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Development and Initial Validation of the Parent and Family Engagement in Higher Education Measure

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by

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Dedication

This dissertation is dedicated to my mom, whose steadfast love, encouragement, and support have been ever present from daycare to doctorate. To my husband, whose unconditional love and support throughout this process helped me stay the course. To the future generations of our families, may they all find joy in learning new knowledge through the journey of education.

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is for all of us! From my first day of doctoral class until this moment, I have felt the immense love and encouragement needed to persevere.

TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

ABSTRACT

Throughout the history of higher education in the United States, parents and family members of college students have often found themselves as obsolete to the postsecondary experience. Minimal research has been dedicated to understanding the experience of parents and family members of college students until the millennial generation began their collegiate years (Harper et al., 2012; Wartman & Savage, 2008). In consideration of a new generation of college students (i.e., Gen Z) and the ongoing impact of the COVID-19 global pandemic, it is crucial to illuminate the complexities of parent and family engagement in higher education and the needs of parents and families. Most recently, Kiyama and Harper (2018) proposed a *Model of Parent Characteristics, Engagement, and Support* based on their research. Harper et al. (2020) continued to investigate this model through qualitative methodologies and identified several constructs to better understand this complex phenomenon. Currently, no quantitative tools exist to measure Kiyama and Harper's (2018) model and accompanying construct. Thus, the goal of this study was to develop and initially validate the Parent and Family Engagement in Higher Education (PFEHE) measure as a quantitative research tool to complement Kiyama and Harper's (2018) model. This dissertation is the beginning of the ongoing and iterative process researchers need to develop and gather validity evidence for any measure (Bandalos, 2018; Kline, 2016). Strength of evidence supporting validity, reliability, and fairness were evaluated for the PFEHE measure. Evidence to support validity was based on test content, response processes, and internal structure and was mixed. Higher education and measurement experts and current family

members of undergraduate college students assisted the development process resulting in a 54-item PFEHE measure. A wide recruitment effort garnered participation of more than 1,000 participants who completed the 54-item measure. After a thorough data screening process, 650 responses were viable to use for a variety of analyses. Approximately half of these responses were used in a series of exploratory factor analyses. These analyses further refined the PFEHE measure to 21 items representative of three constructs: family aspirational characteristics, family/student involvement and engagement, and family/university involvement and engagement. The other half of responses were used for a confirmatory factor analysis with the three factors and 21 items. Results of this analysis were less than favorable as no model fit indices met the minimum standards (DiStefano & Hess, 2005; Kline, 2016; McCoach et al., 2013). Strength of evidence based on reliability was gathered by calculating Cronbach's alpha separately for the two samples using the redefined 21-item measure. Reliability measures for each of the three scales across both samples ranged from .76 to .84, indicating moderately strong evidence. Finally, evidence to support fairness of the PFEHE measure was gathered initially from expert panel review. Additional evidence was gathered from cognitive interviews conducted with current parents and family members of undergraduate college students. Families were asked to recall the information needed to respond to each item and whether they would respond to each item honestly. Their responses guided the final wording for items and the inclusion of additional instructions for participants. Collectively, the strength of evidence supporting fairness was strong given the scope of this study. This study concludes with a discussion about the many opportunities the PFEHE measure could be used in future quantitative and qualitative research studies. The evidence reported in this study is promising for the PFEHE

measure, and future research will aid in the evaluation of more evidence of validity, reliability, and fairness.

CHAPTER ONE:

INTRODUCTION

Helicopter parenting has been a common way for university professionals and faculty to describe the over involvement of parents and family members in higher education. The terminology "helicopter," "bulldozer," and "lawnmower" refers to parents who are overtly and overly involved in their college students' experiences (Carney-Hall, 2008). Often, these terms are used with a negative connotation and parents who are labeled with such adjectives are not viewed as positive influencers of their college students' experiences. However, this dissertation makes the case for higher education to explore and better understand the complex and ever-evolving phenomenon of family engagement in higher education. Parent and family engagement in higher education has always been evolving, and the nature of this engagement today continues to be quite a mystery. This dissertation focused on filling in some of the gap areas presented from the literature and provided researchers and higher education administrators a measurement tool to understand how parents and families are engaging in the undergraduate college student experience.

Evolution of Parents and Families in Higher Education

The role of parents and family members of college students has been a point of discussion since the establishment of the first colleges in the United States. The *Yale Report on the Course of Instruction* of 1828, one of the first critical documents outlining the role of higher education in the United States, proclaimed "[higher education's] object is to lay the foundation

of a superior education . . . at a period of life when a substitute must be provided for parental superintendence" (Yale College, 1828, p. 7). Parental superintendence was defined as *in loco parentis*, and its philosophy became the doctrine of higher education for more than a century. When in loco parentis was legally challenged, the courts reaffirmed the doctrine, often stating a university has the same rights to set rules as a father does in his own household (*Gott v. Berea College*, 1913; *John B. Stetson University v. Hunt*, 1924; Lee, 2011). The philosophy and legal affirmation situated parents and family members as unnecessary stakeholders in their college students' experiences.

In loco parentis, as a legal precedent, began to dissipate with the 1961 decision of *Dixon v. Alabama State Board of Education* (Peters, 2007). Interestingly, *Dixon v. Alabama State Board of Education* (1961) is credited with the fall of in loco parentis, but this decision did not shift the role of parents and families of college students. Instead, the case, along with *Hammond v. South Carolina State College* (1967), argued for and achieved rulings asserting college students' constitutional rights regardless of their attendance at a higher education institution. These rulings shifted the role of higher education from in loco parentis to a more contractual role between the student and the college (Peters, 2007). Following the shift in relationship between colleges and their students, research studies began to focus their inquiries on parental influence in the college-going and college decision-making process of prospective college students.

Meier's (1969) study was one of the earliest research studies about parental influence on college students, resulting in the assertion of four typologies of parental influence. Each typology was focused squarely on the parents' role prior to a college student's enrollment at a higher education institution. Concurrently, higher education researchers were becoming increasingly curious about the role of parent education level and socioeconomic status as one of many

precollege characteristics, hypothesizing these characteristics influenced a student's prospect of retention and persistence to degree completion (Astin, 1993; Tinto, 1975, 1987). Bank et al. (1990) critiqued these models, hypothesizing, "it seems more likely that parents continue to be actively involved in the lives of their college-age children and that these children take their parents' expectations and behaviors into account in formulating their educational goals" (p. 210). Their findings stressed the importance of increasing understanding of familial influences during a college student's experience with the same veracity as understanding how peers and faculty influence retention and persistence to degree completion.

Research about parent involvement in higher education began to converge around the general question of how family involvement affects college students' development, attitudes, and behaviors. After the release of Howe and Strauss's (2003) *Millennials Go to College,* one aspect of family involvement was certain: the increased frequency of communication between parents and their college students through technological advances (Wartman & Savage, 2008). Often, researchers held divergent views of the effects of family involvement in higher education**.** Pennington (2005) suggested value in partnering with parents as a vehicle for student success, although Mullendore et al. (2005) claimed parents impeded college students' development and learning. Such inconsistency in the research did not assist practitioners or policy makers as they attempted to discern whether to shift practices and policies about parent involvement.

Wartman and Savage's (2008) report *Parent Involvement in Higher Education: Understanding the Relationship Among Students, Parents, and the Institution* attempted to reconcile the dissonance among higher education researchers. Their monograph provided practitioners with theoretical frameworks to understand a student's continued need for parental involvement throughout college and the rationale for why colleges need parents to be involved in

their college students' experiences. Kiyama et al. (2015) followed Wartman and Savage's (2008) work with an updated report, *Parent and Family Engagement in Higher Education*. Wartman and Savage (2008) intended to broaden the conversation from parental involvement to family engagement stating, "it is time for a reexamination of how we can better serve the full scope and diversity of today's parents and families" (p. 8). They proclaimed research and practice must shift from the lens of parent(s) to family to be more inclusive of the variations in family support structures for a college student, taking into account the spectrum of ways a family member can support and encourage their college student. Kiyama et al. (2015) made several recommendations to expand the research about family engagement to focus specifically on low-income students, first-generation college students, and students of color. Ultimately, the authors recommended research move from understanding how family engagement affects college students to how family engagement supports critical higher education outcomes, including first-year retention and persistence toward degree completion.

Statement of the Problem

Parent and family engagement in the lives of college students has become an important, evolving research agenda for higher education. This has become even more important since the onset of the COVID-19 global pandemic in March 2020. Many college students were sent away from campus and families were able to witness higher education from their own living rooms. Growth in the literature about parent and family engagement came about as the millennial generation of college students enrolled at colleges and universities, although the literature is still quite limited (Wartman & Savage, 2008). Colleges and universities are now welcoming the next generation of college students, which means research about parent and family engagement is in need of its next evolution. Similar to the rise of research about parents in the 1960s at the end of

in loco parentis, a continued effort to research the role of parent and family engagement in higher education is necessary with each new generation of college students.

Unfortunately, as more researchers heed the plea to focus on inclusivity of key subpopulations, previous studies have been limited to one or two subpopulations. Results of these studies often asserted generalizability as the primary limitation of their results. Generalizability as a limitation restricts the use of the results to develop interventions, improve existing programs, or enact policy change. Furthermore, postsecondary family engagement researchers are adapting various theoretical frameworks to ground their studies because of the lack of a consensus around a theoretical framework specific to parent and family engagement in higher education. Finally, these adaptations create dissonance around whether the theory used was appropriately applied rather than adding to the understanding of parent and family engagement in higher education. The theoretical inconsistencies and continued need to understand the complexity of the role of parents and families in higher education were the basis for this dissertation study.

Purpose and Significance of the Research

Parent and family engagement in higher education is a complex phenomenon that has garnered the attention of doctoral students and researchers since millennials and their families entered the fabric of higher education. Most of the previous research about parent and family engagement in higher education has not been grounded within consistent theoretical frameworks, nor have these studies focused their data collection on the family members themselves. Fortunately, Kiyama and Harper (2018) proposed a model of parent and family engagement which is the first model to theorize the role of families in higher education explicitly. Their framework conceptualized this phenomenon by defining key components of parent and family

engagement in higher education, intentionally centering the perspectives of families of color, families of first-generation college students, and low-income families. Harper et al. (2020) further refined these constructs as a result of their qualitative research study. However, the model does not currently have any quantitative measures associated with it.

The purpose of this dissertation study was to develop and initially validate a self-report instrument to measure parent and family engagement in higher education. The measure is intended to be used as a quantitative research tool complementary to Kiyama and Harper's (2018) and Harper et al.'s (2020) *Model of Parent Characteristics, Engagement, and Support.* By developing a measure and gathering evidence supporting the reliability, validity, and fairness of the measure, the goal was to provide a measurement tool that can be used to evaluate Kiyama and Harper's proposed model and constructs. Evidence of reliability, validity, and fairness are all critical to claim the measure developed should be used beyond this study (American Education Research Association, 2014). A continued focus on centering the perspectives of families of color, families of first-generation college students, and low-income families will also be crucial for consistency with the model and the intent of the theorists. If the measure produces strong evidence of validity, reliability, and fairness, it has the potential to contribute new knowledge for higher education to better inform the policies and practices specific to families of undergraduate college students. Additionally, the measure would provide researchers with a theoretically grounded, quantitative method to understand parent and family engagement.

Research Questions

The purpose of this dissertation was to develop and initially validate a new measure of parent and family engagement in higher education—the Parent and Family Engagement in

Higher Education (PFEHE) measure. After the development of the instrument, the following research questions were evaluated to assess the PFEHE measure:

1. What is the strength of the evidence supporting validity of the PFEHE measure?
2. What is the strength of the evidence supporting reliability of the PFEHE measure?
3. What is the strength of the evidence supporting the fairness of scores from the PFEHE measure?

Conceptual Framework

Yosso (2005) proposed a framework of community cultural wealth to provide researchers with a strengths-based theory when studies focused on families of color. Prior to the conceptualization of community cultural wealth, researchers tended to focus their studies about students and families with marginalized identities on whether and how they could gain certain capital, which would result in upward mobility for themselves and their children. Yosso presented the community cultural wealth framework as an alternative framework, asserting communities of color already possess the capital and assets needed to succeed in education. As researchers, the call to action for other researchers is to reframe studies to focus on the cultural capital communities of color have and how each asset can be used in educational settings to transform education (Yosso, 2005). This study used the combination of community cultural wealth and Kiyama and Harper's (2018) inclusive model of parent and family engagement to guide the development and initial validation of the PFEHE measure.

Kiyama and Harper (2018) developed their model of parent and family engagement in higher education as a counter to the helicopter parent narrative. These researchers believed the helicopter narrative encompassed a small proportion of families and was not representative of families of color, low-income families, and families with first-generation college students. The

model asserted the belief that families of college students are "sources of cultural and community strength that can ultimately assist students with their academic goals, persistence, and graduation from college" (Kiyama & Harper, 2018, p. 368). Harper et al. (2020) conducted a qualitative study to further define the constructs within the model of parent and family characteristics, engagement, and support. Results from the 2020 study led to the authors' articulation of six constructs interacting with one another to understand the role of parent and family engagement in higher education within the context of an institution:

- family characteristics, such as the family composition (e.g., single-parent or two-parent home), role of siblings, and cultural background;
- social networks such as community organization or religious organization membership;
- self-efficacy, including the strategies used to navigate educational systems;
- educational aspirations, such as how and when these aspirations were identified and developed;
- involvement and engagement, inclusive of both normative engagement (campus visits) and more culturally informed engagement (i.e., emotional support); and
- dimensions of support, such as the various people, networks, and resources drawn upon for support (Harper et al., 2020, p. 544).

The constructs of this model and Yosso's (2005) community cultural wealth theory guided the development of the PFEHE measure for this dissertation.

Definitions

Family of a first-generation, undergraduate college student. Parent(s) or family member(s) have not completed a college degree (Center for First-Generation Student Success, 2020).

Low-income families. Low-income families are defined by whether the college student is eligible for a Federal Pell Grant (Federal Student Aid, n.d.).

Parent(s) or Family Members. These are moms, dads, guardians, aunts, uncles, grandparents, community members, mentors, and friends.

Undergraduate College Student. A person who is pursuing an associate's or bachelor's degree at a 2- or 4-years institution.

Delimitations

A few delimitations were determined to accomplish the purposes of this study. First, the PFEHE measure was designed for parents and families of undergraduate college students, which excludes families of students who are in graduate education, vocational training, and those who have students in nondegree credentialling programs. The next delimitation was the inclusion of all family members of all undergraduate college students. To understand the phenomena of family involvement in college students' experiences, it was appropriate to be inclusive of families of first-year students along with families with undergraduate students on the verge of graduating. This did excluded families of college students who were preparing to enter higher education. The questionnaire was administered in the middle of the semester to ensure families had at least some experiences to call upon as they responded to each item.

Role of the Researcher

The topic of parent and family engagement in higher education was deliberately chosen because of my proximal position to the work of parent and family administrators. As an administrator at a university who has worked with families from the time their student is admitted to the university through graduation, I inherently believe a level of parent and family engagement is acceptable and will improve a student's ability to persist to degree completion. This dissertation engaged various stakeholder groups as participants; therefore, it is important to acknowledge the epistemological and ontological underpinnings of this dissertation. The nature of this dissertation, with its conceptual frameworks, lent me to situate myself within the critical race quantitative intersectionality paradigm (CRQI). Covarrubias and Vélez (2013) proclaimed, "CRQI [should] guide our questions, our sources of data, our analysis, and ultimately how we disseminate our work and put it to use" (p. 271). Specific to this study, the critical race quantitative intersectionality paradigm was evident in the choice of literature reviewed, the construction of the measure, who was involved in the development phase, and the broad dissemination of the measure. I recognized "that voice and insight are vital: data cannot 'speak for itself' and critical analyses should be informed by the experiential knowledge of marginalized groups" (Gillborn et al., 2018, p. 158).

CHAPTER TWO:

LITERATURE REVIEW

Parents and families of college students and their relationship with the respective colleges and universities have continued to evolve throughout the history of higher education in the United States. This literature review summarizes the historical context of parent and family engagement in higher education. For clarification, the literature review uses the terms “parent” and “family” interchangeably to ensure consistency with the original intent of each researcher’s work. However, for this study, the more inclusive terminology—parents and families—will be used together or families was used to capture the essence of those who support the college student. Historical context is provided to better understand higher education’s initial intent for the role family members play in their college student(s)’ experiences and the evolution of the role as each new generation of students enrolled in higher education. Following the historical summary, a review of the literature about parents and families from the turn of the millennium to present day is presented. Specific to the purposes of this dissertation, this chapter concludes with an overview of the instruments developed to measure parent and family engagement with their college student(s)’ experiences. Collectively, this review provides a rationale for the continued study of the phenomenon of parent and family engagement in higher education.

Historical Context of Parent Involvement in Higher Education

Prior to the 1960s, the role of family members in their college student(s)’ experiences was fairly nonexistent in colleges and therefore absent in research literature. *In loco parentis*, the

legal doctrine and higher education philosophy contributed to the absence of research about families of college students. Following the downfall of in loco parentis, researchers and college administrators began to focus their inquiries about parental influence in the college-going and college decision-making process of prospective college students. College administrators also recognized the potential influence parents and families had with their student's college going behaviors (Strumpf & Sharer, 1993). The emergence of parent orientation programs was an opportunity to capitalize on the influence parents and families had with their students. College administrators believed parent orientation was an intervention strategy to increase enrollment and retention rates by educating parents about institutionalized policies, processes, and procedures (Strumpf & Sharer, 1993). Orientation programs brought parents and families into the college and university landscape while increasing their knowledge of how to best support their students during this period. These programs brought parents and families into the college experience before their children began their college experience. Additionally, a 1998 amendment to the Federal Educational Rights and Privacy Act brought families further into the college student experience. Better known as the parental notification amendment, institutions were permitted to disclose student conduct violations to parents as courts still viewed college students as adults but also recognized parents should not be prohibited from knowing if their student had violated the student code of conduct (White, 2007). As the 20th century came to a close, higher education administrators began to grapple with where and how parents should be involved in the college student experience.

"Key constituents," "partners," "advocates," and "hovering helicopters" were all terms coined to characterize the role of parents and family involvement in higher education in the new millennium. Higher education researchers were attempting to grasp why parents and families

were involved in their college students' experiences. College administrators were trying to discern what expectations parents and families had on their college students' experiences. Overall, researchers and administrators were hoping to better understand how this involvement impacted the college student experience. Varying evidence, opinions, theories, and frameworks emerged from the ongoing research into this complex phenomenon.

Perna and Titus's (2005) research presented parent involvement as a form of social capital for high school students. Unbeknownst to these researchers, Yosso (2005) was making a similar argument, presenting the community cultural wealth framework as a method to study families and family involvement through an asset or strengths-based lens. The community cultural wealth framework presented several sources of capital, including social capital, which families possess "to survive and resist macro and micro-forms of oppression" (Yosso, 2005, p. 77). Perna and Titus operationalized social capital as a combination of three relationships: parents with their student, parents with the school, and parents with other parents. Although the authors did not share a definition, there was synergy about the importance of defining parents and families or their involvement as a social capital, an asset to the student's academic success.

Perna and Titus's (2005) study examined the relationship between parent involvement and their student's odds of enrolling in a 2- or 4-year institution. The researchers used particular items from the 1992 and 1994 National Educational Longitudinal Study to define parent involvement (National Center for Education Statistics, n.d.). The study, administered by the U.S. Department of Education, is a self-reported questionnaire taken by students in eighth grade, 10th grade, as high school seniors, and 2 years post-high school (National Center for Education Statistics, n.d.; Perna & Titus, 2005). For this study, the data from senior year were used to identify parent involvement during high school, and the data from 2 years post high school were

examined to determine which students enrolled at a 2- or 4-year college or university. Results from the study indicated parent involvement in high school was related to a student's enrollment at a higher education institution. Notably, the frequency of parents contacting the school about volunteer opportunities, frequency of parents contacting the school about their student's academic concerns, and frequency of parent–student discussion about college plans significantly increased the odds of a student enrolling in college. Conversely, a parent's expectations for their student to attend college and finish a college degree significantly decreased the odds of the student attending a college or university. When data were controlled for race and ethnicity, the results did not differ significantly. Perna and Titus concluded their study supported the concept of parent involvement as a form of social capital for high school students. They argued the need to carry over the breadth of parent involvement into a student's college experiences, especially programs focused on the transition from high school to the first year of college.

Toward the beginning of the 2000s, many researchers did not disagree with the importance of parent and family involvement as high school students made their college choices. The literature was more concerned about understanding the next period of a college student's experience—their adjustment to college. However, at the time, researchers did not view parents and families of college students as a form of social capital or a necessity for the student to persist toward degree completion. Rather, the literature centered on the psychological adjustment of college students to college and the renegotiation of students' relationships with their parents and families. The college student's evolving relationship with their families to and through college was often studied through the theoretical framework of separation-individuation psychological processes (Kalsner & Pistole, 2003; Kenyon & Koerner, 2009; Lapsley & Edgerton, 2002; Mattanah et al., 2004). Lapsley and Edgerton (2002) studied how separation-individuation

processes and the attachment styles of college students impacted the students' adjustment to college. Kalsner and Pistole's (2003) study asserted the need for studying separation-individuation, attachment styles, and college adjustment processes with respect to families' race, ethnicity, and culture. Mattanah et al. (2004) advanced the work of the previous studies by exploring whether separation-individuation acted as a mediating factor between a student's attachment to their parents and their social, academic, and personal-emotional adjustment to college. Similarly, Kenyon and Koerner (2009) recognized the abundance of studies examining only the separation from their families and argued for the inclusion of measuring the ongoing connectedness a college student may continue to have with their families. All of these studies came to similar conclusions about the parent–college student relationship and college adjustment. Well-adjusted college students also maintain an ongoing relationship with their families consistent with their cultural norms (Kalsner & Pistole, 2003; Kenyon & Koerner, 2009; Lapsley & Edgerton, 2002; Mattanah et al., 2004). Similar to Perna and Titus's (2005) conclusion, families of college students seem to have continued to value their student's educational experiences.

Parent and Family Involvement and Engagement—New Perspectives

For the first time, a new framework emerged and inserted parents into partnership with colleges and universities and their college students. Henning (2007) explored the evolution of parent involvement in higher education and believed parents should be viewed as partners in pursuit of a college student's success at any given institution. *In consortio cum parentibus,* the term coined by Henning, describes the interlocking relationship between higher education, college students, and their parents and families. In consortio cum parentibus asserts college students develop decision-making processes and autonomous behavior by engaging in

conversations with their parents and by abiding by university policy. Henning hypothesized this reciprocated partnership could assist in teaching students and parents how to navigate the transition of entering college and how to negotiate any hurdles that impede the student's progression toward graduation. This hypothesis is consistent with K–12 and federal policies' declaration of how critical parent involvement is to a student's ability to succeed (Darling-Hammond et al., 2016). The challenge for higher education, and subsequently those who are seeking to understand how to initiate partnerships between parents and institutions, is the restrictive nature of public policy set forth by the Federal Education Rights and Privacy Act (Cutright, 2008).

To assist higher education's understanding of the changing role of parents in the lives of their college students, Wartman and Savage (2008) penned *Parent Involvement in Higher Education: Understanding the Relationship among Students, Parents, and the Institution*. In their definition of parental involvement, they noted:

> parental involvement includes parents' showing interest in the lives of their students in college, gaining more information about college, knowing when and how to appropriately provide encouragement and guidance to their student connecting with the institution, and potentially retaining institutional connection beyond college. (Wartman & Savage, 2008, p. 5)

Their monograph provided practitioners with theoretical frameworks to understand a student's continued need for parental involvement throughout college and the rationale for why colleges need parents to be involved in their college student(s)' experiences. This important work is still cited in much of the recent literature about parents and their involvement in the experiences of college students.

A more specific research agenda about parental involvement was articulated in an additional publication by Sax and Wartman (2010). Following a summarization of parent involvement research, the researchers articulated three research questions to advance the study about parent involvement and its impact in the experiences of college students: "(1) what is the nature of parental involvement in higher education?; (2) what are the effects of parental involvement on college student development?; (3) what does [parent involvement] phenomenon look like for different populations" (Sax & Wartman, 2010, p. 246). Examples of questions were provided to learn more about the nature of parental involvement, including student–parent and institution–parent interactions, which aligned with Henning's (2007) framework asserting the importance of these reciprocated relationships. According to Sax and Wartman, the second research question, about the impact of parent involvement on college student development, cannot be investigated until there is a better understanding of the phenomenon of parent involvement in higher education and must be studied employing a longitudinal framework. Finally, the authors called for researchers to consider the role different demographic characteristics play in defining parent involvement and its impact on college student development. This included taking into account the diversity of family structures and who students call their family.

Kiyama et al. (2015) advanced this conversation with an updated report, *Parent and Family Engagement in Higher Education*. Kiyama et al. intended to broaden the conversation from parental involvement to family engagement stating, "it is time for a reexamination of how we can better serve the full scope and diversity of today's parents and families" (p. 8). They proclaimed research and practice must shift from the lens of parent(s) to family to be more inclusive of the variations in familial support structures for a college student. Similarly, a shift

from involvement to engagement must also occur to expand the concept, taking into account the spectrum of ways a family member can support and encourage their college student. The monograph made several recommendations to expand the research about family engagements. Kiyama et al. (2015) recommended family engagement research focus specifically on low-income students, first-generation college students, and students of color who are underrepresented on college campuses. The researchers offered the suggestion of studying the transition of families as their college student enters higher education hypothesizing a better understanding of a family's transition may derive more intentional programs for family engagement. Finally, the researchers recommended research move from understanding how family engagement affects college students to how family engagement supports critical higher education outcomes, including first-year retention and persistence toward degree completion.

Measuring Parent and Family Engagement in Higher Education

Thus far, the literature has detailed the evolution of parent and family engagement in higher education. Research highlighted used varying methodologies tools to draw conclusions about the impact of parent and family involvement. However, as Wartman and Savage (2008) and Kiyama et al. (2015) proclaimed, there is still a gap in understanding exactly how parents and families are engaged in their college student's experiences and a gap in the literature about whether parent and family engagement is similar across varying subgroups. This dissertation proposes to assist in closing that gap by developing a measure focused on understanding the phenomenon of parent and family engagement in higher education. Prior to developing an instrument, Bandalos (2018) suggested reviewing any existing measures to identify any congruency and to brainstorm items for any new measure. The following subsection of this literature review summarizes research directly connected to measuring parent and family

engagement in higher education. A full list of measures reviewed for this dissertation and rationale for the measures not included in this summary can be found in Appendix A.

Parent and Family Expectations

In response to the call for more research to understand the nature of parent and family engagement in higher education, Miller (2004), Halter (2004), and Young (2006) developed measures with a focus on understanding the expectations of parents and family members have for their involvement in the college student experience. Halter recognized the need to understand college students' parent and family experiences and developed a measure focused on parent and family adjustment to higher education. Miller's research questions were centered on expectations of involvement in the first year of college and how families expected their involvement to shift from high school to college. Young's focus was on understanding the expectations of parents and families in terms of teaching and caring for their college student. These studies used freshmen orientation sessions as their primary recruitment strategy for their target population—parents and families of first-year college students.

Miller (2004) developed a questionnaire defining parent involvement as the frequency of meaningful conversations between students and their parents. In addition to the frequency of conversations, the questionnaire inquired about parents' expectations of the influence they would have during a college student's first year of college. Miller sought to understand whether the expectations about conversations and influence differed from high school involvement, whether certain topics compelled parents to have more frequent conversations or want more influence, and how parents' education level may have impacted the frequency of meaningful conversations and the influence parents wished to have during their student's first year of college. The questionnaire, developed specifically for Miller's dissertation, included 50 items with categories

for conversations and influence inclusive of academic involvement, finances, health and safety, and social experiences of their college student. Additional questions asked about the level of influence during their student's high school years and how a parent believe their influence would shift and change with their student starting college. Participants for the survey were recruited during the new student orientation period at one university, gathering responses prior to the student beginning their first year of college. Miller initially conducted an exploratory factor analysis (EFA) which extracted four factors—college and high school frequency and college and high school influences. Following the factor analysis, the author conducted a series of paired *t* tests to discover any difference in responses from the participants. Some of the key findings included the parents expected to communicate with their student more than once a week. Parents believed their influence and frequency of conversations about finances, safety, and academic success would increase from high school to college. No statistical differences were detected when the researcher compared the different education levels of parents. Finally, a hierarchical regression showed the positive relationship between the influence and number of conversations a parent has with their student during high school and the conversations and influence parents expect to have during the student's first year of college.

Halter's (2004) dissertation took a different lens to measure the experiences of parents in higher education. This study was focused on identifying factors of successful parental adjustment and understanding the needs of parents during the transition of their student to college. Halter also developed a measurement instrument for their study using the relevant research and information gathered from three focus groups. Each focus was a different constituency group—students, administrators, and current parents or caregivers of college students—with an interest to better understand parents' adjustment to their student going to college. This 40-item

instrument also included three open-ended questions for participants to elaborate about their responses. Contrasting Miller's study, Halter (2004) conducted their study during the fall semester of the first year for the college students' parents. The study was limited to parents of college students who were in their first year, taking a full course load, and who had less than 12 credit hours.

An exploratory factor analysis (EFA) was also conducted following the data collection, and the procedure extracted six factors of parent adjustment. These factors included importance of parent–university partnership, campus safety as a concern, the need for personalized information from the university to the parent, the student–parent relationship, knowledge of university resources specific for parent adjustment, and the struggle parents may experience with their student's autonomy (Miller, 2004). This study revealed the toughest adjustment for parents were the changes in family dynamics at home, although there were differences between families of color, families of first-generation college students, families who were sending their first student to college, and families who already had at least one student in college. Additionally, the results asserted the importance of the parent–institution relationship in aiding in parent's ability to adjust to their student going to college. No differences were detected based on gender of parent or parent's race/ethnicity, and the only difference was between families sending their first student to college and those who already had a college student. Again, the importance of the parent–university relationship was illuminated during Halter's (2004) study.

Neither Halter (2004) nor Miller (2004) focused their dissertation on validating their measurement instruments. Rather the researchers placed emphasis on descriptive findings and interpreting those findings for the use of university practitioners. Fortunately, Young's (2006) dissertation study focused on understanding parents' expectations of the institution and was

intended to provide evidence of validity for their instrument. The Parent Expectations of Teaching and Caring (PETAC) tool was developed using the relevant literature, feedback from an expert panel and focus groups, and two pilot studies. Teaching was defined by the importance parents of college students placed on the people and resources a student would need to excel academically. Caring was defined as a parent's perception of how university employees care for their student and the partnership the university has with the parent. The PETAC is an 86-item questionnaire, which asked parents of college students to rate the level of importance each item had to them.

Young's (2006) study was situated at a private, religious institution in the United States, and the vast majority of participants identified as White, and about half of the participants were sending their first student to college. Young used a different participant recruitment technique by using data from the university's admissions office to invite parents of first-year college students to respond to the questionnaire. Descriptive statistics reported the most important items to parents in the teaching section were internet access in residence halls, student's work should be accompanied by grades and feedback from faculty members, and academic advising needed to be available to the student. Important elements within the caring construct included the hope their student would experience fair treatment by faculty members, hope for their student to feel a sense of belonging to the university, and for the university to partner with parents.

Similar to the two studies by Halter (2004) and Miller (2004), Young (2006) conducted an EFA using a principal components analysis to identify the factors for this new instrument. Results indicated the presence of six factors, with teaching and caring constructs both being composed of three factors. The teaching factors included technology resources, learning experiences, and out-of-classroom experiences. The caring factors included care from faculty,

care from the institutional community, and care for parents being partners in a student's collegiate experiences. Young's study concluded with a multivariate analysis of variance to identify whether gender of the parent or the education level of the parent accounted for differences of scores for each construct. Differences were only detected based on the gender of the parent. Young (2006) welcomed the use of the PETAC with more diverse populations and at different institution types to gather more evidence of validity.

The previous dissertation studies began to respond to the research agenda request asserted by Kiyama et al. (2015), Sax and Wartman (2010), and Wartman and Savage (2008). Unfortunately, not enough evidence of validity was gathered to make a claim to explore the use of Miller's (2004) or Halter's (2004) measurement tools. A case could be made to continue exploration of Young's (2006) PETAC, but the scope of the instrument may limit the ability to respond to Sax and Wartman's request to expand the research agenda to understand the nature of parent involvement in higher education. Therefore, this literature review will examine a measurement instrument developed for use for parents of students in elementary and middle school. Walker et al.'s (2005) study focused on the use of measurement instruments as a mechanism to validate and revise a theoretical model of parent involvement, which is a direct application to the purpose of this dissertation study.

Parent Involvement in Early and Middle School Education

The purpose of Walker et al.'s (2005) study was to operationalize Hoover-Dempsey and Sandler's (1995, 1997) model of how parents get involved in the child's education experiences. Seven scales were developed consistent with the first two levels of Hoover-Dempsey and Sandler's model. Two studies were conducted to assist with the process of refining the scales and revising the model of parent involvement. Participants included elementary and middle school

parents, with the majority of parents identifying as parents of color and a majority who did not hold a college degree. During the process of gathering evidence of validity for each of these scales, the researchers described their iterative process of revising the theoretical framework offered into the measurement model to better describe how a parent's motivations, their perceptions of the invitation to be involved, and varying life contexts determined how they chose to be involved in their student's educational experiences.

Motivational beliefs of parents were constructed as a function of how parents believed they should interact with their student's education experiences and a parent's belief that their skills and abilities would benefit their student's educational journey (Walker et al., 2005). A 16-item scale was developed to understand parent's role construction and was developed based on qualitative interviews with parents, the theoretical model, and relevant literature. A parent's self-efficacy was assessed with a 7-item scale which was adapted from other self-efficacy measures to account for Hoover-Dempsey and Sandler's (1995, 1997) theoretical framework. The conceptualization of a parent's perception of the invitation to be involved in their student's education included perceptions of invites by the school and invites by their students and their respective teachers. Invitation by the school's scale is a 6-item measure and was adapted from a previous instrument, whereas invites by a parent's students and their teachers were developed specifically to Hoover-Dempsey and Sandler's framework and additional literature. Walker et al. extracted the need to differentiate between invitations to be involved at home (i.e., homework) and invitations to be involved at school (i.e., attending events or volunteering in the classroom) from the additional literature. The third construct, a parent's perceptions of their life context, was conceptualized with a 9-item scale measured by a parent's self-reported agreement with whether they had the time, energy, knowledge, and skillset to be involved (Walker et al., 2005). Finally,

the revised model of parent involvement indicated these three constructs would determine how a parent chose to be involved in their student's education. Therefore, Walker et al. (2005) developed an additional scale to measure how parents were involved at home and at school. This 10-item scale, equally split between home and school involvement, asked parents to indicate the likelihood of engaging in each of the behaviors.

Walker et al. (2005) used a theoretical framework to develop scales to measure each construct with the goal of providing validation for Hoover-Dempsey and Sandler's (1995, 1997) framework, which is consistent with the purpose of this dissertation study. After extensive research, these scales have not been used for parents of college students to understand if adaptations could present an opportunity to better understand the phenomenon of parent involvement in higher education. Each of the scales and instruments reviewed in this section identified parents as their target population, which is a goal of this study.

Measures Assessed From College Students' Perspective

The previous section exposed the minimal evidence of measurement instruments and models focused on understanding parent and family engagement in higher education from the lens of a parent or family member of a college student. The lack of measures developed to examine parent and family engagement in higher education from the reference point of family members leads to this next section of measuring engagement from the student's perspective. Insights about parent and family engagement gathered from the perspectives of college students may still assist in the development of a measurement instrument for this dissertation. The following section reviews the measures and scales most aligned with the intent of this dissertation study. Sax and Wartman (2010) offered an extensive review of measures of parent and family engagement in higher education for additional reference.

Parent Involvement and Autonomy Development

Many studies have been conducted to investigate the role of secure parent attachment and a college student's well-being and adjustment to college (Kalsner & Pistole, 2003; Kenyon & Koerner, 2009; Lapsley & Edgerton, 2002; Mattanah et al., 2004). Although the conclusions from these studies indicated a college student's need for ongoing connection with their parents and family members, the studies did not provide examples of the connection between parents and their college students. Cullaty's (2011) qualitative study focused on one aspect of a student's adjustment to college and the separation-individuation process—autonomy development. A total of 18 third-year, traditional-aged college students participated in three interviews and wrote two journal entries for the study. The interviews and journal entries provided a number of ways parents and families were involved in their college student's experiences. Parent and family involvement included providing support and advice to their students when making decisions, setting goals, or navigating challenging situations. Additionally, the participants indicated involvement included influencing academic and career decisions of their college students. On the other hand, parent involvement was also described as "allowing students to make mistakes or permitting student to learn from mistakes without intervening on the student's behalf" (Cullaty, 2011, p. 432). Finally, the study described parent involvement as parents determining their student's new responsibilities.

Parent Engagement and the College Student Experience

Wolf et al. (2009) designed their research study to better understand parent engagement in their student's academic environment and intentionally disaggregated parent engagement by "race, social class, parental immigrant status, gender, and year in school" (p. 334). This was in response to the concerns of college administrators and faculty as they began to experience an

increase in parents engaging in the college student's academic experience (Carney-Hall, 2008; Cutright, 2008). Data were collected from the 2005 University of California Student Experience Survey, which was administered to undergraduate college students enrolled at one of the University of California system schools. Items selected for this particular study reflected parents' influence on student's academic experience, parents' support for their student's academic decisions, and items focused on parent–student communication methods and frequencies. Demographic results from the survey revealed more than two thirds of the respondents identified as non-White, and approximately half of the respondents self-reported belonging to middle-class, working-class, or low-income households.

Descriptive and comparative analyses were conducted as a part of this study. Results indicated parental involvement in their student's academic experience included asking students about their nonacademic experiences, parents' interest in the student's academic progression, and parents' stressing the importance of good grades. Parents were less likely to assert influence over a student's schedule and selection of the student's courses. Phone calls were the most frequent form of parent and student communication, and text messaging was the least frequent. Following the comparative analysis, this study found the level of parent involvement and frequency of contact between students and their parents differed across gender, year in school, social class, race/ethnicity, and parent immigrant status (Wolf et al., 2009). These differences revealed parents of college students and their academic involvement are not monolithic. Wolf et al. (2009) stressed a need to understand how else parents are involved in the college student experience stating "institutions (and their students) may be in a position to benefit from parents' renewed interest in students' college experiences, but only equipped with more information" (p. 351).

Harper et al. (2012) continued this investigation into parent and family engagement by studying parent and family engagement contributions to students' academic development, social development, and sociopolitical development. The researchers used results from the 2006 University of California Student Experience Survey. The established parent contact and parent involvement factors confirmed revealed inconsistencies about the impact parent contact had on student's gains in sociopolitical awareness, academic success, and the student's social experience satisfaction. Harper et al. specifically highlighted the positive relationship between parent contact and sociopolitical awareness for low-income students. Whereas students identifying as East Indian and Pakistani experienced a negative relationship between these two variables. Additionally, parent contact was negatively associated with social experience satisfaction for students identifying as White, East Indian Pakistani, and middle class. Conversely, students classified as seniors and students who identified as Chinese or Thai experienced a positive relationship between these two variables. The consistency was the positive association between parent's involvement and all three variables of interest in this study (Harper et al., 2012). Following this additional study, the authors recommended future research to move from frequency of contact toward identifying specific attitudes and behaviors of parents and explore more student outcomes variables. Harper et al. (2012) proclaimed "such information will enable researchers to more adequately account for the full range of [family] influence on college students and will provide valuable information for practitioners whose work involves increasingly diverse populations of students and parents" (p. 152).

Perceived Social Support and the College Student Experience

The Multidimensional Scale of Perceived Social Support (MSPSS), developed by Zimet et al. (1988) expanded the idea of social support to include family, friends, and significant others.

The measure has been used in many research studies with various target populations, including higher education populations. Originally developed to assist in the validation of how family, friend, and significant other support may be considered as a part of mental-health intervention strategies, Zimet et al. concluded their 12-item instrument was psychometrically sound enough to be used in research and educational settings. Ermis-Demirtas et al. (2018) explored the psychometric properties of the MSPSS with college students who identified as Hispanic or Latina/o. The researchers focused on this specific college student population because of the increasing proportion of Hispanic- or Latina/o-identifying students entering higher education. Additionally, the authors summarized the various cultural adaptation studies for the MSPSS and recognized the MSPSS had yet to be studied with Hispanic- or Latina/o-identifying college students. After administering the MSPSS to more than 200 college students, the researchers conducted a confirmatory factor analysis, independent *t* tests, and reliability analysis. Results indicated the current data fit the three-factor model very well, and the friend, family, and significant other subscales had Cronbach's alpha values above .90. Consistent with Zimet et al.'s original investigation of the MSPSS, Ermis-Demirtas et al. found no gender differences in the perceptions of each form of social support.

Family Engagement for First-Generation and Low-Income College Students

A series of literature was published in 2019–2020 exploring family engagement from the perspective of low-income college students, seeking to change the narrative away from what low-income families lack toward how low-income families provide support to a student's success (Roska et al., 2020; Roska & Kinsley, 2019; Roska & Silver, 2019). Roska and Kinsley (2019) identified a gap in the research literature concerning the nature of family engagement and the support family members may provide to their college student. Their study explored whether

there was any relationship between a family's emotional and financial support and their college student's academic engagement and psychosocial adjustment. Family emotional support and financial support were derived from a 4-item measure—one item to represent emotional support and three items to capture the breadth of financial support. Student engagement was determined by asking students to rate the frequency they were working on- or off-campus, hours students spent studying, and time students spent connecting with their faculty members. Psychosocial adjustment to college was measured by assessing a student's sense of belonging and psychological well-being with nine items. Roska and Kinsley focused the study on incoming first-year, low-income students at one university, who intended to major in science, technology, engineering, and math fields with an American College Test (ACT) score of 20+. Results from the study established the positive impact of family emotional support, student engagement, and adjustment to a student's academic outcomes (e.g., grade point average, first-year retention, and credit hour progression). However, financial support did not show any significant association with any of the variables of interest in this study (Roska & Kinsley, 2019).

As a result of outcomes from Roska and Kinsley's (2019) study, Roska et al. (2020) continued to investigate how parent validation, a student's college experiences, and a student's commitment to the institution may be related. Students who identified as low-income, first-generation, and domestic students were invited to participate in the study. Participants included 40% of students identifying as first-generation college students, about a quarter of students identifying as low-income, and about the same percentage of students identifying as first-generation and low-income college students. Students of color represented 37% of the participants. Parent validation was defined with a 6-item scale representing "students' perceptions of their parents' encouragement . . . and emphasis on the value of education" (Roska

et al., 2020, p. 5). College student experiences were defined as a combination of peer and faculty interaction and a student's sense of belonging at the university. Peer interaction and faculty interactions were represented by a 9-item scale, whereas sense of belonging was characterized by a 3-item scale with all scales adapted from a previous measure. The final construct of interest was a student's intent to stay at the university. Pascarella and Terenzini (1980) developed a 5-item scale to measure a student's commitment to their institution, which was used without adaptation for this study (Roska et al., 2020).

Roska et al. (2020) first provided evidence of validity for the parent validation scale, including a measure of internal consistency and evidence of divergent validity. The parent validation scale demonstrated strong reliability with Cronbach's alpha of .93. Divergent validity was established by comparing Zimet et al.'s (1988) MSPSS measure and the parent validation scale (Roska et al., 2020). The authors asserted further research is needed to better understand how parent validation fits into the broader understanding of the nature of parent and family engagement in higher education. Additional results from the study included the positive and statistically significant association with each of the variables of interest—college student experiences, sense of belonging, and institutional commitment (Roska et al., 2020). Roska et al.'s study continued adding to the narrative about the importance of parent involvement in a college student's experiences.

In a final exploration of family engagement of first-generation college students, Roska and Silver (2019) expanded the research by studying graduating seniors using qualitative methods. Through interviews with 62 graduating seniors at one large, public university, the researchers learned about students' limited engagement with university resources to help them transition from their undergraduate career to graduate school or their first job. A majority of the

participants identified as students of color, and 42% of students identified as first-generation college students. Roska and Silver were particularly interested in difference between the resources first-generation college students used versus their continuing-generational peers. A common theme for both groups of students was the reliance on other resources besides the structured services offered by the institution. The divergent themes revealed each group of students used their parents as resources. First-generation college students described informing parents about their postgraduate plans and receiving emotional support to continue their pursuit of a job or graduate school. Continuing-generation college students described the interaction with their parents as a resource to help with searching for jobs, reviewing resumes and cover letters, preparing for interviews, and even gaining access to internship opportunities through their parents' networks. Although the support from parents was quite different, the interviews illuminated how parent engagement may change from first to senior year of college, but parents were still involved throughout their student(s)' college experiences.

Summary

In summary, the literature revealed the evolution from parent to family and involvement to engagement. Wartman and Savage's (2008) compilation brought together the historical knowledge and a present-day understanding of how the parent and family role has continued to evolve and had progressed when the millennial generation of students entered higher education. Kiyama et al. (2015) widened the conversation for researchers, practitioners, and policy makers with their assertion to be more inclusive of variations of family support, students, and the increasing diversity of college students. A few research teams have taken on the challenge of understanding the complex phenomenon of family engagement in higher education, and this dissertation adds knowledge to the most current literature. Walker et al. (2005) proclaimed

“theories are like maps. They are approximations of reality; however, when continually updated with new information, they can be valid and reliable representations” (p. 99). The following sequence of methods used the conceptual framework as a map and adapted the measures reviewed to develop PFEHE measure.

CHAPTER THREE:

METHODS

The purpose of this study was to develop and initially validate a Parent and Family Engagement in Higher Education (PFEHE) measure to better understand the complex phenomenon of family engagement in higher education. This chapter provides an overview of the study's design and describes the phases and steps taken in the development of the PFEHE measure. McCoach et al. (2013) and Bandalos (2018) outlined step-by-step processes for developing any scale or measure, including the ongoing, iterative process of reviewing and revising a measure. This study adapted those steps to develop and initially validate the PFEHE measure. This chapter outlines the three phases used to develop and initially validate the measure. Phase 1 involved the development process for the measure. Phase 2 consisted of the iterative process of reviewing and revising the measure before the final version was formatted and ready for distribution. Phase 3 encompassed the deployment of the final version of the PFEHE measure and analysis used to answer the following research questions:

1. What is the strength of the evidence supporting validity of the PFEHE measure?
2. What is the strength of the evidence supporting reliability of the PFEHE measure?
3. What is the strength of the evidence supporting the fairness of scores from the PFEHE measure?

Each section further describes each phase, when and how participants were engaged, data collection and analysis plans, and how results guided the succeeding phase. Table 1 depicts each phase and the corresponding steps.

Table 1

Steps to Develop and Initially Validate the PFEHE

Phase 1: Developing a PFEHE measure	
Step 1: Define construct	Using the literature review and conceptual frameworks, a conceptual definition of parent and family engagement in higher education was identified.
Step 2: Create an instrument blueprint	A conceptual definition of parent and family engagement in higher education guided the development of a test blueprint specifying the ideal distribution of categories needed to measure the parent and family engagement.
Step 3: Generate items	Items from existing measures and scales were reviewed and considered for the developing measure. Additional items were generated from the relevant literature to ensure items were consistent with today's higher education environment.
Phase 2: Review and revise the measure	
Step 4: Item review process	This process included a variety of participants who evaluated potential items for the parent and family engagement measure. Items were added, revised, or removed during this step.
Step 5: Pilot study	The pilot study assisted with the continued revision and refinement of items. Results assisted with any final adjustments before the validation study was executed.
Phase 3: Validation study	
Step 6: Validation study	A validation study was used to generate enough data to conduct the necessary psychometric analysis.
Step 7: Report evidence of validity, reliability, and fairness	Information and data gathered from Steps 3-6 are necessary for reporting evidence of validity, reliability, and fairness for the PFEHE measure.

Ethical Implications

This subsection is intended to articulate how I attempted to ensure participants and the results were not misused to marginalize communities of color, first-generation college students

or their parents, or students and families who identify as low-income. First, my role as the researcher was stated in the introduction chapter, where I also asserted my epistemological beliefs that guided this study. In addition, this study was guided by the QuantCrit principles as the PFEHE measure was developed, reviewed, and revised, and as evidence of reliability, validity, and fairness was gathered (Gillborn et al., 2018). Additional care was taken to ensure participant identities and their responses were kept confidential during all parts of this study, which included assurances of the data being secured with password-protected databases (Bulmer & Ocloo, 2012). Finally, I took much care when discussing the results of this study, which were guided by Yosso's (2005) asset-based conceptualization of family as a source of capital in a student's education experiences.

Phase 1: Developing a PFEHE Measure

Phase 1 was characterized as the brainstorming phase of this study. The conceptual framework outlined in Chapter 1 and the literature reviewed in Chapter 2 assisted in this phase of the development of the PFEHE measure. During this phase, the purpose of the measure was determined, the construct of parent and family engagement was defined, and items were generated for the measure. Uniquely, this phase of the dissertation study did not include any participants.

Purpose of the Measure

As stated in the introduction section, those researchers and practitioners have not had a quantitative method to better understand the complex phenomenon of parent and family engagement in higher education. Therefore, the PFEHE measure was designed to be used as a tool for researchers and higher education administrators to better understand how parents and family members engage during their student(s)' college experience.

Define the Construct

The next step in developing the measure was defining the construct: parent and family engagement in higher education. An extensive review of the literature and understanding previous construct definitions from Wartman and Savage (2008), Kiyama et al. (2015), and Kiyama and Harper (2018) helped formulate this study's definition of parent and family engagement in higher education. The conceptual definition of parent and family engagement in higher education for this study was defined by four constructs:

- Dimension of support - "People, networks, and resources drawn upon" to support the family member and student during the higher education experience" (Harper et al., 2020, p. 545).
- Involvement and engagement - Methods a family member could use to interact with their college student during the higher education experience (Harper et al., 2020; Walker et al., 2005).
- Self-efficacy - Knowledge, skills, ability, and time a family member has to provide their college student (Walker et al., 2005).
- Institutional commitment - A parent or family member's intention for their student to persist to degree completion at their college/university (Pascarella & Terenzini, 1980; Roska et al., 2020).

Instrument Blueprint

An instrument blueprint was created after the definition of parent and family engagement and the purpose of the measure were determined. The blueprint guided the generation of items by estimating the proportion of the instrument needed for each construct (Bandalos, 2018; McCoach et al., 2013). In addition, the instrument blueprint considered the proportion of demographic-type

information needed for the measure. The proportion of the instrument dedicated to each construct was guided by the purpose of the measure. Therefore, much of the instrument was dedicated to the involvement and engagement construct and the dimensions of support constructs. Table 2 depicts the initial instrument blueprint for the PFEHE measure.

Table 2

Parent and Family Engagement in Higher Education Instrument Blueprint

Constructs	Definition	Type of items	Percentage of instrument
N/A	Demographic information about the parent or family member, including race/ethnicity, relationship to student, education level, etc. (Harper et al., 2020).	Demographic	10%
Self-efficacy	Knowledge, skills, ability, and time a family member has to provide their college student (Walker et al., 2005).	Affective	15%
Involvement and engagement	Methods a family member could interact with their college student during the higher education experience (Harper et al., 2020; Walker et al., 2005).	Affective	30%
Dimensions of support	"People, networks, and resources drawn upon" to support the family member and student during the higher education experience (Harper et al., 2020, p. 545).	Affective	30%
Institutional Commitment	A parent or family member's intention for their student to persist to degree completion at the college/university (Pascarella & Terenzini, 1980; Roska et al., 2020).	Affective	15%

Generating Items

Item generation was the next step in the instrument development process, which was done in alignment with the initial instrument blueprint, the purpose of the measure, and the definition of parent and family engagement. It was critical to capture the breadth of each

construct. To accomplish this, I began this process with a review of existing measures that shared similar constructs (Bandalos, 2018; McCoach et al., 2013). Appendix A provides a summary of all reviewed measures for this study. Chapter 2 of this dissertation highlighted four existing measures because of their relevance to the current study. However, none of these measures captured the full essence of the PFEHE measure. Therefore, items from these existing measures were adapted to align with the purpose, definition, and target population of the PFEHE measure. Next, words and phrases were adapted for congruence to today's higher education experience. In addition to any adapted items from existing measures, original items were developed to capture the full essence of each construct and to ensure a comprehensive, inclusive instrument. Concurrent to the generation of items, an appropriate Likert rating scale was developed for each item (McCoach et al., 2013). Appendix B lists all items generated for the PFEHE measure and their accompanying Likert rating scale. The generation of proposed items concluded the first phase of this study. Phase 2 of this study focused on the review and revision of the items and the scaling technique to ensure the PFEHE measure was comprehensive and inclusive of the higher education experiences of families of color, families of first-generation college students, and low-income families.

Phase 2: Review and Revise the Measure

The review and revision phase of this study was a critical next step to developing the PFEHE measure. This phase brought together several diverse groups of participants to share their expertise and experiences to help shape the final draft of the PFEHE measure. Three important tasks were completed in this phase, which included an expert panel review, cognitive interviews with current parents and family members of college students, and a small pilot study of the measure.

Expert Panel Review

An expert panel was one approach that was used as part of an initial item review. An expert panel was the first group of participants to interact with the proposed items for the PFEHE measure. This group is referred to as the expert panel, expert panelists, or panelists throughout this study. During the initial item review, the expert panel evaluated each item for its clarity, relevance to the measure, and fairness of the item. Additionally, the panelist also identified each item's associated construct (Bandalos, 2018; McCoach et al., 2013). Information gathered from the expert panelists resulted in an initial draft version of the PFEHE measure.

Participants

The composition of the expert panel aligned with Bandalos's (2018) recommendation to have representation of content and measurement experts. As a result of the specificity of the purpose of the expert panel and the expertise needed, a convenience purposive sampling technique guided the recruitment of each panelist. Teddlie and Yu (2007) posited, "A purposive sample is typically designed to pick a small number of cases that will yield the most information about a particular phenomenon" (p. 83), which aligned well for this phase of the study. Specifically, this sampling technique allowed me to elicit participants who already understood the context of this study and participants who understood the complexity of parent and family engagement in higher education (Cohen et al., 2018). The composition of the expert panel was a balance of measurement experts and higher education administrators who work with parents and families.

Fifteen potential panelists received a recruitment email as an invitation to participate in this phase of the study. The potential measurement experts were recruited if they were faculty or university staff who focused on measurement practices. Participants ranged from tenured faculty

members to institutional research staff members and doctoral students who successfully defended dissertations focused on measurement methodology. Higher education administrators were emailed if they currently worked in offices focused on parent and family programs or those who were executive-level administrators who formally worked in family programming units. If a participant agreed to be a panelist, they were asked to schedule a 15-minute introductory meeting. The introductory meeting provided a space to review the expert panel rating form and the instructions (see Appendix C) for completing the rating form. The meeting also gave panelists an opportunity to ask for any additional clarity about the rating form and the developing PFEHE measure. Eight panelists scheduled an introductory meeting and submitted a completed rating form. Table 3 presents an overview of the expert panelists. These panelists brought their expertise and perspectives from various types, sizes, and geographic locations of institutions.

Table 3

Overview of Expert Panelists

Panelists	Professional role	Type of expert	Gender	Race / ethnicity
1	Vice President for Student Affairs	Higher Education Administrator	Women	White
2	Doctoral Candidate	Measurement Expert	Woman	Multiracial
3	Partner & Chief Research Associate; Director for Quality Enhancement Plan	Measurement Expert	Man	White
4	Assistant Vice President for Student Engagement	Higher Education Administrator	Woman	White
5	Associate Vice President, Institutional Research and Effectiveness	Measurement Expert	Woman	Hispanic, Non-White
6	Coordinator for Parent & Family Programs	Higher Education Administrator	Woman	White
7	Associate Director of New Student and Family Services	Higher Education Administrator	Man	White
8	Executive Director of Academic Coaching and Editing	Measurement Expert	Woman	White

Procedures

Procedures for gathering information from the expert panelists were guided by and adapted from McCoach et al.'s (2013) recommendations. Following the introductory meeting, the expert panelists were provided a copy of an expert panel rating form, which reiterated the instructions provided during the introductory meeting. The rating form was designed in Microsoft Excel, and panelists used an online questionnaire to submit their completed form, propose additional items, and provide overall commentary and feedback.

All panelists were asked to identify which construct each item best represented with the options consisting of the four constructs that define parent and family engagement in higher education (i.e., dimension of support, involvement and engagement, self-efficacy, and institutional commitment). Next, panelists were asked the rate the clarity of the item on a 4-point scale from poor to excellent. From there, panelists identified whether the item was relevant or not to the intended purpose of the PFEHE measure. Once relevance was scored, panelists were asked to rate the fairness and whether an item may have potential biases. Finally, the panelists were asked to determine whether the proposed response scales were appropriate for each item. Once completed, panelists submitted the rating form using an online questionnaire where they were able to provide any additional feedback about the items and the PFEHE measure.

A thorough review of all the rating forms, commentary, and feedback was considered to determine which items should be included in the next round of item review and revisions. Items that were removed from further consideration for this study included those rated as not relevant to the measure, items with the potential for bias, and items lacking clarity. Additionally, items that had some uncertainty in construct categorization were considered for removal from this study. Expert panelists scored 65 items, and because of their input, 38 items remained for

consideration in the developing PFEHE measure. The remaining 38 items were then reviewed by the next group of participants who represented the target population for this measure current parents and family members of college students.

Cognitive Interviews

This study continued the review and revision phase by incorporating the perspectives of parents and family members of current college students through a method called cognitive interviews. Cognitive interviews allowed each participant to engage with me to share how they were processing information to answer each item (Bandalos, 2018). Information gathered through this process assisted with adjusting wording of items, adding new items to the measure, and removing items from further consideration for the PFEHE measure.

Participants

The purpose of the cognitive interview portion of this study was to understand how participants reason through each item in preparation to responding to the item. In alignment with this purpose and the overall intention of developing the PFEHE measure, participants were recruited to represent the target population. A convenience, purposive sampling technique was the most appropriate method to recruit participants because of the very specific intentions of this stage of the study (Cohen et al., 2018). Participants were recruited through two different avenues; the higher education administrators from the expert panel were given an email template to share with their communities, and a recruitment flyer was developed to recruit participants from my network using social media. Any person who was interested was asked to fill out a form to indicate their interest and they had the ability to nominate others who matched the participant criteria. Twenty-four individuals expressed interest in participating in this stage of the study and each received an email invitation to participate. The email provided an overview of the study, the

time commitment requested to participate, and directions to schedule a 60-minute meeting with me for the cognitive interview. Ten individuals scheduled and completed the 60-minute cognitive interview with me. Table 4 outlines the participants and some of their key characteristics.

Table 4

Overview of Cognitive Interview Participants

Participant	Relation to student	College(s) student(s) attend	Notes	Gender	Race / ethnicity
1	Mom	University of Michigan University of Florida	Out-of-state students	Women	Middle Eastern
2	Mom	Florida State University (2)	Students are 2 years apart at the same university	Woman	White
3	Mom	Florida State University Emory University	Parents only attended 2-year community colleges	Woman	White
4	Mom	Shippensburg University	Mom of student-athlete	Woman	Black
5	Mom	University of Georgia	Mom of a first-year student	Woman	White
6	Mom	Dillard University	Student attends a HBCU	Woman	Black
7	Mom	Louisiana State University	Mom of a Student-Athlete	Woman	White
8	Mom	University of North Carolina – Charlotte (2)	Participant is also the dean of students	Woman	White
9	Mom	Regis University	Parent of a first-generation college student	Woman	White
10	Mom	Ohio University	Oldest child chose to not attend college; current college student is the youngest child	Woman	White

Although all the participants identified as moms, they all had diverse perspectives based on their student(s)' experiences. Participant 1 had two students and both chose to attend out-of-state schools. Two participants were moms of student-athletes and shared their perspectives of engagement were different from their peers who did not have collegiate student-athletes. Two other participants had students who were the first in their family to attend a 4-year university. One participant had a first-year student who was in their first semester at college. Another participant had two students at the same university, but the students were 2 years apart: a first-year and a third-year student. Participant 8 had two students at the same university and is also the dean of students at the same university, which provided various perspectives of parent and family engagement in higher education. Most participants had students who attended universities in the Southeast. Universities ranged from large-public institutions to small-private institutions and regional public institutions. All 10 participants had the same common sentiment of excitement to participate in this study.

Procedures

For this study, I employed the concurrent verbal probing method of cognitive interviewing using Caspar et al.'s (1999) guidelines. The concurrent verbal probing method consists of the interviewer asking an item aloud to the participant, the participant responding to the item, and then a sequence of probing questions in which the researcher asked participants questions to better understand the thought process the participant took to answer the question (Caspar et al., 1999). Each interview was no longer than 60 minutes, and the last 10-15 minutes of the interviews were set aside for the participants to provide their overall commentary about the measure. All proposed items of the PFEHE were reviewed by at least three of the participants, and participants were asked the same probing questions about each item:

1. (Comprehension Probing Question) Can you paraphrase this question back to me in your own words?
2. (Decision Probing Question) What information, if any, would you need to recall to answer this question? How difficult is it to answer this question?
3. (Response Process Probing Question) Can you share how you would think about answering this question?
4. (Social Desirability Probing Question) What hesitations, if any, would you have in honestly answering this question?

Once the interview had about 10 to 15 minutes left, the participant was asked the following questions:

1. Given that you have already heard a sampling of this measure, what additional topics do you hope are covered within this measure?
2. What feedback do you have about this developing measure?
3. Do you have any additional commentary and/or feedback as the measure continues to develop?

The item-specific questions gave insight into the process a participant used in answering the questions and identified whether there were words or phrases that needed clarification. The measure-specific questions gave participants opportunities to share their perspectives of what was needed to be included in the measure and constructive feedback. Most items were well received by participants and were evaluated as relevant to the measure. Participants also had no hesitations in answering these items honestly. Other items were revised, removed, and added iteratively throughout this stage of instrument development, which allowed for opportunities for subsequent participants to evaluate updated items.

If a participant shared a topic they hoped would be addressed by the measure and the topic was not part of the instrument, the participant and I worked together to generate a relevant item. These items, along with other added items, were reviewed by succeeding cognitive interview participants. When the removal of an item was suggested, the item was reviewed by the next participant before it was removed from the cognitive interview procedure. Similar to the process for added items, any items needing clarification or word changes were made in collaboration with the participant. An in-depth review of the results of the cognitive interviews is available in Chapter 4.

Following all the cognitive interviews, I used the information gathered and revisited the literature review to reexamine and revise the items of the PFEHE measure. Items removed from consideration were evaluated by more than four participants to ensure confidence in their removal. Revised and newly added items were evaluated by at least three more participants prior to considering their addition to the PFEHE measure. The revised version of the PFEHE measure consisted of 54 items inclusive of the demographic questions (see Appendix D).

Pilot Study

The final stage of reviewing and revising an instrument involved testing the measure with a small pilot group. Instrument developers are advised to review the final version of their instrument to verify the directions are clear, the formatting is easy to navigate for participants, and the items are functioning well (Bandalos, 2018). Sample sizes for pilot studies typically range from 10 to 80 participants (Bandalos, 2018; McCoach et al., 2013). Information gathered through this stage assisted in any final decisions about the contents of the PFEHE measure. This pilot study was approved by University of South Florida's Institutional Review Board (USF IRB; see Appendix E).

Participants

Participants for this final stage of the review and revision process were recruited from the pool of individuals interested in the cognitive interview stage. An email invitation was sent to the same interested individuals, which requested for them to complete the final draft of the PFEHE questionnaire. Additionally, the email asked participants to share with one other family member with the hope of collecting data from enough participants to execute item level analyses. Table 5 is an overview of the demographic characteristics of the participants who opted to take the survey.

Table 5

Demographic Characteristics of Pilot Study Participants

Characteristic	*N*	%
Relationship to student		
Immediate family member (e.g., parent, sibling, grandparents)	23	100
Extended family member (e.g., aunt, uncle, cousins)	0	0.0
Guardian	0	0.0
Mentor	0	0.0
Community member	0	0.0
Prefer not to respond	0	0.0
Level of education		
High school or GED, no college courses	0	0.0
Some college course, no college degree	1	4.4
Vocational or technical training	0	0.0
Associate's (e.g., AA, AS) and/or bachelor's (e.g., BA, BS) degree	7	30.4
Master's degree (MS, MFA, MA, etc.)	9	39.1
Doctoral and/or professional degree (e.g., Ph.D., J.D., M.D)	6	26.1
I prefer not to response	0	0.0
First student to go to college		
Yes	15	68.2
No	7	31.8
Pell Grant eligible		
Yes	4	17.4
No	18	78.4
Uncertain	1	4.4

Table 5 (Continued)

Characteristic	*N*	%
Participant's race/ethnicity		
American Indian or Alaska Native	0	0.0
Asian	1	4.4
Black or African American	3	13.0
Hispanic or Latina/o	4	17.4
Middle Eastern or North African	0	0.0
Native Hawaiian or Other Pacific Islander	0	0.0
White or Caucasian	14	60.9
Two or more races (e.g., biracial, multiracial)	0	0.0
Another race or ethnicity	0	0.0
I prefer not to respond	1	4.4
Participant's gender		
Woman	22	95.7
Man	1	4.4
Trans*	0	0.0
Nonbinary	0	0.0
Another gender identity	0	0.0
I prefer not to respond	0	0.0
Student's gender		
Woman	13	56.5
Man	10	43.5
Trans*	0	0.0
Nonbinary	0	0.0
Another gender identity	0	0.0
I prefer not to respond	0	0.0

Note. $n = 23$.

Procedures

The critical objective of the pilot study was to produce the final version of the PFEHE measure for this dissertation study. USF IRB approved the following participant recruitment method and study procedures. Participants were recruited by a convenience sampling technique (Cohen et al., 2008). All participants completed the final draft version of the PFEHE through the online questionnaire administrator, Qualtrics XM software. Participants had to acknowledge their understanding of the informed consent, identify whether they were 18 or older, and identify whether they were a current parent or family member of an undergraduate college student before

they could respond to the items in the PFEHE measure. If any participant did not consent to participating, identified as a minor, or were not a current family member of an undergraduate college student, they were unable to complete the questionnaire. All other participants proceeded to the PFEHE measure.

After 2 weeks, the pilot study data collection concluded. The data gathered from all the participants were initially reviewed for completeness and to identify any participant records to remove. A participant's record was considered complete if all items were responded to, including the two attention-check items. The pilot study had two attention-check items, which assisted me by identifying any participant who might not have been fully focused on taking the survey. No participant records were removed during the pilot study stage.

I used SPSS 26 software to retrieve descriptive, item-level data following the review of participant records. Appendix F includes tables with item-level statistics. Item means ranged from 1.23 to 5.00, and the standard deviations of items ranged from 0.00 to 1.59. Additionally, Cronbach's alphas were calculated for the full measure and for each of the anticipated PFEHE scales. For each scale, item-to-total statistics were calculated and are available in Appendix F. Table 6 provides an overview of the various Cronbach's alpha values and the item-to-total correlation range for each scale.

Table 6

Reliability Statistics – PFEHE Pilot Study Scale Level Statistics

PFEHE scale	Cronbach's alpha	Corrected item-to-total correlation range	*n* of Items
Institutional Commitment	.77	.34–.76	5
Family/Student Involvement and Engagement	.77	.07–.76	20[1]
Family/University Involvement and Engagement	.81	.17–.72	11
Self-Efficacy	.71	.31–.68	3
Dimension of Support	.76	.32–.73	7

Note. $n = 23$. [1]Item 40 - Communicate with my student via text messages was removed from the calculation because there was zero variance.

A thorough review of all the tables in Appendix F and Table 6 assisted me with the adjustment of the PFEHE measure for the final phase of this study. The only item that stood out in this stage was the item asking participants how likely they were to communicate with their student through text messages. Every participant selected the extremely likely response option. This is not a cause to remove the item from the measure; however, there may be focus on this item following the validation study phase of this research. All other items seemed to function well with this small sample and there were no concerns once the items were reviewed as a part of their anticipated scales. The anticipated scales used for this stage of the study were derived from the study's conceptual framework and feedback throughout the expert panel stage of this study. No items were removed or revised during this stage of the study. However, a helpful hint was added to the beginning questionnaire, which asked family members with more than one student in college to choose one of their students to think about as they are responding to the items on the PFEHE measure. Otherwise, the pilot study version of the PFEHE measure was used for final phase of this research: the Validation Study.

Phase 3: Validation Study

The validation study phase was the final phase of this dissertation study. Data gathered from this phase, along with results from the previous phases, provided evidence needed to answer the research questions. Once data were collected, data analysis produced initial understandings of the psychometric properties of the PFEHE measure. Specifically, the analysis resulted in descriptive statistics for each item, measures of internal consistency, exploration of the internal structure of the measure (i.e., exploratory factor analysis [EFA]), and how well the sample data fit the intended model (i.e., confirmatory factor analysis). These results contributed to the necessary evidence to answer this dissertation's research questions about the validity, reliability, and fairness of the PFEHE measure and is presented in Chapter 4.

Participants

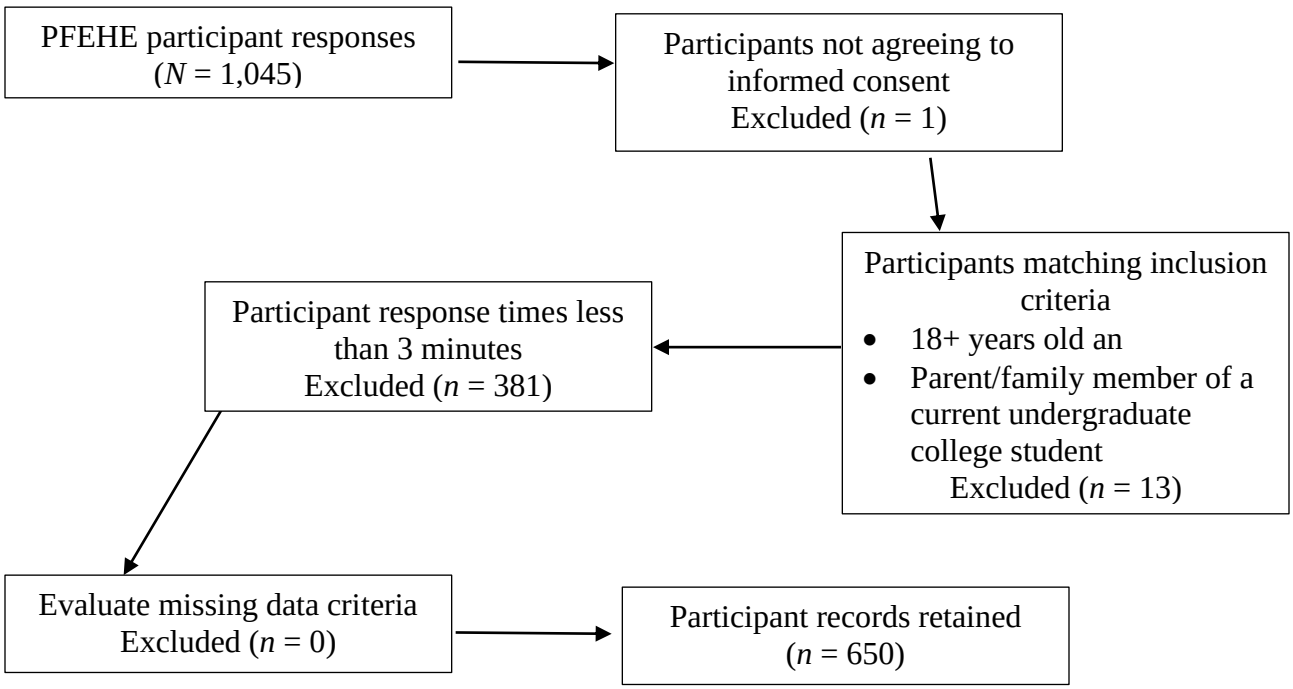
A convenience volunteering sampling technique was used to recruit a wide variety of participants for this validation study (Cohen et al., 2018). Recruitment flyers were shared within Facebook groups, my personal Facebook and LinkedIn pages, and a variety of LinkedIn groups following the approval from USF IRB. Additionally, email communication was sent to individuals within my personal network to assist in this recruitment effort (see Appendix G). The recruitment flyers led participants to complete the PFEHE measure through an online questionnaire administrator (i.e., Qualtrics). Participants who identified as 18 years old or older and a parent or family member of a current undergraduate college student were included in this study. Every participant who completed the PFEHE measure was redirected to an external website to enter for a chance to win a $25 gift card to Amazon. This incentive was given to every 20th participant. Data collection was monitored to ensure data were accurately captured. More

than 1,000 responses were submitted prior to closing the online questionnaire and those responses were reviewed to identify the sample of responses used for data analysis.

Once data collection closed, participant records were reviewed to identify responses that were excluded from the data analysis stage of this validation study. Additionally participant records were reviewed to identify whether there was a pattern of missing data. Figure 1 outlines the data cleaning process for the validation study's participant records.

Figure 1

Validation Study Data Cleaning Process



After this review, missing data were assumed missing completely at random and were handled accordingly through data analysis (Kline, 2016). This data cleaning process removed 395 responses and left 650 records for the data analysis process of this validation study. Table 7

provides a demographic overview of the retained participants who completed the questionnaire. Most participants identified as immediate family members (64.5%) and identified as White or Caucasian (65.5%). One in five participants did not have a postsecondary degree or credential.

Table 7

Demographic Characteristics of Pilot Study Participants

Characteristic	*N*	%
Relationship to student		
Immediate family member (e.g., parent, sibling, grandparents)	419	64.5
Extended family member (e.g., aunt, uncle, cousins)	67	10.3
Guardian	62	9.5
Mentor	90	13.8
Community member	7	1.1
Prefer not to respond	4	0.6
Missing data	1	0.2
Level of education		
High school or GED, no college courses	28	4.3
Some college course, no college degree	102	15.7
Vocational or technical training	62	9.5
Associate's (e.g., AA, AS) and/or bachelor's (e.g., BA, BS) degree	178	27.4
Master's degree (e.g., MS, MFA, MA)	180	27.7
Doctoral and/or professional degree (e.g., PhD, JD, MD)	96	14.8
I prefer not to response	1	0.2
Missing data	0	0.0
First student to go to college		
Yes	412	63.4
No	181	27.8
Uncertain	16	2.5
I prefer not to respond	3	0.5
Missing data	38	5.8
Pell Grant eligible		
Yes	381	58.6
No	152	23.4
Uncertain	106	16.3
I prefer not to respond	7	1.1
Missing data	4	0.6
Participant's gender		
Woman	339	52.2
Man	271	41.7
Trans*	10	1.5
Nonbinary	0	0.0
Another gender identity	1	0.2
I prefer not to respond	3	0.5
Missing data	26	4.0

Table 7 (Continued)

Characteristic	*N*	%
Participant's race/ethnicity		
American Indian or Alaska Native	74	11.4
Asian	30	4.6
Black or African American	61	9.4
Hispanic or Latina/o	41	6.3
Middle Eastern or North African	2	0.3
Native Hawaiian or Other Pacific Islander	4	0.6
White or Caucasian	426	65.5
Two or more races (e.g., biracial, multiracial)	6	0.9
Another race or ethnicity	3	0.5
I prefer not to respond	3	0.5
Missing data	0	0.0
Student's gender		
Woman	340	52.3
Man	282	43.4
Trans*	13	2.0
Nonbinary	2	0.3
Another gender identity	4	0.6
I prefer not to respond	6	0.9
Missing data	3	0.5

Note. $n = 650$.

Summary

This chapter outlined a three-phase approach to the development and initial validation evidence of the PFEHE measure. Phase 1 focused on defining the purpose for the measure and the generation of items for the PFEHE measure. Phase 2 engaged various participants to assist in the review, revision, additions, and edits to these items. Additionally, Phase 2 participants provided overall feedback about the PFEHE measure and its intended purpose. The completion of Phases 1 and 2 led to the preparation of the measure for Phase 3: the Validation Study. Data collected from the validation study provided a large enough sample to conduct reliability analysis and an exploratory and a confirmatory factor analysis. Collectively, the phases and

corresponding data analyses provided evidence answering the three research questions associated with this dissertation study.

CHAPTER FOUR:

RESULTS

This dissertation study was intended to develop and initially validate a new measure to capture the complex phenomenon of parent and family engagement in higher education. Chapter 3 detailed the process of developing the measure from conceptualization through a validation study. Phase 1 and Phase 2 were characterized by developing items for the measure and gathering feedback about those items from expert panelists and current parents and family members of college students. In Phase 3, the Validation Study, data were collected to conduct the necessary psychometric analyses detailed in Chapter 3. This chapter reports evidence of validity, reliability, and fairness, directly responsive to this dissertation's research questions:

1. What is the strength of the evidence supporting validity of the PFEHE measure?
2. What is the strength of the evidence supporting reliability of the PFEHE measure?
3. What is the strength of the evidence supporting the fairness of scores from the PFEHE measure?

Evidence of Validity, Reliability, and Fairness

The final step in this instrument development process was to report on evidence of validity, reliability, and fairness (Bandalos, 2018; Kline, 2016; McCoach et al., 2013). Specifically for this dissertation study, the report of evidence directly responds to each of the research questions. Discussion of the results is presented in the next chapter of this dissertation.

Strength of Evidence Support Validity of the PFEHE Measure

The Standards of Education and Psychological Testing (American Educational Research Association, 2014) outlined the various sources of validity evidence for instrument developers to gather in support of intended use of their measure (Bandalos, 2018; McCoach et al., 2013). This dissertation explored three sources of validity; (a) evidence based on test content, (b) evidence based on response processes, and (c) evidence based on internal structure. Evidence based on test content was collected and evaluated using results from the expert panel review and the cognitive interviews. Particularly, the evidence gathered focused on the alignment of the pool of items with the proposed constructs and purpose of the instrument. The next source of validity was based on response processes, which was obtained from the cognitive interviews and results from the pilot study. Finally, the validation study provided a large enough sample to conduct various analyses to provide evidence based on the internal structure of the measure.

Test Content

Strength of evidence based on test content was assessed through several methods during this dissertation study. From the start, the instrument blueprint was established to account for the breadth and depth of parent and family engagement. The blueprint also guided the initial development of items for the PFEHE measure. The evaluation of whether the content developed for the PFEHE measure represented the construct was initially the objective for the expert panelists. Construct agreement was calculated by the number of panelists who chose the same construct for each item. Results ranged from 33% to 100% agreement, with 75% as the average agreement. There were 29 items with an agreement percentage greater than the average. Item clarity was scored on a 4-point scale (1 = *poor*, 2 = *fair*, 3 = *average*, 4 = *excellent*). Scores were averaged and ranged from 3.14 to 4.00. The average item clarity score was 3.77 and 48% of items scored at or above this average. Item relevance was dichotomously scored (1 = *relevant*

and 2 = *not relevant*). Percentage of agreement was the number of panelists who scored the item as relevant, and those scores ranged from 57% to 100%, with 37 items achieving 100% agreement. Item fairness was scored on a 4-point scale (1 = *fair and void of bias*, 2 = *fair and potential for bias*, 3 = *unfair but void of bias*, 4 = *unfair with potential bias*). Fairness agreement was calculated as a percentage of the panelists who scored each item as fair and void of bias. These scores ranged from 29% to 100%, with 47 items unanimously scored as fair and void of bias. A full report of the results for each item is presented in Appendix I.

Additional evidence based on test content was gathered through the various cognitive interviews, specifically, asking participants for additional topics to add to the measure, feedback about the measure, and for their additional commentary. The responses helped identify the need to separate the item asking about a student's health and well-being into two items: mental health and physical health. In addition, results from the cognitive interviews helped to generate the following new items for the PFEHE measure:

- Talk to my student about engaging in undergraduate research while in college.
- Talk to my student about joining a religious or faith-based community while in college.
- Talk to my student about maintaining religious or faith-based practices while in college.
- I have enough knowledge about campus rules and policies to help my student if needed.
- The university should contact me if my student violates the student code of conduct.
- The university should contact me if my student violates the student academic honor policy.

- Communicate with university/college administrators to discuss my student's schoolwork.
- Communicate with university/college administrators to discuss my student's college-related expenses.
- Communicate with university/college administrators to discuss my student's nonacademic activities.
- Communicate with university/college administrators to discuss my student's physical health and well-being.
- Communicate with university/college administrators to discuss my student's mental health and well-being.
- Communicate with university/college administrators to discuss my student's safety.

The triangulation between the expert panel review and cognitive interviews suggested the evidence supporting test content validity for the PFEHE measure was strong.

Response Processes

The cognitive interviews and pilot study contributed the necessary data to evaluate the strength of evidence based on response processes for the PFEHE measure. Chapter 3 outlined the process for gathering the data from the 10 participants. All proposed items, inclusive of demographic questions, of the PFEHE were reviewed by at least three of the participants, and participants were asked the same probing questions about each item:

1. (Comprehension Probing Question) Can you paraphrase this question back to me in your own words?
2. (Decision Probing Question) What information, if any, would you need to recall to answer this question? How difficult is it to answer this question?

3. (Response Process Probing Question) Can you share how you would think about answering this question?
4. (Social Desirability Probing Question) What hesitations, if any, would you have in honestly answering this question?

Most items were well received by participants. Many items were assessed as relevant to the measure and participants had no hesitations in responding to any of the items honestly. Other items were revised, removed, and added iteratively throughout this stage of instrument development, which allowed for opportunities for subsequent participants to evaluate updated items.

Five items were removed from the measure based on the cognitive interviews. All removed items asked participants whether "they had enough time to help their student" with a particular task. When these items were discussed with the participants, it was often met with the following sentiment: sure, I could answer this question but no matter how I answer this question, the university cannot create more time for me. Participants did not believe these items were relevant to the measure, not applicable to their experience, and felt the items and corresponding responses could be used to pass judgment on the family member.

Several items were added to the measure after analysis of the cognitive interviews. The participants and I worked together to determine the appropriate wording for each new items. A good example of this collaborative effort was the inclusion of two religious and spiritual life questions. The first participant for the cognitive interviews shared their hope for the measure to ask about religion and faith-based communities while their student was at college, which was not an item on any of the initial list of items. In this exchange, me and the participant and I spent time ideating about the focus of the item. Two items were generated from this conversation, and

these items were able to capture the essence of the topic for the participant and fit into the conceptual framework of the measure. The two items generated ask participants to indicate the level of importance of talking to their student about joining a religious and or faith-based community during their college experience and talking to their student about maintaining religious or faith-based practices during their college experience. These items, along with other added items mentioned in the evidence supporting test content section, were reviewed and affirmed by succeeding cognitive interviews with participants.

During the cognitive interview process, other items needed clarification about their meaning and intent. An example of an item needing clarification asked family members the level of importance in talking with their student about the student's health and well-being. When the item was read aloud to the participants many responded by asking whether the measure was asking about physical or mental health. I responded with a follow-up question asking participants whether the participants' responses would differ for mental and physical health. Each participant confirmed their answer would be different. Therefore, two items emerged from the original item.

Another example of clarification was focused on examples for items to help guide the thought process of participants for certain items. For instance, in the item that asked participants about the level of importance of talking to their student about nonacademic activities, participants often asked about what nonacademic activities included, then each time, the participant was asked to share what came to mind when they heard nonacademic activities. This list of activities included, but was not limited to, student organizations, work, social activities, etc. The list brainstormed by participants assisted with the examples provided for this item and other items needing similar clarification.

During the cognitive interviews, participants who had more than one student immediately asked whether they should be answering the questions for one of their students or both. On a similar note, families with students of different genders said they would answer certain questions differently based on the gender of their student. This illuminated the need to add specific directions at the beginning of the instrument to help participants respond to each item. I asked participants if their answers would differ for their student(s). The answer was always a resounding "yes" that their responses would differ depending on which student they chose to focus on while responding to the measure. Therefore, on the final version of the PFEHE there is a helpful hint for participants—"If you have more than one student in college, you will want to choose one of your students to think about as you answer the following items." Additionally, this solidified the inclusion of the demographic question asking participants the gender identity of their student.

In summary, items removed from consideration were evaluated by more than four participants to ensure confidence in their removal. Revised and newly added items were evaluated by at least three more participants prior to considering their addition to the PFEHE measure. The cognitive interviewing process was followed up by a pilot study to better understand participant response processes with the revisions to the measure. Descriptive, item-level statistics were evaluated to determine whether any additional items needed to be reviewed or adjusted prior to the development of the final version of the PFEHE. Appendix F outlines the item-level statistics, including item means, standard deviations, and item-total statistics based on constructs identified in the instrument blueprint. No items were removed at this point due to the continued exploratory nature of this study. However, Table 8 highlights the items identified for me to be cognizant of during further rounds of data analysis.

Table 8

Items of Concern From Pilot Study

Item	Reason for concern
I expect my student to reenroll or graduate by next semester.	Removal of the item would increase the Cronbach's alpha of the anticipated scale.
Talk to my student about their physical health.	Low item-total correlation (.11).
Talk to my student about their budgeting during my student's college experience.	Low item-total correlation (.11).
Talk to my student about engaging in undergraduate research during my student's college experience.	Low item-total correlation (.07).
Communicate with my student via phone calls.	Low item-total correlation (.15).
Communicate with my student via text messages.	Item had zero variance.
Communicate with university/college administrators to discuss my student(s)' college-related expenses.	Low item-total correlation (.17).

Note. $n = 23$

The triangulation between the cognitive interviews and pilot study suggested that the evidence based on response process for the PFEHE measure was strong.

Internal Structure

According to the Standards of Education and Psychological Testing, evidence based on internal structure can derive from testing the degree to which the instrument's items align with the intended constructs of the measure (AERA, 2014). The conceptual framework indicated several, correlated constructs or factors to understand the phenomenon of parent and family engagement in higher education. However, through this study, I sought to explore the internal structure of the measure using an exploratory factor analysis followed by a confirmatory factor

analysis to acquire evidence based on internal structure. The constructs presented within the conceptual framework were considered following these analyses.

Both the exploratory and confirmatory factor analyses were conducted using the data collected from the validation phase of this study. The validation study collected more than 1,000 responses, and a thorough review and data cleaning process removed 395 participant response (see Figure 1). The remaining 650 responses were used to evaluate a measurement model representative of items on the PFEHE measure. The hypothesized model was then analyzed to determine how well the hypothesized model fit the observed variables. Guidelines for model fit included: chi-square statistics, comparative fit index (CFI) and Tucker Lewis index (TLI) ideally greater than or equal to .95, root mean square error of approximation (RMSEA) ideally less than or equal to .06, and standardized root mean square residual (SRMR) less than or equal to .08 (DiStefano & Hess, 2005; Kline, 2016; McCoach et al., 2013). An overview of the various analyses and their results are detailed in this section.

Item-Level, Descriptive Statistics

Item-level, descriptive statistics for the 47-item PFEHE items were calculated using SPSS 26 software and are presented in Table 9. All items were scored on 5-point Likert scales ranging from either (1) *strongly disagree* to (5) *strongly agree*, (1) *not at all important* to (5) *extremely important*, or (1) *extremely unlikely* to (5) *extremely likely*. Item means ranged from 3.22 to 3.97 and the standard deviations of items ranged from 0.95 to 1.62. All items were well within the normality ranges, with skewness statistics ranging from -0.85 to -0.22 and kurtosis statistics ranging from -0.74 to 0.13.

Table 9

Descriptive Statistics on PFEHE Validation Study

Item	*n*	*M*	*SD*	Skewness	Kurtosis
To what extent do you agree or disagree with the following statements:					
1. My student earning a college degree is important to me	648	3.84	1.05	-0.70	-0.20
2. My student earning a college is important for their future success	646	3.84	1.05	-0.52	-0.60
3. I expect my student to reenroll or graduate by next semester	646	3.72	1.16	-0.55	-0.74
4. I am confident my student made the right decision in choosing to attend this college or university	646	3.97	1.07	-0.85	-0.12
5. It is important that my student graduates from this college or university	641	3.87	1.06	-0.67	-0.44
Please indicate how important each of the following statements:					
6. Talk to my student about making friends	638	3.64	0.97	-0.66	0.05
7. Give advice to my student about choosing classes each semester	647	3.66	1.03	-0.36	-0.66
8. Talk to my student about their current major	648	3.69	1.00	-0.60	-0.14
9. Give guidance to my student about their professors	647	3.63	1.03	-0.50	-0.31
10. Talk to my student about their grades	646	3.59	1.03	-0.38	-0.55
11. Talk to my student about their non-academic activities (ex: organizations, work, social life, roommates, etc.)	647	3.64	1.01	-0.43	-0.49
12. Talk to my student about their physical health	649	3.74	1.04	-0.56	-0.41
13. Talk to my student about their mental health	646	3.80	1.03	-0.47	-0.67
14. Talk to my student about their budgeting during my student's college experience	648	3.56	.97	-0.43	-0.24
15. Talk to my student about their post-college plans	647	3.66	1.04	-0.39	-0.62
16. Talk to my student having an on- or off-campus job, including internship experiences	646	3.73	.95	-0.41	-0.45
17. Talk to my student about doing well academically to your student	646	3.77	1.00	-0.49	-0.43
18. Talk to my student about joining a student organization during my student's college experience	647	3.57	.98	-0.40	-0.35
19. Talk to my student about engaging in undergraduate research during my student's college experience	644	3.61	1.04	-0.48	-0.44
20. Talk to my student about joining a religious or faith-based community during my student's college experience	645	3.25	1.13	-0.22	-0.68
21. Talk to my student about maintaining religious or faith-based practices during my student's college experience	648	3.22	1.12	-0.22	-0.68

Table 9 (Continued)

Item	*n*	*M*	*SD*	Skewness	Kurtosis
During the current school year, how likely are you to:					
22. Communicate with university/college administrators to discuss my student's schoolwork	649	3.46	1.13	-0.63	-0.28
23. Communicate with university/college administrators to discuss my student's college-related expenses	646	3.33	1.13	-0.27	-0.61
24. Communicate with university/college administrators to discuss my student's non-academic activities	645	3.39	1.15	-0.51	-0.47
25. Communicate with university/college administrators to discuss my student's physical health and well-being	649	3.56	1.15	-0.50	-0.58
26. Communicate with university/college administrators to discuss my student's mental health and well-being	650	3.56	1.10	-0.64	-0.21
27. Communicate with university/college administrators to discuss my student's safety	649	3.68	1.15	-0.64	-0.38
To what extent do you agree or disagree with the following statements:					
28. I have enough knowledge about my student's college expenses to help my student if needed	649	3.71	1.00	-0.69	0.09
29. I have enough knowledge about my student's social life to help my student if needed	647	3.65	0.98	-0.41	-0.39
30. I have enough knowledge about campus rules and policies to help my student if needed	648	3.74	1.03	-0.51	-0.49
31. The university should contact me if my student violates the student code of conduct	648	3.69	1.10	-0.53	-0.45
32. The university should contact me if my student violates the student academic honor policy	648	3.69	1.13	-0.56	-0.55
33. The university should offer me advice about how to support my student(s)' academic experiences	645	3.75	0.99	-0.59	-0.10
34. The university should offer me advice about how to support my student(s)' academic experiences	647	3.70	1.04	-0.53	-0.34
35. The university should inform me about financial aid options (scholarships, loans, grants, etc.)	649	3.76	1.02	-0.63	-0.13
During the current school year, how likely are you to:					
36. Have a communication plan for you and your student during their college or university years	649	3.69	1.06	-0.79	0.13
37. Communicate with my student via email	648	3.45	1.10	-0.30	-0.53
38. Communicate with my student via phone calls	646	3.85	1.03	-0.64	-0.32
39. Communicate with my student via video calls (Face Time, Zoom, etc.)	650	3.86	1.09	-0.67	-0.51
40. Communicate with my student via text messages	647	3.78	1.06	-0.56	-0.47

Table 9 (Continued)

Item	*n*	*M*	*SD*	Skewness	Kurtosis
When you need support during your college student(s)' experience, how likely are you to:					
41. Connect with other parents/families who have college students	650	3.66	1.06	-0.56	-0.40
42. Connect with my group of friends with college students	646	3.52	1.11	-0.36	-0.60
43. Connect with your group of friends who do not have college students	649	3.34	1.10	-0.24	-0.74
44. Connect with immediate family members	647	3.66	1.02	-0.53	-0.24
45. Connect with others in your family	648	3.63	1.08	-0.55	-0.37
46. Connect with others in your community	647	3.33	1.09	-0.24	-0.71
47. Reach out to the college or university for assistance	648	3.70	1.10	-0.64	-0.26

Note. Items 1–5 and 28–35 used a 1 (*strongly disagree*) to 5 (*strongly agree*) scale. Items 6–21 used a 1 (*not at all important*) to 5 (*extremely important*) scale. Items 22–27 and 36–47 used a 1 (*extremely unlikely*) to 5 (*extremely likely*) scale.

Exploratory Factor Analysis

A random sample of the 650 participant records, or a split-sample, was created using the SPSS 26 software. The sample was transferred to Mplus software, version 8.7, which allowed for an exploratory factor analysis (EFA) using participants who were randomly selected into Group 1. Several EFAs were conducted to identify the number of factors representative of the 47-item PFEHE measure. Quantitative results from each EFA were evaluated to identify the number of constructs. Each construct was identified using the conceptual framework once the number of constructs and the items associated with each factor had been determined (McCoach et al., 2013). The following section details the results from the EFAs and concludes with the hypothesized measurement model for the PFEHE measure.

Group 1 from the split sample had 319 participant records. All observations were considered independent for the EFA phase. Using Mplus software, version 8.7, data were treated

as continuous; therefore, missing data were handled using full information maximum likelihood. The number of missing data patterns was 23. Item means ranged between 3.26 to 3.88, while skewness ranged from -0.79 to -0.22, and kurtosis statistics ranged from -0.71 to 0.13. Each of these ranges was consistent with the larger data sample. Maximum likelihood estimation with an oblique rotation was used to execute the analysis. The oblique rotation permitted all possible factors to correlate, which was consistent with the conceptual framework for this dissertation. Following each EFA, the following process was used to evaluate whether another round of analysis was needed: (a) determine the number of factors to extract, (b) review pattern matrix coefficients, (c) determine items to retain for any subsequent EFA, and (d) rerun EFA, as needed. Seven rounds of EFAs were conducted and are explained in the next section.

Kaiser's criterion and a parallel analysis were used to determine the number of factors to extract for analysis. Kaiser's criterion suggests any factor with an eigenvalue greater than one should be extracted as a potential construct of an instrument (Bollen, 1989; DiStefano & Hess, 2005). Therefore, the EFA eigenvalues were reviewed to primarily identify the number of potential factors of the PFEHE measure. From there, a parallel analysis was conducted to further explore the number of factors. Mplus software, version 8.7, produced a scree plot with all eigenvalues plotted with the 95th percentile parallel analysis line. A review of the scree plot with the parallel analysis line was used to determine the number of factors to extract. Appendix J depicts scree plots with the 95th percentile parallel analysis line for each of the seven EFAs.

A review of the pattern matrix coefficients was the next step in the EFA process. For each EFA, the pattern matrix coefficients were evaluated to determine which items to retain for the identified factors. Each pattern matrix is available in Appendix K. Items were retained if their primary loading was greater than .40 and no secondary loadings greater than .32 (Beavers et al.,

2013). However, exceptions were considered for items that were conceptually important to retain. From there, model fit indices were recorded for each EFA and are represented in Table 10.

Table 10

Model Fit Information for Each EFA

EFA round	Number of items	Factors extracted	χ^2 value / df	*p* value	RMSEA (90% C. I.)	CFI	TLI	SRMR
1	47	5	1761.24	.0000	.058 (.054-.061)	.864	.829	.039
2	39	5	1173.21 / 556	.0000	.059 (.054-.064)	.886	.848	.037
3	35	5	957.98 / 460	.0000	.058 (.053-.063)	.895	.856	.037
4	31	5	659.33 / 320	.0000	.058 (.051-.064)	.915	.876	.034
5	29	4	654.69 / 296	.0000	.062 (.055-.068)	.903	.867	.040
6	28	4	582.69 / 272	.0000	.060 (.053-.067)	.913	.879	.038
7	21	3	354.85/ 150	.0000	.065 (.057-.074)	.915	.881	.040

Note. n = 319*;* RMSEA = root mean square error of approximation; CFI = comparative fit index; TLI = Tucker Lewis fit index; SRMR = standardized root mean square residual.

The first EFA used all 47 items from the PFEHE. Eigenvalue results suggested nine factors with values ranging from 14.30 to 1.06. Figure J.1 shows the eigenvalues plotted with 95th percentile parallel analysis line, which revealed five factors should be extracted (see Appendix J). Table K.1 presents the 5-factor pattern matrix, along with the item communalities. Items 7, 10, 15, 19, 31, 32, 39, and 49 did not meet the minimum loading of .40 to be retained and used to interpret the extracted factors (see Appendix K).

Following the removal of these eight items, a second EFA was conducted. Items 20, 21, 26, 27, 37, 41, and 42 had a secondary loading greater than the established .32 cutoff. However, these items were retained for the second EFA to better understand how these items functioned with the removal of the eight items that did not meet the minimum primary loading cutoff.

The second EFA that was conducted used items 1–6, 8–9, 11–14, 16–18, 20–30, 33–38, and 41–47. Seven factors were identified after review of the eigenvalues, which ranged from 11.88 to 1.21. A review of Figure J.2, the parallel analysis plot for this second EFA, suggested five factors to be extracted (see Appendix J). Following the same process, the 5-factor pattern matrix was reviewed. Table K.2 displays the second EFA's pattern matrix and item communalities (see Appendix K). Items 44 and 37 were the only items with a loading less than the .40 cutoff. Items 20, 21, 22, 26, 27, 38, 41, 42, and 47 all had secondary loadings beyond the .32 cutoff. Items 20 and 21 could be interpreted as similar items and were added based on the cognitive interviews. Therefore, Item 21 was retained for the third EFA and Item 20 was removed from further analysis. Item 27 was retained for the next EFA because of its conceptual importance to the measure. The same rationale was true for Items 41, 42, and 47. Items 26 and 38 were not conceptually critical to retain and, therefore, were removed from further analysis.

Items 1–6, 8–9, 11–14,16–18, 21–30, 33–37, and 41–47 were used for the third exploratory analysis. Similar to the previous EFA, the eigenvalues identified seven factors to extract, with values ranging from 11.43 to 1.11. Figure J.3 is the parallel analysis plot for the third EFA, which continued to suggest five factors should be extracted (see Appendix J). Next, Table K.3, which displays the third EFA's pattern matrix and item communalities, was reviewed (see Appendix K). Items 9, 34, and 44 were the only items to have less than the .40 cutoff and

Items 21, 22, 37, 41, and 42 had secondary loadings greater than the .32 cutoff standard. Items 21, 22, and 41 were the only items retained because of the conceptual importance to the measure.

The fourth EFA produced six factors with eigenvalues greater than 1. These values ranged from 9.47 to 1.06. The plot of eigenvalues against the parallel analysis line still suggested five factors should be extracted (see Appendix J). Again, a review of the pattern matrix, Table K.4, was used to explore the individual items (see Appendix K). Items 6, 33, and 43 failed to meet the .40 cutoff, and Items 21, 41, and 47 had secondary loadings beyond the .32 cutoff. A review of the conceptual framework, along with the fourth EFA results, led to the removal of Items 33 and 43, whereas Items 6, 21, 46, and 47 were retained for the fifth analysis.

A fifth EFA was conducted with 29 items. Eigenvalues pointed to only five factors to be extracted, with values ranging from 9.35 to 1.29, but Figure J.5 (parallel analysis) revealed four factors were to be extracted (see Appendix J). Table K.5 represents the pattern matrix for the fifth EFA's 4-factor model (see Appendix K). Items 6 and 45 did not achieve the .40 cutoff and Item 21 continued to have a secondary loading beyond the .32 cutoff. A final EFA was conducted with Item 45 removed.

Results from the sixth exploratory factor analysis included five eigenvalues greater than 1 that ranged from 9.11 to 1.61. A review of the parallel analysis plot indicated a four-factor solution, similar to the previous analysis (see Figure J.6). Table K.6 represents the pattern matrix for the sixth exploratory factor analysis (see Appendix K). Items 6 and 46 did not meet the .40 minimum and item 21 continued to have a secondary loading greater than the .32 cutoff. Items 6, 21, and 46 all are conceptually important to the Parent and Family Engagement in Higher Education (PFEHE) measure. Therefore, no items were removed.

Similar to the process used following each EFA, the conceptual framework was consulted to determine whether the sixth exploratory analysis produced a conceptually relevant model of the PFEHE model. This review differed from the previous rounds because the items were examined within the context of their association to each respective factor. Results of this review led to the adjustment of a few items, the removal of other items, and a reduction to a three-factor model. Items 1, 28-30, 35-36, and 41 were removed during this final review based upon lack of conceptual fit with their associated factor or other items captured the essence of their content. Items 6 and 8 were moved to a factor that was more consistent with the fundamental nature of these items.

A seventh and final EFA was conducted following this comprehensive review. The analysis included four eigenvalues greater than 1 that ranged from 6.89 to 1.11. A review of the parallel analysis plot indicated a three-factor solution, similar to the previous analysis (see Figure J.7). Table K.7 represents the pattern matrix for the 3-factor solution from the seventh exploratory factor analysis (see Appendix K). All items met the .40 minimum. At this point, the factor correlations were also reviewed. The correlations between Factor 1 and Factors 2 and 3 were less than .10; .02 and .09 respectively. Factor 2 and Factor 3's correlation was .52. The conceptual framework was consulted TO define the final hypothesized model, based upon the results of this EFA, to be tested with a confirmatory analysis.

The intent of this extensive, exploratory analysis was to identify a theoretically and statistically meaningful number of factors to represent the PFEHE measure (McCoach et al., 2013). This iterative process utilized eigenvalues, scree plots with all eigenvalues plotted with 95th percentile parallel analysis line, model fit information, and the resulting pattern matrices to evaluate the number of constructs representative of the 47-item PFEHE measure. Twenty-one

items were retained following the exploratory analysis. The seventh EFA suggested a two-factor model could be the hypothesized measurement model for the PFEHE. However, the theoretical framework for this study would suggest Items 2–5 are a different construct than items 6,8,11–14, 16–18, and 21. Therefore, these sets of items were separated into two separate factors. In contrast, items 22–25, 27, 46–47 made sense to stay connected into one factor. Table 11 offers an overview of the factors and their associated items after the conceptual adjustment.

Table 11

Hypothesized Factors and Corresponding Items

#	Item
	Family Aspirational Characteristics
Q_2	My student earning a college degree is important for their future success
Q_3	I expect my student to reenroll or graduate by next semester
Q_4	I am confident my student made the right decision in choosing to attend this college or university
Q_5	It is important that my student graduates from this college or university
	Family/Student Involvement and Engagement
Q_6	Talk to my student about making friends
Q_8	Talk to my student about their current major
Q_11	Talk to my student about their nonacademic activities (ex: organizations, work, social life, roommates, etc.)
Q_12	Talk to my student(s) about their physical health
Q_13	Talk to my student(s) about their mental health
Q_14	Talk to my student(s) about their budgeting during my student's college experience
Q_16	Talk to my student having an on- or off-campus job, including internship experiences
Q_17	Talk to my student about doing well academically
Q_18	Talk to my student about joining a student organization during my student's college experience
Q_21	Talk to my student about maintaining religious or faith-based practices during my student's college experience
	Family/University Involvement and Engagement
Q_22	Communicate with university/college administrators to discuss my student(s)'schoolwork
Q_23	Communicate with university/college administrators to discuss my student(s)' college-related expenses
Q_24	Communicate with university/college administrators to discuss my student(s)' non-academic activities
Q_25	Communicate with university/college administrators to discuss my student(s)' physical health and well-being
Q_27	Communicate with university/college administrators to discuss my student(s)' safety
Q_46	Connect with others in your community
Q_47	Reach out to the college or university for assistance

A thorough review of this hypothesized model, its factors, and the items associated with each factor was needed to initially interpret each factor. Factor 2 and Factor 3 were easiest to identify and consistent with the instrument blueprint. Both factors have items associated with the involvement and engagement construct but are separated by a family member's involvement and engagement with their student or the institution. Factor 1 is composed of items originally generated for the institutional commitment and self-efficacy constructs. However, another review of the conceptual framework revealed this factor to be defined as family aspirational characteristics. This construct is a theoretical combination of Yosso's (2005) aspirational capital and Harper et al.'s (2020) emergent theme acknowledging the importance of a family's value of a college degree to a family member's engagement in higher education. Further interpretation of these factors is discussed in Chapter 5, but the names of each factor are used in the remaining sections of this chapter.

A final set of analyses was performed as a part of the exploratory step to determine if any other items should be reconsidered prior to evaluating the measurement model. Inter-item correlation matrices were developed for each of the hypothesized scales. Tables 12–14 represent the inter-item correlation matrices for each factor. There were no items that presented a concern for being overly correlated with another item within each factor. Items 21 and 46 had low inter-item correlations but remained as conceptually vital items to the measure.

Table 12

Inter-Item Correlation Matrix for Family Aspirational Characteristics

Item	Q_2	Q_3	Q_4	Q_5
Q_2	1.00			
Q_3	.48	1.00		
Q_4	.54	.39	1.00	
Q_5	.47	.47	.50	1.00

Note. n = 310.

Table 13

Inter-Item Correlation Matrix for Family/Student Involvement and Engagement

Item	Q_6	Q_8	Q_11	Q_12	Q_13	Q_14	Q_16	Q_17	Q_18	Q_21
Q_6	1.00									
Q_8	.45	1.00								
Q_11	.31	.31	1.00							
Q_12	.39	.42	.46	1.00						
Q_13	.29	.40	.36	.57	1.00					
Q_14	.42	.33	.34	.28	.33	1.00				
Q_16	.26	.37	.39	.44	.46	.44	1.00			
Q_17	.28	.39	.47	.50	.55	.32	.53	1.00		
Q_18	.36	.41	.43	.35	.43	.38	.37	0.43	1.00	
Q_21	.20	.13	.23	.28	.14	.20	.16	.23	.19	1.00

Note. n = 305.

Table 14

Inter-Item Correlation Matrix for Family/University Involvement and Engagement

Item	Q_22	Q_23	Q_24	Q_25	Q_27	Q_46	Q_47
Q_22	1.00						
Q_23	.56	1.00					
Q_24	.53	.52	1.00				
Q_25	.58	.46	.53	1.00			
Q_27	.60	.52	.52	.58	1.00		
Q_46	.25	.23	.24	.24	.23	1.00	
Q_47	.50	.40	.42	.41	.43	.40	1.00

Note. n = 309.

Following this final quantitative analysis, a measurement model for the PFEHE measure was developed consistent with Table 11 which was used to conduct confirmatory analyses.

Confirmatory Factor Analysis

A CFA was used to gather additional validity evidence based on internal structure in response to the study's research questions. The other half of the split-sample, 331 participant records, was used for the CFA. The item-level statistics and reliability statistics were examined for this split sample. Item means ranged between 3.26 to 3.96, kurtosis values ranged from -0.91 to 0.11, and skewness values ranged between -0.87 to -.20. A CFA was conducted using the initial scales developed for this study (see Table 6) prior to executing the confirmatory analyses based on the model derived from the EFA. Aligned with the exploratory nature of this study and the purpose of developing a theoretically grounded measure, it was important to explore this model as an option during the confirmatory analysis phase. The measures of model fit obtained were uninspiring: χ^2 (1029, n = 331) = 2838.34, $p < .0001$; root mean square error of approximation (RMSEA) estimate of 0.073 with a 90% confidence interval between 0.070 and 0.076; a comparative fit index (CFI) value of 0.728 and Tucker Lewis fit Index (TLI) value of

.714; and a standardized root mean square residual (SRMR) value of 0.181. Therefore, the confirmatory factor analyses for this study continued with the exploration of the measurement model hypothesized during the exploratory factor analysis phase. Information from the EFA and the conceptual framework supported the final decisions about an item's association with each latent factor. Table 15 provides an overview of which items were best associated with which factors. These item associations did differ from the assumptions made during the previous two phases of this dissertation, which will be discussed further in the next chapter.

Table 15

Items Associated With Each Hypothesized Factor of the PFEHE Measure

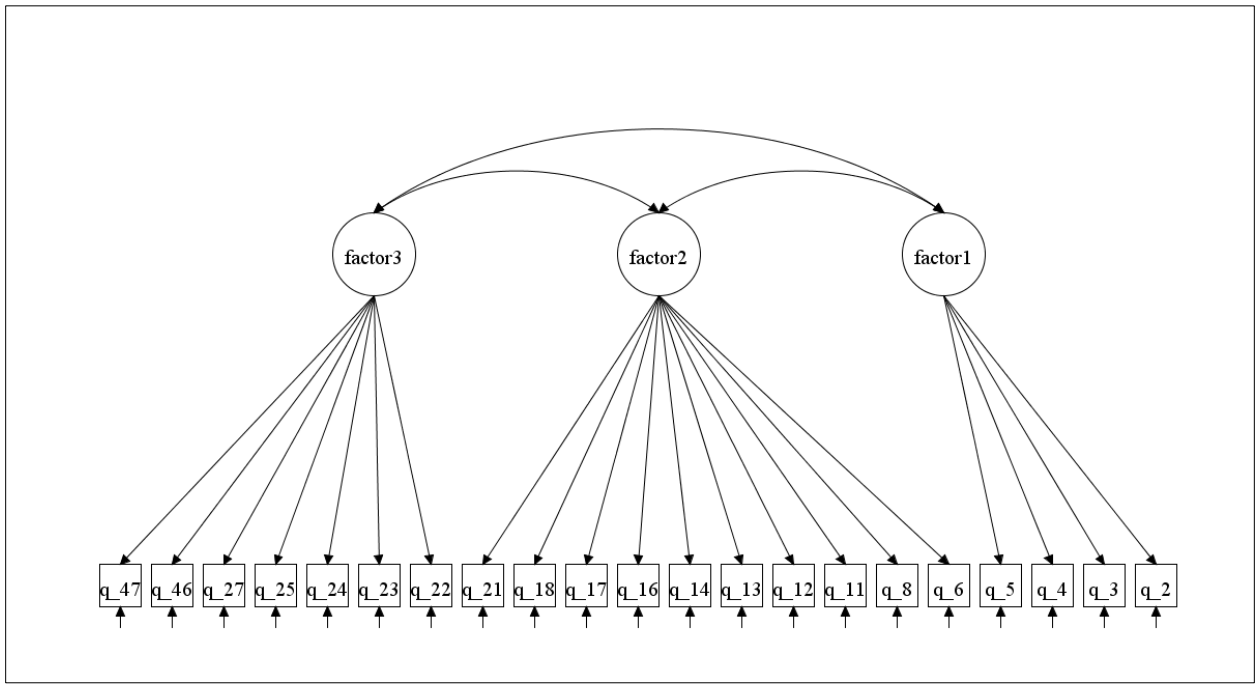
Factor	Items	Number of items
1 – Family Aspirational Characteristics	Q2–Q5	4
2 – Family/Student Involvement and Engagement	Q6, Q8, Q11–14, Q16–Q18, Q21	10
3 – Family/University Involvement and Engagement	Q22–Q25, Q27, Q46–Q47	7

Note. To review the full wording of each item, please consult Table 11.

The CFA was conducted using Mplus software, version 8.7, and data were treated as continuous. Missing data were handled using full information maximum likelihood. The number of missing data patterns was 22. The model was identified using a unit variance identification method setting all factor variances to 1.0 (Kline, 2016). Figure 2 represents the 21-item, 3-factor model analyzed by this CFA.

Figure 2

PFEHE Model for CFA



Several measures of model fit were derived from the CFA. Measures of model fit were obtained including: χ^2 (189, n = 331) = 447.19, p < .0001; root mean square error of approximation (RMSEA) estimate of 0.064 with a 90% confidence interval between 0.057 and 0.072; a comparative fit index (CFI) value of 0.889 and Tucker Lewis fit Index (TLI) value of .877; and a standardized root mean square residual (SRMR) value of 0.151. None of the reported model fit indices from the CFA were within the acceptable guidelines (DiStefano & Hess, 2005; Kline, 2016).

A review of the standardized model results from the CFA shown in Table 16 identified some initial sources of misfit. DiStefano and Hess (2005) suggested that standardized estimates for the loadings greater than .70 are ideal and greater than .55 should be regarded as good. Estimates of .32 or lower should be considered poor.

Table 16

CFA Standardized Parameter Estimates for the PFEHE Measure

Item	Estimate	Standard error	Residual variances
Family Aspirational Characteristics			
Q_2	.81*	.01	.35
Q_3	.62*	.04	.61
Q_4	.75*	.03	.44
Q_5	.76*	.03	.42
Family/Student Involvement and Engagement			
Q_6	.80*	.01	.35
Q_8	.73*	.03	.47
Q_11	.78*	.04	.57
Q_12	.84*	.02	.34
Q_13	.72*	.04	.51
Q_14	.61*	.04	.65
Q_16	.63*	.04	.63
Q_17	.78*	.03	.42
Q_18	.69*	.04	.55
Q_21	.38*	.06	.85
Family/University Involvement and Engagement			
Q_22	.83*	.01	.31
Q_23	.65*	.04	.58
Q_24	.71*	.03	.50
Q_25	.72*	.03	.48
Q_27	.75*	.03	.44
Q_46	.29*	.06	.92
Q_47	.62*	.04	.63

Note. $n = 331$. *$p < .05$. Estimates, standard error, and residual variances depicted from STDYX model results.

Family aspirational characteristics' factor had standardized factor loading estimates ranging from .62 to .81 with no items considered poor. Family/student involvement and engagement had estimates ranging from .38 to .84 with Item 21 considered poor with an estimate of .38. If Item 21 was removed from this factor, the estimates would range from .61 to .84, which would be considered good to ideal. Family/university involvement and engagement factor had estimates ranging from .29 to .83 with Item 46 considered poor with an estimate of .28. If Item

46 was removed from this factor, the estimates would range from .63 to .83, which would be considered good to ideal. The estimates for Items 21 and 46 are considered poor and are possibly sources of misfit.

Next, a review of the factor correlation matrix from the CFA was conducted. Table 17 represents the factor correlation matrix from the CFA's standardized solution. All factors are highly correlated with one another, which is consistent with the conceptual framework for this study. Factors 1 and two had a relatively high correlation and the correlation between factors 2 and 3 and factors 1 and 2 were significant at .87, .65, and .62 respectively. All of which may suggest a lack of discriminant validity for the constructs (McCoach et al., 2013).

Table 17

CFA Factor Correlations

Factor	Factor 1	Factor 2	Factor 3
Factor 1	1.00		
Factor 2	.87*	1.00	
Factor 3	.62*	.65*	1.00

Note. $n = 331$. *$p < .05$.

From there, the modification indices produced for the CFA were evaluated to determine any additional sources of misfit. Modification indices suggesting correlated errors were reviewed first. Items 21 with Item 2 and Item 25 with Item 4 had the greatest potential to positive impact the fit of the model by a modification index of 14.02 and 14.29, respectively. Other items with correlated errors included: Item 21 with Item 3; Item 23 with Items 2 and 8; Item 24 with Items 16; Item 46 with Items 18 and 47. The modification indices ranged from 10.71 to 14.29. Table

18 represents the contents of each pair of correlated errors items with their corresponding modification index value.

Table 18

Items With Potential Correlated Errors

Item	Item	Modification index
Q_21 - Talk to my student about maintaining religious or faith-based practices during my student's college experience	Q_2 - My student earning a college is important for their future success	14.02
Q_21 - Talk to my student about maintaining religious or faith-based practices during my student's college experience	Q_3 - I expect my student to reenroll or graduate by next semester	13.63
Q_23 - Communicate with university/college administrators to discuss my student(s)'schoolwork	Q_2 - My student earning a college is important for their future success	10.74
Q_23 - Communicate with university/college administrators to discuss my student(s)'schoolwork	Q_8 - Talk to my student about their current major	13.17
Q_24 - Communicate with university/college administrators to discuss my student(s)' non-academic activities	Q_16 - Talk to my student having an on- or off-campus job, including internship experiences	11.44
Q_25 - Communicate with university/college administrators to discuss my student(s)' physical health and well-being	Q_4 - I am confident my student made the right decision in choosing to attend this college or university	14.29
Q_46 - Connect with others in your community	Q_18 - Talk to my student about joining a student organization during my student's college experience	10.71
Q_46 - Connect with others in your community	Q_47 - Reach out to the college or university for assistance	11.04

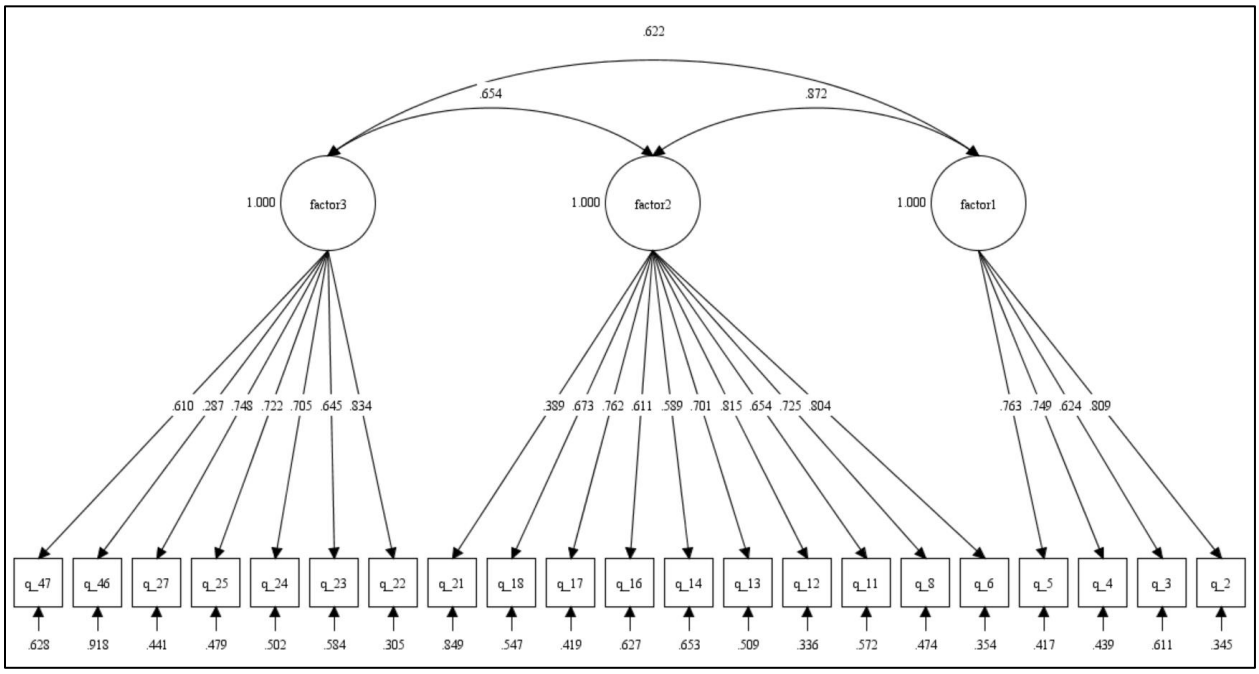
Next, the modification indices evaluating potential secondary loadings for items indicated Item 6 could be a source of misfit as the indices suggested the item could be an indicator for Factor 1 (M.I. = 12.05) and Factor 2 (M.I. = 16.55). According to the model modification indices, Item 24 may also be an indicator of Factor 1 (M.I. = 10.01). Lastly, modification indices were presented specific to the relationships of the factors. Factor 1 on/by Factor 2, Factor 2 on/by

Factor 2, and Factor 2 on/by Factor 3 all with the same modification index of 16.55. Collectively, these modification indices pinpoint potential sources of misfit for this current analysis (Kline, 2016).

In summary, the CFA produced a breadth of quantitative data to evaluate how well the hypothesized model fit the sample data (DiStefano & Hess, 2005; Kline, 2016; McCoach et al., 2013). The results of the CFA are depicted graphically by in Figure 3.

Figure 3

PFEHE Model for CFA With Standardized Estimates



The model fit information indicated misfit of the model with the sample data. A review of the standardized model estimates, factor correlations, and the modification indices was conducted to identify the sources of misfit. Two items, 21 and 46, had very low item-factor loading coefficients. Factors 1 and 2 had a correlation greater than .85 and indicative of limited

discriminant validity and a need to further review whether these factors are as distinct as initially posited.

Summary

Overall, the strength of evidence based on internal structure was mixed results. The EFA identified a 3-factor measurement model for the PFEHE measure with 21 items. This result implied the existence of set of items to identify three constructs to define parent and family engagement in higher education (Kline, 2016). A hypothesized model, derived from the EFA, was tested in an independent sample using a CFA. Information gathered from the CFA was used to evaluate the hypothesized model. The data gathered suggested misfit of the model and the sources of misfit were identified. Overall, the strength of evidence based on internal structure had mixed results.

Strength of Evidence Supporting Reliability of the PFEHE Measure

The second research question asked about the strength of evidence supporting reliability for the PFEHE measure. This dissertation calculated the Cronbach's (1951) alpha coefficient as evidence supporting reliability of the PFEHE measure. Although the measurement model produced suboptimal results, it was still critical to produce evidence of reliability as another method to evaluate the precision of each of the constructs from the PFEHE measure (Bandalos, 2018; Kline, 2016; McCoach et al., 2013). During the EFA stage (Sample 1), Cronbach's alpha was calculated for each identified scale using SPSS 26 software. The calculation produced the following results: Family aspirational characteristics' factor (α = .78; 4 items), student/family involvement and engagement (α = .84; 10 items), and student/university involvement and engagement (α = .84; 7). Prior to conducting the CFA with Sample 2, Cronbach's alpha was calculated for each identified scale. Sample 2 produced the following reliability statistics: Family

aspirational characteristics' factor (α = .76; 4 items), student/family involvement and engagement (α = .84; 10 items), and student/university involvement and engagement (α = .81; 7). A review of each factor's item-total statistics for both samples were reviewed as additional evidence. Table 19 represents the item-total statistics for all factors including corrected item-total correlation, squared multiple correlation, and Cronbach's alpha if item was deleted.

Table 19

Item-Total Statistics by PFEHE Factor (Samples 1 and 2)

Item	Corrected item-total correlation (Sample 1)	Corrected item-total correlation (Sample 2)
Family Aspirational Characteristics	α = .78	α = .76
Q_2	.63	.58
Q_3	.55	.50
Q_4	.59	.59
Q_5	.59	.60
Family/Student Involvement and Engagement	α = .84	α = .84
Q_6	.50	.61
Q_8	.55	.57
Q_11	.56	.51
Q_12	.64	.65
Q_13	.61	.58
Q_14	.51	.48
Q_16	.59	.51
Q_17	.64	.63
Q_18	.57	.57
Q_21	.29	.27
Family/University Involvement and Engagement	α = .84	α = .81
Q_22	.70	.69
Q_23	.62	.56
Q_24	.64	.61
Q_25	.65	.59
Q_27	.67	.63
Q_46	.34	.26
Q_47	.58	.54

Note. Sample 1 (*n* = 319) and Sample 2 (*n* = 331).

Unsurprisingly, Items 21 and 46 could be removed from their identified scales to improve the reliability statistic. Nevertheless, the strength of the reliability statistics for all factors is considered very good to excellent (Bollen, 1989; Kline, 2016; McCoach et al., 2013).

Strength of Evidence Supporting Fairness of the PFEHE Measure

Evidence of fairness was gathered and documented throughout the instrument development process. Fairness was first examined by all the expert panelists during the initial item review stages for the PFEHE measure. Panelists were asked to rate each item on a 4-point scale: 1 = *fair and void of bias*, 2 = *fair and potential for bias*, 3 = *unfair but void of bias*, 4 = *unfair with potential bias*. Panelists' scores were totaled as a percentage of panelists who scored the item as fair and void of bias. Table 20 represents all the items that had at least one expert panelist score between a 2–4 on the fairness component, which was indicative of some level of unfair and potential of bias.

Table 20

Items for Review Due to Fairness Score From Expert Panel

Item #	Item	Fairness agreement
2	When I need support during my student's college experience, I connect with my group of friends.	86%
8	I know the right advice to give to my student about their social life.	86%
9	I know the right advice to give to my student about their academic work.	86%
10	I know the right advice to give to my student about their college expenses.	86%
11	I know the right advice to give to my student about navigating university systems.	29%
12	I know the right advice to give to my student about their health and well-being.	86%
18	I have enough time to help my student navigate university systems.	57%

Table 20 (Continued)

Item #	Item	Fairness agreement
22	I know enough about my student's coursework to help them when asked.	86%

25	I know enough about the university systems to help my student when needed.	86%
27	I assist my student with college-related expenses.	86%
54	The university should have events specifically for me.	83%
55	The university should have an office dedicated to families	86%
56	The university should inform me of my student's grades	86%
57	The university should contact me if my student violates the student code of conduct	86%
58	The university should offer me advice about how to support my student's academics	86%
59	The university should offer me advice about how I can support in my student's college experience	86%
60	The university should offer me advice about how I can support my student's academic experience	86%
61	The university should offer me advice about financial aid options (scholarships, loans, grants, etc.)	71%

Note. Appendix I represents the full list of all items reviewed by the expert panel and the corresponding fairness scores.

The additional commentary provided by the panelists pointed to word choices as a rationale for an item being unfair and having a potential for bias. Items 8–12 used the phrase "right advice," which some panelists noted could be unfair to ask families who may have first-generation college students and families who may not have experienced higher education in the United States. Some items used the terminology "university systems" and the expert panelists suggested a review of this language to ensure participants understood the question better. Items 54–61 were flagged by the higher education experts because of the terminology "university." The panelists wanted to ensure the items were inclusive of community colleges, state colleges, and 4-year universities. Each of these items were reviewed based upon their fairness score and the additional commentary provided.

In addition to gathering evidence from the expert panelists, it was critical to gather evidence of fairness from participants who represented the target population. Each cognitive interview participant was asked about potential items for the PFEHE measure. Two of the

questions were asked to every participant about each item; the first was whether the participant could recall information to be able to respond to the item. The other question was whether they had any hesitations to responding honestly to each item. Asking participants if they could recall information to answer each item helped to ensure items' relevancy to the intended construct. If participants used recalled information that was beyond the scope of their engagement with their student in higher education, those items were reviewed. The process for reviewing items was documented earlier in this chapter. Participants did not have concerns with responding honestly to any item, as reported earlier in this chapter. This, along with the evidence from the expert panelists, documented evidence based on fairness.

Evidence of fairness as it relates to the PFEHE measure's intended use was evaluated during the cognitive interviews and asserted through the participant consent agreement from the validation study (see Appendix H). For this study, the intention was to establish a measurement tool to better understand the phenomenon of parent and family engagement in higher education. Therefore, the intent of this study was focused on psychometric testing to determine whether the measure's use could be broadened. Participants recruited for the expert panel, cognitive interviews, and pilot studies knew the intention of the PFEHE measure, which meant the participants did not struggle to access the content (AERA, 2014). Thus, the results of this study focused on reporting evidence of validity, reliability, and fairness for the PFEHE measure. Overall, the evidence supporting fairness of the PFEHE measure is limited for this current study. More evidence is needed to ensure the PFEHE measure has strong evidence based on fairness (e.g., absence of bias). There are more psychometric testing options to gather evidence supporting fairness, which will need to be conducted and analyzed in the future.

Summary

This chapter provided the results generated through this dissertation study. All documented results assess the strength of validity, reliability, and fairness of the PFEHE measure. Evidence supporting validity was mixed but has some potential. Strength of evidence supporting reliability was strong, with a few items needing further review. Finally, the evidence supporting fairness was limited. Collectively, the evidence presented in this chapter is promising and presents opportunities and direction for future research of the PFEHE measure. The next chapter reflects on these opportunities, the limitations of gathering more evidence during this study, and an overview of knowledge gained through this dissertation study.

CHAPTER FIVE:

DISCUSSION

The Parent and Family Engagement in Higher Education (PFEHE) measure was developed, reviewed, revised, and administered throughout the course of this dissertation. The primary objective was to develop and provide initial validation evidence of a measure for use as a quantitative research tool complementary to Kiyama and Harper's (2018) *Model of Parent Characteristics, Engagement, and Support*. Ideally, evidence presented in previous chapters and discussed in this chapter will aid researchers and practitioners in their continued investigation of the phenomenon of parent and family engagement in higher education. The following chapter will summarize the results from the study, discuss the interpretations, articulate limitations and implications, and focus on the various opportunities for future research studies.

Summary of Findings

The development of the PFEHE measure began by defining parent and family engagement in higher education. The conceptual definition of parent and family engagement in higher education initially included by four constructs: (a) dimension of support, (b) involvement and engagement, (c) self-efficacy, and (d) institutional commitment (Harper et al., 2020; Pascarella & Terenzini, 1980; Roska et al., 2020; Walker et al., 2005). Next, 65 items were generated using these constructs, a synthesis of recent literature, and this dissertation's conceptual framework. A review and revision phase followed, which amended the initial 65-item measure to a 54-item measure. The 54-item measure consisted of 47 items capturing the

definition of parent and family engagement, along with seven demographic items. Many of the original items were retained, but expert panelists and cognitive interview participants assisted in the removal and generation of new items. Once the final version was available, current parents and family members of undergraduate college students were recruited to complete the PFEHE measure to generate enough data to conduct more complex psychometric analyses. These analyses, along with expert panelist reviews and cognitive interviews, offered results needed to gauge the strength of evidence supporting the validity, reliability, and fairness of the measure.

Evidence supporting validity was gathered based on determining whether the PFEHE measure could be used to interpret the complex phenomenon of parent and family engagement in higher education. The development of this measure, similar to any new measure's development process, is an ongoing iterative process (Bandalos, 2018; McCoach et al., 2013). Evidence supporting validity collected in this study should be considered as a baseline with the goal of generating more evidence in subsequent studies. This dissertation documented the evaluated evidence of validity based on test content, response processes, and internal structure (AERA, 2014). Test content was evaluated through the review and revision phase of this dissertation study. Expert panelists rated the initial items based on item clarity, relevance to the purpose of the measure, item fairness, and the relationship to specific constructs (see Appendix I). Results from the expert panelist review produced a smaller list of items for a group of parents and family members of current undergraduate college students to review. The family members engaged in one-on-one cognitive interviews to collect evidence based on test content from the measure's target audience. Specifically, participants were asked whether the items fully captured parent and family engagement in higher education. This question provided the opportunity for these participants to expand the content of the measure and ensure its representativeness. These

interviews generated new items for the measure and assisted in the removal of items and the revision of other items. The combination of expert panelist reviews and cognitive interviews suggests evidence based on test content was relatively strong.

Cognitive interviews also provided the breadth of data needed to gather evidence of validity based on response processes. A pilot study was also conducted to evaluate response processes. The 10 cognitive interview participants were asked comprehension, decision, and response processing probing questions as they reviewed each item. Items were removed and revised based on the synthesis of these interviews to ensure the intent of each item was congruent to how each participant processed each item (AERA, 2014). Overwhelmingly, each participant was pleased there was an effort to learn about the experience of parents and families of college students. A pilot study was then conducted to quantitatively review the response processes of participants who represented the intended population. The 23 pilot study participants completed the revised 54-item PFEHE measure. Item-level statistics were analyzed to identify any concerns with any of the items (see Appendix F). Many items had no concerns and 7 items had concerns including low item-total correlation, zero variance, or that removal of the item would have improved the scale-level reliability statistic. Those items of concern were not removed during the pilot study stage, but notes were made to pay close attention to these items during the larger validation study. Given the scope of this dissertation, evidence based on response processes was strong but ongoing engagement with intended participants is needed.

The next phase of this dissertation was the validation study and the opportunity to generate validity evidence based on internal structure. Participant recruitment for the validation study garnered a large sample size (n = 650), which provided the capacity to split the data into two random samples for exploratory and confirmatory factor analyses. Exploratory factor

analyses (EFA) were used to identify a hypothesized model of parent and family engagement (see Figure 2). Following seven rounds of EFAs, three factors were extracted as the model for the PFEHE measure with a total of 21 items. The first factor extracted was identified as family aspirational characteristics representing the family member(s)' hopes for their student to achieve a college degree. Family involvement and engagement were represented by factors two and three. These two factors were differentiated by whom the family member(s) engaged.

A confirmatory factor analysis was used to test the three-factor, 21-item hypothesized model for the PFEHE measure using the second half of the split sample. Several measures of model fit were used to evaluate the hypothesized model; chi-square statistic, root mean square error of approximation (RMSEA) estimate, comparative fit index (CFI), Tucker Lewis fit index (TLI), and the standardized root mean square residual (SRMR) value. Unfortunately, none of the fit measures were within acceptable guidelines (DiStefano & Hess, 2005; Kline, 2016). Each factor's standardized parameter estimates were reviewed and ranged from .29 to .81 (see Figure 3). Only one item had a parameter estimate that would be considered poor: item 46. Factor correlations were also reviewed, with all factors highly correlated with one another, which is consistent with the theoretical framework used to develop the measure. Finally, the evaluation of the CFA concluded with the identification of several sources of potential model misfit.

Reliability, or the measure of internal consistency for the PFEHE, was quite strong for this dissertation. The reliability statistics for the first sample were: family aspirational characteristics ($\alpha = .78$; 4 items), family/student involvement and engagement ($\alpha = .84$; 10 items), and family/university involvement and engagement ($\alpha = .84$; 7 items). For the second of the split-sample, the reliability statistics were family aspirational characteristics ($\alpha = .76$; 4 items), family/student involvement and engagement ($\alpha = .84$; 10 items), and family/university

involvement and engagement (α = .81; 7 items). These internal consistency measures, for both samples, were relatively strong internal consistency statistics (Bollen, 1989; Kline, 2016; McCoach et al., 2013).

The strength of evidence to support fairness was gathered throughout this dissertation. First, expert panelists were asked to rate each item based on whether the item was fair and void of bias. The majority of items were identified as fair and void of bias (see Appendix I). During the cognitive interview phase, participants were asked to share what information they needed to retrieve to respond to each item. This probing question identified whether items were causing participants to recall information inconsistent with the intent of the item. Items in this category were irrelevant to the construct and were revised or removed during this phase (AERA, 2014). This evidence supporting fairness is strong within the scope of this dissertation but should be considered limited until more evidence is generated in future studies.

Interpretations

The PFEHE measure was developed to provide a quantitative research tool to complement Kiyama and Harper's (2018) model of parent and family characteristics, engagement, and support. Four constructs were thought to define parent and family engagement: (a) self-efficacy, (b) involvement and engagement, (c) dimensions of support, and (d) institutional commitment (Harper et al., 2020; Pascarella & Terenzini, 1980; Roska et al., 2020; Walker et al., 2005). Throughout the item review and revision stage, items for engagement and involvement were separated into two categories: (a) family/student involvement and engagement and (b) family/university involvement and engagement. This split was consistent with Henning's (2007) *In consortio cum parentibus* framework, which asserted an interlocking relationship between students and the university, parents and the university, and parents and their students.

Harper et al.'s research also supported this split based upon the results of their study that identified parental support and institutional engagement of parents as two separate themes. The results from this study revealed three factors of parent and family engagement. The analyses supported the identification of which items from the PFEHE measure were associated with each factor. A review of each factor's items determined whether the original instrument blueprint definitions were consistent with the results or a new definition was necessary.

Table 11 identified the factors and their corresponding items from the PFEHE measure. Three factors were identified with at least four items. The first factor, interpreted as family aspirational characteristics, was identified by four items (a) my student earning a college degree is important to their future success, (b) I expect my student to reenroll or graduate next semester, (c) I am confident my student made the right decision in choosing to attend this college or university, and (d) it is important that my student graduates from this college or university. These items bring together Yosso's (2005) definition of aspirational capital and Harper et al.'s (2020) emerging theme of families valuing a college degree. An operationalized definition of this new interpretation is a family member's value and hopes for a college degree for their student. This factor is not much different from the institutional commitment construct hypothesized in the original item blueprint (Pascarella & Terenzini, 1980). The shift to family aspirational characteristics realigns the initial construct within the conceptual framework espoused for this dissertation.

The second factor can be interpreted as involvement and engagement between a family member and their student. This factor is consistent with the operationalized definition provided in the original instrument blueprint; methods a family member could interact with their college student during the higher education experience (Harper et al., 2020; Walker et al., 2005). Unlike

many of the measures reviewed for this study, the response scale for these items moved beyond understanding the frequency of communication with students to understanding the likelihood of family member(s) engaging in these conversations with the college student. Each of the items and their response scales was built upon Harper et al.'s (2012) recommendations. Items included family members talking to their student about: making friends, the student's health and well-being, academic-specific conversations, and the student's engagement opportunities. Additionally, items represented talking to their student about budgeting during college, jobs and internships, and maintaining religious or faith-based practices during the college experience.

The third factor can be interpreted as involvement and engagement between a family member and the student's institution. This factor builds upon the initial definition presented in the instrument blueprint; methods a family member may use to interact with their student's college or university. Kiyama and Harper (2018) captured this definition within their broader involvement and engagement factor and would probably identify these items as normative engagement. An *extremely unlikely* to *extremely likely* 5-point Likert scale was used for the following items identifying this factor: communicate with university/college administrators to discuss schoolwork, college-related expenses, student's non-academic activities, student's physical health and well-being, and student safety. Connecting with others in your community and reaching out to the college or university for assistance were also identified with this factor. Responses to these items could provide insight into exactly how families may interact with the student's institution.

All interpreted factors aligned with the conceptual framework for this dissertation, which incorporated Yosso's (2005) community cultural wealth theory within Kiyama and Harper's (2018) hypothesized model parent and family engagement. Furthermore, the analyses illuminated

statistically significant correlations between all the factors, consistent with the model and results from Harper et al.'s (2020) qualitative research study. At this initial stage of development and validation of the PFEHE measure, it can be viewed as a promising tool to examine the complex phenomenon of parent and family engagement in higher education. The next two sections address the limitations of this inaugural study and articulate directions for future researchers to contend with these limitations.

Limitations

Several limitations emerged throughout the course of this study. Limitations outlined in this section need to be taken into consideration by potential users of the PFEHE measure. The first limitation is the demographic characteristics of the expert panelist and cognitive interview participants. The convenience sampling technique used to recruit participants for the expert panel and cognitive interviews did not yield as diverse of a participant pool as it possibly could. Many of the panelists identified as White or Caucasian, and all the cognitive interview participants identified as women. The information provided by these participants helped to shape the items of the measure with their diverse experiences; families of student-athletes, varying types of institutions, families with students, and families with students at various stages of their higher education careers. However, it continues to be critical to ensure the PFEHE measure and its items are inclusive of families of color, families of first-generation college students, and low-income families. Standard 3.3 of the Standards for Educational and Psychological Testing clearly states that test developers need to ensure items are evaluated by individuals who represent all the relevant population subgroups (AERA, 2014). Harper et al.'s (2012) study also suggested race and ethnicity of a family member may explain differences in how parents and families engage in higher education. Finally, Yosso's (2005) theory was developed specifically as an application to

better understand the strengths families of color have to support their student(s)' educational careers. To ensure the PFEHE measure is an inclusive representation of the diversity of parent and family engagement in higher education, the expert panel review and cognitive interviews should be replicated with a more diverse participant pool (e.g., race/ethnicity, first-generation status).

Another limitation to note was the self-reporting nature of the PFEHE measure. Specifically, the target population for this study was parents and family members of undergraduate college students. This constituent group is rarely viewed as key stakeholders in higher education and is only engaged by the institution at specific points of a student's experience (Carney-Hall, 2008). Therefore, there is a concern about whether participants hesitated to honestly respond to the items of the measure—otherwise known as social desirability bias (Bandalos, 2018). Their participation was not connected with any university, and this study sought to minimize this bias. However, it is unclear whether the validation study participants were responding as they thought they should or whether the participants responded authentically. Future researchers who use the PFEHE measure should be mindful of this limitation. This caution is particularly true if a researcher seeks to use responses to understand how parent and family engagement is related to varying student outcomes.

A final limitation to note about this study is the uncertainty of how the current COVID-19 global pandemic may have impacted the responses to PFEHE. The introduction to this dissertation stated the role of parents and families has continued to evolve throughout the history of higher education in the United States. While the initial premise for studying this complex phenomenon began because of the new generation of college students entering postsecondary education, the COVID-19 global pandemic has added a new layer to the complexity. The items

for the PFEHE measure were not explicitly developed to capture the pandemic, so the interpretation of the results from this study may be limited to this specific timeframe.

Opportunities for Future Research

The development of any measure is an ongoing and iterative process requiring several rounds of expert judge panels, cognitive interviews and focus groups, and the collection of various data (Bandalos, 2018; Kline, 2016). Fortunately, this process supports many opportunities for future research with this newly developed Parent and Family Engagement in Higher Education (PFEHE) measure. This section begins with a discussion of opportunities associated with the aforementioned limitations of this study. Next, this section will elaborate on the next iteration to future develop and gather new evidence to support the use of the PFEHE measure. Furthermore, this section will offer additional methods to better understand the complexity of parent and family engagement in higher education. Finally, a discussion about the possibility of utilizing the PFEHE measure for practical applications, once it is psychometrically sound, is provided.

The first opportunity for future research is to replicate the expert panel review and cognitive interviews with participants with varying identities. A focus on inclusivity in the continued development process of the PFEHE is a major consideration when evaluating the fairness of the instrument. Specifically, the Standards of Education and Psychological Testing articulate "characteristics of all individuals in the intended rest population . . . must be considered . . . so that barriers to fair assessment can be reduced" (AERA, 2014, p. 50). For future researchers who will replicate the expert panel and cognitive interviews, efforts to recruit participants who do not identify as women would assist with understanding how other gender identities are processing the items on the PFEHE measure. Cognitive participant recruitment

should focus on gathering data from families of color, low-income families, and family members of first-generation college students. Another subgroup to engage for cognitive interviews are those family members who do not consider themselves immediate family members. Approximately 35% of the validation study participants identified as an extended family member, guardian, community member, or mentor. An ongoing focus is needed to engage participants who can sharpen the PFEHE measure by ensuring the items consider all the diverse identities of parents and family members, including an account of the diversity of family structures and the breadth of individuals who students call family (Sax & Wartman, 2010). This could be accomplished by delimiting participant criteria specific to each subgroup of parent and (e.g., first-generation college student families, families of historically Black college or university students, families with honors students). As the PFEHE measure develops further, it will be critical to ensure the measure is as inclusive as possible to many subgroups.

Further investigation from this current study could review the exploratory factor analysis. A researcher could evaluate the EFA process executed for this study, along with a deep knowledge of the theoretical frameworks, and derive a different measurement model for the PFEHE measure. The decisions to retain and remove items were determined based on the quantitative analysis and the researcher's understanding of the theoretical frameworks. This type of review could refine the model for the PFEHE measure or identify items to examine further. If the measurement model is redefined, it will be critical for future researchers to continue their analysis with a CFA based on the newly defined model. This research opportunity would build upon the validity evidence based on internal structure and test content.

Another opportunity for future research is to collect a new dataset using the 54-item PFEHE measure and replicate the same methods to acquire validation evidence based on internal

structure. For this research opportunity, there are a variety of research settings to explore. A researcher may want to recruit family members with students who attend minority-serving institutions such as historically Black colleges and universities, Hispanic serving institutions, or tribal colleges and universities. Other research settings could explore families with students who attend 2-year institutions. Another research may want to replicate the recruitment method used for this study and gather a new data set from any parent or family member of undergraduate students. The current study provided a baseline of psychometric properties for the PFEHE measure, which articulated evidence based on internal structure using exploratory and factor analysis. For any of these research settings, a replication of the exploratory and confirmatory analyses could produce a similar solution or a very different solution. In either case, the information derived from a replication of the analyses will provide additional validation evidence to evaluate the PFEHE measure. The research community could have more confidence in the measurement model for the PFEHE measure derived from this study if the new evidence has similar results. A difference in results may indicate a need to revise the measurement model, review and revise items, or refine the constructs of the model. Different results would raise potential concerns and suggest that the measure should only be used in certain capacities: broad application, singular research setting, or specific types of higher education institutions. Regardless of the results, the opportunity to continue gathering more validity and reliability evidence is crucial to evaluate the continued ability to use the PFEHE measure.

The results of the current study revised the original measure to a 21-item version with the accompanying seven demographic items. An appropriate next step for researchers could be the use of other measures, in addition to the 21-item PFEHE measure. The utilization of other measures combined with the 21-item PFEHE measure would allow researchers to determine how

the association between each measure's constructs operates consistent with the theoretical understanding of this phenomenon (AERA, 2014). A recommendation is to use measures or construct(s) reviewed in Chapter 2 to evaluate concurrent and discriminant validity.

For example, a researcher could combine the revised PHEFE measure with Young's (2006) Parent Expectations of Collegiate Teaching and Caring (PECTAC) measure. The PECTAC measure's constructs include: (a) technology resources provide in support of learning, (b) active and team learning, (c) out of class learning opportunities, (d) caring faculty, (e) a caring university community, and (f) being in partnership with parents (Young, 2006, pp. 156–158). By examining the relationships between the subscale scores from the PECTAC measure with the subscales from the PHEFE, a researcher could determine if there is evidence of convergent validity between the family/university involvement and engagement construct from the PFEHE measure and the caring university and being in partnership with parents constructs from the PECTAC measure (AERA, 2014). Together, items associated with these constructs should be measuring the same concept. The PECTAC items associated with out-of-class learning opportunities appear similar to the PFEHE items representing the family/student involvement construct. This direction for future research could produce promising results and add to the strength of validity evidence collected throughout the current study.

Beyond psychometric testing to derive convergent and divergent evidence, future researchers could focus on gathering more validity evidence based on fairness. One method to assess the strength of fairness for any measure is to ensure the items and their respective constructs are operating consistently across various participant subgroups, also known as measurement invariance testing (Kline, 2016; McGovern & Lowe, 2018; Meade & Lautenschlager, 2011). A continued focal point for the ongoing development of the PFEHE

measure should be centering the perspectives of families of color, families of first-generation college students, and low-income families. Therefore, invariance testing could be conducted between the following groups: families of color and Caucasian-identifying families, families of first-generation college students and families of continuing generation college students, and low-income families and their counterparts. Another opportunity to evaluate measurement invariance for the PFEHE measure could be conducted with a longitudinal study. Longitudinal measurement invariance can be evaluated utilizing the same cohort of family members who would take the PFEHE measure every year their student was enrolled in undergraduate course work (Kline, 2016). According to Sax and Wartman (2010), the impact of parent and family involvement on college student development, cannot be investigated until there is a better understanding of the phenomenon of parent involvement in higher education over time. A longitudinal framework is a necessary component to fully understanding this complex population. Ideally, measurement invariance should hold for the PFEHE for any subgroups of interest to future researchers and should hold over time. If measurement invariance does not hold the standards 3.2 and 3.3 recommended, the responsibility of the test developer is to ensure the engagement of all relevant subgroups in the continued construction of the measure (AERA, 2014) to identify potential sources of non-variance and ways of minimizing non-invariance. This example is the ongoing, iterative processes of measurement, development, and validation.

Future researchers interested in learning how various subgroups of family members engage in the higher education experience may also seek to study this population through a qualitative lens. In fact, qualitative studies reviewed for this study made efforts to report whether there were differences in parent and family engagement. Roska and Silver's (2019) focus-group study engaged first-generation college students and found how family members engage with

their student did differ at the varying levels of the college student experience (e.g., first-year to senior college students). Conversely, Harper et al.'s (2020) interview study did not find any differences in parent and family engagement while attempting to understand the phenomenon of this engagement in higher education. Varied qualitative methodologies could provide a depth of responses from families that could also provide evidence for the use of Kiyama and Harper's (2018) model. Researchers could focus their study on one subgroup, like Roska and Silver, who focused on first-generation and low-income students. Other researchers may wish to focus their studies on how Yosso's (2005) community cultural wealth theory may be applicable beyond families of color (e.g., families of first-generation college students, low-income families, etc.). The current study would urge any qualitative studies to incorporate the lived experiences of the family members of current undergraduate college students rather than interpreting family engagement solely from the student's perceptions.

Another qualitative opportunity would be to use focus groups for expert panelists and cognitive interviews to gather input and feedback about the measure. This current study was conducted during the COVID-19 pandemic and therefore these methods were conducted one-on-one with participants using video conferencing technology. However, taking advantage of the robust conversations a focus group could generate between participants could provide more insights into the many items removed or revised throughout this dissertation and produce more items. The engagement of participants who represent various subgroups of family members and involving participants in focus groups may provide additional revisions to the PFEHE measure.

This study engaged higher education administrators and current family members of undergraduate college students; participating individuals began to inquire whether the measure would be used at institutions. Therefore, there is a great opportunity for the PFEHE measure to

be studied at colleges and universities to learn more about parent and family populations. Nevertheless, recent researchers stressed the need to understand how parents are involved in the college student experience suggesting institutions may have an advantage if they could capitalize on the engagement of parents and families (Sax & Wartman, 2010; Wolf et al., 2009). Yet, a researcher or practitioner who delimits the use of the PFEHE measure to a singular institution should take caution because the strength of evidence presented in this study was not scoped to one institution. *The Standards of Education and Psychological Testing* clearly emphasize the importance of gathering validation for all intended purposes for the measure (AERA, 2014). This future research opportunity has a different intent than the current study. Hence, it is recommended to scrutinize the PFEHE measure further to ensure results can be interpreted for a variety of intentions.

Conclusion

Development and initial validation of a measurement tool to learn about the complex phenomenon of parent and family engagement in higher education from the lens of parents and family members were the intentions of this dissertation. The purpose of this dissertation study was to create a quantitative measure as a complement to Kiyama and Harper's (2018) *Model of Parent Characteristics, Engagement, and Support*. A three-phase, nine-step process was used to develop the Parent and Family Engagement in Higher Education measure and to report evidence of reliability, validity, and fairness. Data collection occurred through expert panel reviews, cognitive interviews, a pilot study, and the validation study. Results from all three phases of this dissertation provided evidence, varying in strength, of validity, reliability, and fairness of the measure. Following a review of the results, three factors were extracted by quantitative analyses generally aligned with Kiyama and Harper, Harper et al.'s (2020) themes of family engagement,

and integrated aspects of Yosso's (2005) community cultural wealth theory. These three factors represented family aspirational characteristics, student/family involvement and engagement, and family/university involvement and engagement. Limitations of this study and results were acknowledged. Future studies are needed to continue gathering evidence to support future use of the PFEHE measure. Overall, the PFEHE measure represents a promising tool to better understand the complexity of parent and family engagement in higher education.

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Appendix A

Measures Reviewed for This Dissertation

Table A.1

Full List of Measures Reviewed for Literature Review

Article reference	Name of instrument	Result
Alexander, A. J. (2020). *Parental involvement and phase-adequate career engagement: Comparative study of Indian and American college seniors* (Publication No. 28024221). [Doctoral dissertation, Clark University]. ProQuest Dissertations and Theses Global.	Career-Related Parental Involvement Scale	Excluded
Ball, A., Bates, S., Amorose, A., &Anderson-Butcher, D. (2019). The parent perceptions of overall school experiences scale: Initial development and validation. *Journal of Psychoeducational Assessment*, *37*(3). 251-262. https://doi.org/10.1177/0734282917742310	Parent Perceptions of Overall School Experiences Scale	Excluded
Blizzard, H. M. (2020). *Social support among undergraduate students: Measure development and validation* (Publication No. 28088059). [Doctoral dissertation, University of Denver]. ProQuest Dissertations and Theses Global.	Social Support Among Undergraduate Students Scale	Excluded
Daur, K. L. D. (2017). *Parental involvement in U.S. study abroad: Helicopters or helper* (Publication No. 10276931). [Doctoral dissertation, University of Minnesota]. ProQuest Dissertations and Theses Global.	Exploring Parental Involvement in Study Abroad measure	Excluded
Ermis-Demirtas, H., Watson, J. C., Karaman, M. A., Freeman, P., Kumaran, A., Haktanir, A., & Streeter, A. M. (2018). Psychometric properties of the multidimensional scale of perceived social support within Hispanic college students. *Hispanic Journal of Behavioral Sciences, 40*(4), 472–485. https://doi.org/10.1177/0739986318790733	Multidimensional Scale of Perceived Social Support (MSPSS)	Adapted for PFEHE measure
Halter, M. F. (2004). *Parental psychological adjustment and the needs of parents when an emerging adult attends college* (Publication No. 3189053). [Doctoral dissertation, Northern Arizona University]. ProQuest Dissertations and Theses Global.	Parent Adjustment Survey	Excluded
Harper, C. E., Sax, L. J., & Wolf, D. S. (2012). The role of parents in college students' sociopolitical awareness, academic, and social development. *Journal of Student Affairs Research and Practice*, *49*(2), 137-156. https://doi.org/10.1515/jsarp-2012-6147	University of California Undergraduate Experience Survey (UCUES)	Excluded

Table A.1 (Continued)

Article reference	Name of instrument	Result
Hind, B. Z. (2016). *Conceptualization, measurement, and effects of helicopter parenting on college students from the millennial generation* (Publication No. 10294776). [Doctoral dissertation, Western Michigan University]. ProQuest Dissertations and Theses Global.	Helicopter Parent Controlling scale	Excluded
Kong, S., Li, R. K., Kwok, R. C. (2019). Measuring parents' perceptions of programming education in P-12 schools: Scale development and development. *Journal of Computing Research, 57*(5), 1260–1280. https://journals.sagepub.com/doi/10.1177/0735633118783182	Parents' Perception of Programming Education	Excluded
LeMoyne, T., & Buchanan, T. (2011). Does "hovering" matter? Helicopter parenting and its effect on well-being. *Sociological Spectrum, 31*(4), 399–418. https://doi.org/10.1080/02732173.2011.574038	Helicopter Parenting Measure	Excluded
Mason, C.D. (2015). *'We are all stories in the end, I want mine to be a good one': College students' work-family expectations and role of educational experiences* (Publication No. 3672552). [Doctoral dissertation, The City University of New York]. ProQuest Dissertations and Theses Global.	Various work/family experience scales	Excluded
Miller, P. Z. (2004). *Family members' expectations for involvement with their first year* students (Publication No. 3141633). [Doctoral Dissertation, The Ohio State University]. ProQuest Dissertations and Theses Global.	Expectations of Involvement	Excluded
Pascarella, E. T., & Terenzini, P. T. (1980). Predicting freshman persistence and voluntary dropout decisions from a theoretical model. *The Journal of Higher Education, 51*(1), 60-75. https://www.jstor.org/stable/1981125	Institutional and Goal Commitments Scale	Included in PFEHE
Perna, L. W., &Titus, M. A. (2005). The relationship between parental involvement as social capital and college enrollment: An examination of racial/ethnic group differences. *Journal of Higher Education, 76*(5), 485–518. https://doi.org/10.1080/00221546.2005.11772296	National Education Longitudinal Study (1992 & 1994)	Excluded
Roksa, J., Deutschlander, D., & Whitley, S. E. (2020). Parental validation, college experiences, and institutional commitment of first-generation and low-income students, *Journal of Student Affairs Research and Practice*, 1-15. https://doi.org/10.1080/19496591.2019.1699105	Parent Validation Scale	Adapted for PFEHE measure

Table A.1 (Continued)

Article reference	Name of instrument	Result
Sax, L. J., & Weintraub, D. S. (2014). Exploring the parental role in first-year students' emotional well-being: Considerations by gender. *Journal of Student Affairs Research and Practice, 51*(2), 113-127. http://dx.doi.org/10.1515/jsarp-2014-0013	Cooperative Institutional Research Program & Institutional Residence Life Survey	Excluded
Strom, R. E., & Savage, M.W. (2014). Assessing the relationships between perceived support from close others, goal commitment, and persistence decisions at the college level. *The Journal of College Student Development, 55*(6), 531–547. http://doi.org/10.1353/csd.2014.0064	Support From Family Scale and Intent to Persist Scale	Adapted for PFEHE measure
Walker, J. M. T., Wilkins, A. S., Dallaire, J. R., Sandler, H. M., Hoover, & Dempsey, K. V. (2005). Parental involvement: Model revision through scale development. *The Elementary School Journal, 106*(2), 85-104. https://doi.org/10.1086/499193	Various Scales	Adapted for PFEHE measure
Young, W. W. (2006). *Parent expectations of collegiate teaching and caring* (Publication No. 3236911). [Doctoral Dissertation, The University of Nebraska-Lincoln]. ProQuest Dissertations and Theses Global.	Parent Expectations of Collegiate Teaching and Caring	Excluded

Appendix B

Initial Items Generated for PFEHE Measure

Table B.1

Initial Items for the PFEHE Measure

Item #	Citation	Item
1	*adapted* Harper et al., 2020	When I need support during my student's college experience, I connect with other parents/families with college students
2	*adapted* Harper et al., 2020	When I need support during my student's college experience, I connect with my group of friends
3	*adapted* Harper et al., 2020	When I need support during my student's college experience, I connect with immediate family members
4	*adapted* Harper et al., 2020	When I need support during my student's college experience, I connect with extended family members
5	*adapted* Harper et al., 2020	When I need support during my student's college experience, I connect with other community members
6	*adapted* Harper et al., 2020	When I need support during my student's college experience, I connect with university parent and family office
7	*adapted* Walker et al., 2005	I know how to help my student do well in school.
8	*adapted* Walker et al., 2005	I know the right advice to give to my student about their social life.
9	*adapted* Walker et al., 2005	I know the right advice to give to my student about their academic work.
10	*adapted* Walker et al., 2005	I know the right advice to give to my student about their college expenses.
11	*adapted* Walker et al., 2005	I know the right advice to give to my student about navigating university systems.
12	*adapted* Walker et al., 2005	I know the right advice to give to my student about their health and well-being.
13	*adapted* Walker et al., 2005	I know how to help my student get good grades in school.
14	*adapted* Walker et al., 2005	I have enough time to communicate with my student when needed
15	*adapted* Walker et al., 2005	I have enough time to help my student with their schoolwork.
16	*adapted* Walker et al., 2005	I have enough time to help my student with their extracurricular activities
17	*adapted* Walker et al., 2005	I have enough time to help my student navigate their college expenses.
18	*adapted* Walker et al., 2005	I have enough time to help my student navigate university systems.
19	*adapted* Walker et al., 2005	I have enough time to help my student with their health and well-being.

Table B.1 (Continued)

Item #	*Citation*	Item
20	*adapted* Walker et al., 2005	I have enough time to attend events at my student's university.
21	*adapted* Walker et al., 2005	I know about events I can attend at my student's university.
22	*adapted* Walker et al., 2005	I know enough about my student's coursework to help them when asked.
23	*adapted* Walker et al., 2005	I know enough about my student's social life to help them when asked.
24	*adapted* Walker et al., 2005	I know enough about my student's college expenses to help when needed.
25	*adapted* Walker et al., 2005	I know enough about the university systems to help my student when needed.
26	*adapted* Walker et al., 2005	I know enough about my student's health and well-being to help them when needed.
27	McNulty, Unpublished	I assist my student with college-related expenses.
28	McNulty, Unpublished	I talk to my student about making friends.
29	McNulty, Unpublished	I help my student choose their courses each semester.
30	McNulty, Unpublished	I helped my student choose their current major.
31	McNulty, Unpublished	I talk to my student about the professors.
32	McNulty, Unpublished	I talk to my student about their grades.
33	McNulty, Unpublished	I talk to my student about their non-academic activities at the university.
34	McNulty, Unpublished	I talk to my student about their health and well-being.
35	McNulty, Unpublished	I talk to my student about their college expenses.
36	McNulty, Unpublished	I communicate with the university to discuss my student's coursework.
37	McNulty, Unpublished	I communicate with the university to discuss my student's finances.
38	McNulty, Unpublished	I communicate with the university to discuss my student's non-academic activities.
39	McNulty, Unpublished	I communicate with the university to discuss my student's health and well-being.
40	McNulty, Unpublished	I emphasize the value of a college education to my student.
41	McNulty, Unpublished	I encourage my student to excel in college.
42	McNulty, Unpublished	I emphasize the importance of getting good grades.
43	McNulty, Unpublished	I encourage my student to do their best academically.
44	McNulty, Unpublished	I emphasize the importance of a college education.
45	McNulty, Unpublished	I encourage my student to have high aspirations.
46	*adapted* Strom & Savage, 2014; Pascarella & Terenzini, 1980	I want my student to earn a college degree
47	*adapted* Strom & Savage, 2014	My student earning a college degree is important to me

Table B.1 (Continued)

Item #	Citation	Item
48	*adapted* Strom & Savage, 2014	My student earning a college degree is important for their future success
49	*adapted* Strom & Savage, 2014	I expect my student to reenroll or graduate by next semester
50	*adapted* Strom & Savage, 2014	I expect my student to do well the rest of their college career
51	*adapted* Pascarella & Terenzini, 1980	I am confident my student made the right decision in choosing to attend this institution
52	*adapted* Pascarella & Terenzini, 1980	It is important my student graduates from this university
53	Lamprianou, Symeou, and Theodorou (2019)	It is important for me to talk to my student about their school work
54	McNulty, Unpublished	The university should have events specifically for me
55	McNulty, Unpublished	The university should have an office dedicated to families
56	McNulty, Unpublished	The university should inform me of my student's grades
57	McNulty, Unpublished	The university should contact me if my student violates the student code of conduct
58	*adapted* Lamprianou, Symeou, and Theodorou, 2019	The university should offer me advice about how to support my student's academics
59	*adapted* Lamprianou, Symeou, and Theodorou, 2019	The university should offer me advice about how I can support in my student's college experience
60	*adapted* Lamprianou, Symeou, and Theodorou, 2019	The university should offer me advice about how I can support my student's academic experience
61	*adapted* Lamprianou, Symeou, and Theodorou, 2019	The university should offer me advice about financial aid options (scholarships, loans, grants, etc.)
62	McNulty, unpublished; *adapted* Miller, 2004	My student and I communicate via text
63	McNulty, unpublished; *adapted* Miller, 2004	My student and I communicate via email
64	McNulty, unpublished; *adapted* Miller, 2004	My student and I communicate via phone calls/video calls
65	McNulty, unpublished; *adapted* Miller, 2004	My student and I have a specific plan for communication

Appendix C

Expert Panel Review Form (Directions)

Thank you for agreeing to be an expert panelist and assisting with the development of a new measure for Parents and Family members of college students.	
Purpose of Dissertation Study	The purpose of this study is to develop and initially validate a self-report instrument to measure parent and family engagement in higher education. The measure is intended to be a used as quantitative research tool complementary to Kiyama and Harper's (2018) model of parent and family characteristics, engagement, and support. Evidence of reliability, validity, and fairness are all critical to claim the measure developed should be used beyond this proposed study (American Education Research Association, 2014). A continued focus on centering the perspectives of families of color, families of first-generation college students, and low-income families will also be crucial for consistency with the model and the intent of the theorists.
What is the role of an Expert Panel?	An expert panel will review questionnaire items that will be used in a future study of Parent and Family Engagement in Higher Education. During the initial item review, the expert panel will evaluate items for their quality and fairness, consider items' association with their respective construct, and ensure items are not offensive and are void of any biases.
What are the objectives for this review?	Objective #1 – evaluate items for quality, fairness, and ensure items are void of biases
	Objective #2 – determine whether scoring levels, associated with each item, is appropriate for the intent of the measure
	Objective #3 – provide an opportunity for each panelist to recommend items for possible inclusion in the PFEHE measure
Rating Form Instructions	
Step 1: Item Review	Click on the "Items" sheet and read each item.
Step 2: Match the Item with a Category	A drop-down menu of pre-selected categories has been provided. (*If any items do not fit the pre-selected category, please select other & share suggested category in general comments column)*
Step 3: Rate Item Clarity	On a scale from 1-poor to 4-excellent, please indicate whether the question is clear to understand.
Step 4: Rate Item Relevance to the Measure	Please indicate whether the item is relevant or not to the measure being developed (Relevant is defined by how

	appropriate the item is to the measure and the intent of the measure)
Step 5: Rate the Item's Fairness	Please indicate whether fairness of the item (Fairness is defined by the accessibility of an item and an item is considered fair when it lacks bias and cannot be perceived as offensive*)*
Step 6: Share any additional commentary about the item (Optional)	Please use the final column to share any additional commentary about each item. Please do not feel obligated to use this section if it is not needed
Step 7: Response Scale Review	Click on the "Response Scale" sheet and review the item and its associated response scale
Step 8: Rate the Appropriateness of the Response Scale	On a scale from 1-inappropriate to 2-inappropriate, please indicate whether the response scale is appropriate for the question. (If another rating is needed, please select other & share suggestions in general comments column)
Step 9: Save File & Open Participant Submission Link	Please save your file as Participant Number_Completed Form & Open Participant Survey - https://usf.az1.qualtrics.com/jfe/form/SV_9yovZIrKm6NWK1g
Step 10: Complete Participant Survey	The participant survey will ask you for any overall feedback about the items and the development measure; give you an opportunity to recommend any additional items for the developing measure and will give you a place to upload your completed rating form.
Step **OPTIONAL**	The participant survey will ask if you want to answer some additional, optional questions. This is completely up to you and will not impact your ability to submit your uploaded rating form.
DEFINITIONS	
Dimension of Support	"people, networks, and resources drawn upon" to support the family member and student during the higher education experience" (Harper et al., 2020, p. 545)
Involvement and Engagement	Methods a family member could interact with their college student during the higher education experience (Harper et al., 2020; Walker et al., 2005)
Self-Efficacy	Knowledge, skills, ability, and time a family member has to provide their college student (Walker et al., 2005)
Institutional Commitment	A parent or family member's intention for their student to persist to degree completion at the college/university (Pascarella & Terenzini, 1980; Roska et al., 2020)
Parent(s)/Family of College Students	These are moms, dads, guardians, aunts, uncles, grandparents, community members, and friends who a college student considers family.

Appendix D

Revised - Parent & Family Engagement in Higher Education Measure

To what extent do you agree or disagree with the following statements:
Score Scale: 5-point Likert scale (Strongly Disagree to Strongly Agree)

1. My student earning a college degree is important to me
2. My student earning a college degree is important for their future success
3. I expect my student to reenroll or graduate by next semester
4. I am confident my student made the right decision in choosing to attend this college or university
5. It is important that my student graduates from this college or university

Please indicate how important each of the following statements:
Score Scale: 5-point Likert scale (Not at all important to Extremely important)

6. Talk to your student about making friends
7. Give advice to your student about choosing classes each semester
8. Talk to your student about their major
9. Give guidance to my student about their professors
10. Talk to your student about their grades
11. Talk to your student about their non-academic activities (ex: organizations, work, social life, roommates, etc.)
12. Talk to your student about their physical health
13. Talk to my student about their mental health
14. Talk to your student about budgeting during my student's college experience
15. Talk to my student about their post-college plans
16. Talk to my student about having an on- or off-campus job, including internship experiences
17. Talk to my student about doing well academically
18. Talk to my student about joining a student organization while in college
19. Talk to my student about engaging in undergraduate research while in college
20. Talk to my student about joining a religious or faith-based community while in college
21. Talk to my student about maintaining religious or faith-based practices while in college

During the current school year, how likely are you to:
Score Scale: 5-point Likert scale (Extremely unlikely to extremely likely)

22. Communicate with university/college administrators to discuss my student's school work
23. Communicate with university/college administrators to discuss my student's college-related expenses
24. Communicate with university/college administrators to discuss my student's non-academic activities
25. Communicate with university/college administrators to discuss my students' physical health and well-being
26. Communicate with university/college administrators to discuss my student's mental health and well-being
27. Communicate with university/college administrators to discuss my student's safety

To what extent do you agree or disagree with the following statements:
Score Scale: 5-point Likert scale (Strongly Disagree to Strongly Agree)

28. I have enough knowledge about my student's college expenses to help when needed
29. I have enough knowledge about my student's social like to help my student if needed
30. I have enough knowledge about campus rules and policies to help my student if needed
31. The university should contact me if my student violates the student code of conduct
32. The university should contact me if my student violates the student academic honor policy
33. The university should offer me advice about how to support my student's academic experiences
34. The university should inform me about involvement opportunities for my student
35. I enough knowledge about my student's college expenses to help if needed

During the current school year, how likely are you to:
Score Scale: 5-point Likert scale (Extremely unlikely to extremely likely)

36. Have a communication plan for you and your student during their college or university years
37. Communicate with my student via email
38. Communicate with my student via phone calls
39. Communicate with my student via video calls (Face Time, Zoom, etc)
40. Communicate with my student via text messages

When you need support during your student's college experience, how likely are you to:
Score Scale: 5-point Likert scale (Extremely unlikely to extremely likely)

41. Connect with other parents/families with college students
42. Connect with your group of friends who have college students
43. Connect with your group of friends who do not have college students
44. Connect with immediate family members
45. Connect with others in your family
46. Connect with others in your community
47. Reach out to the college or university for assistance

Demographic Questions

48. How would be best describe yourself in relation to your college student(s)?
    - Immediate Family Member (Parent, Sibling, Grandparents, etc.)
    - Extended Family Member (Aunt, Uncle, Cousins, etc.)
    - Guardian
    - Mentor
    - Community Member
    - I prefer not to respond

49. What is the highest level of education that you have completed?
    - High school or GED, no college courses
    - Some college course, no college degree
    - Vocational or technical training

- Associate's (AA, AS, etc.) and/or Bachelor's (BA, BS, etc.) Degree
- Master's Degree (MS, MFS, MA, etc.)
- Doctoral, and/or Professional Degree (Ph.D., J.D., M.D., etc.)
- I prefer not to respond

50. Is this your first student to go to college or university?
    - Yes
    - No
    - I prefer not to respond

51. During the current school year, did your college student(s) qualify for a Federal Pell Grant?
    - Yes
    - No
    - Uncertain
    - I prefer not to respond

52. How would you describe your race and/or ethnicity? (select one)
    - American Indian or Alaska Native
    - Asian
    - Black or African American
    - Hispanic or Latina/o
    - Middle Eastern or North African
    - Native Hawaiian or Other Pacific Islander
    - White or Caucasian
    - Two or more races (biracial/multiracial)
    - Another race or ethnicity
    - I prefer not to respond

53. How would you describe your gender? (select one)
    - Woman
    - Man
    - Trans*
    - Non-binary
    - Another gender identity
    - I prefer not to respond

54. How would you describe your gender? (select one)
    - Woman
    - Man
    - Trans*
    - Non-binary
    - Another gender identity
    - I prefer not to respond

Appendix E

USF IRB Approval – Pilot & Validation Study

UNIVERSITY of SOUTH FLORIDA

EXEMPT DETERMINATION

October 1, 2021

Michelle McNulty
[redacted]

Dear Michelle McNulty:

On 9/29/2021, the IRB reviewed and approved the following protocol:

Application Type:	Initial Study
IRB ID:	STUDY003199
Review Type:	Exempt (2)
Title:	Parent & Family in Higher Education Validation Study
Funding:	None
Protocol:	• McNulty_SurveyPanel_IRB Protocol_STUDY3199_CLEAN.docx;

The IRB determined that this protocol meets the criteria for exemption from IRB review.

Appendix F

Pilot Study: Item-Level Statistics

Table F.1

Descriptive Statistics on Parent & Family Engagement in Higher Education Pilot Study

Item	*M*	*SD*
1. My student earning a college degree is important to me	4.64	1.05
2. My student earning a college is important for their future success	4.50	1.06
3. I expect my student to reenroll or graduate by next semester	4.27	1.58
4. I am confident my student made the right decision in choosing to attend this college or university	4.64	0.73
5. It is important that my student graduates from this college or university	4.18	0.91
6. Talk to my student about making friends	4.32	0.78
7. Give advice to my student about choosing classes each semester	3.59	0.91
8. Talk to my student about their current major	4.05	0.72
9. Give guidance to my student about their professors	2.95	1.05
10. Talk to my student about their grades	3.73	1.20
11. Talk to my student about their non-academic activities (ex: organizations, work, social life, roommates, etc.)	3.86	0.71
12. Talk to my student about their physical health	4.23	0.61
13. Talk to my student about their mental health	4.64	0.49
14. Talk to my student about their budgeting during my student's college experience	4.50	0.60
15. Talk to my student about their post-college plans	4.14	0.71
16. Talk to my student having an on- or off-campus job, including internship experiences	4.05	0.84
17. Talk to my student about doing well academically to your student	4.18	0.73
18. Talk to my student about joining a student organization during my student's college experience	4.00	0.76
19. Talk to my student about engaging in undergraduate research during my student's college experience	2.59	1.14
20. Talk to my student about joining a religious or faith-based community during my student's college experience	2.55	1.50
21. Talk to my student about maintaining religious or faith-based practices during my student's college experience	2.64	1.47
22. Communicate with university/college administrators to discuss my student's schoolwork	1.23	0.61
23. Communicate with university/college administrators to discuss my student's college-related expenses	1.55	0.91
24. Communicate with university/college administrators to discuss my student's non-academic activities	1.27	0.63
25. Communicate with university/college administrators to discuss my student's physical health and well-being	2.00	1.07
26. Communicate with university/college administrators to discuss my student's mental health and well-being	1.95	1.09
27. Communicate with university/college administrators to discuss my student's safety	2.05	1.17

Table F.1 (Continued)

Item	*M*	*SD*
28. I have enough knowledge about my student's college expenses to help my student if needed	4.45	0.80
29. I have enough knowledge about my student's social life to help my student if needed	4.27	0.83
30. I have enough knowledge about campus rules and policies to help my student if needed	3.82	1.01
31. The university should contact me if my student violates the student code of conduct	3.27	1.45
32. The university should contact me if my student violates the student academic honor policy	3.50	1.44
33. The university should offer me advice about how to support my student's academic experiences	3.77	0.87
34. The university should offer me advice about how to support my student's academic experiences	3.45	1.01
35. The university should inform me about financial aid options (scholarships, loans, grants, etc.)	4.41	0.67
36. Have a communication plan for you and your student during their college or university years	3.64	1.36
37. Communicate with my student via email	2.68	1.59
38. Communicate with my student via phone calls	4.91	0.29
39. Communicate with my student via video calls (Face Time, Zoom, etc)	4.68	0.72
40. Communicate with my student via text messages	5.00	0.00
41. Connect with other parents/families who have college students	3.86	1.25
42. Connect with my group of friends with college students	4.36	0.90
43. Connect with your group of friends who do not have college student	2.68	1.25
44. Connect with immediate family members	4.14	1.04
45. Connect with others in your family	3.59	1.18
46. Connect with others in your community	3.18	1.44
47. Reach out to the college or university for assistance	2.91	1.27

Note. n = 23.

Table F.2

Item-Total Statistics – Institutional Commitment Pilot Study Scale

Item	Scale mean if item deleted	Scale variance if item deleted	Corrected item-total correlation	Squared multiple correlation	Cronbach's alpha if item deleted
My student earning a college degree is important to me	17.65	9.510	.764	.902	.658
My student earning a college is important for their future success	17.78	9.632	.728	.900	.670
I expect my student to reenroll or graduate by next semester	18	9.727	.338	.204	.858
I am confident my student made the right decision in choosing to attend this college or university	17.70	11.403	.713	.573	.708
It is important that my student graduates from this college or university	18.09	11.810	.448	.228	.762

Note. n=23

Table F.3

Item-Total Statistics – Family/Student Involvement and Engagement Pilot Study Scale

Item	Scale mean if item deleted	Scale variance if item deleted	Corrected item-total correlation	Squared multiple correlation	Cronbach's alpha if item deleted
Talk to my student about making friends	71.59	66.729	.283	.	.765
Give advice to my student about choosing classes each semester	72.32	65.084	.344	.	.761
Talk to my student about their current major	71.86	67.838	.217	.	.768
Give guidance to my student about their professors	72.95	60.903	.548	.	.746
Talk to my student about their grades	72.18	57.489	.659	.	.734
Talk to my student about their non-academic activities (ex: organizations, work, social life, roommates, etc.)	72.05	64.617	.510	.	.754
Talk to my student about their physical health	71.68	69.465	.105	.	.773

Table F.3 (Continued)

Item	Scale mean if item deleted	Scale variance if item deleted	Corrected item-total correlation	Squared multiple correlation	Cronbach's alpha if item deleted
Talk to my student about their mental health	71.27	66.398	.536	.	.758
Talk to my student about their budgeting during my student's college experience	71.41	69.491	.110	.	.773
Talk to my student about their post-college plans	71.77	67.232	.275	.	.766
Talk to my student having an on- or off-campus job, including internship experiences	71.86	67.076	.228	.	.768
Talk to my student about doing well academically to your student	71.73	61.636	.762	.	.740
Talk to my student about joining a student organization during my student's college experience	71.91	65.515	.397	.	.759
Talk to my student about engaging in undergraduate research during my student's college experience	73.32	68.323	.070	.	.782
Talk to my student about joining a religious or faith-based community during my student's college experience	73.36	60.528	.349	.	.764
Talk to my student about maintaining religious or faith-based practices during my student's college experience	73.27	60.113	.382	.	.760
Communicate with my student via email	72.27	58.684	.497	.	.748
Communicate with my student via phone calls	73.23	64.565	.152	.	.786
Communicate with my student via video calls (Face Time, Zoom, etc)	71.00	68.095	.569	.	.763
Communicate with my student via text messages	71.23	66.184	.364	.	.761

Note. n = 23.

Table F.4

Item-Total Statistics – Family/University Involvement and Engagement Pilot Study Scale

Item	Scale mean if item deleted	Scale variance if item deleted	Corrected item-total correlation	Squared multiple correlation	Cronbach's alpha if item deleted
Communicate with university/college administrators to discuss my student's schoolwork	27.04	38.316	.646	.906	.785
Communicate with university/college administrators to discuss my student's college-related expenses	26.74	40.747	.168	.537	.817
Communicate with university/college administrators to discuss my student's non-academic activities	27.00	38.363	.718	.932	.780
Communicate with university/college administrators to discuss my student's physical health and well-being	26.30	34.040	.668	.974	.770
Communicate with university/college administrators to discuss my student's mental health and well-being	26.35	34.146	.644	.974	.772
Communicate with university/college administrators to discuss my student's safety	26.26	33.292	.654	.784	.770
The university should contact me if my student violates the student code of conduct	25.04	32.134	.565	.877	.782
The university should contact me if my student violates the student academic honor policy	24.83	32.059	.573	.906	.781
The university should offer me advice about how to support my student's academic experiences	24.43	39.893	.249	.418	.810
The university should offer me advice about how to support my student's academic experiences	34.78	39.360	.251	.476	.812
The university should inform me about financial aid options (scholarships, loans, grants, etc.)	23.38	41.241	.211	.215	.810

Note. n = 23.

Table F.5

Item-Total Statistics – Self-Efficacy Pilot Study Scale

Item	Scale mean if item deleted	Scale variance if item deleted	Corrected item-total correlation	Squared multiple correlation	Cronbach's alpha if item deleted
I have enough knowledge about my student's college expenses to help my student if needed	8.09	2.810	.310	.097	.844
I have enough knowledge about my student's social life to help my student if needed	8.30	2.040	.675	.560	.438
I have enough knowledge about campus rules and policies to help my student if needed	8.74	1.656	.645	.558	.453

Note. n=23

Table F.6

Item-Total Statistics – Dimension of Support Pilot Study Scale

Item	Scale mean if item deleted	Scale variance if item deleted	Corrected item-total correlation	Squared multiple correlation	Cronbach's alpha if item deleted
Connect with other parents/families who have college students	20.61	24.067	.318	.316	.769
Connect with my group of friends with college students	20.09	25.628	.325	.299	.763
Connect with your group of friends who do not have college students	21.83	22.968	.414	.296	.750
Connect with immediate family members	20.35	23.055	.541	.593	.726
Connect with others in your family	20.96	20.043	.731	.733	.680
Connect with others in your community	21.39	19.613	.579	.539	.713
Reach out to the college or university for assistance	21.65	21.510	.509	.421	.730

Note. n = 23.

Appendix G

Validation Study - Call for Participants Email

Dear Parent and/or Family Member,

My name is Michelle McNulty and I am doctoral student at the University of South Florida. My research focus is parent and family engagement in higher education. My dissertation is focused on the development of a new survey to learn more about how parents and family members engage in higher education. The survey is ready for its first participants and I would appreciate if you would consider participating in this research study (IRB Study #003199) by completing the 10-15 minute Parent & Family Engagement in Higher Education Survey - https://bit.ly/ParentFamilyEngagement.

Your perspective as a parent/family member of a college student is important. All responses are anonymous and cannot be linked back to you or your student.

Participant Criteria

- 18 Years of Age or Older
- A parent or family member of a current undergraduate college student(s).

Willing to Participate? Here is How!

1. Complete the Parent & Family Engagement in Higher Education Survey - https://bit.ly/ParentFamilyEngagement.

2. Incentive: Every 20th person to complete the survey will receive a $25 gift card to Amazon to compensate for your participation. An external link will be provided to you once you have submitted your responses.

   Note: A first name and email address will be needed to claim the gift card, but the external link will ensure your entry is not linked to your survey responses.

I truly hope you will consider this opportunity to participate. If you are have any questions or concerns about participating, please do not hesitate to reach out to me at mrobinson4@usf.edu.

Looking forward to hearing from you,
Michelle

Michelle McNulty, M.S.
Doctoral Candidate – Educational Measurement & Evaluation
University of South Florida
Email: mrobinson4@usf.edu

Appendix H

PFEHE Informed Consent

Informed Consent to Participate in Research
Information to Consider Before Taking Part in this Research Study
Title: Parent & Family Engagement in Higher Education Survey
Study # ___003199_____

Overview: You are being asked to take part in a research study. The information that follows will help you to decide if you would like to participate.

Study Staff: Michelle McNulty, who is a doctoral candidate at the University of South Florida, is leading this study. Dr. Robert Dedrick, Professor at the University of South Florida is guiding her in this research.

Study Details: The purpose of the study is to gather data in pursuit of developing a parent and family engagement survey for future use on college campuses across the United States. The survey should take no longer than 15 minutes to complete.

All responses will be analyzed to determine whether this survey and its results can be interpreted and used by various colleges and universities, which is known as psychometric testing. Psychometric testing begins with calculating descriptive statistics, which will be reviewed to better understand the demographic characteristics of participants, mean scores of each construct of interesting, measures of normality for each construct, and the identification of any outliers for each construct. Following the review of the descriptive statistics, measures of internal consistency will be calculated, which will provide reliability evidence for the developing measure. A confirmatory factor analysis (CFA) will be used as the next statistical analysis to produce a plethora of information to evaluation the structure of the PFEHE measure and determine the fit of the measure to the estimated model. Several measures of model fit will be assessed to determine the strength of validity evidence for the developing measure. The final statistical analysis will assess the strength of fairness. This will analysis will determine whether items and their respective constructs are operating consistently across various subgroups of participants.

Participants: You are being asked to take part because you are 18+ years old and a parent or family member of a current undergraduate college student(s).

Voluntary Participation: Your participation is voluntary. You do not have to participate and may stop your participation at any time. There will be no penalties or loss of benefits or opportunities if you do not participate or decide to stop once you start. Your responses are anonymous and therefore will not have any impact on your or your student(s).

Anonymity: Due to the anonymity of the survey, published findings from this study will not be linked back to you or your student(s). Anyone with the authority to look at survey results will, also, be unable to link your response to your or your student(s).

Benefits and Risk: We are unsure if you will receive any benefits by taking part in this research study. This research is considered to be minimal risk.

Compensation: Every 20th person to complete the survey will receive a $25 gift card to Amazon to compensate for your participation. An external link will be provided to you once you have submitted your responses. The external link will allow for the researcher to gather your contact information separate from your survey responses.

Privacy and Confidentiality

We will do our best to keep your records private and confidential. We cannot guarantee absolute confidentiality. Your personal information may be disclosed if required by law. Certain people may need to see your study records. The only people who will be allowed to see these records are: the Principal Investigator, faculty advisor, and the University of South Florida Institutional Review Board (IRB).

Your information collected as part of the research, even if identifiers are removed, will NOT be used or distributed for future research studies.

It is possible, although unlikely, that unauthorized individuals could gain access to your responses because you are responding online. Confidentiality will be maintained to the degree permitted by the technology used. No guarantees can be made regarding the interception of data sent via the Internet. However, your participation in this online survey involves risks similar to a person's everyday use of the Internet. If you complete and submit an anonymous survey and later request your data be withdrawn, this may or may not be possible as the researcher may be unable to extract anonymous data from the database.

Contact Information

If you have any questions, concerns or complaints about this study, email Michelle McNulty at mrobinson4@usf.ed If you have questions about your rights, complaints, or issues as a person taking part in this study, call the USF IRB at (813) 974-5638 or contact the IRB by email at RSCH-IRB@usf.edu.

I understand that by proceeding with this survey, I am agreeing to take part in research and I am 18 years of age or older.

Appendix I

Results from the Expert Panel Review

Table I.1

Results From Expert Panel Review

Item #	Item	Construct agreement (%)	Item clarity average	Relevance agreement (%)	Fairness agreement (%)
1	When I need support during my student's college experience, I connect with other parents/families with college students	86	3.86	86	100
2	When I need support during my student's college experience, I connect with my group of friends	86	4.00	86	86
3	When I need support during my student's college experience, I connect with immediate family members	86	3.86	86	100
4	When I need support during my student's college experience, I connect with extended family members	86	3.71	86	100
5	When I need support during my student's college experience, I connect with other community members	86	3.86	86	100
6	When I need support during my student's college experience, I connect with university parent and family office	100	3.43	86	100
7	I know how to help my student do well in school	100	3.43	100	100
8	I know the right advice to give to my student about their social life	100	3.86	100	86
9	I know the right advice to give to my student about their academic work	100	3.86	100	86
10	I know the right advice to give to my student about their college expenses	100	3.86	100	86
11	I know the right advice to give to my student about navigating university systems	100	3.14	100	29
12	I know the right advice to give to my student about their health and well-being	100	3.86	100	86

Table I.1 (Continued)

Item #	Item	Construct agreement (%)	Item clarity average	Relevance agreement (%)	Fairness agreement (%)
13	I know how to help my student get good grades in school	100	3.43	100	100
14	I have enough time to communicate with my student when needed	71	4.00	100	100
15	I have enough time to help my student with their schoolwork	57	3.71	86	100
16	I have enough time to help my student with their extracurricular activities	57	3.57	86	100
17	I have enough time to help my student navigate their college expenses	71	3.71	86	100
18	I have enough time to help my student navigate university systems	86	3.14	100	57
19	I have enough time to help my student with their health and well-being	71	3.71	86	100
20	I have enough time to attend events at my student's university	57	3.57	100	100
21	I know about events I can attend at my student's university	57	3.57	100	100
22	I know enough about my student's coursework to help them when asked	71	3.71	100	86
23	I know enough about my student's social life to help them when asked	71	3.71	100	100
24	I know enough about my student's college expenses to help when needed	71	3.71	100	100
25	I know enough about the university systems to help my student when needed	71	3.29	100	86
26	I know enough about my student's health and well-being to help them when needed	71	3.71	100	100
27	I assist my student with college-related expenses	57	3.71	86	86
28	I talk to my student about making friends	71	4.00	100	100
29	I help my student choose their courses each semester	71	3.57	100	100

Table I.1 (Continued)

Item #	Item	Construct agreement (%)	Item clarity average	Relevance agreement (%)	Fairness agreement (%)
30	I helped my student choose their current major	71	3.71	100	100
31	I talk to my student about the professors	100	4.00	100	100
32	I talk to my student about their grades	100	4.00	100	100
33	I talk to my student about their nonacademic activities at the university	100	3.86	100	100
34	I talk to my student about their health and well-being	100	4.00	100	100
35	I talk to my student about their college expenses	100	4.00	100	100
36	I communicate with the university to discuss my student's coursework	71	3.71	100	100
37	I communicate with the university to discuss my student's finances	71	3.57	100	100
38	I communicate with the university to discuss my student's non-academic activities	71	3.71	100	100
39	I communicate with the university to discuss my student's health and well-being	71	3.71	100	100
40	I emphasize the value of a college education to my student	50	4.00	86	100
41	I encourage my student to excel in college	43	4.00	100	100
42	I emphasize the importance of getting good grades	43	3.86	100	100
43	I encourage my student to do their best academically	43	3.86	100	100
44	I emphasize the importance of a college education	33	4.00	100	100
45	I encourage my student to have high aspirations	43	4.00	86	100
46	I want my student to earn a college degree	80	4.00	86	100
47	My student earning a college degree is important to me	80	4.00	86	100
48	My student earning a college degree is important for their future success	80	4.00	86	100
49	I expect my student to reenroll or graduate by next semester	80	4.00	86	100

Table I.1 (Continued)

Item #	Item	Construct agreement (%)	Item clarity average	Relevance agreement (%)	Fairness agreement (%)
50	I expect my student to do well the rest of their college career	80	3.71	71	100
51	I am confident my student made the right decision in choosing to attend this institution	67	4.00	71	100
52	It is important my student graduates from this university	80	3.71	86	100
53	It is important for me to talk to my student about their schoolwork	57	3.86	100	100
54	The university should have events specifically for me	57	3.71	86	83
55	The university should have an office dedicated to families	57	3.57	86	86
56	The university should inform me of my student's grades	57	3.71	57	86
57	The university should contact me if my student violates the student code of conduct	57	3.71	57	86
58	The university should offer me advice about how to support my student's academics	57	3.71	86	86
59	The university should offer me advice about how I can support in my student's college experience	57	3.57	86	86
60	The university should offer me advice about how I can support my student's academic experience	57	3.57	86	86
61	The university should offer me advice about financial aid options (scholarships, loans, grants, etc.)	71	3.86	86	71
62	My student and I communicate via text	100	4.00	100	100
63	My student and I communicate via email	100	4.00	100	100
64	My student and I communicate via phone calls/video calls	100	4.00	100	100
65	My student and I have a specific plan for communication	100	3.57	100	100

Note. Construct agreement was calculated by the number of panelists who chose the same construct for each item. Item clarity was scored on a 4-point Likert scale (1 - *poor*, 2 - *fair*, 3 -

average, 4 - *excellent*). Item relevance was dichotomously scored (1 - *relevant* and 2 - *not relevant*) and percentage of agreement was the number of panelists who scored the item as relevant. Item fairness was scored on a 4-point scale (1 - *fair and void of bias*, 2 - *fair and potential for bias*, 3 - *unfair but void of bias*, 4 - *unfair with potential bias*).

Appendix J

EFA Parallel Analysis Plots

Figure J.1. Initial EFA – Parallel Analysis Plot

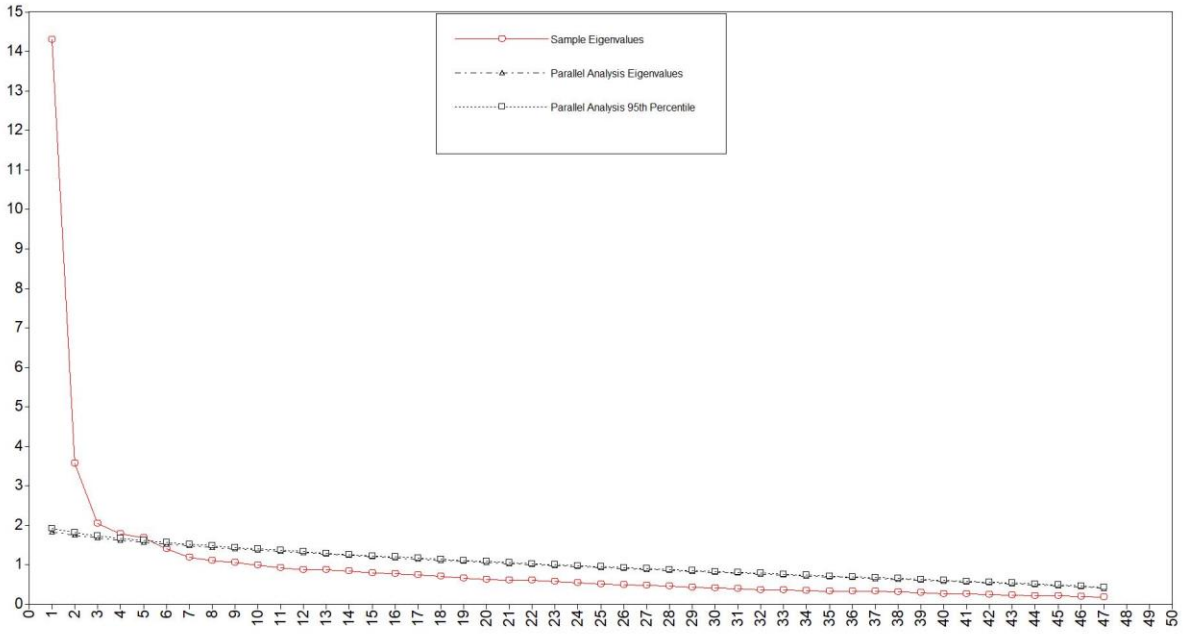


Figure J.2. 2nd EFA – Parallel Analysis Plot

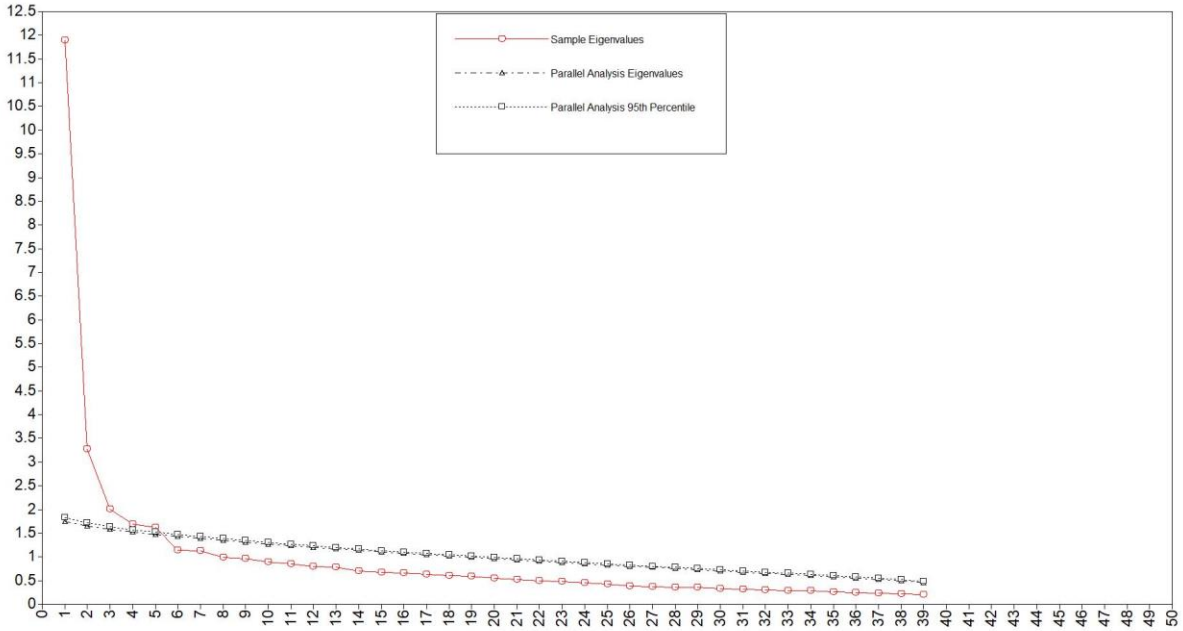


Figure J.3. 3rd EFA – Parallel Analysis Plot

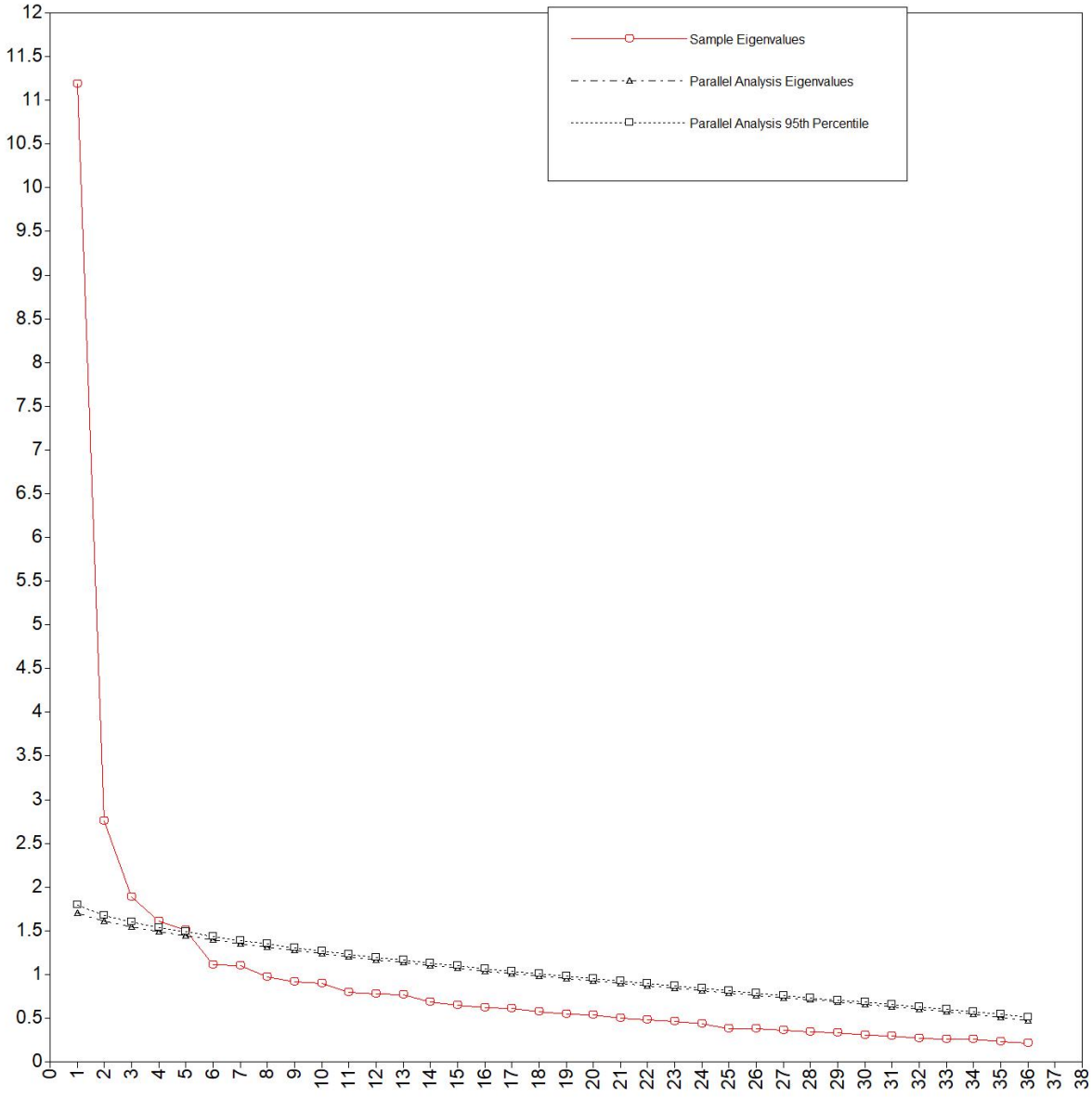


Figure J.4. 4th EFA – Parallel Analysis Plot

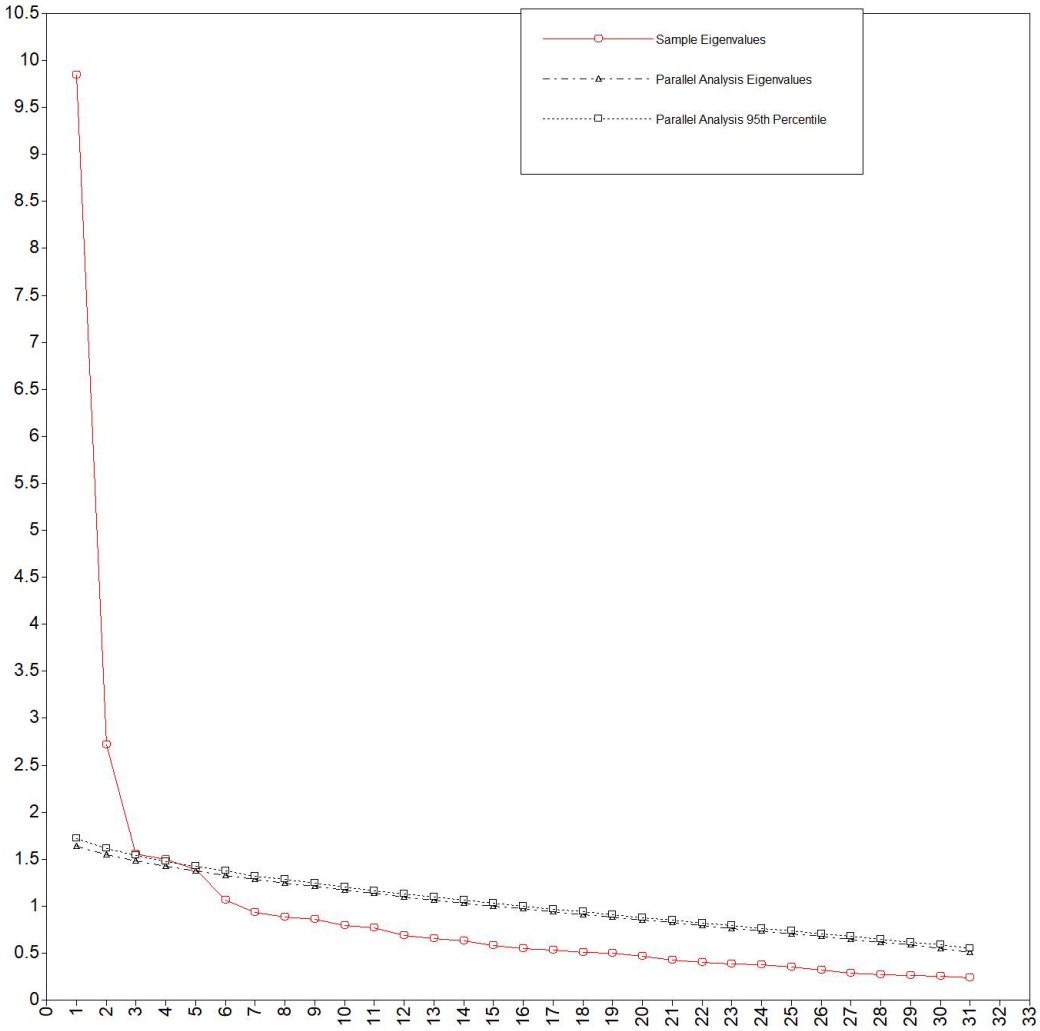


Figure J.5. 5th EFA – Parallel Analysis Plot

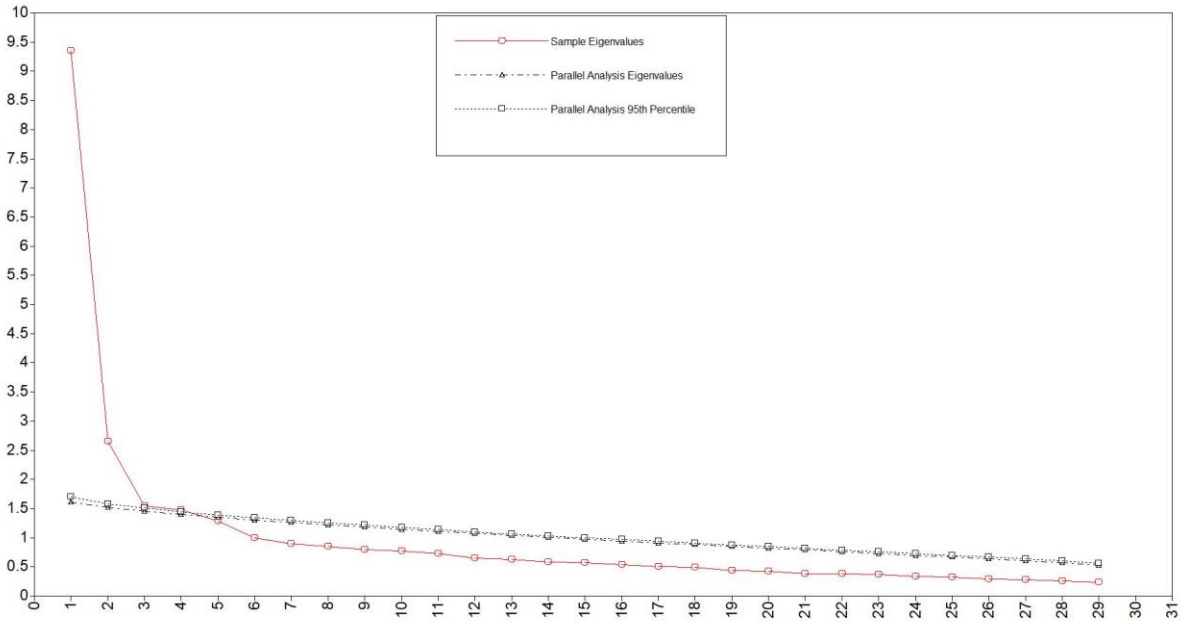
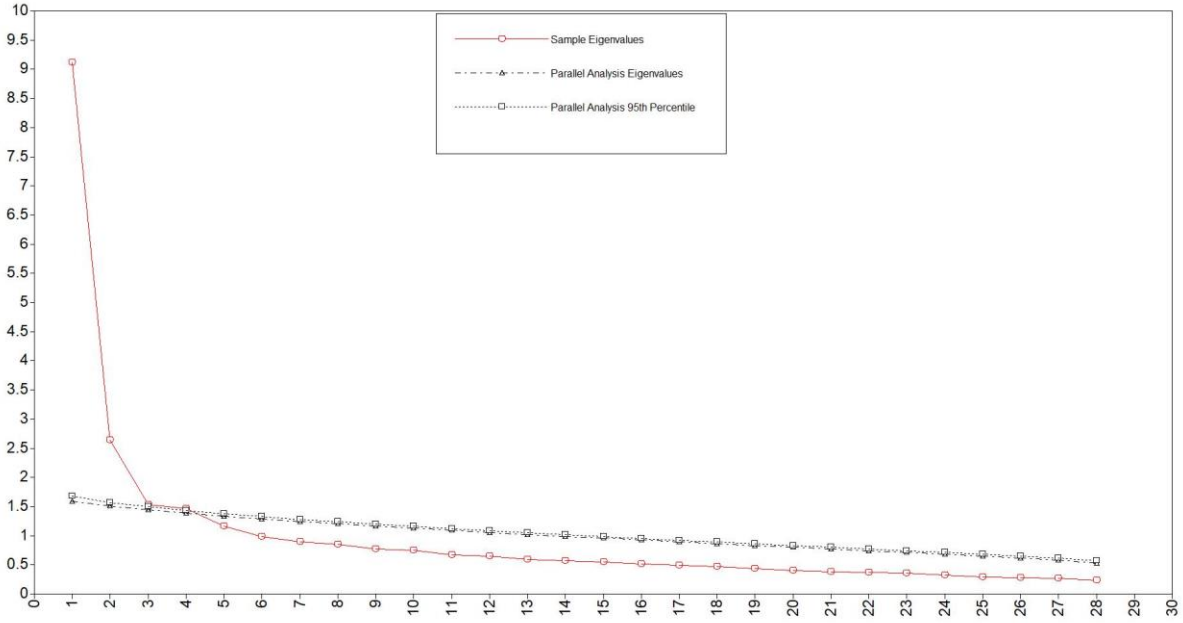


Figure J.6. 6th EFA – Parallel Analysis Plot



Appendix K

Pattern Matrices for Each Exploratory Factor Analysis

Table K.1

Initial EFA - Pattern Matrix Coefficients for a 5-Factor Model of the PFEHE Measure

Item	Factor 1	Factor 2	Factor 3	Factor 4	Factor 5	h^2
Q_1	.10	.26*	-.25*	**.49***	.02	.37
Q_2	.17	**.70***	-.04	-.07	.01	.52
Q_3	.29*	**.40***	.14*	-.04	-.12	.28
Q_4	.05	**.47***	.00	.25*	.05	.29
Q_5	.21	**.41***	-.01	.16	.02	.23
Q_6	.24*	-.03	-.08	**.43***	-.02	.25
Q_7	.24*	.21*	.09	**.27***	.00	.18
Q_8	.22*	.06	-.12*	**.50***	-.05	.32
Q_9	.28*	-.04	.16*	**.43***	-.09	.30
Q_10	**.35***	.13	.00	.22*	-.09	.20
Q_11	**.61***	.05	-.04	-.01	.05	.37
Q_12	**.50***	.06	.04	.31*	-.17*	.38
Q_13	**.52***	.17	-.03	.16	-.16*	.35
Q_14	**.46***	.03	.02	.03	.02	.21
Q_15	**.35***	.25*	.08	.19*	-.14*	.24
Q_16	**.51***	.20	.05	.04	-.03	.31
Q_17	**.70***	-.04	.01	.08	.03	.50
Q_18	**.47***	-.02	-.03	.20*	.04	.26
Q_19	.19*	.07	**.31***	.19*	-.01	.18
Q_20	**.51***	-.33*	.45*	-.04	.01	.57
Q_21	**.55***	-.43*	.41*	-.04	.06	.66
Q_22	-.01	.04	**.52***	.41*	.08	.44
Q_23	.04	.16	**.63***	.11	.00	.43
Q_24	.25*	-.04	**.62***	.03	.02	.45
Q_25	.10	-.05	**.59***	.26*	.04	.43
Q_26	-.22*	-.04	**.56***	.51*	-.04	.63
Q_27	-.02	.19*	**.50***	.38*	-.02	.43
Q_28	-.01	.00	-.31*	**.79***	.11	.72
Q_29	.22	**.46***	.00	.05	.05	.26
Q_30	.25	**.42***	.18*	.05	.06	.28
Q_31	.10	.14	.28*	**.37***	-.04	.25
Q_32	.08	.01	.26*	**.39***	.05	.22

Table K.1 (Continued)

Item	Factor 1	Factor 2	Factor 3	**Factor 4**	Factor 5	*h*2
Q_33	.05	.13	.12	**.48***	.00	.27
Q_34	.00	.14	.19*	**.43***	.09	.25
Q_35	.00	.14*	.04	**.52***	.11	.30
Q_36	.00	-.19*	.00	**.80***	.05	.67
Q_37	-.07	**.59***	.38*	-.01	.08	.50
Q_38	**.46***	.38*	-.13*	.00	.07	.38
Q_39	**.37***	.17	-.12*	.19*	.15*	.24
Q_40	**.38***	.01	-.27*	.16	.16*	.26
Q_41	.02	-.01	.02	.39*	**.42***	.32
Q_42	.00	.34*	.03	-.01	**.42***	.30
Q_43	.19	-.13	.15*	.03	**.49***	.32
Q_44	.15	.25*	-.11	.05	**.40***	.26
Q_45	.20*	.04	.03	.15	**.40***	.23
Q_46	-.06	.05	.29*	-.06	**.54***	.38
Q_47	.00	.24*	**.43***	.03	.31*	.34

Note. $n = 319$. * $p < .05$. Loadings in bold represent the highest factor loading.

Table K.2

Second EFA - Pattern Matrix Coefficients for a 5-Factor Model of the PFEHE Measure

Item	Factor 1	Factor 2	Factor 3	Factor 4	Factor 5	h^2
Q_1	.28*	.06	-.21*	**.51***	.02	.39
Q_2	**.73***	.09	-.04	-.05	-.01	.54
Q_3	**.44***	.26*	.13*	-.04	-.12	.29
Q_4	**.52***	.00	.02	.23*	.03	.32
Q_5	**.47***	.16	.01	.13	.01	.26
Q_6	.01	.22*	-.05	**.44***	-.04	.24
Q_8	.08	.20*	-.08	**.53***	-.06	.33
Q_9	-.01	.28*	.18*	**.40***	-.06	.27
Q_11	.10	**.57***	-.05	.01	.05	.34
Q_12	.11	**.46***	.07	.31*	-.16*	.35
Q_13	.22*	**.48***	-.03	.18*	-.14*	.33
Q_14	.04	**.45***	-.01	.07	.04	.21
Q_16	.23*	**.48***	.03	.07	-.01	.29
Q_17	.04	**.65***	.01	.09	.02	.44

Table K.2 (Continued)

Item	Factor 1	**Factor 2**	Factor 3	Factor 4	Factor 5	*h2*
Q_18	.00	**.45***	-.04	.22*	.08	.26
Q_20	-.29*	**.52***	.43*	-.04	.00	.55
Q_21	-.38*	**.55***	.40*	-.04	.05	.61
Q_22	.04	.02	**.54***	.38*	.01	.44
Q_23	.13	.05	**.62***	.09	.03	.42
Q_24	-.03	.27*	**.62***	.02	.02	.46
Q_25	-.02	.15*	**.62***	.21*	.01	.45
Q_26	-.03	-.15*	**.59***	.46*	-.03	.59
Q_27	.23*	-.02	**.56***	.33*	-.01	.47
Q_28	.00	-.02	-.26*	**.81***	.11*	.75
Q_29	**.49***	.15	.05	.07	.04	.27
Q_30	**.48***	.21*	.18*	.02	.05	.31
Q_33	.20*	.04	.18*	**.42***	-.04	.25
Q_34	.19*	.01	.23*	**.37***	.06	.23
Q_35	.17*	.02	.07	**.48***	.10	.27
Q_36	-.18*	.01	.06	**.78***	.06	.65
Q_37	**.58***	-.08	.37*	-.02	.08	.48
Q_38	**.43***	.41*	-.15*	.02	.08	.38
Q_41	-.02	.03	.01	.38*	**.44***	.34
Q_42	.34*	-.04	.02	.06	**.41***	.29
Q_43	-.10	.20*	.12	.05	**.45***	.27
Q_44	.29	.11	-.12*	.06	**.39***	.26
Q_45	.05	.20*	-.01	.16	**.43***	.25
Q_46	0.04	-.04	.24*	-.09	**.58***	0.41
Q_47	0.26*	.01	**.41***	-.01	.32*	0.34

Note. n = 319. * p < .05. Loadings in bold represent the highest factor loading.

Table K.3

Third EFA - Pattern Matrix Coefficients for a 5-Factor Model of the PFEHE Measure

Item	Factor 1	Factor 2	Factor 3	Factor 4	Factor 5	h^2
Q_1	.29*	.09	-.20	**.50**	.02	.39
Q_2	**.76***	.08	-.06	-.04	.00	.59
Q_3	**.44***	.24	.13	-.04	-.11	.28
Q_4	**.52***	.04	.01	.21	.04	.32

Table K.3 (Continued)

Item	**Factor 1**	Factor 2	Factor 3	Factor 4	Factor 5	*h*2
Q_5	**.48***	.20	-.02	.10	.03	.27
Q_6	.04	.20	-.03	**.43**	-.04	.23
Q_8	.08	.18	-.04	**.55**	-.08	.35
Q_9	-.02	.29	.20	.37	-.06	.26
Q_11	.05	**.64**	-.04	-.05	.09	.43
Q_12	.08	**.52**	.07	.24	-.13	.36
Q_13	.19*	**.55**	-.03	.12	-.10	.36
Q_14	.03	**.46**	.01	.04	.05	.22
Q_16	.19*	**.52**	.05	.04	.02	.30
Q_17	.02	**.69**	.02	.03	.06	.48
Q_18	-.02	**.50**	-.03	.16	.11	.29
Q_21	-.31*	**.42**	.40	-.05	.05	.44
Q_22	.01	.01	**.59**	.35	.05	.47
Q_23	.13	.04	**.63**	.06	.02	.42
Q_24	-.06	.24	**.65**	-.02	.01	.49
Q_25	-.05	.16	**.63**	.14	.01	.45
Q_27	.20*	-.03	**.59**	.31	-.08	.49
Q_28	.01	-.02	-.23	**.83**	.10	.75
Q_29	**.46***	.14	.07	.10	.03	.25
Q_30	**.43***	.23	.20	.02	.05	.28
Q_33	.20*	.04	.18	**.40**	-.04	.24
Q_34	.20*	-.03	.24*	**.37***	.05	.24
Q_35	.16*	.02	.08	**.47**	.01	.25
Q_36	-.17*	-.01	.09	**.77**	.04	.63
Q_37	**.55***	-.10	.37	.00	.06	.46
Q_41	-.03	.04	.03	.37	**.44**	.33
Q_42	.37*	-.07	.02	.02	**.40**	.31
Q_43	-.08	.16	.15	.04	**.44**	.24
Q_44	.28*	.11	-.12	.07	**.39**	.26
Q_45	.02	.27	-.02	.09	**.47**	.30
Q_46	.05	-.05	.22	-.12	**.60**	.42
Q_47	.21	.01	**.45**	-.02	.30	.33

Note. $n = 319$. * $p < .05$. Loadings in bold represent the highest factor loading.

Table K.4

Fourth EFA - Pattern Matrix Coefficients for a 5-Factor Model of the PFEHE Measure

Item	Factor 1	Factor 2	Factor 3	Factor 4	Factor 5	h^2
Q_1	.29*	.06	-.12	**.52***	-.04	.38
Q_2	**.73***	.04	-.05	-.01	-.01	.54
Q_3	**.47***	.18*	.13*	-.06	-.09	.27
Q_4	**.61***	-.02	.00	.17*	.11	.40
Q_5	**.56***	.13	-.03	.06	.08	.34
Q_6	.06	.21*	.01	.39*	-.05	.20
Q_8	.04	.20*	.04	**.54***	-.14*	.33
Q_11	.08	**.61***	-.04	-.03	.03	.38
Q_12	.11	**.50***	.12*	.20*	-.15*	.31
Q_13	.20*	**.54***	-.02	.09	-.11	.34
Q_14	-.02	**.49***	.00	.07	.01	.25
Q_16	.17*	**.53***	.02	.04	.02	.31
Q_17	.04	**.68***	.01	.02	.03	.46
Q_18	-.02	**.52***	-.05	.18*	.09	.31
Q_21	-.29*	**.43***	.40*	-.08	.03	.43
Q_22	.03	-.01	**.63***	.31*	.07	.49
Q_23	.10	.03	**.64***	.05	.01	.42
Q_24	-.06	.24*	**.67***	-.06	-.01	.51
Q_25	-.03	.17*	**.63***	.08	.05	.43
Q_27	.25*	-.06	**.62***	.22*	-.04	.50
Q_28	.03	-.02	-.15	**.83***	.08	.71
Q_29	**.48***	.11	.08	.09	.03	.26
Q_30	**.48***	.19*	.17*	-.02	.09	.29
Q_33	.26*	.04	.23*	.32*	-.04	.22
Q_35	.17*	.04	.10	**.44***	.12	.24
Q_36	-.13	-.01	.19*	**.73***	.00	.59
Q_41	-.04	.07	.02	**.43***	.40*	.19
Q_43	-.07	.17	.13	.11	**.38***	.06
Q_45	.04	.26*	-.05	.18	**.43***	.11
Q_46	.06	-.03	.10	-.05	**.68***	.02
Q_47	.28*	-.03	**.40***	-.03	.37*	.24

Note. n = 319. * p < .05. Loadings in bold represent the highest factor loading.

Table K.5

Fifth EFA - Pattern Matrix Coefficients for a 4-Factor Model of the PFEHE Measure

Item	Factor 1	Factor 2	Factor 3	Factor 4	h^2
Q_1	.29*	.08	-.11*****	**.51***	.36
Q_2	**.76***	.04	-.07	-.03	.58
Q_3	**.46***	.19*	.08	-.07	.26
Q_4	**.62***	-.03	.05	.16*****	.41
Q_5	**.56***	.14	-.01	.06	.34
Q_6	.05	.24*	-.01	**.37***	.20
Q_8	.02	.24*	.00	**.51***	.32
Q_11	.09	**.58***	-.03	.00	.34
Q_12	.08	**.53***	.05	.19*****	.33
Q_13	.17*	**.56***	-.07	.10	.36
Q_14	-.01	**.48***	.01	.09	.24
Q_16	.17*	**.52***	.03	.06	.30
Q_17	.04	**.67***	.02	.04	.45
Q_18	-.01	**.48***	.02	.21*****	.28
Q_21	-.29*	**.41***	.40*****	-.08	.41
Q_22	.02	-.02	**.68***	.29*****	.55
Q_23	.09	.04	**.65***	.05	.43
Q_24	-.07	.24*****	**.66***	-.07	.50
Q_25	-.03	.17*****	**.65***	.05	.45
Q_27	.21*	.01	**.59***	.16*****	.42
Q_28	.02	-.02	-.06	**.84***	.71
Q_29	**.49***	.11	.09	.08	.26
Q_30	**.47***	.19*****	.21*****	-.02	.30
Q_35	.15*	.05	.18*****	**.43***	.24
Q_36	-.15*	.01	.25*****	**.71***	.59
Q_41	.01	-.01	.25*****	**.45***	.26
Q_45	.11	.14	.18*****	.22	.11
Q_46	.13	-.15	**.40***	.02	.20
Q_47	.31*	-.10	**.57***	-.01	.43

Note. n = 319. * p < .05. Loadings in bold represent the highest factor loading.

Table K.6

Sixth EFA - Pattern Matrix Coefficients for a 4-Factor Model of the PFEHE Measure

Item	Factor 1	Factor 2	Factor 3	Factor 4	h^2
Q_1	.29*	.08	-.11*	**.51***	.36
Q_2	**.76***	.04	-.07	-.03	.58
Q_3	**.46***	.20*	.08	-.07	.26
Q_4	**.62***	-.03	.05	.15*	.41
Q_5	**.56***	.14	-.01	.06	.34
Q_6	.05	.24*	.00	**.37***	.20
Q_8	.02	.24*	.00	**.51***	.32
Q_11	.09	**.58***	-.03	-.01	.34
Q_12	.08	**.53***	.06	.19*	.33
Q_13	.17*	**.56***	-.06	.10	.36
Q_14	-.01	**.48***	.01	.09	.24
Q_16	.17*	**.52***	.03	.06	.30
Q_17	.04	**.67***	.02	.04	.45
Q_18	.00	**.48***	.02	.20*	.27
Q_21	-.29*	**.41***	.40*	-.07	.41
Q_22	.03	-.01	**.68***	.30*	.56
Q_23	.09	.04	**.65***	.03	.43
Q_24	-.07	.24*	**.66***	-.07	.50
Q_25	-.03	.17*	**.65***	.06	.45
Q_27	.21*****	.01	**.59***	.17*	.42
Q_28	.02	-.02	-.05	**.84***	.71
Q_29	**.49***	.11	.09	.08	.26
Q_30	**.48***	.19*	.20*	-.02	.30
Q_35	.16*****	.05	.18*	**.43***	.24
Q_36	-.15*****	.01	.25*	**.71***	.59
Q_41	.02	-.01	.24*	**.44***	.25
Q_46	.13	-.14	**.39***	.01	.19
Q_47	.31*****	-.09	**.57***	-.01	.42

Note. n = 319. * p < .05. Loadings in bold represent the highest factor loading.