and development. When there is a lack of mattering, graduate students feel disconnected and unsupported by the community they are trying to become a part of. This lack of mattering leads to dissatisfaction with their program and burnout. Students who feel like they do not matter may exhibit negative behaviors to make the academic community aware of them or they begin to withdraw and/or disengage from the academic community (Flett, 2018; Rosenberg and McCullough, 1981). The final GSEM path model demonstrated that mattering does influence (directly or indirectly) the three persistence variables of importance to finish, inclination to transfer, and inclination to dropout. Ultimately, the students who feel like they do not matter leave the institution and become part of the 50% that starts, but does not finish their degree (Wao, 2010).

Research Question 1

Is France's (2011) Unified Measure of University Mattering (UMUM-15) survey (based upon a unidimensional model) a valid instrument for measuring mattering with graduate students? France (2011) developed the UMUM-15 in an extensive study with undergraduate students while studying the differences in mattering between transfer students and native students (started at JMU and had not attended any other institution). This study looked at using the UMUM-15 with another sub-population (graduate students) of the overall student population in the United States. Graduate students make up 14.9% of the total overall student population (National Center for Education Statistics, 2020). The analysis conducted through the CFA

demonstrated that the UMUM-15, with a few modifications, was a valid tool in measuring mattering in graduate students.

Overall, the 15-question scale of France (2011) demonstrated a relatively poor model fit with the data from the survey of NDSU graduate students. The SRMR was the only fit test within the recommended ranges. The CFA demonstrated that three questions were not significant to measuring mattering with this graduate student population. A strong model fit (chi-squared was nonsignificant at $p = .170$) was achieved when the three questions were removed from the analysis. The removed questions “No one in my degree program at NDSU depends on me” and “If I were not an NDSU graduate student, the people in my degree program at NDSU would suffer” were used to measure the reliance facet in the versions of the mattering scales created by France (2011). The removed question, “When I have a problem, people in my degree program at NDSU usually don’t want to hear about it” was used to measure the importance facet in France’s (2011) scale. A fourth question designed to measure reliance, “My contributions to my degree program benefit the people in my degree program at NDSU”, was considered for removal. France’s (2011) scale included four questions to measure the reliance facet and it was determined that since two reliance facet questions had already been removed from the survey, this third reliance facet question with limited influence in the overall model would be retained. There appears to be an overall lack of significance in reliance designed questions in the UMUM-15 survey with graduate students.

Along with the lack of significance for reliance questions, one of the reliance facet designed questions demonstrated correlated error terms with two other questions. The reliance question “Often, people in my degree program at NDSU trust me with things that are important to them” had a correlated error with the ego-extension facet question of “There are people in my

degree program at NDSU who react to what happens to me in the same way they would if it happened to them”. The other question the reliance facet question had a correlated error with was the awareness facet question “The people in my degree program are usually aware of my presence”. A third correlated error was between two ego-extension questions of “There are people in my degree program at NDSU who react to what happens to me in the same way they would if it happened to them” and “My successes are a source of pride to the people in my degree programs at NDSU”.

While the facets are closely related, the survey design may have contributed to the correlated errors by having the scale broke down into three sets of five questions in the survey instrument. Each set of five questions had the same set of instructions that included the following paragraph.

Below are a series of statements that represent feelings toward NDSU. Think about your relationships with the people in the university community and indicate the degree to which each statement is aligned with your relationships. When you respond to these statements, do not think of specific others at your university; rather, try to focus on NDSU in general as an entity or whole community. **By “community” we mean students, faculty, advisor, administrators, and staff. Think of all these people as a whole when responding to these items.** There are no right or wrong answers. Just answer as honestly as possible based on your role as a graduate student at NDSU. Not all students feel the same way or are expected to feel the same way.

The correlated errors occurred in the first and second set of questions with one correlation crossing from the first set of questions to the second set. One of the correlated errors was between two questions that might be in fact measuring a different kind of relationship. In the correlation between the questions “Often, people in my degree program at NDSU trust me with things that are important to them” and “There are people in my degree program at NDSU who react to what happens to me in the same way they would if it happened to them”, the questions may in fact be measuring belonging. Baumeister and Leary (1995) defined belonging as “a need to form and maintain at least a minimum quantity of interpersonal relationships” (pp. 499). To

build this sense of belonging, Baumeister and Leary (1995) stated that frequent and positive personal contacts are required. These two questions are written in a way that a person would think of a strong emotional connection with another person, such as with a good friend. A feeling of mattering does not require deep interpersonal connections or frequent interactions (Elliott, 2009).

The finding of three nonsignificant questions and three correlated errors supports France's (2011) conclusion that the four facets are so closely related that one simplified measure can be used to measure mattering. After removing the three nonsignificant questions and adding in parameters for the correlated errors, the resulting survey had good model fit. The new survey tool has been named the Graduate Student Unified Measure for University Mattering-12 (GSUMUM-12).

While the close correlation of the four facets may explain why the three reliance questions performed poorly in the model to create a statistically sound instrument, I would propose that the current question design does not measure the reliance facet of mattering with graduate students. This stems from the differences in undergraduate and graduate scholarship. In undergraduate scholarship, students are learning accepted theories from various academic fields and developing practical skills. Graduate scholarship is designed to question the established rules, test new hypotheses, and develop new truths. Graduate student scholarship explores the gray areas of ambiguity. Graduate students are exploring various topics across a broad spectrum of disciplines. While undergraduate students can gather in study groups and support each in learning the required materials, every dissertation presented by a graduate student is unique. Often the peers of a graduate student have limited familiarity with the area of research being explored and the type of support that is provided is often not related to the topic

of study, but rather a recognition of similar hurdles to be overcome. Undergraduate students are involved in a variety of campus activities outside the classroom while graduate students tend to have limited participation in on-campus, non-academic activities. Offerman (2011) noted how many graduate students are older, working full-time while attending part-time, and are married with children while undergraduates still tend to be single, under 24, and attending full-time (U.S. Department of Education, 2019). The demographic profile of survey participants described in chapter three shows that the NDSU graduate student population that participated in this survey have many of the characteristics described by Offerman (2011). In reading the reliance questions, undergraduates would think about their experiences on teams, in clubs, and working on campus when responding to the survey. Participants in this survey read the reliance questions through a different lens than undergraduate students.

Research Questions 2

The second piece of this study revolves around a theoretical model of causality involving mattering, burnout, program satisfaction, and persistence. This piece is addressed through two sub-questions. *Research Question 2a: Does mattering have direct influences on program satisfaction, burnout, and persistence with graduate students? Research Question 2b: Does mattering have an indirect influence on persistence with graduate students (using program satisfaction and burnout as mediators)?* A GSEM analysis was conducted to develop a path model to show the influence of mattering on satisfaction, burnout (personal and work), the importance to finish, the inclination to transfer, and the inclination to dropout as this dissertation has presented the theoretical model that mattering is the underlying predictor of the previously listed variables.

When reviewing the data, it was discovered that 47 participants skipped over the question used to measure the importance of finishing at NDSU. Along with the large number of participants not responding to the question regarding the importance of finishing their graduate degree at NDSU, it was found that the three persistence questions (importance to finish, inclination to transfer, and inclination to dropout) had nonnormal distributions and little variation in responses. After exploring several options to transform the data for these three responses, the data was transformed from ordinal to dichotomous. Development of a separate path model for the importance to finish at NDSU variable was considered, but it was determined that it would be more appropriate to use the GSEM analysis that is able to incorporate varying response rates and dichotomous data allowing all of the variables from the original model to be analyzed at once.

Research Question 2a. The final path model demonstrated mattering had a direct positive relationship to the importance of finishing at NDSU. Burnout and satisfaction do not influence the importance to finish. While mattering directly influences both satisfaction and burnout, mattering does not have a path to the importance of finishing through burnout and satisfaction. The odds ratios demonstrated that for each one point increase in feelings of mattering a graduate student was 2.7 times as likely to feel that it was important to finish at NDSU. This finding is supported by the research of Schlossberg, et al. (1989) that described university mattering as developing a student's sense of loyalty to the institution. If you feel like you matter to the people in your degree program, the desire to complete your degree at that institution grows. Not finishing would mean disappointing the people in your program that care about you. Your success matters to your academic community. One could infer that the students that skipped the importance of finishing at NDSU question were exhibiting less loyalty to the institution due to weaker feelings of mattering.

Research Question 2b. While mattering has a direct relationship with importance to finish at NDSU, mattering has an indirect influence on inclination to transfer and inclination to dropout through the variable of satisfaction. As the feeling of mattering increases so does satisfaction and as satisfaction increases the inclination to transfer or dropout decreases. When looking at the odds ratios of the indirect effects (through the mediators of satisfaction and burnout) of mattering on the persistence outcomes, for each one point increase in mattering the odds of being inclined to transfer decrease by 52.8% and the odds of being inclined to dropout decrease by 63.6%.

It is a bit surprising that mattering does not directly affect the persistence outcomes of inclination to transfer and the inclination to dropout, as research on undergraduate mattering supports a direct relationship between mattering and persistence (Astin, 1982; Rosenberg & McCullough, (1981); Schlossberg, 1989; Schlossberg, et al., 1989; Tinto, 1987). Rosenberg and McCullough (1981) described how when there is a lack of feeling like one matters it leads to behaviors that are negative or socially unacceptable. A person may act out, be absent often or simply leave the institution. This difference in mattering directly influencing the inclination to transfer and dropout may be explained by the fact that this study is one of the few studies that has included the variable of satisfaction in a mattering survey. Satisfaction was added to this survey due to the nature of the student population to be surveyed. Graduate students are typically more mature than undergraduate students (Offerman, 2011; U.S. Department of Education, 2019). The average age of the graduate students that participated in this study was 30.6. Graduate students are routinely weighing costs and benefits as they balance work, family, and graduate school. Of the graduate students that participated in this survey, 52.5% reported being engaged, married, separated or divorced. Satisfaction would bring in a variety of other

variables that graduate students may be experiencing so that mattering becomes one of many factors influencing the overall satisfaction with their programs.

While the relationship between mattering and satisfaction aligned with developed theory, the relationship between mattering to burnout (both personal and work) did not fully align with accepted theory. Mattering theory supports the finding that mattering has a negative relationship with burnout. As students' feelings of mattering increase, their feelings of burnout decrease. The final model aligns with this theory as mattering demonstrated a negative relationship with burnout (personal) and burnout (work). The influence of burnout (both work and personal) was not as strong as expected in the final model. Burnout (work) has a negative relationship with the inclination to transfer and no relationship with the inclination to dropout. Burnout (work) has to go through satisfaction to influence the inclination to dropout. Burnout (personal) has a positive relationship with the inclination to transfer and no relationship with satisfaction or the inclination to dropout. The model showed that burnout (personal) and burnout (work) are closely correlated, which is not surprising as the questions were taken out of the Copenhagen Burnout Inventory (CBI; Kristensen, et al., 2007). The third scale of burnout (client) from the CBI was not included in this survey, as most graduate students are not experiencing a client type relationship as part of their degree programs.

In thinking about the unexpected paths for burnout, I paused to reflect on my own experience and I can relate to these finding. I started my doctoral journey in the summer of 2013. After attending graduate school for eight years, I have experienced feelings of burnout. While taking one class per semester allowed for balancing work, family, and school, it has made it a long journey. Most of my cohort members have been awarded their doctoral degrees. While I do feel burnout at times, my sense of mattering does damper the feeling of burnout. I know

there are people in the Education Doctoral Program supporting me. While am I tired of being a graduate student at times, I will not quit until this degree is done. My sense of burnout is not leading to an inclination to transfer or dropout or lessening my satisfaction with my program. I believe much like satisfaction, the maturity of the graduate students is influencing the burnout paths (Offerman, 2011; U.S. Department of Education, 2019). Of the graduate students who participated in is this survey, 42.4% were working full-time with 35.6% working part-time while attending graduate school. As working professionals with families and educational goals, graduate students are always dealing with a level of burnout either work or personal. Graduate students are balancing many variables in their lives and it would take a very complex model to fully understand everything that influences graduate students on their doctoral journey.

The Need to Matter

Another element that may be underlying the reason for students skipping the importance to finish at NDSU question is the concept of the need to matter developed by Hopkins (2021) in her dissertation *Developing a Measure of Need to Matter*. Would fewer participants have skipped the importance of finishing their degree question if “from NDSU” had been left out of the question? In reading Hopkin’s (2021) dissertation, I reviewed the overall structure, layout and responses to this survey with the concept of the need to matter as my lens. Over 200 participants clicked on the link to complete the survey and 170 accessed the survey after passing the two screening questions. Upon reading the first set of mattering questions, 34 or 20% opted to stop. Could that have been a reflection of their need to matter? A participant with a low need to matter may be more likely not to complete a survey focused on mattering in their graduate program. At the end of the first set of mattering questions, the number grew to 27% opting not to complete the survey. At the end of the second set of mattering questions, the percentage grew

to 28%. Survey fatigue is always a concern and it is normal that participants stop-out while taking surveys, but I found it interesting that all of the participants that completed the three sections of the mattering scale completed the rest of the survey that contained three persistence questions, a five question satisfaction scale, a 13 question burnout scale, and 16 demographic questions. This survey may be measuring feelings of mattering in a participant group with a high need to matter.

Future Research

The resulting survey tool, the GSUMUM-12, needs to be tested with other graduate student populations to confirm its reliability in measuring mattering among graduate students. This tool was designed for graduate students in that the wording of the UMUM-15 was changed to read “my degree program at *institution name*” instead of simply “at *institution name*” as a reflection of the demographic differences between undergraduate and graduate students (Offerman, 2011; U.S. Department of Education, 2019). Graduate students who are working full-time while balancing family and school commitments may have little interaction with university community members outside of their degree programs. When comparing the Goodness-of-Fit tests for the GSUMUM-12 and the UMUM-15 (France, 2011), the two surveys performed well and demonstrated similar model fit. The CFI for the GSUMUM-12 was 0.991 while France (2011) reported as CFI of 0.98 for the UMUM-15. The SRMR was 0.033 and 0.04 respectively while the RMESA was 0.039 and 0.06. Reliability of the GSUMUM-12 had a Cronbach’s $\alpha = .943$ while France (2011) reported .91 and .92. France’s research sample was divided into two groups for comparison of mattering between transfer students and students that had only attended JMU

Another area for future research that was highlighted by the findings of this study relates to a deeper exploration of the relationship between mattering and satisfaction. For graduate students working full-time and attending graduate school, there is often a professional/job related motivation to attending graduate school. Graduate school becomes part of their job/professional environment leading to the idea of workplace satisfaction and burnout to be considered when exploring mattering. Mattering affecting persistence indirectly (the inclination to transfer and the inclination to dropout) through burnout and satisfaction is a significant finding of this study as the studies of burnout and satisfaction (Boren, 2013; Harde et al, 2019; Peltonen et. al, 2017) in graduate student attrition have not factored in mattering as a determinant leading to burnout or satisfaction.

A third line of future research could be followed as a result of the direct relationship between mattering and the inclination to transfer being on the margin of significance ($p = .052$). Future applications of the GSUMUM-12 with other graduate student populations may demonstrate that there is a direct relationship between mattering and the inclination to transfer. A direct path between mattering and inclination to transfer would align with research on undergraduate mattering supporting a direct relationship between mattering and persistence (Astin, 1982; Rosenberg & McCullough, 1981; Schlossberg, 1989; Schlossberg, et al., 1989; Tinto, 1987).

In reflecting upon the design of the employment question, a fourth line of future research emerged. The question was written to measure the amount of time graduate students were working while attending graduate school. The question did not gather any information to differentiate between working externally (off-campus) and working internally (on-campus) in a position such as a graduate assistantship. Graduate students working on-campus while attending

graduate school would interact with a greater variety of people within the NDSU community than would graduate students working for a private business or at another academic institution. This increased interaction within the NDSU community may have resulted in Graduate Assistants having stronger feelings of mattering than participants that worked full-time or part-time outside of the NDSU community.

Finally, the relationship between mattering and satisfaction is a positive relationship and the theoretical framework of university mattering has focused on the positive relationships between feelings of mattering and student behaviors like engagement, motivation, and involvement that lead to persistence (Astin, 1982; Rosenberg & McCullough, 1981; Schlossberg, 1989; Schlossberg, et al., 1989; Tinto, 1987). Would future research show that the lack of mattering leads to burnout and dissatisfaction, which creates behaviors in students that diminish student engagement, participation, retention, and completion? A place to begin this future research aligns with the work of Flett (2108) and his concept of antimattering causing the internalization of negative feelings resulting in behaviors that lead to disengagement. Antimattering flows through satisfaction and work burnout to increase the likelihood that a student will transfer or dropout. An internalization of negative feelings due to antimattering aligns with the elements of burnout: emotional exhaustion, cynicism, and lack of personal accomplishment (Boren, 2013).

Possible Limitations

While this study may indicate how important mattering is to graduate students at NDSU, the study has limited generalizability. The graduate student population at NDSU does not reflect some of the demographic characteristics of the overall graduate student population in the United States, especially in terms of diversity. Of the graduate students that participated in this survey,

69.2% reported being White. This survey is a first step in exploring if undergraduate theories of mattering are applicable to the graduate student experience. For there to be greater generalizability, this survey would have to be administered to graduate students attending universities across the country.

Along with the limited generalizability of the study, the participants in this survey were all currently enrolled graduate students at NDSU. This is not unusual as mattering surveys conducted with undergraduate students have been conducted with enrolled students. By limiting survey participants to enrolled students are we missing a large piece of the picture in mattering and its influence on student retention? Would surveys of students who withdrew show that a lack of mattering influenced their decision to dropout? Would students that recently graduated show that mattering influenced them in finishing their degrees? It is challenging to reach students who have withdrawn as they have no loyalty to the institution that would entice them to complete a survey. Contact information for withdrawn students and graduates of the institution becomes dated and no longer an accurate method of reaching these former students. While it would be challenging to achieve a sample population that included enough responses from withdrawn students, currently enrolled students, and graduates of the institution, it could generate an enlightening picture of mattering and the student experience.

Finally, the 47 participants that did not respond to the importance to finish at NDSU question may have biased the results. It is unknown if the survey design caused the participants to miss the question or if the participants purposefully did not respond. The bias analysis conducted demonstrated that two variables, citizenship status and the inclination to dropout, had a significant relationship with the nonresponse to the importance to finish question. For international students, 11.1% did not respond while 43.6% of domestic students did not respond.

For graduate students with some thoughts of dropping out, 50.0% did not respond while for students that had no inclination to dropout, 30.9% did not respond. The low rate of nonresponse for international students may be a reflection of motivation in enrolling in a graduate program at NDSU. International students make large sacrifices, personally and financially, to attend an American university. These sacrifices may lead to a stronger motivation or a greater sense of importance in finishing their degrees. Domestic students may not need to complete their degrees to advance professionally. Skills acquired through certain courses may create new opportunities for them professionally. The importance of finishing a degree may not be a factor influencing a student that is considering dropping out, so it is not unusual that these students may have chosen to skip over an importance to finish question. The nonresponse rate for students that had no inclination to dropout was quite high at 30.9%, which leads to the consideration that there was a design flaw in the survey layout or the survey question that is contributing to nonresponse rates.

Application

What is the practical application of the concept of mattering to the graduate student experience? As I have noted, my program of study was the Educational Doctoral Program (EDP) in which students are enrolled in cohorts. The faculty in EDP purposefully build communities of care for graduate students inside and outside of the classroom and I believe enrolling students in cohorts is a key part of building a strong, caring, academic community. Of the participants in this survey, 56.3% responded “not sure” to the question “Does your program admit students in cohorts” and another 12.6% responded “no”. I would encourage graduate programs at NDSU to grow the cohort model for enrolling graduate students. While I lagged behind some in my cohort in finishing the dissertation process, others in my cohort are still working through that process. We cheer for each other as each one of us completes the journey.

Together, we are saying we are not going to be part of that 50%. We are going to beat that statistic.

With each academic year, as graduate students move at their own pace through their program, there are fewer and fewer students from your cohort in the classes you are taking, but this does not have to lead to a diminishing sense of mattering. There are faculty within the EDP that purposefully create opportunities within their classes to grow a new “cohort” out of each of their classes. Mattering develops out of positive interactions between people, which creates connections. I would encourage faculty to break down the barriers between open, respectful interaction and communication within their classes. Graduate students may be hesitant to take the first steps in building these connections, but once they experience the synergy that is created from such an experience they will yearn to create those connections in all of their interactions within the program. These positive interactions and communications between students and between students and faculty increases feelings of mattering for everyone.

Summary

This study showed that mattering is a conceptual framework that is applicable to the graduate student population. While the GSUMUM-12 needs to be tested with other samples of graduate students to confirm reliability and could possibly be refined by redesigning the reliance facet questions, this study showed that the GSUMUM-12 is a promising survey instrument for exploring mattering and its influence on graduate student persistence. In the unique atmosphere of apprenticeship in graduate scholarship, mattering creates an environment of caring support for graduate students as they travel along the path to becoming a scholar.

REFERENCES

- Astin, A. W. (1984). Student involvement: A developmental theory for higher education. *Journal of College Student Personnel*, 25(4), 297-308.
- Baumeister, R. F. & Leary, M. R. (1995). The need to belong: Desire for interpersonal attachments as a fundamental human motivation. *Psychological Bulletin*, 117, 497-529.
- Bean, J. P. (1981). *The application of a model of turnover in work organizations to the student attrition process. Air Forum 1981 Paper* [Washington, D. C.]: Distributed by ERIC Clearinghouse. <https://eric.ed.gov/?id=ED205151>
- Blazie, A., "Mattering and marginality: students with disabilities at Rowan University" (2013). *Theses and Dissertations*. 375. <https://rdw.rowan.edu/etd/375>
- Boren, J. P. (2013). Co-rumination partially mediates the relationship between social support and emotional exhaustion among graduate students. *Communication Quarterly*, 61(3), 253–267. <https://doi.org/10.1080/01463373.2012.751436>
- Borkowski, N. A. (2006). *Changing our thinking about assessment at the doctoral level*. In P.L. Maki and N. A. Borkowski, (Eds.). (2006) *The assessment of doctoral education: Emerging criteria and new models for improving outcomes* (pp. 11-51). Stylus Publishing.
- Brown, B. (2015). *Daring greatly : how the courage to be vulnerable transforms the way we live, love, parent, and lead*. Avery.
- Brown, B. (2017). *Braving the wilderness : the quest for true belonging and the courage to stand alone* (First edition). Random House.

- Burns, K. (2010). Community college student success variables: A review of the literature. *Community College Enterprise*, 16(2), 33-61.
- Butcher, J. L. (1997). *Involvement and persistence: Nontraditional student perceptions of the student-college relationship* (Order No. 9819077). Available from ProQuest Dissertations & Theses Global. (304377518).
<https://ezproxy.lib.ndsu.nodak.edu/login?url=https://search-proquest-com.ezproxy.lib.ndsu.nodak.edu/docview/304377518?accountid=6766>
- Cassuto, L. (2013). Ph.D. Attrition: How Much Is Too Much? Retrieved September 24, 2016, <http://www.chronicle.com/article/PhD-Attrition-How-Much-Is/140045/>
- Cattell, J. (2017). *Commuter student and residential student mattering in an honors concentration* (Order No. 10638136). Available from ProQuest Dissertations & Theses Global. (2007550948). <https://ezproxy.lib.ndsu.nodak.edu/login?url=https://search-proquest-com.ezproxy.lib.ndsu.nodak.edu/docview/2007550948?accountid=6766>
- Clegg, J. W. (2006). A phenomenological investigation of the experience of not belonging. *Journal of Phenomenological Psychology*, 37, 53-83.
- Cooke, D. K., Sims, R. L., & Peyrefitte, J. (1995). The relationship between graduate student attitudes and attrition. *The Journal of Psychology*, 129(6), 677-688.
- D'Angelo, C., "An evaluation of graduate students' perceptions of mattering at Rowan University" (2010). *Theses and Dissertations*. 8. <https://rdw.rowan.edu/etd/8>
- Dahan, J. D., "Military veterans in higher education: application of adult development theories to selected Rowan University undergraduate veterans" (2008). *Theses and Dissertations*. 767. <https://rdw.rowan.edu/etd/767>

- Diaz, A. (2017). *Yo importo: The Latina/o students' experience at rowan university* (Order No. 10603788). Available from ProQuest Dissertations & Theses Global. (1946186313).
<https://ezproxy.lib.ndsu.nodak.edu/login?url=https://search-proquest-com.ezproxy.lib.ndsu.nodak.edu/docview/1946186313?accountid=6766>
- Ditzel, L., "Do LGBTQIA Rowan students matter? Marginality and mattering in Rowan University's LGBTQIA undergraduate population" (2019). *Theses and Dissertations*. 2666. <https://rdw.rowan.edu/etd/2666>
- Dixon Rayle, A. (2005). *The Interpersonal and General Mattering Assessment*. Unpublished instrument, Arizona State University, Tempe, AZ.
- Dixon Rayle, A. & Chung, K. (2007). Revisiting First-Year College Students' Mattering: Social Support, Academic Stress, and the Mattering Experience. *Journal of College Student Retention: Research, Theory & Practice*, 9, 21-37.
- Dixon, S. K. & Robinson Kurpius (2008). Depression and college stress among university undergraduates: Do mattering self-esteem make a difference? *Journal of College Student Development*, 49, 412-424.
- Elliott, G. C. (2009). *Family Matters: The Importance of Mattering to Family in Adolescence*. Wiley-Blackwell.
- Elliott, G., Kao, S., & Grant, A. M. (2004). Mattering: Empirical validation of a social-psychological concept. *Self and Identity*, 3(4), 339-354.
- Flett, G. L. (2018). *The psychology of mattering: understanding the human need to be significant*. Academic Press, an imprint of Elsevier.

- France, M. K. (2011). *Introducing the Unified Measure of University Mattering: Instrument development and evidence of the structural integrity of scores for transfer and native students* (Doctoral dissertation, James Madison University).
- France, M. K. & Finney, S. J. (2009). What matters in the measurement of mattering: A construct validity study. *Measurement and Evaluation in Counseling and Development*, 42, 104-120.
- France, M. K., & Finney, S. J. (2010). Conceptualization and utility of university mattering: A construct validity study. *Measurement and Evaluation in Counseling and Development*, 43, 48-65.
- Gardner, S. K. (2007). "i heard it through the grapevine": doctoral student socialization in chemistry and history. *Higher Education*, 54(5), 723-740.
- Gardner, S. K., & American Association for Higher Education. (2009). The development of doctoral students: phases of challenge and support (Ser. Ashe higher education report, v. 34, no. 6). Jossey-Bass.
- Girves, J. E., & Wemmerus, V. (1988, March/April). Developing models of graduate student degree programs. *The Journal of Higher Education*, 59 (2), 163-189.
- Gomez, D. M. (2009). *ACT 101 programs as learning communities: Using the construct of mattering to enhance higher education service delivery* (Order No. 3338567). Available from ProQuest Dissertations & Theses Global. (305159533).
<https://ezproxy.lib.ndsu.nodak.edu/login?url=https://search-proquest-com.ezproxy.lib.ndsu.nodak.edu/docview/305159533?accountid=6766>
- Hagerty, B. M. K., Lynch-Sauer, J., Patusky, K. L., Bouwsema, M., & Collier, P. (1992). Sense of belonging: A vital mental health concept. *Archives of Psychiatric Nursing*, 6, 172-177.

- Hagerty, B. M. K., Williams, R. A., Coyne, J. C., & Early, M. R. (1996). Sense of belonging and indicators of social and psychological functioning. *Archives of Psychiatric Nursing, 10*, 235-244.
- Hardre, P. L., Liao, L., Dorri, Y., & Beeson, S. M. A. (2019). Modeling american graduate students' perceptions predicting dropout intentions. *International Journal of Doctoral Studies, 14*, 105–132. <https://doi.org/10.28945/4161>
- Harvey, D. W., Slate, J. R., Moore, G. W., Barnes, W., & Martinez-Garcia, C. (2013). College readiness gaps: A review of the literature. *Journal of Education Research, 7*(3), 181-204.
- Hopkins, K. M. (2021). *Developing a measure of need to matter* (Order No. 28415607). Available from ProQuest Dissertations & Theses Global. (2532115478). <https://ezproxy.lib.ndsu.nodak.edu/login?url=https://www-proquest-com.ezproxy.lib.ndsu.nodak.edu/dissertations-theses/developing-measure-need-matter/docview/2532115478/se-2?accountid=6766>
- Hu, L.-t., & Bentler, P. M. (1999). Cutoff criteria for fit indexes in covariance structure analysis: Conventional criteria versus new alternatives. *Structural Equation Modeling, 6*(1), 1–55. <https://doi.org/10.1080/10705519909540118>
- Isaacson, M. (2008). *Mattering and persistence relative to a first-year seminar for residential students at a great plains university* (Unpublished doctoral dissertation). University of South Dakota.
- Israel, M. (2018). *Transition experiences: Feelings of mattering among military students at rowan university* (Order No. 10934461). Available from ProQuest Dissertations & Theses Global. (2117594537).

<https://ezproxy.lib.ndsu.nodak.edu/login?url=https://search-proquest-com.ezproxy.lib.ndsu.nodak.edu/docview/2117594537?accountid=6766>

Judge, T. A., Locke, E. A., Durham, C. C., & Kluger, A. N. (1998). Dispositional effects on job and life satisfaction: The role of core evaluations. *Journal of Applied Psychology*, 83(1), 17–34. <https://doi.org/10.1037/0021-9010.83.1.17>

King, M. (2008). *Ph. d. completion and attrition: Analysis of baseline program data from the ph. d. completion project*. Washington, D.C.: Council of a Graduate School.

Klug, J. M. (2008). *A phenomenological study on students' perceptions of mattering at a selected midwestern public institution* (Order No. 3333970). Available from ProQuest Dissertations & Theses Global. (304487386).

<https://ezproxy.lib.ndsu.nodak.edu/login?url=https://search-proquest-com.ezproxy.lib.ndsu.nodak.edu/docview/304487386?accountid=6766>

Kristensen, T. S., Borritz, M., Villadsen, E., & Christensen, K. B. (2007, February 23). The Copenhagen Burnout Inventory: A new tool for the assessment of burnout. *Work and Stress*, 19, 192-207. <http://dx.doi.org/10.1080/02678370500297720>

Kurz, Jeffrey, "Women veterans in higher education: transitions and transformative learning experiences" (2013). *Theses and Dissertations*. 430. <https://rdw.rowan.edu/etd/430>

Leary, M. R. & Baumeister, R. F. (2000). The nature and function of self-esteem: Sociometer theory. In: M. P. Zanna (Ed.), *Advances in Experimental Social Psychology*, 32 (pp. 1-62). Academic Press.

Lovitts, B. E. (2005, April). Being a good course-taker is not enough: a theoretical perspective on the transition to independent research. *Studies in Higher Education*, 30, 137-154. <http://dx.doi.org/10.1080/03075070500043093>

- Lovitts, B. E. (2008, May/June). The transition to independent research: Who makes it, who doesn't, and why. *The Journal of Higher Education*, 79, 296-325.
<http://dx.doi.org/10.1353/jhe.0.0006>
- Marcus, F. M. (1991). *Mattering; Its measurement and theoretical significance for social psychology*. Paper presented at the annual meeting of the Eastern Sociological Association, Cincinnati, OH.
- Maslow, A. H. (1970). *Motivation and personality* (2nd ed.). Harper & Row.
- Mullen, J. N. (2016). *A comparative analysis of nontraditional students' perceptions of mattering in small private catholic four-year academic institutions* (Order No. 10126822). Available from ProQuest Dissertations & Theses Global. (1808509721).
<https://ezproxy.lib.ndsu.nodak.edu/login?url=https://search-proquest-com.ezproxy.lib.ndsu.nodak.edu/docview/1808509721?accountid=6766>
- National Center for Education Statistics, Integrated Postsecondary Education Data System. (2020) *Table 6. Unduplicated headcount enrollment and percentage distribution at title IV institutions, by control of institution, student level, level of institution, gender, and race/ethnicity: United States, 2019-20*.
https://nces.ed.gov/ipeds/Search?query=&query2=&resultType=all&page=1&sortBy=date_desc&overlayTableId=28462
- Offerman, M. (2011, Spring). Profile of the nontraditional doctoral degree student. *New Directions for Adult and Continuing Education*, 129, 21-30.
<http://dx.doi.org/10.1002/ace.397>
- Olsen, S. M., "Student affairs programs at Rowan University and their impact on students' sense of mattering" (2015). *Theses and Dissertations*. 2. <https://rdw.rowan.edu/etd/2>

- Peltonen, J., Vekkaila, J., Rautio, P., Haverinen, K., & Pyhältö K. (2017). Doctoral students' social support profiles and their relationship to burnout, drop-out intentions, and time to candidacy. *International Journal of Doctoral Studies*, 12, 157–173.
<https://doi.org/10.28945/3792>
- Price, J. L. & Mueller, C. W. (1981). A casual model of turnover for nurses. *The Academy of Management Journal*, 24(3), 543-565.
- Procidano, M. E., & Heller, K. (1983). Measures of perceived social support from friends and from family: Three validation studies. *American Journal of Community Psychology*, 11, 1-24.
- Reason, R. D. (2003, Summer). Student variables that predict retention: Recent research and new developments. *NASPA Journal*, 40(4), 172-191.
- Rosenberg, M. (1965). *Society and the adolescent self-image*. Princeton University Press.
- Rosenberg, M. (1985). Self-concept and psychological well-being in adolescence. In R. Leahy (Ed.), *The development of the self* (pp. 205-246). Academic Press.
- Rosenberg, M., & McCullough, B. C. (1981). Mattering: Inferred significance and mental health. *Research in Community and Mental Health*, 2, 163 – 182.
- Schafer, W. (1987). *Stress management for wellness*. Holt, Rinehart, and Winston
- Schlossberg, N. K. (1989). Marginality and mattering: Key issues in building community. *New Directions for Student Services*, 48, 5-15.
- Schlossberg, N. K., Lasalle, A., & Golec, R. (1988). *The Mattering Scale for Adults in Higher Education*. 6th edition. University of Maryland.

- Schlossberg, N.K., Lynch, A. Q., and Chickering, A. W. (1989). *Improving Higher Education Environments for Adults: Responsive Programs and Services from Entry to Departure*. Jossey-Bass.
- Schneider, H. A. (2015). *Perceptions of mattering in the doctoral student and advisor relationship* (Order No. 10014625). Available from ProQuest Dissertations & Theses Global. (1767166327). <https://ezproxy.lib.ndsu.nodak.edu/login?url=https://search-proquest-com.ezproxy.lib.ndsu.nodak.edu/docview/1767166327?accountid=6766>
- Shaginaw, K. (2018). *Transition, mattering and marginality: Deaf students in a hearing institution* (Order No. 10935340). Available from ProQuest Dissertations & Theses Global. (2164836329). <https://ezproxy.lib.ndsu.nodak.edu/login?url=https://search-proquest-com.ezproxy.lib.ndsu.nodak.edu/docview/2164836329?accountid=6766>
- Sullivan, K. (2019). *Perceptions of mattering and marginality: A study of international students at rowan university* (Order No. 13864195). Available from ProQuest Dissertations & Theses Global. (2219350040). <https://ezproxy.lib.ndsu.nodak.edu/login?url=https://search-proquest-com.ezproxy.lib.ndsu.nodak.edu/docview/2219350040?accountid=6766>
- Sumner, K. J. (2012). *A phenomenological study of students' perceptions of mattering at a selected midwestern private faith-based institution* (Order No. 3507948). (1017537417). <http://odinproxy06.odin.ndak.edu/login?url=https://search.proquest.com/docview/1017537417?accountid=29402>
- Tinto, V. (1987). *Leaving college: Rethinking the causes and cures of student attrition*. University of Chicago Press.

- Tovar, E., Simon, M. A., & Lee, H. B. (2009). Development and validation of the college mattering inventory with diverse urban college students. *Measurement and Evaluation in Counseling and Development*, 42(3), 154-178.
- U.S. Department of Education. (2019). *Profile of Undergraduate Students: Attendance, Distance and Remedial Education, Degree Program and Field of Study, Demographics, Financial Aid, Financial Literacy, Employment, and Military Status: 2015–16* (NCES 2019-467).
<https://nces.ed.gov/pubsearch/pubsinfo.asp?pubid=2019467>
- Wao, H. O. (2010, June 5). Time to the doctorate: Multilevel discrete-time hazard analysis. *Educational Assessment, Evaluation and Accountability*.
<http://dx.doi.org/10.1007/s11092-010-9099-6>
- Walker, G. E., & Carnegie Foundation for the Advancement of Teaching. (2008). *The formation of scholars: rethinking doctoral education for the twenty-first century* (1st ed.). Jossey-Bass.
- White, J., & Nonnamaker, J. (2008). Belonging and mattering: How doctoral students experience community. *Naspa Journal*, 45(3), 350-372.
- Williams, K. R. (2018). *Influence of mattering on black males' intent to persist at a regional predominantly white institution* (Order No. 10747949). Available from ProQuest Dissertations & Theses Global. (2026286152).
<https://ezproxy.lib.ndsu.nodak.edu/login?url=https://search-proquest-com.ezproxy.lib.ndsu.nodak.edu/docview/2026286152?accountid=6766>

APPENDIX A: SURVEY INVITATION

Dear Graduate Student:

My name is Jodi Ost and I am graduate student in the Education Doctoral Program at North Dakota State University. I am conducting a research project to better understand whether graduate students feel they matter to their university. Because you are a graduate student at NDSU, you are invited to take part in this research project.

The results will be used to further research about mattering, and will also be shared with the Graduate School and graduate programs for practical application in changing or providing new services to better aid graduate students at NDSU.

Your participation is entirely your choice, and you may change your mind or quit participating at any time, with no penalty to you. If you choose to participate in this survey, your answers will be released only as part of group summaries.

https://ndstate.co1.qualtrics.com/jfe/form/SV_bvjPVfAffqUeVmJ

If you have any questions or comments about this survey, please feel free to contact me at 701.231.7921 or at the address below.

Thank you very much for helping me with this important study.

Sincerely,

Jodi Ost
Investigator
North Dakota State University
School of Education
FLC 210
NDSU Dept. 7921
PO Box 6050
Fargo, ND 58108-6050
701.231.7921

APPENDIX B: FOLLOW-UP EMAIL

Dear Graduate Student:

If you have already completed the survey, Thank You for your participation.

If you have not completed the survey, please consider participating as this research is focused on the graduate student experience.

The results will be used to further research about mattering, and will also be shared with the Graduate School and graduate programs for practical application in changing or providing new services to better aid graduate students at NDSU.

Your participation is entirely your choice, and you may change your mind or quit participating at any time, with no penalty to you. If you choose to participate in this survey, your answers will be released only as part of group summaries.

https://ndstate.co1.qualtrics.com/jfe/form/SV_bvjPVfAffqUeVmJ

If you have any questions or comments about this survey, please feel free to contact me at 701.231.7921 or at the address below.

Thank you very much for helping me with this important study.

Sincerely,

Jodi Ost
Investigator

North Dakota State University
School of Education
FLC 210
NDSU Dept. 7921
PO Box 6050
Fargo, ND 58108-6050
701.231.7921

APPENDIX C: INTRODUCTORY MESSAGE

Dear NDSU graduate student:

My name is Jodi Ost and I am graduate student in the Education Doctoral Program at North Dakota State University. I am conducting a research project to better understand whether graduate students feel they matter to their university. It is my hope that this project will expand the research on university mattering.

Because you are a graduate student at NDSU, you are invited to take part in this research project. Your participation is entirely your choice, and you may change your mind or quit participating at any time, with no penalty to you.

It is not possible to identify all potential risks in research procedures, but I have taken reasonable safeguards to minimize any known risks. These known risks include: loss of confidentiality, and emotional or psychological distress.

You are not expected to get any immediate benefit from being in this research study. However, benefits to others and/or society are likely to include advancement of knowledge, and /or possible benefits to graduate students through changed or added services and programming.

I will keep private all research records that may identify you. Your information will be combined with information from other people taking part in the study, I will write about the combined information that I have gathered. You will not be identified in these written materials. I may publish the results of the study; however, I will keep any identifying information private.

If you have any questions about this project, please contact me at 701.671.2154 or jodi.ost@ndsu.edu; or contact my advisor at brent.hill@ndsu.edu, 701.231.8664, or FLC 210K.

You have rights as a research participant. If you have questions about your rights or complaints about this research, you may talk to the researcher or contact the NDSU Human Research Protection Program at 701.231.8995, toll-free at 1-855-800-6717, by email at ndsu.irb@ndsu.edu, or by mail at: NDSU HRPP Office, NDSU Dept. 4000, P.O. Box 6050, Fargo, ND 58108-6050.

It should take about 15 minutes to complete the questions about your feelings of mattering toward NDSU. Click next arrows below to begin the survey.

Thank you for your taking part in this research.

Sincerely,
Jodi Ost
Investigator

APPENDIX D: SURVEY QUESTIONNAIRE

Screening questions will be asked at the start of the survey to screen-out students that are not actively seeking to complete a graduate degree. If a student answers “yes” to either of the following questions, they will be screened-out and receive a message that their survey is complete and that I thank them for taking the time to participate in the survey

Are you currently enrolled as a non-degree seeking student?

Are you currently auditing graduate level courses?

Below are a series of statements that represent feelings toward NDSU. Think about your relationships with the people in the university community and indicate the degree to which each statement is aligned with your relationships. When you respond to these statements, do not think of specific others at your university; rather, try to focus on NDSU in general as an entity or whole community. **By “community” we mean students, faculty, advisor, administrators, and staff. Think of all these people as a whole when responding to these items.** There are no right or wrong answers. Just answer as honestly as possible based on your role as a graduate student at NDSU. Not all students feel the same way or are expected to feel the same way.

	Strongly Disagree	Disagree	Disagree Slightly	Agree Slightly	Agree	Strongly Agree			
	1	2	3	4	5	6			
The people in my degree program at NDSU pay attention to me.				1	2	3	4	5	6
My successes are a source of pride to the people in my degree program at NDSU.				1	2	3	4	5	6
There are people in my degree program at NDSU who react to what happens to me in the same way they would if it happened to them.				1	2	3	4	5	6
When I have a problem, people in my degree program at NDSU usually don't want to hear about it.				1	2	3	4	5	6

I know people in my degree program at NDSU are sincerely interested in me.	1	2	3	4	5	6
Often, the people in my degree program at NDSU trust me with things that are important to them.	1	2	3	4	5	6
There are people in my degree program at NDSU who give me advice when I need it.	1	2	3	4	5	6
There are people in my degree program at NDSU who would also experience my disappointment if I didn't reach my full potential.	1	2	3	4	5	6
No one in my degree program at NDSU depends on me.	1	2	3	4	5	6
The people in my degree program at NDSU are usually aware of my presence.	1	2	3	4	5	6
People in my degree program at NDSU are invested in my life.	1	2	3	4	5	6
My contributions to my degree program benefit the people in my degree program at NDSU.	1	2	3	4	5	6
People in my degree program at NDSU care what happens to me.	1	2	3	4	5	6
People in my degree program at NDSU would be upset if I were mistreated.	1	2	3	4	5	6

If I were not an NDSU graduate student, the people in my degree program at NDSU would suffer. 1 2 3 4 5 6

Please indicate the degree to which you agree with the following statements.

Strongly Disagree	Disagree	Slightly Disagree	Neither Agree Nor Disagree	Slightly Agree	Agree	Strongly Agree
1	2	3	4	5	6	7

I feel fairly well satisfied with my graduate studies.	1	2	3	4	5	6	7
Most days I am enthusiastic about my school work.	1	2	3	4	5	6	7
Each day of classes seems like it will never end.	1	2	3	4	5	6	7
I find real enjoyment in my school work.	1	2	3	4	5	6	7
I consider my graduate studies rather unpleasant.	1	2	3	4	5	6	7

Please indicate the degree to which you agree with the following statements.

Never/almost never or to a very low degree	Seldom or to a low degree	Sometimes or somewhat	Often or to a high degree	Always or to a very high degree	
1	2	3	4	5	
My school work is emotionally exhausting.	1	2	3	4	5
I feel burnt out because of school work.	1	2	3	4	5
My school work frustrates me.	1	2	3	4	5
I feel worn out at the end of the school day.	1	2	3	4	5
I am exhausted in the morning at the thought of another day at school.	1	2	3	4	5
I feel that every hour dedicated to school is tiring for me.	1	2	3	4	5
I have enough energy for family and friends during leisure time.	1	2	3	4	5

Please indicate the degree to which you agree with the following statements.

	Never/almost never or to a very low degree 1	Seldom or to a low degree 2	Sometimes or somewhat 3	Often or to a high degree 4	Always or to a very high degree 5		
How often do you feel tired?			1	2	3	4	5
How often are you physically exhausted?			1	2	3	4	5
How often are you emotionally exhausted?			1	2	3	4	5
How often do you think "I can't take it anymore"?			1	2	3	4	5
How often do you feel worn out?			1	2	3	4	5
How often do you feel weak and susceptible to illness?			1	2	3	4	5

How important is it to you to graduate from NDSU with your graduate degree?

- a. Essential
- b. Very important
- c. Somewhat important
- d. Not that important
- e. Not applicable

How frequently have you thought about transferring to another institution?

- a. once a day
- b. once a week
- c. once a month
- d. once a semester
- e. once an academic year
- f. never

How frequently have you thought about dropping out altogether?

- a. once a day
- b. once a week
- c. once a month
- d. once a semester
- e. once an academic year
- f. never

What is the subject area focus of your graduate program at NDSU? (select all that apply)

- a. Social/Behavioral Sciences
- b. Business
- c. Biological Sciences
- d. Engineering
- e. Allied Health
- f. Education
- g. Mathematics/Computer Science
- h. Agricultural Sciences
- i. Art/Humanities
- j. Physical Sciences

What level of graduate studies are you currently working toward?

- a. Master's Degree
- b. Professional Degree
- c. Doctoral Degree
- d. Graduate Certificate
- e. Accelerated Bachelor's-to-Master's

How many credits are you taking per semester (excluding summer terms)?

- a. 12 or more credits/semester
- b. 9-11 credits/semester
- c. 7-8 credits/semester
- d. 1-6 credits/semester

At what point are you in your graduate program?

- a. Taking courses
- b. Preparing for comprehensive exams/portfolio (may apply whether coursework is complete or you have courses remaining)
- c. Developing my dissertation/thesis/creative component

How do you usually attend or plan to attend class?

- a. Physical classroom on NDSU campus • Fargo, ND
- b. Via video network (IVN (Interactive Video Network), Blackboard Collaborate, Zoom, etc.)
- c. Asynchronously online (self-directed, self-paced, non-group)

How often do you physically visit the NDSU campus?

- a. I live on-campus (all types, including residence halls, on-campus apartments, and so on)
- b. I live off-campus and regularly visit campus (e.g., to go to class, events, etc.)
- c. I live-off campus and rarely or never visit campus (e.g., online or distance student, working on thesis/dissertation, etc.)

Do you plan to enroll next semester?

- a. Yes
- b. No

When did you begin your graduate courses (excluding probationary coursework)? (Please enter mm/yyyy) _____

When do you plan to graduate? (Please enter mm/yyyy) _____

Does your graduate program admit students into cohorts?

- a. Yes
- b. No
- c. Not sure

Are you employed?

- a. Full-time (36 + hours/week)
- b. 3/4 -time (30–35 hours/week)
- c. Part-time (1–29 hours/week)
- d. Not employed

What is your marital status?

- a. Single
- b. Engaged
- c. Married
- d. Separated
- e. Divorced
- f. Widowed

Gender/Gendered Identity

- a. Male
- b. Female
- c. Transgender
- d. Do not wish to disclose

How would you describe yourself (select all that apply)

- a. American Indian or Alaska Native
- b. Asian
- c. Black or African American
- d. Hispanic or Latino
- e. Native Hawaiian or Other Pacific Islander
- f. White
- g. Do not wish to disclose

Are you enrolled at NDSU as an international student?

- a. Yes
- b. No

Age (in years) _____

APPENDIX E: COPENHAGEN BURNOUT SURVEY

Personal Burnout

- How often do you feel tired?
- How often are you physically exhausted?
- How often are emotionally exhausted?
- How often do you think “I can’t take it anymore”?
- How often do you feel worn out?
- How often do you feel weak and susceptible to illness?

Work-Related Burnout

- Do you feel worn out at the end of the working day?
- Are you exhausted in the morning at the thought of another day at work?
- Do you feel that every working hour is tiring for you?
- Do you have enough energy for family and friends during leisure time? (inverse scoring)
- Do you feel burnt out because of your work?
- Is your work emotionally exhausting?
- Does your work frustrate you?

Client-Related Burnout

- Do you find it hard to work with clients?
- Does it drain your energy to work with clients?
- Do you find it frustrating to work with clients?
- Do you feel that you give more than you get back when you work with clients?
- Are you tired of working with clients?
- Do you sometimes wonder how long you will be able to continue working with clients?

Response options:

- *Always or to a very high degree*
- *Often or to a high degree*
- *Sometimes or somewhat*
- *Seldom or to a low degree*
- *Never/almost never or to a very low degree*

Kristensen, T. S., Borritz, M., Villadsen, E., & Christensen, K. B. (2007, February 23). The Copenhagen Burnout Inventory: A new tool for the assessment of burnout. *Work and Stress*, 19, 192-207. <http://dx.doi.org/10.1080/02678370500297720>.
<http://www.tandfonline.com>

APPENDIX F: BRIEF JOB SATISFACTION MEASURE II

DIRECTIONS: Some jobs are more interesting and satisfying than others. We want to know how you feel about your job. For each statement below, use the following scale to indicate which is most descriptive of your current job:

- 1 = STRONGLY DISAGREE
- 2 = DISAGREE
- 3 = SLIGHTLY DISAGREE
- 4 = NEITHER AGREE NOR DISAGREE
- 5 = SLIGHTLY AGREE
- 6 = AGREE
- 7 = STRONGLY AGREE

1. I feel fairly well satisfied with my present job.
2. Most days I am enthusiastic about my work.
3. Each day of work seems like it will never end. (reverse-scored)
4. I find real enjoyment in my work.
5. I consider my job rather unpleasant. (reverse-scored)

Note: We have also used the following response scale: 1=strongly disagree, 2=disagree, 3=neutral, 4=agree, 5=strongly agree.

Source: timothy-judge.com/Measures.htm

APPENDIX G: UMUM-15

#	Stem
1	The people of the JMU community pay attention to me.
4	My successes are a source of pride to the people of the JMU community.
10	There are people of the JMU community who react to what happens to me in the same way they would if it happened to them.
11 ^a	When I have a problem, people of the JMU community usually don't want to hear about it.
13	I know people in the JMU community are sincerely interested in me.
14	Often, the people of the JMU community trust me with things that are important to them.
16	There are people at JMU who give me advice when I need it.
22	There are people in the JMU community who would also experience my disappointment if I didn't reach my full potential.
23 ^a	No one in the JMU community depends on me.
24	The people of the JMU community are usually aware of my presence.
25	People of the JMU community are invested in my life.
29	My contributions to JMU benefit the JMU community.
31	People of the JMU community care what happens to me.
33	People at JMU would be upset if I were mistreated.
34	If I were not a JMU student, the JMU community would suffer.

Note. Original item numbering was retained from the RUMS to facilitate comparisons.

^a Indicates reserved scored

Facets

Awareness: 1, 24

Reliance: 14, 23*, 29, 34

Ego-Extension: 4, 10, 22, 33

Importance: 11*, 13, 16, 25, 31

APPENDIX H: GSUMUM-12

1. The people in my degree program at [UNIVERSITY] pay attention to me.
2. My successes are a source of pride to the people in my degree program at [UNIVERSITY].
3. There are people in my degree program at [UNIVERSITY] who react to what happens to me in the same way they would if it happened to them.
4. I know people in my degree program at [UNIVERSITY] are sincerely interested in me.
5. Often, the people in my degree program at [UNIVERSITY] trust me with things that are important to them.
6. There are people in my degree program at [UNIVERSITY] who give me advice when I need it.
7. There are people in my degree program at [UNIVERSITY] who would also experience my disappointment if I didn't reach my full potential.
8. The people in my degree program at [UNIVERSITY] are usually aware of my presence.
9. People in my degree program at [UNIVERSITY] are invested in my life.
10. My contributions to my degree program benefit the people in my degree program at [UNIVERSITY].
11. People in my degree program at [UNIVERSITY] care what happens to me.
12. People in my degree program at [UNIVERSITY] would be upset if I were mistreated.

Response options and scoring:

Facets:

Awareness items: 1, 10

Ego-extension items: 2, 3, 8, 14

Importance items: 5, 7, 11, 13

Reliance items: 6, 12