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The Process And Power Of Owning Intellectual Limitations: A Grounded Theory Of Intellectual Humility In Undergraduate Education

Johann Ducharme
William & Mary - School of Education, jfducharme@email.wm.edu

THE PROCESS AND POWER OF OWNING INTELLECTUAL LIMITATIONS: A GROUNDED THEORY OF INTELLECTUAL HUMILITY IN UNDERGRADUATE EDUCATION

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A Dissertation

James P. Barber, Ph.D.
Chairperson of Doctoral Committee

Ronald Sims, Ph.D.
Committee Member

Judi Harris, Ph.D.
Committee Member

When any real progress is made,
we unlearned and learned anew
what we thought we knew before.

— Henry David Thoreau, *Uncommon Learning: Thoreau on Education*

The test of a first-rate intelligence is the ability
to hold two opposing ideas in the mind at the same time,
and still retain the ability to function.

— F. Scott Fitzgerald, *The Crack Up*

To Tierney, my love and joy,

And delightful mother of our children: Juniper, Theo & Axel.

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ABSTRACT

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Intellectual humility is understood as the attentiveness to and owning of intellectual limitations and operates as an Aristotelian golden mean along a spectrum of its absence (i.e., intellectual arrogance) and excess (i.e., intellectual servility). This study investigates the nature and formation of intellectual humility contextualized to an undergraduate, liberal arts and sciences education. A grounded theory approach was employed to conceptualize and develop two models of intellectual humility: a process for unlearning as an appropriate response to owning intellectual limitations and a way to cultivate intellectual humility in undergraduate students. This qualitative study comprised of tenured faculty from a highly selective, public, liberal arts and sciences research university by first examining responses to 90 descriptive survey submissions. From these entries, a total of 33 semi-structured interviews—11 Arts and Humanities, 10 Business, and 12 Sciences participants—were conducted, transcribed, coded, categorized, and member checked with each individual.

Faculty identified a process of unlearning that took place in students who owned their intellectual limitations. Intellectually humble students were described as able to unlearn old, forced, or narrow mental mindsets. Examples of these mindsets included study habits developed in high school, mental models of receiving feedback, or prior ways of thinking that no longer proved successful or were prohibitive to further learning. Students who rejected, owned, or stressed their intellectual limitations followed a bi-directional path of growth or stagnation in how they responded to feedback and displayed intellectual arrogance, humility, or servility. Regardless of academic community, faculty described students who had intellectual humility

owned their intellectual limitations, operated with a tolerance for discomfort, and developed a love of learning. In some cases, that love of learning was renewed.

When displayed, intellectual humility was described by faculty members as a mixture of confidence and empathy and was instilled by counterbalancing for the quality students lacked. Undergraduates who responded to their intellectual limitations by denying, rejecting, or remaining ignorant of them (i.e., displayed intellectual arrogance) lacked empathy to consider the position of the professor or a peer providing the feedback. Nearly all of my participants, however, shared that they more often experienced the converse: students who—when receiving feedback—stressed their limitations as too great and needed confidence. Professors also confirmed their own attentiveness to and owning of intellectual limitations. Implications for pedagogy are offered that include fostering a tolerance for discomfort and multiple strategies to build the intellectual confidence and empathy of undergraduates.

THE PROCESS AND POWER OF OWNING INTELLECTUAL LIMITATIONS: A GROUNDED THEORY OF INTELLECTUAL HUMILITY IN UNDERGRADUATE EDUCATION

CHAPTER 1

OWNING INTELLECTUAL LIMITATIONS

The study of humility is experiencing a notable renaissance across the academy. From philosophy to theology, psychology research to business and management literature, scholars within many disciplines have explored ways in which humility is understood to have an impact on these fields. Recent research on humility has led to the creation of subdomains such as relational humility, cultural humility, and leader humility that have had an influence on each of their respective disciplines. Intellectual humility, another subdomain of humility, is identified as a desirable outcome of higher education (Baehr, 2013; DeWall, 2016; Jones, 2012) that has a direct influence on how individuals process new information, remain open to new experiences, and admit the potential fallibility of one's knowledge or worldview (Krumrei-Mancuso & Rouse, 2015; Samuelson et al., 2015).

Humility's etymology stems from the Latin *humus* meaning "earth" and *humi* "on the ground" (Owens & Hekman, 2012). A humble individual is traditionally understood to possess a complexity of traits such as a low concern for oneself, willingness to admit one's faults, and having an accurate self-awareness of strengths and limitations (Tangney, 2000, 2009). Modesty and self-esteem are personal qualities that are positively associated with humility, whereas narcissism is often negatively associated (Tangney, 2009). Moreover, some have argued that humility operates as a meta-virtue, required in order to possess other virtues such as wisdom (Kross & Grossman, 2012), or as a counterbalance to worrisome traits such as narcissism (Owens et al., 2015).

What follows is an in-depth look at why research on intellectual humility is urgent at this time. Intellectual humility is properly understood as an intellectual virtue that operates as an ability to own one's intellectual limitations. Intellectual humility is understood as the golden mean on a spectrum between intellectual arrogance and servility. I argue that a grounded theory study of intellectual humility will discover a model of its nature and reveal how it may be instilled or fostered in higher education. The purpose of this chapter is to identify problems that intellectual humility addresses, identify the various characteristics of persons with humility, situate the topic within the context of undergraduate education, and make a grounded argument for the future of research on this topic.

Case for Intellectual Virtues

Misinformation, ideological polarization, and dogmatic thinking are some of the most pressing cultural, political, and societal issues of our day. The preservation and progress of our democratic society depend on substantial counterbalances to these ills (Lynch, 2017, 2018; Lynch et al., n.d.). Mechanisms to fact-check disinformation campaigns, depolarize ideological gaps, and bring to light our cognitive biases have fueled recent arguments and empirical studies. For instance, philosophers have theorized over the past two decades that educating for intellectual virtues, such as humility, can address and better develop critical, creative, and open-minded thinkers (e.g., Baehr, 2013; Jones, 2012; Roberts & Wood, 2007; Whitcomb et al., 2017). The field of positive psychology has advanced multiple definitions to measure the intellectual properties of virtues such as intellectual humility (Haggard et al., 2018; Krumrei-Mancuso & Rouse, 2015; Leary et al., 2017). Research in business and management has proposed useful ways leaders who operate from a position of humility can improve their corporate, governmental, or nonprofit environments (Ou et al., 2014; Owens & Hekman, 2012,

2016; Owens et al., 2013). However, the field of higher education has yet to practically evaluate how to teach for intellectual humility, including whether intellectual humility is a quality that can be instilled in undergraduates (Leary, 2018).

Our democratic society lives with immense, unlimited access to news and facts, in what philosophers O'Connor and Weatherall (2019) posited as the misinformation age. They defined the age we live in as proliferated by propaganda, marketers' spin, and blatant lies (O'Connor & Weatherall, 2019). This has clear consequences. When misinformation is assumed to be true by a reader or listener, what results are false beliefs or wrong thinking; O'Connor and Weatherall (2019) termed this as "cognitive biases or blind spots, quirks of human psychology that prevent us from drawing reliable inferences" (p. 7). Cognitive bias, in turn, can reinforce erroneous knowledge creation. The proliferation of misinformation via social media platforms has especially exacerbated the problem. The power of Facebook, for instance, to accelerate the spread of disinformation campaigns was shown to have had a significant impact on voter suppression and persuasion (Roose, 2018), such as a fictitious article of the Pope endorsing Donald Trump for President in 2016 (Schaedel, 2016). *The New York Times* reported over 4,000 examples of election misinformation spread over social media platforms (Roose, 2018). This new struggle has turned the conversation into how to catch and correct misinformation quickly enough before it does more harm as well as to address the need to educate and potentially correct the cognitive limitations of readers.

Ideological views in the U.S. have diverged and become significantly polarized over the past three decades. By one estimate, this gap has occurred largely across educated lines, where individuals with a postsecondary degree were more likely to hold politically progressive values (Pew Research Center, 2016). This political polarization has resulted in the gradual loss of more

moderate views held by U.S. citizens who may find common ground with either Republican or Democrat standpoints. Philosophers have suggested an antidote is to remove arrogant thinking caused by unchecked, implicit bias and to increase our capacity to have meaningful discourse in the midst of disagreement (Lynch, 2018; Lynch et al., n.d.). Mechanisms associated with intellectual humility are suggested as a means of depolarization when individuals in group settings share divergent points of view (Kross & Grossman, 2012; Lynch, 2017).

Dogmatic thinking, or asserting one's beliefs without evidence, is commonly associated with the polarization that derives from overconfidence in one's views. "A toxic mix of technology, psychology, and ideology" are to blame, according to Michael Patrick Lynch (2017, para. 8), Director of the Humanities Institute at the University of Connecticut. He argued that "an explosion of overconfidence in what you individually understand [and] an active encouragement of epistemic arrogance" is fueled by our society's misuse of social media and the Internet (2017, para. 8). This overconfidence is not limited to society at large but is shown to exist also within parts of the academy. A study replication crisis within psychology and medicine has disrupted once-held, valid findings as new researchers—replicating prior studies—disprove original findings (Johnson et al., 2017; Stanley et al., 2018). One meta-analysis of 8,000 scientific papers concluded that "psychological research is, on average, afflicted with low statistical power" (Stanley et al., 2018, p. 1325); in other words, the academy is not immune to overconfidence.

Intellectual virtues are needed now more than ever to stem the combined onslaught of misinformation, ideological polarization, and dogmatic thinking. Jones (2012) defined intellectual virtues as "dispositions of persons to form beliefs of strengths that are *appropriate to their epistemic position*" (p. 696). An epistemic position is the reflection of a person's inherited knowledge, the contextual source of one's beliefs. Jones (2012) argued that institutions of higher

education aim to instill two types of intellectual virtues: intellectual confidence and humility. He presented these two as "cognitively balanced" (p. 698), or what others have deemed "complementary virtues" (Roberts & Wood, 2007, p. 234). Intellectual confidence is understood as the strength of one's cognitive awareness and is cultivated when students can identify the basis for their epistemic position. Its complement—intellectual humility—is argued as the limit of one's epistemic position whereby one's intellect is constructed from a cognitive awareness of what one knows and does not know (Jones, 2012). How an undergraduate student becomes aware of their epistemic position has stirred much debate by philosophers (e.g., Baehr, 2013; DeWall, 2016; Jones, 2012).

Research Questions

The study of intellectual humility is in its infancy. To date, most research on the subject has explored its nature through either a philosophical lens or by utilizing self-reporting, survey metrics. The latter has included the creation of multiple measurement scales that were descriptive surveys, conducted online, and removed any contextual considerations (e.g., Haggard et al., 2018; Krumrei-Mancuso & Rouse, 2015; Leary et al., 2017). So far, most investigations have concluded that a computerized survey format was insufficient to gather a full understanding and deeper picture of intellectual humility, whereas a live, interpersonal setting may prove more helpful (Jarvinen & Paulus, 2017). Given the centrality of self-reporting, some have argued that new research should include other-reporting techniques as well as continued touchpoints with participants over several months (Haggard et al., 2018; Meagher et al., 2015). In addition, others have argued how future research is needed to explore how individuals become intellectually humble (Porter & Schumann, 2018).

Most empirical studies of intellectual humility have included educational attainment as a form of participant background information. Of these published studies, educational attainment was provided if the participant held a bachelor's degree. In addition, a handful of researchers have used undergraduate and community college students as their participants, such as Porter and Schumann's (2018) survey of 181 community college students and Davis et al.'s (2016) survey of 1,097 undergraduates registered in a psychology course. However, no study has made the context of higher education a central focus on understanding intellectual humility or as it pertains to college student development. The median age of participants in most studies was well over the traditional age of undergraduate students (e.g., 18–24). University professors in specific were rarely included as participants. Overall, extant research has primarily focused on definitions of intellectual humility and its correlations with other phenomena without examining the context or situation from which the data is derived.

To my knowledge, very few extant research has examined intellectual humility by prioritizing qualitative, in-depth approaches. Furthermore, no empirically based model, diagram, and/or conceptual framework exists that seeks to depict the construct or structure of intellectual humility. New research is poised to offer greater insights into its significance in higher education as well to discover an empirically based, grounded theory of its concept. In fact, Leary (2018) proposed, "Although *no evidence exists*, education may increase [intellectual humility] overall, while lowering [intellectual humility] in the domains of one's expertise" (emphasis added, p. 10). The dichotomy of education and expertise in a field underscores the need to capture the perspectives of university faculty. Thus far, professors have not served as full-fledged participants in a study of intellectual humility. Based on the absence of research and

demonstrated need for additional empirical data, the following research questions and sub-questions guided this grounded theory dissertation study:

1. What are faculty perceptions on the nature of intellectual humility within the context of undergraduate education?

   1a. How, if it all, does their understanding of intellectual humility differ by academic community (e.g., Arts & Humanities, Natural & Applied Sciences, and Business)?

2. In what ways do faculty perceive how intellectual humility is instilled or impeded, if at all, in undergraduate students?
3. What are faculty perceptions of their own intellectual humility?

Theory Generation

The following research explores how less-frequently employed methods with rarely utilized participants in a context relevant to intellectual humility promotion provides a proof of concept for how intellectual humility research benefits from more intensive, intentional, and theoretically predicated methods and data collection. Given the theoretical importance of intellectual humility in higher education (e.g., Jones, 2012; Lynch, 2018), the current study focused on that specific context, and invited participants less frequently chosen, that is, professors. Limited research to date has examined intellectual humility using qualitative, in-depth approaches (e.g., Zachry et al., 2018). The current study sought to address the intersection of these three gaps in the literature by employing grounded theory methods.

A process of discovery undergirds all studies that employs grounded theory as their research approach (Strauss & Corbin, 1998). Grounded theory is generally founded in two schools of thought: Pragmatism (the successful, practical application of theory) and Symbolic Interactionism, which emphasizes two principles—building change and rejecting determinism

(Corbin & Strauss, 1990). In essence, discovery as a research aim synthesizes these aspects of identifying practical policies that lead to a desired change. In short, Charmaz (2017) defined grounded theory as "a systematic approach to qualitative inquiry for the purpose of theory construction" (p. 1).

Scholars have identified three, or possibly four, movements, iterations, or schools of thought to grounded theory (Biaggi & Wa-Mbaleka, 2018; Clarke, 2019). The differences imbued within each perspective highlight how grounded theory is broadly applied, processed, and accepted for unique and distinct aims. For this study, I utilized the tradition of grounded theory popularized by Strauss and Corbin (1998) on account of its sampling procedures, coding strategies, and theory construction.

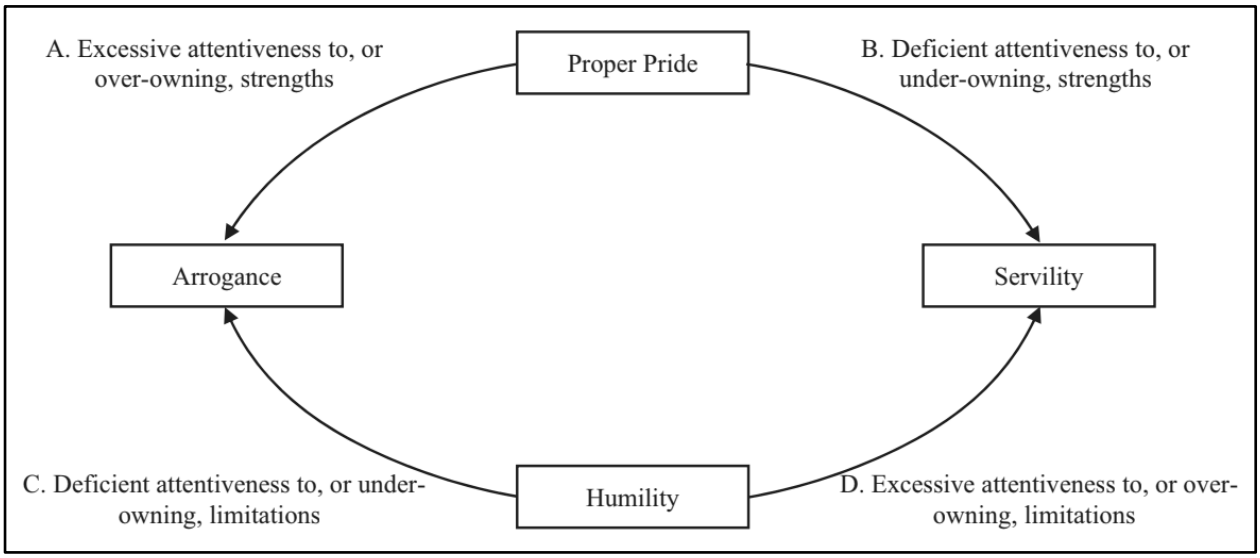
Grounded theory fits the purpose of this study for a variety of reasons. First and foremost, grounded theory is a theory- and concept-building approach to new inquiries (Strauss & Corbin, 1998). The method assists researchers who are determined to explore phenomenon/a for which either little is known or no empirical data exist. There is currently little to no consensus on the definitional properties of intellectual humility, as separate camps of philosophers and psychologists have carved out differing ontological and epistemological notions. These differences will be addressed in greater detail in chapter two.

While a team of philosophers has put forth a diagram on the inter-relationship of humility with other qualities (see Figure 1), no empirical data have confirmed its structure or the relationships between concepts that it depicts. Furthermore, Whitcomb et al.'s (2017) diagram differentiates between limitations (e.g., humility) and strengths (e.g., proper pride). However, there are conflicting notions about whether intellectual humility is restricted to limitations only or whether it also includes an accurate self-appraisal of one's strengths. A core argument for the

purpose of this study is to develop an empirically based theory, model, or construct of intellectual humility to potentially clarify these conflicts and confusions.

Figure 1

Relationship Between Proper Pride, Humility, Arrogance, and Servility



Note. Adapted from "Intellectual humility: Owning our limitations" by D. Whitcomb, H. Battaly, J. Baehr, & D. Howard-Snyder, 2017, *Philosophy and Phenomenological Research, 94*(3), p. 531. (https://doi.org/10.1111/phpr.12228).

Second, grounded theory researchers seek to make contextual and situational considerations a more central focus of their study by including thicker, richer descriptions of the phenomenon/a under study. To date, the majority of research on intellectual humility has ignored the context of the study as an equal partner in determining and analyzing the data. No research, to my knowledge, has prioritized in-depth interviews as situated within the design of a study on intellectual humility. Most research on intellectual humility—explained in greater detail in Chapter 2—is argued from a positivist or objectivist standpoint by eliminating confounding variables and isolating for the core concept. Very little knowledge is understood on how, if at all,

to cultivate intellectual humility. A major purpose of this study is to situate and examine intellectual humility within a liberal arts and sciences university setting.

Researcher-as-Instrument

At the outset of any qualitative inquiry, it is important to address the personal assumptions and biases that shape the lens of the researcher. I am mindful of how both my orientation into the nature of inquiry and my own historical background as it relates to higher education have ample opportunity to affect the study as I am the primary person responsible for data analysis. Hence, it is critical to acknowledge in what ways the generation and analysis of qualitative data may be influenced by the role of the researcher. With this in mind, it is relevant to discuss, in short, my background as well as the orientation I have to research as it pertains to my topic. Please see Appendix A for a full statement on my introduction to this research topic.

First, my initial interest in the nature and qualities of humility as a subject was instilled from my religious upbringing and education. As a teenager I attended Protestant, non-denominational church activities once or twice a week, and was exposed to and read numerous passages from the Bible on humility. One of my earliest memories was writing a three-part devotional reflection as an 18-year-old on a passage of scripture that read,

> Clothe yourselves, all of you, with humility toward one another, for "God opposes the proud but gives grace to the humble." Humble yourselves, therefore, under the mighty hand of God so that at the proper time he may exalt you. (*English Standard Version Bible*, 2001, 1 Peter 5:5-6)

My reflections on humility, in fact, began my journey as a writer, and became part of a weekly series of devotions that were published online by an international Christian youth organization in 2001, although they have since been taken down.

Second, I have enjoyed a career in higher education in large part because of my professors, mentors, and friends who have exemplified intellectual virtues such as humility. The professors I had as an undergraduate and graduate student who made a significant impact on my intellectual development were naturally curious, open to new ideas, and excellent questioners. Those who served as mentors to me were likewise great listeners who also challenged me to investigate the origin of my beliefs and assumptions. My mentors in college were the first to consistently and over time demonstrate what I came to understand as humility. My professional experiences in higher education over nearly a decade and a half were shaped by roles as an admissions counselor, academic advisor, course instructor, student mentor, scholarship advisor, and graduate/research assistant.

Finally, I espouse a social constructivist perspective on the nature of research and certainty that argues for the inclusion of diverse viewpoints to make fuller, richer meanings of phenomena. I am personally drawn for this reason to the process of discovery in grounded theory as a methodological approach and believe that there is more to uncover about intellectual humility as a potential mechanism for depolarization across social groups and its creative potential within individuals. I acknowledge that my optimistic perception of the world has influenced these characterizations. As a White male who studied at a small, private, religious liberal arts institution (Gordon College) as well as completed graduate work at a state-flagship, public, research intensive R1, doctoral university (University of Maryland, College Park), I am also cognizant of the potential impact on how I engage with literature surrounding intellectual humility, my participants, data analysis, and my findings.

Significance of Study

The following study explores the origins, empirical research, and potential trajectory of intellectual humility. Philosophers have argued that the purpose of the academy is to produce intellectual virtues such as humility (Baehr, 2013; Jones, 2012). Psychologists have followed by determining its core concept via the development of measurements and scales, producing separate and conflicting notions of intellectual humility (Haggard et al., 2018; Krumrei-Mancuso & Rouse, 2015; Leary et al., 2017). Research on humility in business and management literature has argued how leaders who have, or express humility, foster better outcomes for their followers, overall team performance, and experience a contagion effect of increased humility within their organization (Ou et al., 2014; Owens & Hekman, 2016; Owens et al., 2013).

This research study also serves as a detailed argument for two new directions on intellectual humility. First, research in higher education has yet to incorporate and explore the implications of intellectual humility. There are clear benefits, given current research findings, for faculty to teach from a posture of humility, college students to adopt greater openness to new experiences and information, and both to interact with mutual intellectual humility for purposes of sustained growth and development. Second, empirical research on intellectual humility has solely explained its essence via quantitative approaches, such as descriptive surveys and Likert scales. New directions for futures studies include the generation of a theory-based model of intellectual humility as well as a situational analysis of this theory via interviews of faculty and their observations in undergraduate education.

As previously described, current research has explored intellectual humility from multiple perspectives, but its uniform approach has left new theory for discovery. Instead of isolating variables and correlating intellectual humility with other scales, a number of researchers

have suggested that future studies should employ new techniques of generating and analyzing data, such as a live, interpersonal setting (Jarvinen & Paulus, 2017), other-reporting study methods (Haggard, 2019), and longer exposure to participants (Haggard et al., 2018; Porter & Schumann, 2018). Grounded theory as an established research approach offers a new approach to the development and confirmation of new theory (Strauss & Corbin, 1998). But unlike statistical or metrically based strategies, grounded theory supports constant revisions to the field of questions as new information is generated and coded (Corbin & Strauss, 1990). Hence, the research strategy employed by grounded theorists, according to Corbin and Strauss is "to systematically seek the full range of variation of the phenomena under scrutiny" (p. 423).

Summary

The importance of humility received a notable endorsement when the Senior Vice-President of People Operations at Google, Laszlo Bock, identified intellectual humility as one of their top five desired qualities in new employees (Freidman, 2014). "Successful, bright people," Bock said, "rarely experience failure, and so they don't learn how to learn from that failure" (para. 6). His point seemed to stress that working professionals in the 21st century must understand both their limitations and how to respond properly once their limitations are exposed. The college environment can serve an important way station for undergraduates to experience first-hand and know their intellectual limitations.

In sum, intellectual humility is argued as a subdomain of humility that has the potential to safeguard against misinformation, to serve as a mechanism in depolarizing ideological differences, and to illuminate one's cognitive biases. However, the study of general humility has led to a number of problematic outcomes, such as divergent definitional understandings, confounding ways to accurately measure humility, and the problem of self-aggrandizement from

self-report scales (Haggard, 2019; Nadelhoffer et al., 2017; Tangney, 2009). The study of intellectual humility to date has also fallen prey to these dilemmas. I have argued that grounded theory offers a fresh methodological approach to discover an in-depth, contextual examination of intellectual humility and the possibility of constructing a conceptual model of how it may be fostered in undergraduate students.

CHAPTER 2

GROUNDING INTELLECTUAL HUMILITY

Intellectual virtues such as humility are currently put forth as mechanisms necessary to stem the spread of misinformation, to depolarize the U.S. electorate, and to assist individuals with identifying their own implicit biases. Furthermore, the proliferation of research on the subject of humility—its generalities, particularities, and subdomains—has significantly increased over the past two decades corresponding with the character-focused, positive psychology movements (Peterson & Seligman, 2004). Philosophers, theologians, and psychologists have identified intellectual humility, in specific, as a fundamental and central element of individuals who are concerned with truth and an accurate self-appraisal (Haggard, 2019). Research on leaders who possess humility has added important insights into its practicability and operationalization in business and management (Owens & Hekman, 2012, 2016). Yet, arguments for intellectual humility's developmental purpose and integration in higher education have remained philosophical in nature (DeWall, 2014; Jones, 2012), and, at best, peripheral considerations in large-scale studies (Leary, 2018).

Fundamental disagreements exist on the defining characteristics of intellectual humility because debate still occurs on how to understand humility (Leary, 2018; Wright et al., 2017). Does general humility involve both intrapersonal (e.g., accurate judgment of one's strengths and limitations) and interpersonal (e.g., other-focused over self-focus) dimensions? How philosophers, psychologists, and business researchers answered this core question of humility has led to the diversity of thought on the nature of intellectual humility described at length in this

chapter. Early studies argued for a two-dimensional approach to theorizing and measuring intellectual humility (Krumrei-Mancuso & Rouse, 2015; Samuelson et al., 2015). These studies posited that intellectual humility had two distinct dimensions: one that is social, which claims "one's proper status as knowledgeable without overclaiming what one knows in relation to others" (Samuelson et al., 2015, p. 389), and one that is cognitive. A second group of researchers, however, argued that intellectual humility is "fundamentally a cognitive phenomenon" (Leary, 2018, p. 2), and believed any behavioral or emotional components detract from the central concept (Leary et al., 2017). These core differences are ontological in nature. In sum, most researchers are asking: Is intellectual humility a character virtue? An ability to be learned in relation to others? Or a state of being or quality entirely different?

The following review of literature on intellectual humility is designed to emphasize three central aspects of current research: (a) the primacy of measurements and scales used to estimate the topic, (b) the uniformity of participants being either undergraduate students or broad swaths of the general population, and (c) the overreliance on self-report data. In response to these movements and to address the gaps within the literature, this study is concerned with contextualizing intellectual humility to undergraduate education by exploring faculty members' understandings of its nature and formation in undergraduate students. This chapter is outlined by situating intellectual humility as an intellectual virtue and subdomain of humility, by identifying the differing definitional characteristics of and their corresponding scales on the topic, and by introducing developmental research on undergraduate students and faculty adjacent and relevant to the study topic.

Philosophical Roots

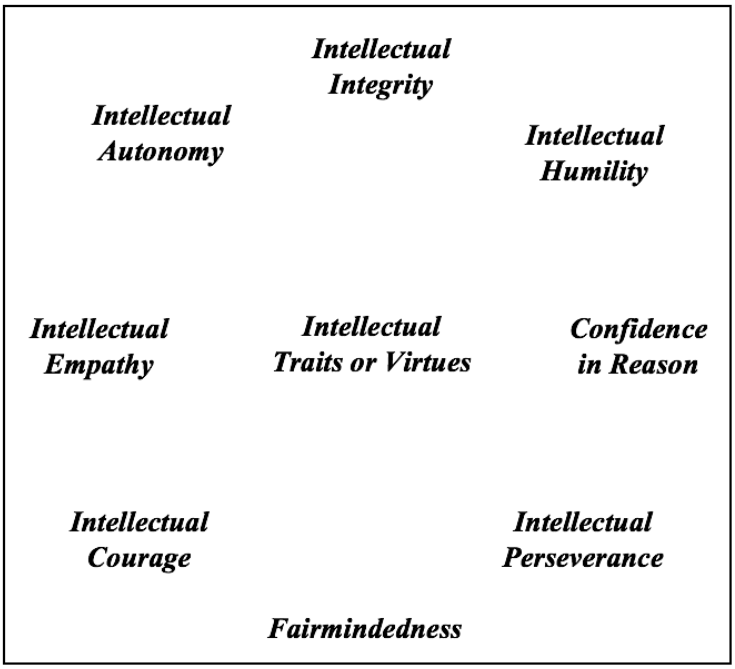
Intellectual Virtues

As previously mentioned, intellectual virtues are understood as a person's dispositions or the state of one's character that form beliefs complementary to their epistemic position (Jones, 2012). While not exhaustive, Roberts and Wood (2007) offered the following list of seven intellectual virtues: (a) love of knowledge, (b) firmness, (c) courage and caution, (d) humility, (e) autonomy, (f) generosity, and (g) practical wisdom. Other philosophers have included fairmindedness, open-mindedness, intellectual honesty, curiosity, and attentiveness (Baehr, 2014, 2016). Those who possess any number or variation of intellectual virtues are concerned, first and foremost, with a unifying care for epistemic goods, such as "knowledge, truth, and understanding" (Baehr, 2013, pp. 248-249). Those responsible with teaching in the classroom have a specialized and intentional activity of fostering intellectual growth within their students (Baehr, 2016; Bain, 2004).

Elder and Paul (2012) identified the following intellectual virtues as worthy critical thinking abilities: fairmindedness, intellectual humility, intellectual courage, and intellectual empathy—viewing them as interconnected traits (see Figure 2). They argued that to specifically develop intellectual humility an individual must "learn to actively distinguish what one knows from what one does not know" (p. 30). Although less than a page in length and without any citations or links to prior research, Elder and Paul drafted one of the first sets of performance indicators, dispositions, and outcomes associated with intellectual humility.

Figure 2

Critical Thinking as the Cultivation of Intellectual Skills



Note. Adapted from "Critical thinking: Competency standards essential to the cultivation of intellectual skills, part 4" by L. Elder & R. Paul, 2012, *Journal of Developmental Education*, *35*(3), p. 31.

A total of nine outcomes were postulated for students who critically thought from a posture of intellectual humility. Those outcomes were:

- state, elaborate, and exemplify the concept;
- discover their own false beliefs, misconceptions, prejudices, illusions, and myths;
- suspend judgment about matters of which they are ignorant;
- accurately distinguish what they understand about a subject from what they do not;
- accurately articulate the extent of their ignorance;
- avoid claiming to know what they have no defensible reason for claiming;
- admit mistakes and change their views;

- demonstrate awareness of and concern for the fact that they have been socially conditioned into the belief systems and worldview of their culture and nation (hence seeking out diverse viewpoints and worldviews from their own); and
- understand the importance of intellectual humility in thinking at a high level within any discipline and profession. (Elder & Paul, 2012)

However, their definition of intellectual humility was not tested with any associated research to confirm what outcomes were, or were not, verifiable to the core concept. In addition, their analysis remained broad without defining who students were (e.g., K-12, higher education, technical education, etc.) and what they implied by including all educational institutions in their analysis.

Hence, it is reasonable to ask: Are intellectual virtues a worthy or realistic aim of those responsible for educating students? Baehr (2016) refuted three objections commonly presented against educating for intellectual virtues or characteristics, naming them as situational, transformational, and costliness objections. He concluded that because intellectual virtues are possessed in *degrees* whereby an individual can possess moderate, or even robust, amounts that educating for intellectual virtues is a worthy, reasonable, and realistic aim. Baehr (2016) emphasized the following behavioral activities associated with intellectual virtues, "thinking, inquiry, question-asking, self-reflection, intellectual risk-taking and conceptual understanding," noting that they were "compatible with traditional modes of instruction" (p. 127). In conclusion, these qualities or traits were argued as necessary for human flourishing, civic engagement, and a healthy liberal democracy.

Humility

Ancient and modern notions of humility have a checkered history. Often mistaken for modesty or an underestimation of one's self-worth or accomplishments (Tangney, 2000), most definitions of humility are ill-suited to consider it squarely as a virtue worth wanting (Richards, 1988). These included religious notions of humility (e.g., self-loathing, self-abasement, low regard for self-worth) and philosophical ones (e.g., having a distorted, paradoxical, and/or irrational view of one's relationship to one's accomplishments). Not until recently were more positive notions of humility identified such as having an accurate view of oneself in relation to one's accomplishments and perspectives (Nadelhoffer et al., 2017).

Richards (1988) made what appears to be one of the first, modern, compelling cases for identifying humility as a virtue. However, to do so, he argued that various dictionary definitions of humility as having a low opinion of oneself or low self-esteem were incompatible with current understandings of virtue. In essence, he was asking his contemporaries: What, then, is proper humility in relation to one's accomplishments? In answer to his own question, Richards suggested "proper humility doesn't require that you take *no pride at all* in what you've done" (p. 255), but individuals with humility resist overestimation or exaggeration of their accomplishments and abilities. Removing these temptations, he argued, resulted in the virtue of having a proper humility and awareness of oneself in relation to one's achievements.

One of the first researchers to provide a metanalysis of research on humility was George Mason University psychologist June Price Tangney. She reiterated Richards's (1988) argument that most dictionary definitions of humility were problematic and unhelpful as a starting or ending point. Tangney (2000), noting the dearth of empirical research, concluded that a reliable measurement and scale directly addressing the construct of humility had yet to be developed.

Complementing her own assertion, Tangney's (2009) most important contribution was to provide a robust, comprehensive definition of general humility as the following:

> An accurate assessment of one's abilities and achievements (not low self-esteem, self-deprecation), an ability to acknowledge one's mistakes, imperfections, gaps in knowledge, and limitations (often vis-a-vis a higher power); openness to new ideas, contradictory information, and advice; keeping one's abilities and accomplishments—one's place in the world—in perspective...; a relatively low self-focus, a "forgetting of the self," while recognizing that one is but a part of the larger universe; an appreciation of the value of all things, as well as the many different ways that people and things can contribute to the world. (p. 483)

Humility as having a low self-focus while maintaining an accurate self-appraisal was unquestionably included as an intellectual virtue, desired for its positive qualities and individual characteristics. Tangney's (2000, 2009) definition of humility went on to spur renewed philosophical interest as well as novel empirical research.

Numerous researchers since Tangney's initial arguments have explored humility from such subdomains as cultural (Hook et al., 2013) and relational humility (Davis et al., 2011), not to mention intellectual humility. Researchers have gone on to debate humility's definitional properties, how to accurately measure it, and whether—and to what extent—humility is distinguishable from its potential subdomains (Davis et al., 2016; Haggard, 2019; Wright et al., 2017). Specifically, Roberts and Wood (2003, 2007) were some of the first to situate and argue for humility as an intellectual virtue. They examined, however, the intellectual virtue of humility through its opposite characteristics, such as arrogance, vanity, conceit, egotism, and more.

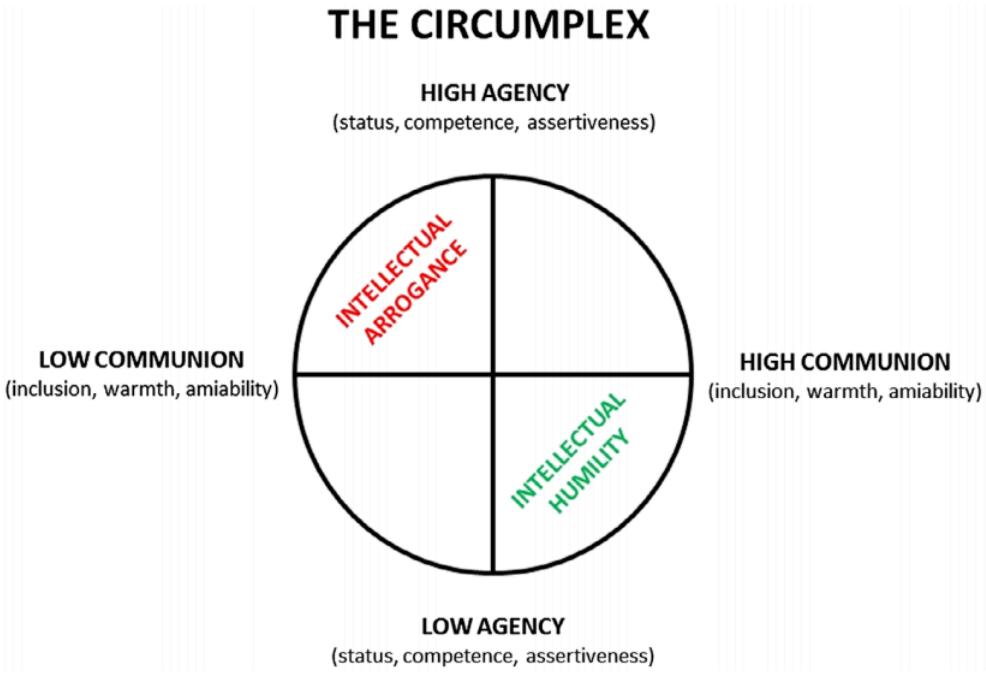
Intellectual Arrogance as Antonym

Roberts and Wood (2007) framed their philosophical argument by claiming that arrogance was the intellectual vice to intellectual humility's virtue. By doing so, they argued for everything humility was not, or is opposed to, for instance vanity and arrogance. They argued most professors are likely to have some degree of intellectual arrogance, or to be found superior in one's thinking. The authors eventually defined intellectual humility as "an unusually low dispositional concern for the kind of self-importance that accrues to persons who are viewed by their intellectual communities as talented, accomplished, and skilled" (p. 250). Thus, faculty with intellectual humility would "rejoice in the progress of one's students, especially, perhaps, when they advance beyond oneself" (p. 243); and thus, indifferent when asked how much their teaching had an influence. Their definition served as the first foray into intellectual humility, but was later deemed vague and inconsequential (Leary, 2018; Samuelson et al., 2015). However, intellectual humility was durably linked to intellectual arrogance as a result.

Many of the first empirical studies of intellectual humility included these components of its antonym, more specifically intellectual arrogance. Gregg and Mahadevan (2014) offered a Darwinian or evolutionary account of both concepts by exploring their etymology. They argued when confronted with intellectual integrity, the lack of intellectual humility resulted in intellectual arrogance. Gregg et al. (2016) later predicted that someone who demonstrated intellectual humility must exhibit high communion (e.g., *inclusion* and *warmth*) with low agency (e.g., *status*), whereas its diametric opposite is expected from someone exhibiting intellectual arrogance. They termed this interaction as The Circumplex (see Figure 3), and their empirical study suggested accurate placement of their definitions of intellectual arrogance and humility in relation to high-versus-low agency and communion.

Figure 3

The Circumplex of Agency and Communion



Note. Adapted from "Intellectual arrogance and intellectual humility: Correlational evidence for an evolutionary-embodied-epistemological account," by A. P. Gregg, N. Mahadevan, & C. Sedikides, 2016, *The Journal of Positive Psychology*, *12*(1), p. 63. (https://doi.org/10.1080/17439760.2016.1167942).

Many philosophers and psychologists criticized the analysis of humility solely based on its antonym as unhelpful and detracting from the essence of intellectual humility (Krumrei-Mancuso & Rose, 2015; Leary et al., 2017; Samuelson et al., 2015; Whitcomb et al., 2017). Subsequent arguments sought to distinguish intellectual humility from its antonyms in order to situate characteristics of intellectual humility on a foundation of its own (Samuelson et al., 2015; Whitcomb et al., 2017). Samuelson et al. (2015) examined folk or implicit understandings of persons who exhibit intellectual humility, intellectual arrogance, and general wisdom by creating a semantic map of each construct. They surveyed participants (n = 350) to provide 10 different

descriptors for each person-construct (e.g., intellectual humility, intellectual arrogance, and wise), and created clusters to determine how much or little they overlapped. An intellectually humble person-concept yielded three clusters: Intelligent/Love-of-learning, Humility/Modesty, and Respectful/Considerate. Their analysis revealed 39% overlap between wise person and intellectually humble person constructs, and virtually no overlap between either and intellectually arrogant persons, giving "evidence for intellectual humility as a stand-alone concept" (p. 402). A clear, strong call to differentiate intellectual humility from its antonym produced new definitional understandings as well as corresponding measurements and scales.

Intellectual Humility as Binary

A new group of scholars sought to define intellectual humility on a foundation of its own. Fresh presentations, although not fully disassociated from intellectual arrogance, explored intellectual humility in binary terms: having both a cognitive dimension and an interpersonal dimension (Church & Barrett, 2016; Jarvinen & Paulus, 2017; Krumrei-Mancuso & Rouse, 2015). Another way some scholars described this binary attribute of humility was in terms of how self-focused versus other-focused an individual behaved (Lynch, 2018; Nadelhoffer & Wright, 2017). These dualistic notions were concerned with the behavioral and motivating attributes or characteristics associated with a person who demonstrates intellectual humility.

Lynch (2018) argued that a central problem plaguing today's public and democratic discourse is a psychological attitude he termed as epistemic arrogance. Therefore, intellectual humility stood as an appropriate counterbalance to correct these ills. The foundational principles of democracy, as argued by educational philosopher John Dewey (1916/2012), required of its citizens to hold basic convictions, while maintaining a public discourse across disagreements. Central to his argument was how humility had self-regarding and other-regarding attitudes. The

same held true for arrogance. To this, Lynch (2018) shared how epistemic arrogance in citizens looked like "not seriously listening, not admitting mistakes in one's own position and improper attentiveness to, and assignments of blame and credit" (p. 285). He purposefully used the term attitudes because, in contrast to personality traits, attitudes are not fixed or stable dispositions. Citizens without an intellectual humble attitude in public discourse were unwilling to alter or change their worldview and had a lack of concern for truth.

Instead of emphasizing its opposite, Jones (2012) appealed that intellectual humility within the context of higher education is a complementary virtue to intellectual confidence. He argued these virtues were profoundly affected by the epistemic positionality inherent within the academic traditions themselves. He defined epistemic positionality as "to form a belief about the world that is either warranted (justified, rational, and the like), that is correct, or that will count as knowledge" (p. 696). Academic communities that relied on established theory or facts as foundational to further knowledge (e.g., natural and applied sciences) operated from a different epistemic position than that of the arts and humanities. The latter, Jones argued, held more independent and persuasive epistemic arguments, whereas the former operated as a consensus-reaching community. For instance, how does one assert that Monet was the best Impressionist painter to have lived in the 19th century? Hence, intellectual confidence and humility, he argued, are inculcated differently to the extent that the academic community was consensus-reaching or not. Professors who taught in a more *reflective* manner, in effect, have greater influence over how their students become aware of their inherited epistemic position for having confidence and/or humility. "Reflective epistemic awareness," Jones (2012) continued, "is necessary for developing these particular intellectual virtues and is the right starting point for achieving both"

(p. 710). Unfortunately, Jones only differentiated between arts and sciences, and did not address the specific positionalities of business, education, or law academic communities.

Most of the criticism against a binary understanding of intellectual humility came from researchers who posited that behavioral and motivational factors were peripheral. The essence of intellectual humility, Leary et al. (2017) argued, was unidimensional and solely located in cognitive interpretations. Thus, posited motivational, emotional, or behavioral definitional features of intellectual humility were problematic for three reasons: (a) it obscured the core construct, (b) it was difficult to quantitively measure behaviors, and (c) near impossible to measure interpersonal aspects (Leary, 2018). Leary et al. (2017) went on to define intellectual humility as a cognitive phenomenon that recognizes the fallibility of one's beliefs, the basis for evidence, and limitations in the foundation of relevant information.

Intellectual Humility on a Spectrum

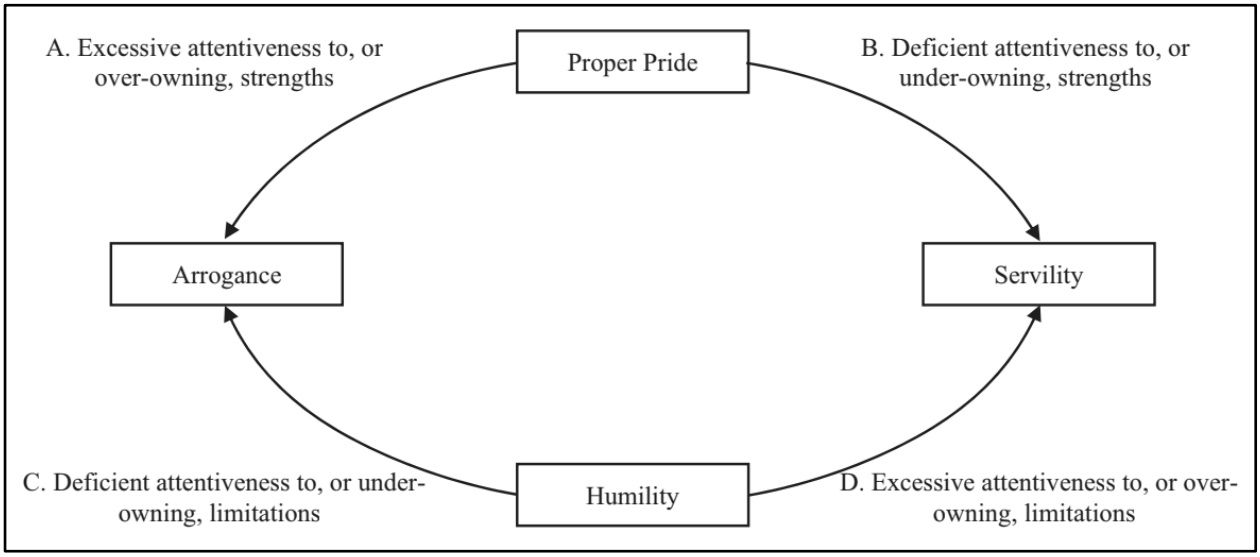
As opposed to antonym, binary, or unidimensional interpretations of intellectual humility, recent philosophical explanations have suggested a spectrum view. Founded on Aristotle's notion of the "golden mean"—or the middle ground between two extremes—intellectual humility is situated along a spectrum between two poles of scarcity (i.e., intellectual arrogance) and excess (i.e., intellectual servility; see Haggard, 2016; Haggard et al., 2018; and Whitcomb et al., 2017). While arguments for including intellectual arrogance were not new, scholars who espoused a spectrum understanding contended that some individuals do not have firm beliefs at all, and thus can be swayed, making them intellectually diffident or servile.

Whitcomb et al. (2017) were the first to lay out a comprehensive, philosophical analysis for intellectual humility as the median on a spectrum between two poles. Individuals, they argued, have the ability to think and act either too confidently on one end or too modestly on the

other end (see Figure 4). The golden mean in which case—intellectual humility—they defined as an ability to own one's intellectual limitations. Their argument included the idea that proper pride, not arrogance, was an alternative to humility. Proper pride entailed accurate ownership and attentiveness of one's strengths. However, is it inappropriate to think a person can be humble about their strengths?

Figure 4

Relationship Between Proper Pride, Humility, Arrogance, and Servility



Note. Adapted from "Intellectual humility: Owning our limitations" by D. Whitcomb, H. Battaly, J. Baehr, & D. Howard-Snyder, 2017, *Philosophy and Phenomenological Research, 94*(3), p. 531. (https://doi.org/10.1111/phpr.12228).

Whitcomb et al. (2017) defined intellectual humility as "an intellectual virtue just when one is appropriately attentive to, and owns, one's intellectual limitations" (p. 520). The philosophical underpinnings of a spectrum notion were conceptually based on four ways to own limitations: (a) cognitively (e.g., acknowledgement and acceptance); (b) behaviorally (e.g., admittance and deferral); (c) motivationally (e.g., purge); and (d) affectively (e.g., gratitude). Individuals who held these responses were committed to the epistemic goods of truth,

knowledge, and understanding. Whitcomb et al. (2017) made 19 predictions of intellectual humility that, if confirmed, would verify or disprove the spectrum figure between intellectual arrogance and servility.

For her dissertation in psychology, Haggard (2016) followed Whitcomb et al.'s (2017) line of reasoning, predictions on intellectual humility, and confirmed three factors central to measuring its construct. These factors included "owning one's intellectual limitations, love of learning, and appropriate discomfort with one's intellectual limits" (Haggard et al., 2018, p. 185). Persons with intellectual humility should be attentive to, but not preoccupied by, their own limitations. The impact of which in education, Haggard (2019) suggested, has the potential to increase the practice of reflexivity among students to appropriately understand the basis of their knowledge while also providing a check on their biases. These three notions of intellectual humility—measured by intellectual arrogance as its opposite, cognitive and interpersonal features, and a spectrum understanding—have served as separate camps that philosophers erected for further empirical considerations.

Psychological Foundations

Definitional Properties

Psychologists, as a response to each philosophical expression of intellectual humility, have conducted numerous studies to determine the salience and strength of their definition (see in specific Haggard et al., 2018; Krumrei-Mancuso & Rouse, 2015; Leary et al., 2017). In doing so, these researchers created contending positions for how to define, accurately measure, and effectively position intellectual humility in contrast or correlation to other variables. Research in psychology, moreover, has begun to confirm and disprove predictions of the associations that may exist between intellectual humility and other phenomena (Krumrei-Mancuso et al., 2019;

Zmigrod et al., 2019), including potential psychological levers for its cultivation (Porter & Schumann, 2018).

Although no consensus exists yet, definitions of intellectual humility have two essential elements: an ontological paradigm and an epistemic position. The ontological component of intellectual humility follows the basis for how malleable or static the construct is and its ability to be measured or observed. Psychologists have argued for its ontological essence as:

- an intellectual or character virtue (Deffler et al., 2016; Jarvinen & Paulus, 2017; Zmigrod et al., 2019);
- a trait (Leary, 2018);
- a state or attitude (Samuelson et al., 2015);
- a characteristic (Hoyle et al., 2016);
- a nonthreatening awareness (Krumrei-Mancuso & Rouse, 2015);
- an ability (Davis et al., 2016); and
- an accurate self-appraisal. (Porter & Schumann, 2018)

Each of these positions are constructed on the basis of the methodological standpoint of the research and researcher(s). Yet, what each definition has shared in common is an epistemological position for a person's intellectual beliefs as potentially fallible or limited. The ownership of intellectual limitations has summarized most epistemological understandings of intellectual humility. These two worldviews—ontology and epistemology—are incorporated within each proposed definition of intellectual humility, and each has had a significant effect on how it is measured.

Measurement and Scale Development

Research psychologists relied on the development and precision of measurements or scales to determine which statements and factors were best suited to quantify the core essence of intellectual humility. At present, there are six different scales employed in the literature: McElroy et al.'s (2014) *Intellectual Humility* (IH) *Scale*, Krumrei-Mancuso and Rouse's (2015) *Comprehensive IH Scale* (CIHS), Hoyle et al.'s (2016) *Specific IH Scale*, Leary et al.'s (2017) *General IH Scale* (GIHS), Alfano et al.'s (2017) *Four Factor IH Scale*, and Haggard et al.'s (2018) *Limitations-Owning IH Scale* (L-OIHS). Each scale was designed to measure aspects of intellectual humility based on the philosophical and ontological understandings of the methods chosen. For this chapter, only three will be discussed in greater depth on account of their broad utility in featured studies, corresponding robustness in their internal reliability in measuring—and external validity in confirming—intellectual humility, and integration between and among other scales.

Comprehensive Intellectual Humility Scale

Krumrei-Mancuso and Rouse's (2015) research was some of the first to distinguish humility (e.g., an accurate view of oneself) from intellectual humility (e.g., an accurate view of one's "knowledge, beliefs, opinions, and ideas" [p. 209]). In doing so, they developed the first, comprehensive, self-report scale—CIHS—to assess two elements of intellectual humility: (a) underlying feelings, attitudes, and beliefs, and (b) behavioral components. Their hypotheses going into the development of the scale were that intellectual humility had interpersonal and intrapersonal qualities. Krumrei-Mancuso and Rouse (2015) employed two focus groups, or a total of 14 participants, which resulted in the compilation of 187 initial survey items. They narrowed this to 22 items via peer feedback, multiple pilot studies, and a final study. The survey

offered a 5-point Likert scale ranging from *strongly disagree* (1) to *strongly agree* (5). The CIHS was validated with modest 1- and 3-month test-retest correlation (0.75 and 0.70 respectively). Four factors were associated with intellectual humility: independence of intellect and ego, openness to revising one's viewpoint, respect for others' viewpoint, and lack of intellectual overconfidence. Each factor was argued to be "psychometrically robust" and "internally consistent" with a Cronbach's alpha equaling 0.88 in Study 1 and 0.87 in Study 2 (p. 220).

The CIHS is unique from the rest of the measurement tools in one significant way. It is the only scale that utilized university faculty feedback in the development of the tool. A total of 20 professors (two in focus groups and 18 who provided peer feedback), all of whom held terminal degrees, were invited to comment on the development of the 22 final survey items selected. Of the published studies that employed the CIHS, the correlated positive links were associated with knowledge acquisition (Krumrei-Mancuso et al., 2019) and cognitive flexibility (Zmigrod et al., 2019). Unfortunately, intellectual humility in binary terms as measured by the CIHS has not become the leading definition, or most reliable, measurement tool that exists.

General Intellectual Humility Scale

In response to the binary interpretation of intellectual humility that is reflected in Krumrei-Mancuso and Rouse's scale, Leary et al. (2017) developed a more concise, self-report measurement called the General Intellectual Humility Scale (GIHS). Leary et al. argued that any behavioral, emotional, and motivational components associated with intellectual humility, hence all of the interpersonal qualities, dilute and misconstrue its core concept. According to their research, intellectual humility was to be measured as unidimensional via its cognitive elements solely. The CIHS construct was problematic by being too focused on other people's viewpoints, which they argued "sacrifices fidelity for bandwidth" (p. 795). In contrast, they developed a 6-

item general scale that focused solely on the epistemic elements of the construct, and found intellectual humility had positive correlations with need for cognition (e.g., enjoyment of thinking) and epistemic curiosity. In addition, the GIHS had a negative correlation with intolerance of ambiguity (e.g., suspending beliefs). The GIHS also operated as a 5-point Likert scale that ranged from *not at all like me* (1) to *very much like me* (5), with a Cronbach's alpha equaling 0.82.

In an effort to be concise, the GIHS was developed without separate stages of distillation. The eight-member research team generated the initial list of terms and potential items for survey use. The final six items chosen for the GIHS were identified based on a factor analysis from one study of 300 participants. No test-retest measurement was taken to confirm how reliable the GIHS was over a span of time. In one of the only external studies to use the GIHS, Deffler et al. (2016) found intellectual humility predicted detection sensitivity, thus participants who scored higher on the GIHS more accurately distinguished old from new survey items. However, intellectual humility as measured by the GIHS did not relate to response bias (Deffler et al., 2016). Additionally, the GIHS is criticized for having no significant correlations, positive or negative, to narcissism and social vigilantism, defined as the need to correct other's beliefs. Leary et al. (2017) predicted their scale would have negative correlations to both. This finding was worrisome given other scales measuring humility (such as the CIHS) did find significant negative correlations to narcissism and social vigilantism (Krumrei-Mancuso et al., 2019). Whether or not cognitive predominance matters, what remained problematic was the assurance of measuring a complex and meaningful construct such as intellectual humility with only 6 items that, at worst, compromised the integrity of the larger conversation.

Limitations-Owning Intellectual Humility Scale

The most recent self-report scale designed to provide a comprehensive measurement of intellectual humility was Haggard et al.'s (2018) Limitations-Owning Intellectual Humility Scale (L-OIHS). These researchers bypassed the interpersonal-epistemic debate and applied Whitcomb et al.'s (2017) theoretical argument that intellectual humility existed as the golden mean on a spectrum. By doing so, Haggard et al. (2018) developed their L-OIHS survey tool by positioning intellectual humility between its deficiency (i.e., intellectual arrogance) and excess (i.e., servility; see Whitcomb et al., 2017). They argued that a person found to be intellectually humble is attentive to, but not preoccupied with, their own limitations. To measure their assertion, they identified three factors that corresponded with a limitations-owning spectrum (see Table 1). Those factors were owning intellectual limitations, having an appropriate discomfort with intellectual limits, and a love of learning. The authors assembled a team of philosophers and psychologists with these three factors as their guide to generate 64 items. These initial candidate items were used in a pilot study of 386 adults, and after a factor analysis, the top four items measuring each of the three factors were kept synthesizing the measurement tool. The 12-item L-OIHS has a Cronbach's alpha of 0.86 with "moderate to high reliabilities for each of the factors—love of learning ($\alpha = 0.81$), appropriate discomfort with limitations ($\alpha = 0.84$), and owning intellectual limitations ($\alpha = 0.77$)" (p. 186).

Table 1

Three-Factor Limitations-Owning Intellectual Humility Scale

LIMITATIONS-OWNING INTELLECTUAL HUMILITY SCALE		
I. Love of Learning	**II. Appropriate Discomfort with Limitations**	**III. Owning Intellectual Limitations**
1. If I don't understand something, I try to get clear about what exactly is confusing to me.	1. I focus on my intellectual weaknesses too much.*	1. I have a hard time admitting when one of my beliefs is mistaken.*
2. When I don't understand something, I try hard to figure it out.	2. When I know that I have an intellectual weakness in one area, I tend to doubt my intellectual abilities in other areas as well.*	2. When someone points out a mistake in my thinking, I am quick to admit that I was wrong.
3. I love learning.	3. When I think about the limitations of what I know, I feel uncomfortable.*	3. I am quick to acknowledge my intellectual limitations
4. I care about truth	4. I tend to get defensive about my intellectual limitations and weaknesses.*	4. I feel comfortable admitting my intellectual limitations.
*Denotes item is reverse-scored.		*9-Point Strongly Disagree-Agree Likert Scale*

Note. Adapted from "Finding middle ground between intellectual arrogance and intellectual servility: Development and assessment of the limitations-owning intellectual humility scale," by M. Haggard, W. Rowatt, J. Leman, B. Meagher, C. Moore, T. Fergus…and D. Howard-Snyder, 2018, *Personality and Individual Differences, 124*, p. 184-193. (https://doi.org/10.1016/j.paid.2017.12.014).

The three-factor, 12-item survey Haggard et al. (2018) created was distinct from other scales measuring intellectual humility in a few significant ways. First, the scale offered a greater number of Likert values by including nine points, ranging from *strongly disagree* (1) to *strongly agree* (9). Remarkably, the L-OIHS keeps the same relatively high reliability in comparison to the CIHS and GIHS. Secondly, Haggard et al. (2018) tested their scale in relation with the other established intellectual humility surveys and found moderate positive correlations between L-

OIHS, GIHS ($r = 0.43$, $p < 0.001$), and CIHS ($r = 0.52$, $p < 0.001$). Discrepancies, however, were identified between the subscales, most specifically the GIHS. Limitations Owning and Love of Learning subscales of the L-OIHS positively correlated with the GIHS, but not the Appropriate Discomfort subscale ($r = 0.08$, $p = 0.069$). By the end of their study, the L-OIHS was tested in relation to a total of 13 separate personality and theoretically related scales, where the following was found:

- small correlations with extraversion and openness;
- moderate correlations with agreeableness, assertiveness, authentic pride, conscientiousness, neuroticism, and self-deceptive enhancement;
- negative correlations with dogmatism, closed-mindedness, and hubristic pride; and
- no correlations were found with respect to cognitive reflection, narcissism, general religiousness, social vigilantism, as well as participant age or sex. (Haggard et al., 2018)

Haggard (2019) argued that L-OIHS more accurately predicts intellectual humility than Krumrei-Mancuso and Rouse's (2015) CIH and Leary et al.'s (2017) GIH scales on account of its "inclusion of a motivational factor and a recognition that focusing too much on one's limitations could lead to negative outcomes" (p. 363). However, researchers have not addressed the substantial issue of how three separate scales measuring intellectual humility from different definitions and unique paradigms can have positive correlations across the tools. Although anchored in different ontologies, all three scales—CIHS, GIHS, and L-OIHS—are separately employed as reliable and valid measurements to determine correlative elements of intellectual humility and other phenomena.

Psychological Determinism

Psychology literature (e.g., behavioral, cognitive, developmental, experimental, positive, and psychosocial) has only empirically explored intellectual humility over the past six or so years. This is in large part because researchers have relied on the time-consuming process of validating and confirming metrically based surveys. The first survey tool was not published until 2014 (see McElroy et al., 2014) and it was developed to measure the intellectual humility of religious leaders (Hook et al., 2015). Since that time and with the creation of more survey tools, empirical data existed on the examination of intellectual humility and possible correlations with a number of personality characteristic and additional trait scales.

Kross and Grossmann (2012) defined wisdom as promoting the common good and the basis of intellectual humility, "recognizing that there are limits associated with one's own knowledge" (p. 43). They argued that a psychologically distanced perspective is needed for individuals to adequately develop wisdom when confronted with divergent personal or political issues. They also predicted wise reasoning is enhanced by how distanced or immersed someone's perspective is on a topic. Intellectual humility was assumed as one of two types of wise reasoning, along with dialecticism or the belief that the future is likely to change. The researchers, however, failed to define what they meant by *psychological distance* and how, if at all, to enhance wise reasoning. Their experimental study of 57 University of Michigan seniors and recent alumni confirmed that one's perceived distance from a topic does impact how likely a person was at recognizing the limits of their knowledge. Furthermore, wise reasoning as intellectual humility "was correlated with openness to diverse viewpoints, but not attitude assimilation scores" (p. 46). As precious described, folk concepts of intellectual humility confirmed the significance of the relationship to wise reasoning (Samuelson et al., 2015).

Intellectual humility was found to be positively correlated to openness to experience, epistemic curiosity, and the need for cognition (Leary et al., 2017; Porter & Schumann, 2018). These findings suggested that individuals who operate with intellectual humility have an open orientation to learning, enjoy the process of thinking, and have a love of learning. What remained unclear was whether these individuals "possess more accurate, nuanced, and useful knowledge than less intellectually humble people" (Leary et al., 2017, p. 810). To explore this assertion, Zmigrod et al. (2019) found intellectual humility positively correlated with cognitive flexibility and fluid intelligence. This, they suggested, incorporated dual systems of human thinking—or fast versus slow analytical processing—which played an important role in determining a psychological pathway for intellectual humility. The latter system of reasoning, anchored by deliberative and conscious thinking, is required for intellectual humility to be present. However, Krumrei-Mancuso et al. (2019) found mixed results when isolating for knowledge acquisition as determined by student GPAs. Intellectual humility was positively linked to general knowledge, but not cognitive ability. It fundamentally did not explain why a relational directionality existed between "exposing individuals to advanced knowledge [that] increases an appreciation for the complexity of knowledge, thereby increasing people's [intellectual humility] in realizing the limits of their knowledge" (Krumrei-Mancuso et al., 2019, p. 14). This dilemma exposed the need for additional research on the relationship between intellectual humility and knowledge acquisition.

Intellectual humility was found to have a negative correlation with intolerance of ambiguity, dogmatism, and self-righteousness (Leary et al., 2017) as well as neuroticism (Haggard et al., 2018). These findings suggested people with low intellectual humility have a harder time suspending their beliefs and are more likely to act emotionally unstable. Jarvinen and

Paulus (2017) confirmed this relationship where emotionally secure people were more cognitively open to counterarguments than avoidant, insecure individuals. The combination of these findings provided ample evidence that "intellectual humility involves emotions, not only cognitions and behaviors" (Haggard et at., 2018, p. 192). Intellectual humility was not correlated at all with religious or political affiliation. Individuals who identified as pro- or anti-religion were equally able to show intellectual humility, and the same held true for liberal and conservative individuals (Leary et al., 2017). In addition, religious or spiritual maturity was not linked to one's level of intellectual humility (Krumrei-Mancuso, 2018).

Not all analysis of intellectual humility yielded consistent results. The relationship between intellectual humility and narcissism, for instance, was not confirmed given mixed findings across measurement scales (Haggard et al., 2018; Leary et al., 2017). The same held true for a domineering concern for the correctness of others' beliefs (Krumrei-Mancuso et al., 2019; Leary et al., 2017). These are troubling given that both narcissism and social vigilantism are argued as opposite constructs to humility (Haggard, 2019; Tangney, 2009). Mixed findings within and across studies are not surprising when considering the variety of intellectual humility scales. For instance, Krumrei-Mancuso et al. (2019) acknowledged the misgivings of employing different intellectual humility scales within their manuscript as a primary reason for the lack of consistent findings on their predictions of acquiring knowledge in relation to intellectual humility.

Educational Psychology

Extant research is also limited on how, if at all, intellectual humility affects the classroom. Mindset, introduced by educational psychologist Carol Dweck, remained the closest tangential research conducted on how students reacted to their mistakes and limitations. Dweck

(2006/2016) developed understandings of educational mindsets through her research on how elementary and secondary students responded to failures within a learning context. Dweck (2012) also offered a broad overview of research on these mindsets and defined them as:

> People's lay beliefs about the nature of human attributes, such as intelligence or personality. Some people hold a fixed mindset (or an entity theory) and believe that human attributes are simply fixed traits. For example, they might believe that each person has a fixed amount of intelligence and cannot change that or that each person has a certain personality or moral character and cannot do anything much to alter it. In contrast, other people hold a growth mindset (or an incremental theory). For example, they may believe that all people, no matter who they are, can become substantially more intelligent, say, through their effort and education, or that all people can take steps to develop their personality or moral character over time. (p. 615)

In short, students who operated with a fixed mindset concerning their intellectual ability had trouble coping with failure and were less resilient than their peers who adopted a growth mindset. The latter were shown to believe that their intellectual ability was not fixed but could be developed. A synthesis of further research has shown the effects of operating from a fixed versus a growth mindset (Dweck, 2006/2016).

When searching for studies situated on undergraduate student experiences, mindset research and the potential of change revealed mixed results. In one of the only developmental studies concerned with the change of mindset in college students, Limeri et al. (2020) surveyed 875 undergraduates in a mid-level STEM course at four times throughout a semester. Using mixed methods, they then interviewed 20 students to explore their beliefs about intelligence. They found that "students' growth mindsets decreased slightly throughout the semester…[while]

conversely their fixed mindset increased slightly" (p. 8). Their analyses of interviews resulted in the identification of five factors that influenced college student's beliefs about their intelligence: academic experiences, observing peers, deducing logically, taking societal cues, and formal learning. Limeri et al. (2020) noted a general uncertainty about mindsets in undergraduates. Their study corroborated prior research that first year STEM students "tend to shift towards fixed beliefs" of their intelligence (p. 15). These findings underscored an urgency for the identification of a process of change from a fixed to growth mindset in college students.

Mills and Mills (2018) examined how the knowledge of a fixed and growth mindset impacted 188 liberal arts college students studying remedial math. Simply making students aware of the differences between a fixed and a growth mindset was found to have little significance on student retention. A majority of their sample population were first-generation college students that they concluded confounded their results. Yet, other studies confirmed a growth mindset was less common within lower-income students than their wealthier peers, and "that students' mindsets may temper or exacerbate the effects of economic disadvantage on a systemic level" (Claro et al., 2016, p. 8664). Mills and Mills (2018) also acknowledged they failed to reassess student's understanding of mindsets at the end of the remedial math course. College students' confidence levels were also confirmed to positively correlate between their displays of overconfidence and paying less attention to difficult problems than those who operated from an incremental (growth) mindset (Ehrlinger et al., 2016).

Business Leadership

Case for Humility

Over the past 20 years as philosophers and psychologists have explored humility, business scholars have also analyzed its significance for the purposes of leadership and

management practices. One of the first, Collins (2001) identified qualities of personal humility and professional will that exemplified what he termed Level 5 leadership. He associated personal humility with modesty and interpersonal qualities such as "acts with quiet, calm determination; relies principally on inspired standards, not inspiring charisma, to motivate" (p. 73). Level 5 business leaders were found to initiate transformative practices within their organizations. When pressed on how this kind of leader is developed, however, Collins' view of humility was criticized as vague (e.g., a collection of inspiring stories) and unhelpful (e.g., either you have it, or you don't).

The case for leaders to exemplify humility has ushered in new perspectives on business and management literature. Humility was contrasted with over-confidence as a leader and having a willingness to broaden ones' perspective (Kallasvuo, 2007). In addition, humility and commitment to an organization were thought to allow leaders to have courage to speak up in disagreements (Kallasvuo, 2007). Menkes (2011) suggested that leaders needed "psychological elasticity" (p. 63), the ability to remain adaptable in increasingly competitive environments. He argued this characteristic of elasticity was a complementary skill to humility. Hence, humble leaders most likely possessed the following qualities: "authenticity and the capacity for self-reflection, an absence of shame around personal failures and imperfections, and a heightened sensitivity and awareness of others" (Menkes, 2011, p. 63). However, these descriptions of humble leaders were all anecdotal. In order to form definitive descriptions of leaders who operated out of humility, these perspectives were followed up with a number of empirical studies.

Leader Humility

Owens and Hekman (2012) were the first to empirically research humility within the context of the leader-follower dynamic, by interviewing 55 leaders with backgrounds in banking, finance, military, hospital, and religious clerics. Through their qualitative inquiry, they developed a model of leader humility defined by three behaviors: owning their limitations and mistakes, highlighting the strengths and contributions of their followers, and modeling teachability (see Figure 5). Contingencies, however, were found to influence each categorical behavior. For instance, humble leaders who admitted their faults were only successful if they were perceived as competent. Humble leaders who acknowledged and celebrated follower's strengths were contingent upon their perceived sincerity. In general, Owens and Hekman (2012) found that:

> Humble leaders model how to grow to their followers…transparently exemplify how to develop by being honest about areas for improvement, encouraging social learning by making salient the strengths of those around them, and being anxious about listening, observing, and learning by doing. (p. 801)

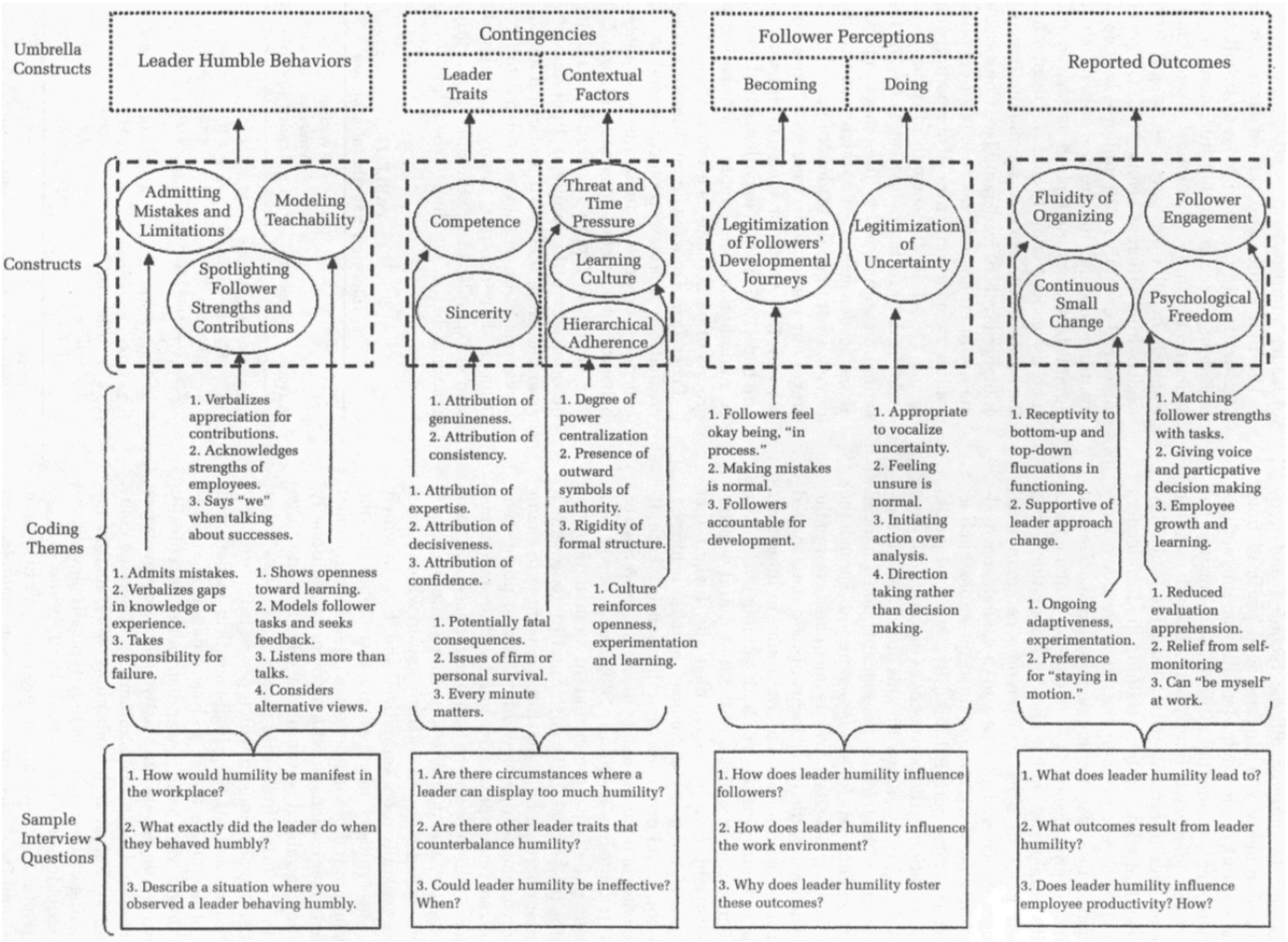
Their model of leader humility included contingencies and differences by the leader's age, sex, and their professional context. Overall, their third finding—teachability—was the most mentioned behavior of humble leaders.

Figure 5 models how to study humility from a qualitative, grounded theory approach. Not only was it one of the few to employ interviewing, transcribing, and coding strategies, Owens and Hekman (2012) shared sample interview questions and the trajectories their data generation and analysis took in arriving at their findings. A major part of this process was how their coding aligned with thematic constructs. For instance, questions of how humility is manifested led them

to identify common patterns and thematic meaning-making across interviews, which were clustered and grouped together to form the three constructs of admitting mistakes, spotlighting follower contributions, and modeling teachability. This recursive process led to finding contingencies and follower perceptions as critical aspects of the model as a whole.

Figure 5

Grounded Theory Data Analysis of Leader Humility



Note. Adapted from "Modeling how to grow: An inductive examination of humble leader behaviors, contingencies, and outcomes," by B. P. Owens, & D. R. Hekman, 2012, *Academy of Management Journal*, *55*(4), p. 792. (https://doi.org/10.5465/amj.2010.0441). Copyright 2012 by the Academy of Management Journal. Adapted with permission.

One of the most significant aspects of Owens and Hekman's (2012) research was their arrival at reported outcomes, specifically follower engagement and psychological freedom—some of the first in research on humility.

Subsequent research on leader humility has explored the degree to which a leader's disposition influences follower outcomes, team performance, and integration of team member responses (Ou et al., 2014, Owens & Hekman, 2016, Owens et al., 2013). Leader-expressed humility positively affected followers' job engagement, job satisfaction, and had negative associations with voluntary job turnover (Owens et al., 2013). In addition, the level of a leader's humility was shown to have a direct, causal correlation to collective humility (e.g., a contagion effect) and higher team performance (Owens & Hekman, 2016). Ou et al.'s (2014) study conducted in China showed how humility in CEOs confirmed the integration of middle managers in fostering an environment of empowerment. In sum, humility has a "tangible value in organizational contexts" (Owens & Hekman, 2016, p. 1104) as a worthy virtue for leaders and their followers from CEOs to middle managers, which leads to strengths-based progress and personal development.

Educating for Humility

Many corporate and nonprofit leaders worldwide are arguably educated at U.S. colleges and universities, most especially within their business schools. Moreover, the Association to Advance Collegiate Schools of Business stands as one of the largest, most important accrediting agencies for global business schools. In a 2019 report, the Advance Collegiate Schools of Business touted a core design of business education as developing future business and management leaders. As undergraduate students, these future leaders are, directly and indirectly, influenced by the decisions made by business faculty, deans, and administrative staff as the

relative institutional drivers of the academic curriculum, programmatic components, and support (Advance Collegiate Schools of Business, 2012). “Each faculty member, bringing to bear analytic skills and logic framed by an understanding of inquiry,” according to the Advance Collegiate Schools of Business (2008), “[and] decides on course-level learning goals, combines content with pedagogy to create courses, and evaluates individual learning” (2008, pp. 15–16). Yet, leader humility was not mentioned as a leadership-specific business education outcome despite the previous literature described. How future business leaders are taught and what values they are encouraged to espouse, including whether intellectual humility bears weight to either of those conversations, implores future research.

An important inference can be drawn between leader humility in the business world via the leader-follower dynamic and intellectual humility in undergraduate education via faculty-student interactions. As previously established, leader humility was found to have a positive, contagion effect to produce better outcomes for followers and team performance (Owens & Hekman, 2016; Owens et al., 2013). The former promoted professional growth such as “*legitimizing followers’ own developmental journeys*, leading to follower psychological freedom and engagement” (Owens & Hekman, 2012, p. 802). The effect of professors who demonstrate intellectual humility when engaged with college student learning and development is not yet determined. The faculty-student interaction in and outside the classroom has the potential to offer similar dynamics of legitimizing development (e.g., via assignments and coursework) while involving increased engagement (e.g., faculty challenge and support).

Although there are clear environmental differences between for-profit corporations and non-profit higher education (e.g., organizational structures and academic freedom), the subordinate role of followers and students, respectively, offers potential connections for ways in

which leaders and professors operate from similar standpoints (e.g., elevated authority). Students and followers both respond to the tasks, responsibilities, and intellectual demands placed on them, and if not completed to their personal detriment. Just as organizational leaders "must act virtuously if they want virtue to spread" (Owens & Hekman, 2016, p. 1104), so too must university leaders in the face of spreading intellectual virtues such as humility.

Summary

Presently, researchers have employed six specified scales to measure the self-reported characteristics and varying definitions of intellectual humility, wherein the CIHS, GIHS, and L-OIHS were the most prominent tools used in extant research. A few publications, however, have not disclosed the scale, or its composition, used to report their findings on intellectual humility (see Davis et al., 2016; Krumrei-Mancuso et al., 2019; Porter & Schumann, 2018). Yet, current understandings of intellectual humility are formed on the primacy of Likert scales used for estimations and correlations, maintained the uniformity of participants as either undergraduate students or broad swaths of the general population, and had an overreliance on self-report data.

The various intellectual humility scales are also employed without adequately addressing the inherent discrepancies amongst the measurement factors. I have contended that an important voice needed to comprehend intellectual humility – university faculty – have not served as full-fledged participants. Finally, most publications on intellectual humility have demonstrated an over-reliance on self-report data and have not surmounted the problem of self-aggrandizement, inherent when an individual reports on one's own humility. Owens and Heckman's (2012, 2016) theory of leader humility illustrated the value and benefits of a qualitative inquiry of and data generated by other-reporting on humility. They substantiated the role humility has for leaders and their followers within the business, corporate, and non-profit environments. Most pertinent

to this study and the gaps identified within the literature, current research has not yet discovered how intellectual humility may or may not be cultivated in students.

CHAPTER 3

METHODOLOGY

In this chapter, I argue for investigating intellectual humility by using a grounded theory approach to discover the nature and formation of intellectual humility in undergraduate education. Three differing accounts of the core concept complicate how intellectual humility is commonly understood—whether as a unidimensional, epistemic trait (Leary et al., 2017); a behavioral and cognitive virtue (Krumrei-Mancuso & Rouse, 2015; Samuelson et al., 2015); or a more malleable ability across a spectrum (Haggard et al., 2018). Each of these propositions have a foundation as presented and argued in philosophical literature.

One of the most comprehensive and convincing arguments was put forth by Whitcomb et al. (2017), who posited intellectual humility was the "golden mean" between two poles: one of excess (i.e., intellectual servility) and the other absence (i.e., intellectual arrogance). Aligning her research in psychology to Whitcomb et al. (2017), Haggard (2016, 2019) has led predominate notions of intellectual humility as identifying and owning one's intellectual limitations made up of potential "cognitive deficits, cognitive mistakes, gaps in knowledge, and knowledge-related character flaws" (p. 358). Intellectual humility for the purposes of this study is aligned with Whitcomb et al. (2017) and Haggard (2019) as a virtuous ability along a spectrum,

The benefits of humility, regardless of context, appear to counterbalance destabilizing forces such as unusually high narcissism, closed-mindedness to new information, and the inability to adapt to disruption (DeWall, 2016; Owens et al., 2015; Tangney, 2009). In an effort

to apply principles of humility to business leadership, a number of researchers have articulated how intellectually humble leaders model growth and legitimize positive development to their followers and middle managers (Ou et al., 2014; Owens & Hekman, 2012, 2016). Owens and Hekman (2012) more specifically, and notable to this study, applied research principles of grounded theory to uncover the lived experiences of leader humility.

The benefits of intellectual humility are shown to produce a love of and motivation to learn (Porter & Schumann, 2018; Samuelson et al., 2015); an openness to new experiences (Davis et al., 2016); knowledge acquisition (Krumrei-Mancuso et al., 2019); and cognitive flexibility (Zmigrod et al., 2019). The impact of intellectual humility in education, as suggested by Haggard (2019), has the potential to increase the practice of reflexivity among students to appropriately understand the basis of their knowledge while also providing a check on their biases. The ability to recognize one's biases is critical for undergraduate education as a first step in addressing what one does not know or understand about the nature of the world and their ontological beliefs. However, most research on intellectual humility to date has explored the concept from quantitative, self-report measures as well as from a variety of student perspectives but has yet to designate as essential to the study design faculty perceptions, contextualization to undergraduate education, and an inquiry into how intellectual humility may or may not be cultivated.

University faculty have played a peripheral role as participants investigating the nature and formation of intellectual humility by mainly informing the creation of survey items (see Haggard et al., 2018; Krumrei-Mancuso & Rouse, 2015). Moreover, gaps remain in the literature regarding the intellectual humility of college professors as well as their own perspectives on the students they instruct. If a purpose of the academy is to produce intellectual virtues such as

humility, as previously argued, then faculty and their perspectives on their instruction, curricular decisions, and classroom facilitation are essential to this end. The benefits of faculty who teach from a posture of humility, inspire students to struggle through their intellectual limitations, and maintain mutual, interactive intellectual humility are largely understudied or unknown.

Toward those ends, I proposed a grounded theory study of intellectual humility in an attempt to discover the lived experiences of faculty within a liberal arts and sciences, public, research university setting. The research questions that guided this study are:

1. What are faculty perceptions on the nature of intellectual humility within the context of undergraduate education?

   1a. How, if it all, does their understanding of intellectual humility differ by academic community (e.g., Arts & Humanities, Natural & Applied Sciences, and Business)?
2. In what ways do faculty perceive how intellectual humility is instilled or impeded, if at all, in undergraduate students?
3. What are faculty perceptions of their own intellectual humility?

This investigation has the potential benefits for concept- and theory-building on how faculty may instruct students from a posture of humility while assisting their students to adopt greater openness to new experiences and information. Furthermore, in-depth investigations are required to uncover additional impacts of faculty-student interactions that are infused with intellectual humility for sustained mutual growth and development.

Grounded Theory

Since the middle of the last century, qualitative inquiry has held particular, situational importance to original, scientific research, wherein grounded theory has remained one of the most prevalent, in large part for its empirical approach (Clarke, 2019). The publication of Glaser

and Strauss's (1967) *Discovery of Grounded Theory: Strategies for Qualitative Research* is widely accepted as a foundational moment that "punctured notions of methodological consensus and offered systematic strategies" for qualitative inquiry (Charmaz, 2014, p. 1080). Glaser and Strauss emphasized the development of new theory as the central aim of their research orientation. Since that time, subsequent scholars have identified four main schools of thought attributed to grounded theory (Timonen et al., 2018): Classical (e.g., Glaserian), Interpretivist (e.g., Strauss and Corbin), Constructivist (e.g., Charmaz), and Situational Analysis (e.g., Clark).

For the purpose of this study, I applied research approaches grounded in interpretivism as they most adequately aligned with the desired aim of generating and building new theory while taking into consideration prior empirical research. Principles inherent in interpretivism also aligned with my own ontological paradigm as a researcher. Interpretivist conceptions of grounded theory, such as in Strauss and Corbin (1998), have their basis in the following central assumptions, as identified by Clarke (2019):

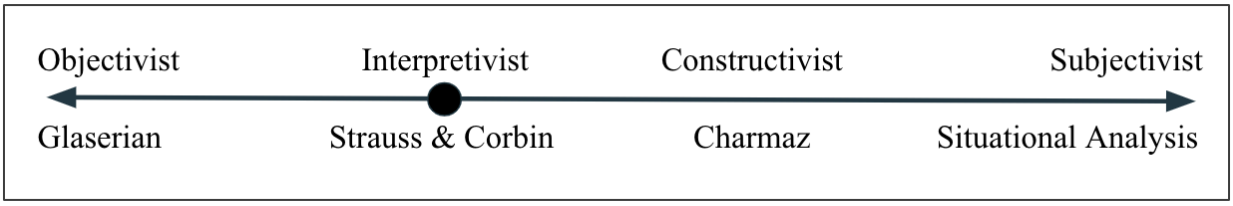
- Meaning is re-located from "reality out there" to "reality as experienced by the perceiver";
- An observer is assumed to inevitably be a *participant* in what is observed, more or less reflexive; and
- Interpretations are *not* universal but must be located and situated in space and time. (p. 7)

Therefore, the nature of reality, and hence the theory under investigation, is perceived through the systematic capture of participants' meaning making. The interpretivist researcher plays the role of investigator who balances dual responsibilities of observation and discovery. The former is sensitive to what is *there* in reality, whereas the latter probes for deeper, underlying meaning

in lieu of the research questions and corresponding interview protocol. In relation to the ontological presuppositions within other schools of grounded theory, I have positioned interpretivist methods as outlined by Strauss and Corbin (1998) between Glaserian and Constructivist notions (see Figure 6). Interpretivists argue for their research to be logically generalizable to similar contexts and locations based on thick descriptions and rich details depicted throughout their study.

Figure 6

Ontological Positionality for Grounded Theory Schools of Thought



Core Principles

What is grounded theory? Timonen et al. (2018) identified four principles essential to grounded theory research. First, those employing this research approach take the notion of *grounded* seriously. Results are directly grounded in data and data analysis, by which researchers bracket previously verified and preexisting propositions, and are prepared to go so far as to alter their original research questions based on data generation. Second, and most important in relation to this study of intellectual humility, "grounded theory is a concept- and theory-generating methodology that is able to work with different forms of data" (Timonen et al., 2018, p. 6). This can include descriptive surveys, scales, and measurements as well as various forms of interviewing and observational strategies. Third, the grounded theorist—when faced with the process of generating and analyzing data—utilizes concurrent, iterative processes to adapt interview questions as needed to capture a fuller, richer description of the theory itself. If done

accurately and with skillful care, this process may generate an enormous amount of qualitative data. Researchers simultaneously analyze this information using—what is described in detail in later sections—open, axial, and selective coding strategies. These strategies are designed to capture "action/interaction and noting movement, sequence, and change as well as how [phenomena] evolve in response to changes in context or conditions" (Strauss & Corbin, 1998, p. 167). This process most likely leads the researcher to conduct additional sampling in order to reach a saturation point. Hence, the fourth and final principle is theoretical saturation, which is achieved when "no significant new insights are emerging" within the data (Timonen et al., 2018, p. 8). The following sections outline each of these principles in greater detail while exploring how I intend to incorporate each approach into my study design.

Discovery and Emergence. Strauss and Corbin (1998) affirmed grounded theory as a research approach that functions to facilitate discovery and flexibly allows for the emergence of theoretical propositions. They juxtaposed the rigidity of traditional approaches with the fluidity and artistry essential to the process of grounded theory. According to Strauss and Corbin, the emergence of theory is the discovery of concepts and the relationships between concepts that explain the essence of a topic, in this case intellectual humility within undergraduate education. This process of discovery, they argued, grants researchers the opportunity to: (a) theorize comparisons of rich, in-depth data; (b) hone better questions throughout data analysis; (c) sample additional participants; all for the end of (d) creating and validating a theoretical framework (Strauss & Corbin, 1998). The grounded theory approach is enhanced via the researcher's ability to adapt to the evolving nature of discovery while interjecting a high amount of creativity into the research methods.

Rather than using the language of generalizability, grounded theorists prefer what Strauss and Corbin (1998) termed as "explanatory power" (p. 267). The essence of explanatory power is located in the predictivity ability to speak back to the populations from which the original data is derived. Moreover, researchers utilizing grounded theory are encouraged to make direct use of the interplay between quantitative and qualitative methods for gathering data. Corbin and Strauss (1990) argued "in grounded theory (whether involving qualitative or quantitative data) the hypotheses are constantly revised" (p. 422) when new data from interviews or surveys are generated. This methodological approach grounded in the generation and analysis of raw data allows concepts and codes pertaining to the research and the study design itself to evolve and change. Hence, the researcher is viewed as an instrument of analysis. Just like the diverse sources of data, there is constant interaction between the researcher and the data being generated. Because in-depth description is a designed purpose of grounded theory, research questions can begin open-ended and fairly broad (Strauss & Corbin, 1998).

Open Coding and Sampling. In order to adequately capture the potential theory under investigation, grounded theorists begin by sampling from a wide range of perspectives relative to the study's focus. Strauss and Corbin (1998) compared the coding process—identifying conditions, actions/interactions, and consequences—with art. Those who make it rigid are trying too hard and eliminate creativity. Thus, sampling begins as openly and flexibly as deemed appropriate and necessary given the study and the research questions. From the moment data are generated, researchers are encouraged to begin analyzing and making interpretations on what is found. The first stage of open coding is this recursive process between data generation and analysis.

Strauss and Corbin (1998) explained open coding as characterized by microanalysis, or more specifically when "data are broken down into discrete parts, closely examined, and compared for similarities and differences" (p. 102). Microanalysis is a line-by-line analysis, a fluid and dynamic process of analysis, requiring an adaptive essence to coding, categorizing, and thematic explanations. At this stage, interplay between the data and the researcher is a critical element of analysis, whereby "the researcher is actively reacting to and working with data" (Strauss & Corbin, 1998, p. 58). Researchers scan data for analytic material. Once identified, a line-by-line analysis is applied to mine the richness of the data. Analytic distancing plays an important function whereby the researcher listens closely to the representations and interpretations of data while also zooming out to "conceptualize and classify events, acts, and outcomes" (Strauss & Corbin, 1998p. 66). This formally begins the process of conceptualization of the study's focus, central to theory building.

Furthermore, open coding is the first step in conceptualizing the phenomenon, allowing it to take shape. In some cases, codes are directly taken from participants' words to form in vivo codes. Interview transcripts are labeled, coded, and, in most cases, returned to over the course of the study for deeper analysis and organized by researcher-written memos, whereby events and situations within the data are contextualized. Open sampling is a necessary feature of open coding in order to capture the full variation and diversity of the study topic. The goal is to collect as many perspectives as readily available to the researcher and begin to code in line-by-line detail the expressions of participants. Once multiple codes are identified, they are conceptualized into categories with similar categorical properties made up of subcategories.

Axial Coding and Variational Sampling. Once initial categories are identified, data generation and analysis morph into their second form. Although not necessarily sequential, axial

coding aims “to look for how categories relate to their subcategories as well as to further develop categories in terms of their properties and dimensions” (Strauss & Corbin, 1998, p. 210). As initial categories and subcategories emerge from the data, patterns and relationships are identified and compared across concepts, persons, and events. Categories are built, not from one person’s representation or perspective, but from the voices of many and distilled into conceptual phrases. Axial coding has a strong focus on fitting categories and their subcategories where the latter “answer questions about the phenomenon such as when, where, why, who, how, and with what consequences” (Strauss & Corbin, 1998, p. 125). The goal at this stage of data analysis is to reveal and confirm as many possible similarities and differences among identifiable concepts. In order to produce depth and quality to the emerging concepts, additional variational sampling is required.

Variational sampling is employed to capture the fullest range of relationships among concepts, themes, and categories. Additional participants are interviewed wherein the initial interview questions may evolve, alter, and be improved upon based on the preliminary analysis from the first round of sampling. The purpose of this sequence, whereby open coding and sampling leads to axial coding and variational sampling, is to capture the maximum variations of the study’s central focus. Once relationships are identified, the researcher employs a third and final concurrent round of data generation and analysis to validate and strengthen the emerging model or framework pertaining to original research questions (Strauss & Corbin, 1998).

Selective Coding and Discriminate Sampling. One of the last techniques applied in grounded theory research is selective coding. Represented by its deliberateness, selective coding integrates and refines the major categories of the study. Strauss and Corbin (1998) explained how the process of this integration occurs “along the dimensional level to form a theory,

validat[ing] the statements of relationship among concepts, and fill[ing] in any categories in need of further refinement" (p. 211). The grounded theorist applies another level of coding to identify how the relationships between categories are integrated. These relationships are intended to be bolstered, or in some cases invalidated, by this selective process.

Because the discovery of a theory, model, or framework is the end of data analysis, the researcher utilizes these strategies of selective coding in order to validate or disprove their interpretations. As in the previous two forms of data generation, participant sampling may continue, but is discriminate based on what categories, comparisons, and/or relationships have not yet reached full permeation. Depending on the needs of the research, prior participants may be asked to sit for another interview to seek clarification or additional meaning on what they shared. In other cases, new participants may be identified and interviewed to fill in gaps or round out interpretations.

Theoretical Saturation and Theory Building

The conclusion of data collection and analysis, according to Strauss and Corbin (1998), is to reach theoretical saturation. They identified three ways in which saturation is achieved when: (a) no new concepts are generated, (b) all categories are fully developed, and (c) relationships between categories are corroborated and well-established. Central to these fluid stages is the interplay between induction and deduction. The former conceptualize data from the specific to the general, whereas the latter draws out an interpretation of and from the data. All good research, according to Strauss and Corbin, is an interplay between these two. Researchers utilizing this approach "recognize the human element in analysis and the potential for possible distortion of meaning" (p. 137). Hence, constant comparison is a critical element of grounded theory because data is validated, or invalidated, by routinely comparing what is emerging.

Theory building occurs throughout axial and selective coding as these approaches support initial predictions of potential representations of the phenomenon. The raw data and the corresponding concepts are "constructed" by the researcher, by which Strauss and Corbin (1998) meant the "sets of relational statements [are] used to explain, in a general sense, what is going on" (p. 145). The progression of drafts of the theory or model are best captured by the researcher via a reflexive journal (see Appendix B for sample entry) and sequential memos (see Appendix C). Upon reaching theoretical saturation, central categories and relationships among concepts are fit together to produce a model, diagram, framework, or theory depending on the appropriate structure or context of the phenomenon.

Participants

Study participants are identified as tenured faculty members from a single institution, Alma Mater University (AMU), located in the mid-Atlantic region. AMU is a highly selective, mid-sized, public, liberal arts and sciences university with a Research 2 (R2) Carnegie classification. This institution—with its diverse context and faculty members—was selected on the basis of its high standards of excellence and educational rigor wherein AMU consistently ranks as one of the top institutions for undergraduate teaching in the United States. AMU offers a distinctive liberal arts education boasting a robust undergraduate teaching in the arts and sciences as well as professional schools. Reasons for masking the institutional context for this study were to ensure a high level of confidentiality for participants, for the potential sensitivity of the information they shared on relevant students, classroom interactions, and the diversity of experiences as a faculty members, as well as to ensure that interviews were rich and substantial conversations on the research topic.

All tenured faculty from the following academic communities at AMU were invited to participate in this study: Arts & Humanities, Natural & Applied Sciences, and Business (n = 339). I purposively sought to interview 10 tenured faculty members from each community as full participants for this study. The delineation of academic communities was made on the basis of Jones's (2012) philosophical argument for the epistemic differences for how academic and knowledge-based consensus is reached. Jones argued that the inheritance of knowledge at the university level is distinct on two fundamental accounts: (a) the nature of consensus within the academic disciplines (e.g., consensus-reaching versus non-consensus-reaching), and (b) the nature of reflective activity amongst the academic communities. His assertion was strictly drawn between the arts and humanities, which he termed as independent disciplines or non-consensus-reaching that required more reflexivity, and the natural and applied sciences, which are largely dependent, consensus-reaching with less reflexivity. Jones notably excluded mathematics and social sciences, with no reference to the academic communities of education and business. The third community I proposed to include in my study, business, was included for its important research link to findings associated with leader humility. As previously mentioned, researchers have established how leaders with intellectual humility model and facilitate developmental growth for their followers (Owens & Hekman, 2012, 2016).

Tenured faculty are traditionally understood as associate or full professors who have completed the rigorous examination process of internal and external scrutiny of their publications, scholarship, and teaching abilities. Some of these individuals have attained the highest rung of scholarship in their respective field or discipline, which connotes increased academic freedom and job security. Participants had teaching experience directly at AMU for a minimum of two full academic years to ensure commonalities of classroom experiences and

student interactions. Although several previous studies of intellectual humility have been set in an academic setting, and included undergraduate or community college students as participants, to my knowledge, faculty members have not served as direct participants in any study of intellectual humility. With some resemblance to a leader's influence over followers, tenured professors are seen as the gatekeepers of knowledge and overseers of the intellectual development of college students. For instance, faculty have final control over assignments and textbooks (e.g., syllabi), the method of instruction (e.g., lecture, discussion, etc.), the material included or excluded during class times, and what behaviors are approved or not permitted in the classroom.

Data Types

The research design for this study was initiated as "in flux" and compatible with interpretivist expressions of grounded theory, whereby "the design, like the concepts, must be allowed to emerge during the research process" (Strauss & Corbin, 1998, p. 33). Based on my research questions, initial participants for this study were identified as tenured professors at a medium-sized, public university that is consistently ranked as one of the top undergraduate teaching institutions in the United States. Tenured faculty were identified as the gatekeepers for ways in which students develop cognitively, including what is prioritized within the undergraduate education curriculum and the classroom. Although most previous studies of intellectual humility relied solely on self-report approaches, this study included both self-report and other-report strategies to gain a fuller, richer understanding of faculty members' accounts of intellectual humility in university students.

Descriptive Survey

Based on the initial strategy of open sampling, all Arts/Humanities and Natural/Applied Sciences, as well as Business, tenured professors at Alma Mater University (n = 339) were invited to complete a descriptive survey sent to their university email. I received a total of 90 consenting survey submissions, a 27% response rate. This initial outreach served as an introduction to the research topic of intellectual humility and invitation to take part in the study as a participant (see Appendix D for email script). A link to the Qualtrics-designed survey was provided in the invitational email. The descriptive survey captured the following data: (a) informed consent (see Appendix E); (b) a self-report measurement of participants' intellectual humility (*Limitation-Owning Intellectual Humility Scale* [L-OIHS], Haggard et al., 2018); (c) an open-ended question to disclose any prior knowledge of the research topic; and (d) background information (e.g., discipline, tenure, etc.). Table 2 outlines each of these in more specificity.

Table 2

Data Collected Within the Descriptive Survey

DESCRIPTIVE SURVEY
1. Informed Consent Form
2. Limitation-Owning Intellectual Humility Scale (12-items, see Haggard et al., 2018)
3. Open-Ended: What does intellectual humility mean to you?
4. Background information
a. Name
b. Title
c. Academic discipline
d. Years teaching (total)
e. Year received tenure
f. Academic teaching load
g. Participant recommendation

Participation in the initial, descriptive survey was voluntary and was estimated to take no more than five minutes to complete.

Participants who opened the link to the descriptive survey also received additional information about the purpose of the study, the importance of their participation, how they were selected, what is expected of participants, and the timeline of the research. Their consent to participate included an agreement of confidentiality, the protection and security of all collected data, voluntary discontinuation in the study, and potential benefits for participating (see Appendix E for entire consent form).

Limitation-Owning Intellectual Humility Scale

One of the first ways participants interacted with the concept of intellectual humility was by completing Haggard et al.'s (2018) Limitations-Owning Intellectual Humility Scale (L-OIHS). The L-OIHS is a three factor, 12-item, 9-point Likert scale, ranging from *Strongly Disagree* (1) to *Strongly Agree* (9), designed to capture individuals' self-reported intellectual humility. Its origin was the product of a dissertation completed by Haggard (2016), which was turned into a full-fledged measurement tool and published in the research journal *Personality and Individual Differences* (see Haggard et al., 2018).

Originally 64 candidate items chosen by a group of philosophers and psychologists, the L-OIHS was narrowed to 12 items with moderate to high reliabilities after a test study of 386 adults (age 18–75, 209 females, predominately White [80.9%]). As shown in Table 3, the L-OIHS measures three factors of intellectual humility (Cronbach's $\alpha = 0.86$), four items assessing love of learning, four items assessing appropriate discomfort with limitations, and four items assessing owning intellectual limitations. The L-OIHS has the highest test-retest correlation

(0.75) after 5 months, whereby "no other current measure of IH has demonstrated reliability over such a long time period" (Haggard et al., 2018, p. 187).

Table 3

Three-Factor Limitations-Owning Intellectual Humility Scale

LIMITATIONS-OWNING INTELLECTUAL HUMILITY SCALE		
I. Love of Learning	**II. Appropriate Discomfort with Limitations**	**III. Owning Intellectual Limitations**
1. If I don't understand something, I try to get clear about what exactly is confusing to me.	1. I focus on my intellectual weaknesses too much.*	1. I have a hard time admitting when one of my beliefs is mistaken.*
2. When I don't understand something, I try hard to figure it out.	2. When I know that I have an intellectual weakness in one area, I tend to doubt my intellectual abilities in other areas as well.*	2. When someone points out a mistake in my thinking, I am quick to admit that I was wrong.
3. I love learning.	3. When I think about the limitations of what I know, I feel uncomfortable.*	3. I am quick to acknowledge my intellectual limitations.
4. I care about truth.	4. I tend to get defensive about my intellectual limitations and weaknesses.*	4. I feel comfortable admitting my intellectual limitations.
*Denotes item is reverse-scored.		*9-Point Strongly Disagree-Agree Likert Scale*

Note. Adapted from "Finding Middle Ground between Intellectual Arrogance and Intellectual Servility: Development and Assessment of the Limitations-Owning Intellectual Humility Scale," by M. Haggard, W. Rowatt, J. Leman, B. Meagher, C. Moore, T. Fergus…and D. Howard-Snyder, 2018, *Personality and Individual Differences, 124*, p. 184-193. (https://doi.org/10.1016/j.paid.2017.12.014).

Interview Protocol

Upon completion of the descriptive survey, I purposively selected and invited 33 participants to take part in the interview portion of the study, 11 arts & humanities, 10 business, and 12 sciences faculty. A pilot study was conducted to field-test both the interview protocol and

descriptive survey in order to ensure quality of responses and accuracy of initial information shared on the research topic. I invited three AMU professors—one from each academic community—with whom I had a prior relationship to complete my research protocols. Each pilot study participant provided detailed feedback on their experience of the descriptive survey and interview questions.

The interview protocol was adapted from Owens and Hekman (2012) who created their protocol to qualitatively examine humility in leaders from multiple business contexts (e.g., banking, military, and religious). Language pertaining to business and leadership was altered to fit the university and academic context. Out of the 12 questions used by Owens and Hekman in their interview protocol, eight were adapted to include professor, student, classroom, and/or intellectual humility, where appropriate. The first prompt of the interview protocol functioned to facilitate an introduction and warm-up to the interview (see Table 4). The next five interview prompts substituted intellectual humility for one of the three factors determined by Haggard et al.'s (2018) L-OIHS.

The latter half of the interview protocol (i.e., Questions 7 through 10) probed situations or instances recalled by participants where they witnessed and/or facilitated students who behaved with intellectual humility. After exploring possible avenues for other-reporting on students and factors of intellectual humility, the final prompt asked participants to summarize their understanding of the research topic. See Appendix F for a memo with a detailed explanation and breakdown of the interview protocol. The interview protocol was intentionally designed to permit follow-up questions and additional clarification when necessary. The semi-structured interview lasted at minimum 60 minutes, and in most cases went up to, or over, 90 minutes.

Table 4

Semi-Structured Interview Protocol

INTERVIEW PROTOCOL
1. What role does the professor play in the intellectual development of their students? In the classroom?
2. How would a student's *love of learning* manifest in the classroom? In interactions with you? In completed assignments?
3. How would students' *ownership of their intellectual limitations* manifest in the classroom? In interactions with you?
4. Are there circumstances where a student can display too much or too little *discomfort with their own limitations*? If so, when?
5. How, if at all, might a professor's *love of learning* and/or *ownership of intellectual limitations* influence his or her students? Interactions in the classroom?
6. What does an *appropriate discomfort with limitations* lead to for faculty? For their students?
7. Describe a situation where you observed a student, and/or group of students, behaving with intellectual humility.
8. What exactly did the student(s) do when they behaved that way? What role, if any, did you have in facilitating or observing?
9. What outcomes, if any, result from teaching in an intellectually humble way?
10. What relationships, if any, exist between intellectual humility and student creativity and/or productivity?

Note. Adapted from "Modeling how to grow: An inductive examination of humble leader behaviors, contingencies, and outcomes," by B. P. Owens & D. R. Hekman, 2012, *Academy of Management Journal*, *55*(4), p. 787–818 (https://doi.org/10.5465/amj.2010.0441).

Data Generation

Before doing a full investigation, I conducted a pilot study in order to ensure accuracy, quality, and rigor of the data types (e.g., descriptive survey, L-OIH Scale, and interview protocol). This pilot study included preliminary testing of these instruments with three representative faculty at AMU. These individuals were identified on account of an established relationship to me. Upon sending the descriptive survey to these individuals, I first analyzed their results for the designed accuracy and quality of their responses and invited detailed feedback

from each pilot study participant. Secondly, I shared the interview questions with these participants to ensure the questions were both understood correctly and may produce substantial answers from participants in their current form. The feedback produced by the pilot study served to inform and refined the data sources. They had direct impact on an accurate investigation of faculty perceptions on the intellectual humility of students and themselves.

Once the data types were finalized with updated alterations, an email explaining the dissertation study was sent to all tenured faculty participants at AMU with a link to the descriptive survey. After several rounds of invitations, I received a total of 90 responses (27% response rate). Faculty members' answers were initially examined for the following: self-reported scores on Haggard et al.'s (2018) 12-item *Limitations-Owning Intellectual Humility Scale* (L-OIHS), prior knowledge and/or initial interpretations of intellectual humility, and background characteristics of participants within the context of a liberal arts and sciences education. Participant self-reported scores from the L-OIHS were calculated for how high, moderate, or low their intellectual humility were measured to be. The entire selection process was determined by a combination of the following factors: participant scores on the L-OIHS, what prior knowledge, if any, they had with the research topic, their academic discipline, cumulative years teaching, and current academic teaching load. The following criteria were utilized to purposely select participants for the interview portion of the study:

- The top quartile of scores on the L-OIHS, which indicated robust self-reported intellectual humility of the participant. Given humility's social contagion effect as observed by Owens and Hekman (2016), it was believed those with humility were more likely to identify others with the same characteristics.

- Prior knowledge of the study topic, or lack thereof, did not disqualify a faculty member from selection in the interview portion, but instead served as potential data to explore in an interview.
- Background characteristics, such as academic discipline, cumulative years teaching, and current teaching load, were used (a) to delineate among academic communities (e.g., Arts & Humanities, Natural & Applied Sciences, and Business); (b) to identify variations for how long a participant has taught; and (c) to explore how many undergraduate students the faculty is currently teaching. Each of these characteristics served as descriptors necessary to conduct theoretical and discriminate sampling when appropriate. For instance, if contingencies and/or outcomes were identified based on years teaching and/or academic load, this background information was critical to invite new, variational perspectives on the study topic.
- Reached a maximum variation sample of tenured professors at AMU by sex (female/ male) and number of years teaching (8–50). It was my intent to include as much heterogeneity as possible in order to capture a diversity of perspective on my dissertation topic.

A first round of participants was invited for semi-structured, one-on-one interviews, wherein the individual's survey responses and follow-up explanations were explored for greater depth, clarity, and understanding.

Maximum Variation Sample Procedure

The process outlined above was followed for purposively selecting participants for the interview portion of my study and I adhered to the ensuing criteria. My overall goal was to identify a maximum variation sample so to capture a diverse group of faculty members

delineated by sex (e.g., female/male), academic discipline (e.g., limited overlapping fields), and total number of years teaching undergraduates. Other factors that played an important role were self-reported scores on the L-OIHS (e.g., top/bottom quartile) and open-ended responses on intellectual humility.

First, I analyzed the data generated by the L-OIHS of individual faculty scores. Five of the 12 survey items were reverse-scored and were accurately highlighted to ensure the proper calculated score for every participant. Once highlighted and reverse-scored, I averaged each participant's L-OIHS score in an Excel spreadsheet. I then grouped faculty by Arts and Humanities, Natural and Applied Sciences, and Business, and reorganized each academic community by sorting from highest to lowest L-OIHS score within groups. Once filtered by academic community and score, I identified the top 25% of scorers within all three groups and highlighted these individuals. The top quartile breakdown was: 9 Arts and Humanities faculty (n = 37), 9 Natural and Applied Sciences faculty (n = 38), and 4 Business faculty (n = 15).

The top scorers on the L-OIHS became the first cohort from which I began selection of a maximum variation sample of 30 total participants (10 in each academic community). The top scorers from each academic community were analyzed by sex, discipline, and total number of years teaching. Given the wide range, I created the following four classifications by number of years teaching: 8–15, 16–24, 25–33, and 34+ years. Overall, it was my aim to reach a maximum variation sample by inviting: (a) 15 men and 15 women approximately; (b) one person from each discipline; and (c) as equitably as possible a mix of undergraduate teaching experience.

With this strategy laid out, the top 25% of scorers by academic community were identified as: seven men and two women (Arts & Humanities), six men and three women (Sciences), two men and two women (Business). I prioritized invitations to these seven women

because women overall did not self-report high on intellectual humility. Then, I analyzed the backgrounds of the high-scoring men by academic discipline and years teaching to identify any duplicate majors and teaching classifications.

I prioritized the business group first given that there were fewer participants (n = 15) in order to reach 10 interviewees. In addition, I created two to three backup slots in case a professor declined to be interviewed. Two of the 15 business participants had to be excluded for the following reasons: one professor only taught graduate students, and the other had a conflict of interest with the study. In the end, the decision was made for me. I had 13 business faculty to choose from, so I invited all 13 for an interview.

Upon completion, I had data to narrow the other two academic communities by sex and number of years teaching. I focused on the Arts and Humanities group second and automatically included the two female faculty (English/26–34 and Modern Languages/16–25) who scored within the top quartile on the L-OIHS. There were only 11 other female faculty to choose from; thus, I identified five more women who were not from either the English or Modern Languages departments. With this completed, I went back to the seven men who were part of the top quartile of scorers. I chose to include three of them to have a balanced 50% representation of high self-reported intellectual humility. Lastly, I prioritized faculty who taught over 34 years because there were disproportionally fewer of them. Once interview slots were taken by participants who met these criteria, I focused on which academic disciplines were not yet included. By the end, I had five women and five men from the following disciplines: Art, Asian & Pacific Islander American Studies, Classical Studies, English, History, Latinx & Hispanic Studies, Modern Languages & Literatures, Music, Philosophy, and Theater—with two reserved spots both of whom were female faculty (e.g., Religious Studies and American Studies).

I took identical steps to determine which Science faculty to invite for interviews. This meant having a 50% representation of men and women, top quartile scorers of self-reported intellectual humility, a broad mix of teaching experience, and a diverse range of academic disciplines within the Sciences. Like the Arts and Humanities, I immediately included the three female faculty who scored in the top 25% on the L-OIHS. There were only seven other female faculty to choose from, so I included five of the seven to invite for an interview or as a back-up. Similarly, I included the other three men who also scored high to have an equal balance of sex. This left only two open spots and one back-up for male science professors. I filled these positions by prioritizing (a) disciplines not included thus far, and (b) faculty who had taught undergraduates over 34 years. The following 10 Natural or Applied Sciences disciplines were included: Anthropology, Biology, Chemistry, Economics, Geology, Neuroscience, Physics, Psychological Sciences, Public Health, and Sociology—with three back-ups in Mathematics, Public Health, and Computer Science. See Table 5 for the resulting breakdown of interviewed participants.

Interviewed Participants

This research study aimed to interview at least 10 faculty members from each academic community (e.g., Arts & Humanities, Natural & Applied Sciences, and Business). No fixed number of interviews were initially determined given the aim of reaching theoretical saturation in grounded theory. This aim resulted in interviewing more than 30 participants. In sum, I conducted three additional interviews, one in the arts and humanities (e.g., religious studies) and two in the sciences (e.g., mathematics and computer science). I sought to diversify the total amount of participants to reach a maximally variable sample of tenured professors at AMU by the following characteristics: (a) academic discipline, (b) sex (female/male), (c) self-reported

intellectual humility (top/bottom quartiles), and (d) total number of years teaching undergraduates (8–50 years; see Table 5).

Table 5

Maximum Variation Sample of Interviewed Participants (n = 33)

Academic Community	Sex	Title	Years Teaching
Arts & Humanities: 11 Business: 10 Sciences: 12	Female: 16 Male: 17	Associate: 13 Full: 18 Distinguished: 2	8–15: 9 16–24: 10 25–33: 9 34+: 5

Note. 42% of interviewed participants (n = 14) scored in the top 25% within academic communities on the Limitations-Owning Intellectual Humility Scale.

Recorded interviews were transcribed and preliminarily analyzed within at least a two-week timeframe and consistently revisited to ensure a concurrent, recursive process of data generation and open coding. The codes and themes produced from analyzing the initial interview data informed changes to the interview protocol needed for interviews not yet conducted and discriminate sampling (see Appendix C). As new codes were identified, categories were formed that led to new areas of exploration during subsequent interviews.

The quality and robustness of data was very important in order to reach theoretical saturation and findings for my research questions. Thus, each faculty participant was requested to complete a brief member check on the accuracy of their perceived themes, ideas, and descriptions on the research topic. In-depth, thick descriptive member checking of individual faculty perceptions was produced at the conclusion of each interview and documented by a memo for each participant. Within 2 weeks of the initial interview, participants were asked to review a document that captured the accuracy of their interpretations and distilled the perceptions of the faculty member on the research topic. Member checking added an additional

layer of credibility to data analysis and coding to accurately test interpretations of participant perspectives (Lincoln & Guba, 1985). This member check was conducted based on the preference of the faculty member (e.g., over email, virtual meeting, in-person, etc.), and occurred after an initial round of open coding. The member check included the accuracy of participant lived experiences as captured in the interview.

Upon completion of the initial round of interviews, variational and discriminate sampling techniques were instituted to identify and determine dimensional alignment of categories as well as similarities and/or differences among faculty perceptions across the academy. For instance, if interviews with arts and humanities faculty substantiated more information, hypothetically, then additional perspectives from science and business faculty were gathered, and vice versa. The same was true of variational similarities and/or differences between years teaching (e.g., more vs. less) and academic load (e.g., two courses vs. four courses). This recursive data generation strategy, central to grounded theory, was employed to capture dimensional variations, contingencies, and/or outcomes of faculty perceptions on intellectual humility. Moreover, the blend of self-report (e.g., faculty L-OIHS scores) measures and other-report interviews (e.g., faculty perception of students) was designed to produce novel insights into the potential structure, form, and model of intellectual humility.

Given the current state of the national and global COVID-19 pandemic while data were being generated, this study was impacted in the following ways: (a) all participants were interviewed virtually (e.g., Zoom) and not in person because of physical distancing regulations (e.g., 6 feet of space between people); (b) the academic year started earlier (e.g., beginning of August) and ended sooner (Thanksgiving break) than previously expected; and (c) faculty members had more or limited time available, depending on the month and week. In addition, a

partial shift from in-person to remote instruction occurred as a result of the preparation for an outbreak of COVID-19 on-campus during fall of 2020. Participants' lives and the make-up of AMU pre- and post-pandemic were significantly different as a result. At the time of my study, professors were forced to make decisions, many for the first time, about teaching remotely or in a hybrid fashion. Some had children at home because of disruptions to school schedules and daycare availability. Faculty were anxious about getting sick with COVID-19, a specific type of a highly infectious coronavirus. Moreover, general uncertainty within U.S. society prompted by the pandemic and Black Lives Matter, a growing movement to end racism and racial injustice, resulted in AMU faculty feeling uneasy about sharing their views given the sensitivities of both topics. All of these factors affected my participants; however, in the end I was enormously grateful to have received 90 survey submissions from AMU faculty.

Data Analysis

The following types of data—survey responses, L-OIHS scores, interviews, and member checking with participants—were intended to generate substantial perspectives of faculty on their orientations to and understanding of intellectual humility. The data captured from each participant were also intended to interrelate as equal sources of data analysis and informed the correspondence between the interviewee and interviewer. Thus, each type of data was used with the intention, first, to answer the research questions for this dissertation study, and second, to build a theory of intellectual humility situated within a liberal arts and sciences undergraduate education. Each survey response and interview were properly reviewed, integrated, and coded for quality and accuracy of meaning making on the research topic. As the sole researcher, I also kept a reflexive journal and used subsequent memos to organize and outline my initial and evolving conclusions from the analysis of data (see Appendices B and C).

Recorded transcripts were transcribed by me and analyzed using open, axial, and selective coding strategies (Strauss & Corbin, 1998). In addition, I employed a peer debriefing strategy whereby my codes and categories of transcribed interviews were reviewed by two Ph.D. colleagues versed in qualitative inquiry and analysis. These individuals were briefed on my research topic and study design via a two-page executive summary and reviewed multiple coded transcripts. They were specifically tasked with identifying (a) the accuracy and quality of my line-by-line coding, (b) any disagreements with the codes attributed to highlighted statements, and (c) additional sections of the transcript that required coding. Once completed, my peer debriefers emailed me their edits and we discussed their suggested changes during four separate virtual meetings. In total, 20% of all interviews were peer debriefed by the end of data generation and analysis. I shared my early conceptualizations and models with committee members and a number of peers. Hence, I made transparent my coding strategies, categories, and initial theory development with these individuals who scrutinized my early findings and offered critical feedback. These extra steps served to enhance the accuracy, quality, and richness of the data (Lincoln & Guba, 1985).

Upon completion of each stage of data generation and analysis, the goal of this recursive study design was to reach theoretical saturation, whereby no new information was captured. For instance, I went over my goal of 30 interviews to include three additional disciplinary-specific perspectives to cover aspects of intellectual humility that proved important. In order to discover faculty perceptions of intellectual humility in undergraduate education and whether it can be instilled or impeded within undergraduates, the dynamic and complex nature of faculty and student interactions were believed to provide the greatest insights.

As outlined in Table 6, all data sources are intended to generate data necessary to answer the research questions for this study. The same is true for data analysis. Grounded theory is designed to utilize both quantitative and qualitative data to construct theory (Charmaz, 2017; Strauss & Corbin, 1998).

Table 6

Research Questions and Study Design

RESEARCH QUESTIONS	DATA TYPES	DATA ANALYSIS
1. What are faculty perceptions on the nature of intellectual humility in undergraduate education? 1a: How, if it all, does their understanding of intellectual humility differ by academic community (e.g., Arts & Humanities, Natural & Applied Sciences, and Business)? 2. In what ways do faculty perceive how intellectual humility is instilled or impeded, if at all, in undergraduate students? 3. What are faculty perceptions of their own intellectual humility?	Descriptive Survey & Background Info Limitations-Owning Intellectual Humility Scale Semi-Structured, Recorded Interviews (60-90 minutes) Member Checking	Recursive Data Generation & Analysis: - Open Coding & Sampling - Axial Coding & Variational Sampling - Selective Coding & Discriminate Sampling Transcription of Interviews Member Checking with Participants Theoretical Saturation Peer Debriefing Reflexive Journaling/ Memos

Finally, the entire research design was intended to discover the existence of a model, diagram, and/or theoretical framework on intellectual humility within the context of a liberal arts and science undergraduate education (Strauss & Corbin, 1998).

Timeline

This research began around the start of the 2020 fall academic semester. My dissertation proposal defense as well as IRB approval were successfully awarded at the end of the summer of 2020. Upon receiving these approvals, the descriptive survey was emailed to all tenured professors at AMU in September and October 2020. The first round of interviews via open sampling were completed at the beginning of October, wherein subsequent rounds of variational and discriminate sampling were conducted in late October, November, and into December. Because data analysis was ongoing and recursive, initial codes and categories were produced throughout the fall and into the winter of 2020. Once all recorded interviews were transcribed, initially coded, and member checked, the final phase of research was commenced with the goal of triangulating data to produce a model, diagram, or theory of the core concept.

Delimitations, Limitations, and Researcher Positionality

Delimitations. As the sole researcher for this study, I chose to limit the study in the following ways. This grounded study, given the critical importance of context in grounded theory, was limited to a highly selective, public, liberal arts and sciences university. Each of these monikers for AMU are expressed in the institution's mission and value statements and operated as distinctive draws to each of the faculty who decided to teach at AMU as well as their students who attended. In addition, AMU boasted a comprehensive liberal arts and sciences curriculum, which was ideal given the broad range of subject areas captured in this study. A liberal arts education was also an optimal fit because of the emphasis applied on providing college students with the opportunity to interact with a diverse array of intellectual orientations, worldviews, perspectives, and beliefs.

In addition, this study focused solely on the perceptions of tenured faculty members as it related to intellectual humility. Assistant professors and seasonal lecturers, although important to the easing of academic loads and teaching of an institution, were not included on account of their short time teaching in the classroom, relatively recent interactions with university students, and being in first few years of their research careers. Instead, this study was interested in the perceptions of established faculty members who have past rigorous examination of their undergraduate teaching, scholarly research and publications, and significant contributions to serving their university and college community. By limiting perspectives to only associate and full professors, this study sought the value of expertise in an academic community as it pertained to the nature and formation of intellectual humility.

Another delimitation regarding faculty was along the lines of the academic communities they taught. While all tenured faculty from AMU were invited to participate, a select group of tenured faculty from a subset of academic communities were purposively identified by moderate-to-high self-reported intellectual humility, more or less knowledgeable understanding of the concept, and variational differences by background (e.g., academic discipline, years teaching, and academic load) for the interview portion of the study. The delineation between academic communities was drawn on account of the philosophical argument explained in a previous section that students' inheritance of intellectual virtues differed on the basis of how academic consensus is reached and the reflexive nature of the material (Jones, 2012). Hence, I intentionally sought to investigate perceptions of faculty in the arts, humanities, and sciences communities. One additional academic community, business faculty, was included given the predominant research on humility in leadership, and in order to have a third perspective from which to juxtapose the arts and humanities and science faculty.

Limitations. In terms of institutional sample, one public university—however diverse—symbolizes only a small representation of the vast totality of colleges and universities across the United States. Hence, any representativeness is limited to institutions of similar size, structure, and make-up of the faculty. Strauss and Corbin (1998) emphasized explanatory power as the predictive ability of grounded theory to contextualize the findings and allow the reader to make the most appropriate inferences. This study was concerned with making logically generalizable explanations based on the depth of descriptions and richness of the data generated.

A potential limitation at the start of this study was the possibility of reaching no consensus and/or identifying too wide of differing perspectives. In addition, there was a likelihood of either over- or under-sampling from the various academic communities themselves. Over-sampling from one community may produce an unequal list of codes, themes, and patterns that had the power to ultimately slant the results. The same problem would present itself if true in the event of under-sampling. This limitation was dependent on how many faculty members from each discipline voluntarily decided to participate in the study.

Researcher Positionality. This study was also guided by a number of assumptions pertaining to the nature and value of higher education in the 21st century, the potential of the topic to produce a discoverable theory, and the modern role of faculty in universities. First, as an individual privileged to have the opportunity to attain a terminal degree in my field, I believed firmly in the role education plays in the development of intellectual virtues. These virtues included, but were not limited to, moral and character formation, critical and creative thinking, as well as social and civic responsibilities. Humility was one of those intellectual virtues that educators are tasked with integrating into their teaching and learning strategies.

Secondly, I operated out of the assumption that intellectual humility had a discoverable model or theory in undergraduate education. Venturing into the unknown was a vocational pursuit and a luxury of the able-minded researcher. However, the possibility of uncovering something you did not set out to find, or worse nothing at all, was also taken into consideration when I decided whether to begin in the first place. The assumption that my research topic, previously explored by philosophers, theologians, and psychologists, had something more—a model or theory—to discover was a calculated risk that I as the researcher made given the importance of the topic in today's society and for educators in general.

Lastly, I operated out of a compelling assumption that faculty had significant influence over students' cognitive development. The way faculty teach, what preferences they institute in the classroom, and the assignments they prescribe all coalesced to hold meaningful value for students. Whether or not there were significant axioms given these differences of method, mode, and strategy undertaken by faculty was fodder for another study. However, intellectual humility, it was assumed, had parallel and/or convergent properties within the robust empirical evidence on the stages of student cognitive development.

Ethical Considerations

Upon successful defense of this study proposal, I applied for Institutional Review Board approval to conduct research within the appropriate institutional context. This approval included maintaining an active certificate from the Collaborative Institutional Training Initiative (CITI) program, a standard requirement for research conducted from my institution. The CITI certificate required a score of 80% or higher on training modules that include assessing risk, informed consent, privacy, and confidentiality. Given the sensitivity of participants other-reporting on student conduct and behavior, I took all the following steps in order to ensure the protection of

participant anonymity and data generation. First, all participants had the opportunity to choose, if desired, their own pseudonyms for the study. Those individuals who did not choose a pseudonym were given one. Secondly, both qualitative and quantitative data were stored and locked behind a firewall.

Summary

My primary interest with this study was to advance research on intellectual humility and address the gaps of extant literature by situating it within an undergraduate, liberal arts and sciences education. By doing so, I intended to build a theory or conceptual model on its nature from the perspective of tenured, university faculty across the arts and humanities, business, and sciences. I utilized grounded theory as described by Strauss and Corbin (1998) as the most suitable methodological approach to generate a conceptual framework and new, robust theory. Its recursive process functioned to flexibly allow concepts, categories, and patterns to emerge from participants' meaning making on intellectual humility. In addition, I approached the generation and analysis of the interview data through a constant comparison that formed strong themes, integrated relationships between those themes, and resulted in theoretical saturation. This entire process undergirded the creation of new, situated theory and the development of a model on intellectual humility contextualized to undergraduate education.

Finally, I employed three critical strategies to ensure the quality and accuracy of my data. First, I conducted a pilot study to verify the strength and precision of my data sources and study protocols. The feedback I received from my pilot study participants was incorporated and enhanced the end result. In addition, I member checked with all participants my interpretations and major takeaways from each interview to confirm an appropriate understanding of their meaning-making. Third, I peer debriefed 20% of my coded transcripts with two colleagues who

specialized in qualitative inquiry to ensure the rigor of my analysis. These peer debriefers challenged, confirmed, and strengthened the viewpoints and conclusions I reached. Each strategy was employed for the purpose of improving the quality of the data and my findings.

This grounded theory study's ultimate aim was the discovery of a model of intellectual humility. Thus, I sought to determine the nature of intellectual humility in undergraduate education, including how, if at all, intellectual humility might be instilled and/or impeded within college students. Its cultivation was argued to occur along a spectrum of its excess (i.e., intellectual servility) and its absence (i.e., intellectual arrogance). The following chapters detail my findings centered on the perspectives of 33 associate and full professors across the arts and humanities, business, and sciences.

CHAPTER 4

THE NATURE OF INTELLECTUAL HUMILITY

My findings are based on the data generation and analysis of 33 semi-structured, one-on-one, virtual interviews with tenured faculty across a diverse range of academic disciplines and communities from one public, liberal arts and sciences, research university. These 33 interviews yielded new insights into the nature of intellectual humility, confirmed and disputed conceptual understandings of intellectual humility, discovered novel pathways in which intellectual humility is cultivated, and uncovered numerous strategies that faculty employ to inculcate intellectual humility within their university students.

My dissertation study was guided by three research questions. In sum, I sought to discover the nature and formation of intellectual humility contextualized to a liberal arts and sciences, undergraduate education. First, I was interested to understand the perspectives of associate and full professors on intellectual humility within the context of their disciplines. Thus, I captured the most diverse group of faculty perspectives broken down by four characteristics: (a) academic discipline; (b) self-report score on the *Limitations-Owning Intellectual Humility Scale* [L-OIHS] (Haggard et al., 2018); (c) sex; and (d) number of total years teaching undergraduate students (see Table 7). Although a few participants whom I interviewed identified as faculty of color, I was unable to account for race and ethnicity because of the lack of diversity within the total number of consenting participants. Lastly, I explored the differences within and between the academic communities for a comprehensive understanding of intellectual humility across a single, highly selective, public, liberal arts and sciences university.

Within this chapter, I grounded my findings on two main ideas pertaining to the nature of intellectual humility. First, faculty perceived that some students required a process of unlearning to become successful in their courses. These students approached academic material, exams, and course assignments with previously successful mindsets and study habits. When revealed as narrow or unhelpful, faculty sought out ways to convince their students through intellectual humility to abandon these strategies to learning. In sum, to unlearn constrained mental models. Second, faculty shared how students' intellectual humility differed by academic community. The study habits or mindsets developed by students that faculty convinced them to unlearn specifically diverged based on whether they were in the arts and humanities, sciences, or business. Each of these differences are described and discussed at length in this chapter.

Faculty Perceptions on Intellectual Humility

My faculty participants described the nature of intellectual humility within undergraduate education as facilitating a process of change within a student, or, in special cases, student groups, to gradually unlearn prior ways of approaching academic material or assignments. In sum, intellectually humble students were more apt to rethink their mindsets to education. Faculty identified numerous types of unlearning strategies adopted by their students as well as the unique characteristics of each by academic community. Moreover, participants displayed varying levels of awareness for this change process based on their understanding of: (a) what constituted an intellectual limitation, (b) the very nature of a limitation as either fixed or temporary, and (c) their own willingness to admit their intellectual limitations. Lastly, faculty noted situational discrepancies on when (e.g., during class, one-on-one, office hours), why (e.g., amount of discomfort), and in what ways (e.g., motivation) their students accepted the process of unlearning former mindsets.

Table 7

Descriptions of Interviewed Participants

	PSEUDONYM	SEX	TITLE	DISCIPLINE	# of YEARS
Arts & Humanities (11)	Alexander*	Male	Associate Professor	Theatre	15
	Jane*	Female	Distinguished Professor	English	34
	Mark*	Male	Associate Professor	Latinx & Hispanic Studies	18
	Mary*	Female	Distinguished Professor	Modern Languages & Literatures	25
	Leo*	Male	Professor	Philosophy	25
	Athena	Female	Professor	Classical Studies	40
	Toni	Female	Associate Professor	Religious Studies	12
	Lisa	Female	Professor	Music	30
	Georgia	Female	Professor	Art	29
	Gabe	Male	Associate Professor	History	11
	Bruce	Male	Professor	Asian-Pacific Islander American Studies	23
Business (10)	Judy*	Female	Professor	Finance	21
	Maye*	Female	Clinical Associate Prof.	Business Analytics	23
	Peter*	Male	Associate Professor	Business Marketing	32
	Swift	Female	Associate Professor	Organizational Behavior	20
	Lewis	Male	Clinical Associate Prof.	Business Operations	14
	Emma	Female	Professor	Business Leadership & Ethics	32
	Murphy	Male	Associate Professor	Organizational Behavior	10
	Gus	Male	Professor	Business Marketing	13
	Kelly	Male	Professor	Business Marketing	26
	Will	Male	Clinical Associate Prof.	Business Operations	15
Sciences (12)	Alice*	Female	Professor	Anthropology	30
	Diana*	Female	Associate Professor	Sociology	20
	Doug*	Male	Professor	Applied Science	22
	Albert*	Male	Professor	Biology	33
	Roy*	Male	Professor	Computer Science	23
	Kim*	Female	Professor	Chemistry	19
	Edward	Male	Professor	Economics	40
	Ann	Female	Professor	Geology	23
	Nora	Female	Associate Professor	Public Health	8
	Carl	Male	Professor	Mathematics	50
	Walter	Male	Professor	Physics	40
	Kristin	Female	Associate Professor	Psychological Sciences	14

* Self-report score in the top 25% within academic communities on the Limitations-Owning Intellectual Humility Scale.

Intellectual Humility as Three Factors

With this understanding, a professor's awareness and display of intellectual humility as owning intellectual limitations proved most significant on whether they identified a student's willingness to unlearn flawed or unhelpful former mindsets. The gradual change of mindset was perceived to occur in students based on three factors of intellectual humility: (a) an ownership of intellectual limitations, (b) a tolerance for discomfort with intellectual limitations, and (c) a love or enjoyment of learning. Each of these factors are explained with analogous quotations and descriptions by participants in the following sections.

Ownership of Intellectual Limitations. The ability to own intellectual limitations has remained a leading definition of intellectual humility (Haggard, 2019). This specific ownership of student limitations within the context of a university education took the form of responses to grades and faculty feedback on assignments. Almost every participant in my study identified a performative grade-orientation in students as the most common mindset that faculty encouraged students to unlearn. Associate Professor of Business, Peter stated that his students "come in with a bias toward—*Just tell me what I need to do to get an A*," instead of operating from the mindset of learning as a process. "It's more—*Okay, I'll accept this as a contract. I have to do these things for you, then you owe me an A*." Albert, a Professor of Biology for over 30 years, is another example. During his time teaching undergraduates, he witnessed countless student reactions, mostly troubled, to their mistakes and missed grades on his exams. These student reactions to failure—and their own intellectual limitations—left a strong imprint on him, enough so that he reevaluated his own pedagogy.

Albert's Pedagogy. As an undergraduate studying in the sciences 30 years prior, Albert admitted how he "was a highly stressed and anxious [student]…and very frustrated that my

professors held all the power over me because they could make things as difficult as they want…and define my grade if they chose." In response, he made an intentional change to define success, not by his grade, but by how much he learned—taking ownership of his own successes and failures. Albert, now as a faculty member, also made a concerted effort not to lord what power he has over students, especially when it came to grading. Albert went on to share:

> If you define success by your grade, and I have a class in which there are three exams and the final, you will only have…four moments in the course where you can be successful—after each exam. Whereas if you define your own success…you can be successful every 15 minutes. You get a chance to celebrate your success and learn from your failures.

To him, this change from unlearning a narrow (i.e., success solely by one's grade) to an open (i.e., success as defined by the individual) mindset made all the difference in how he approached science as a student and what he now expected of his students as their professor.

However, Albert confessed to not making an explicit pedagogical change to incorporate this approach until 6 or 7 years ago when a student wrote in a course evaluation, "The professor made me learn all of these things, and then I had to learn it all again *my way*." This critical feedback illuminated for Albert all the narrow reactions previous students had had when faced by their failures. He confessed, "I never made it clear [to students] that you have to engage in a way that teaches yourself," and he "realized I've always, or at least for a long time, thought that way, but I haven't articulated it well enough to students." This newfound awareness and ownership of his own failures in teaching set Albert on a mission—to assist students in their own change of mindset when approaching his class.

Albert's strategy for doing so was to make explicit for students a redefining of success he urged them to adopt. He began encouraging students to ask themselves two equally important

questions, “Did I learn as much as I reasonably could have learned? And did I enjoy it as much as I could have enjoyed it?” By doing so, Albert hoped his students, when faced with a failure, would reject feeling defeated or lesser than, and instead ask themselves whether they learned and enjoyed the process of learning as much as they could have. He continued by reiterating what most participants understood of their role:

> I feel like part of my task as a coach is to help them see ways to regain [an enjoyment of learning] if they've lost it or reinforce it. So when I noticed it in students, in small groups or one-on-one, I encourage it. So I'll actively do things to say: *It's great that you love this.*

It was the loss of an enjoyment for learning that Albert noticed impacting whether or not a student owned their intellectual limitations and *continued successfully* in his courses. When asked to provide an example of this, Albert first mentioned how his strategy “to persuade my students to make the changes” in their approach to learning was by sharing stories and telling his students, “There's data to back this up. But the stories are more powerful.”

Albert’s Advisee. One of the best examples of unlearning described by my participants was one of Albert’s former biology students. Most faculty identified varying elements of change as a result of a student made aware of their intellectual limitations. However, Albert detailed the substantive transformation his former advisee experienced in its entirety throughout her four years as an undergraduate student. Albert shared:

> She was a veterinarian student, pre-professional, and was just incredibly excited about animals, and learning about biology and becoming a pre-vet. And in her first semester, she had a couple of grades that were lower than she'd gotten before. They were only Bs and there may have been a C. But they were lower than she'd ever had in her life. And they shook her.

The experience of a student receiving a below-average grade was not unique. What was distinctive was how does a student who have never experienced failure respond? His student's narrative hinged at the point of an awareness of her intellectual limitations as demonstrated by college-level exams and receiving lower-than-expected grades. If Albert's student had believed up to this point before college that her grades were all that mattered, what does this academic failure mean? Albert continued:

> And so by the end of the semester, instead of hearing about how excited she was about all her classes, I was starting to hear more about: "Well, didn't go as well as I wanted. I need to spend more time studying." So, there was some anxiety…And by spring semester, the joy was just gone. Instead of telling me about what was in the courses, and what she was excited about, it was all about what's happening in the exams. And she wound up with some anxiety…And she wound up with a much worse spring semester. And then the next semester was just a disaster. She failed. She flunked out, and she had to leave for a semester.

For many students, this outcome would be in the end of the narrative. The professor might not see or hear from the student again. The result of consecutive failures and an inability to cope personally may overwhelm and overtake whatever motivation the student had left. To stick with Albert's strategy for change, this student's fixation on her grades had defined her understanding of academic success and failure; instead of setting out to learn and enjoy learning as much as she possibly could. Thankfully, Albert continued:

> When she came back, we talked about what had gone wrong. I talked about the kinds of things that had changed. And she agreed…she would try this focus on that definition of success. And from then on, all I ever heard her talk about was whether she had been

> successful in learning as much as she could, and whether she was enjoying the courses. She was still nervous. But over a span of the next year… the joy came back. She was enjoying her courses…And she was no longer focused on the grades.

Here, another pivotal point in the narrative occurred. According to Albert, the student *owned* the limitation of her old, narrow mindset that led her to be preoccupied by the grades she received. In its place, she adopted a more open mindset that focused exclusively on an intrinsic enjoyment of learning. Important to note that Albert was not advocating for the abolishment of grades or the college grading system. His explicit intention was to facilitate a change of mindset within his students—to rethink the meaning of success—and for them to recognize:

> If you learned as much as you could, and you enjoyed it as much as you could, it's a success no matter what the grade is…If you have an F, and you start beating yourself up over that F, when your definition of success was met, you got to stop yourself. That's wrong…If you get an A, the minute you say: "That's great!" You got to stop yourself because it's only a success if you've learned as much as you could. It could still be a failure, if you didn't enjoy it. And so she did that really firmly.

Albert emphasized how a performance-based, grade-oriented mindset within the university made no room for students to learn from their failures. But in contrast, owning one's intellectual limitations as learning-for-the-sake-of-learning allowed his students to takeaway helpful lessons and skills from both their successes and failures. In some student cases, he believed they learned more from the latter. Albert concluded by sharing how easy it was for him to forget his own principle:

> One thing I remember really vividly was that in her last semester, she came to talk to me not long after the semester started, and she had gotten this 4.0 or something close to

> it…the semester before. And I made the idiotic mistake of congratulating her on how well she had done. And I still remember her looking at me like I had slapped her. [quoting the student] "You're the one who helped me do this, and you want to send me back down that terrible path again!?" Then, I apologized.

Throughout our entire interview, Albert vocalized his willingness to own his mistakes, and even thanked a student who pointed it out to him, which showcased his own intellectual humility. He admitted outright how "it's really important for students to know the limits of their professors." Thankfully, Albert was not alone in understanding the importance of this mindset change within faculty and the students they instruct.

I shared this example in its entirety because faculty's explanations of how students owned their intellectual limitations centered on a narrow mindset—"have to get an A"—as the process of unlearning that transcended academic disciplines and communities. Most faculty bemoaned students' fixations on their grades as detracting and distracting from the learning objectives of their courses. They shared how this fixation affected their office hours, where some faculty confessed their preference to meet with students who wanted to talk about course material over their grades. Ann, a professor of geology, shared that she has "lots of examples of students who start off being very grade-oriented, and then manage to shift into either convincingly portraying a love of learning [she laughed] or actually having more of a love of learning." She identified a former student who was terrified of making mistakes and taking risks academically who is now "doing his Ph.D. and able to ask questions in a way that he wasn't able to before." In sum, students unlearned narrow mental habits and learned to rethink the meaning of academic success.

Grades mattered in the life of the modern academy as a matter of function and merit. “At the end of the day it's not—*Your grade doesn't matter*,” explained Roy, a professor of computer science. He continued, “It's—*For the moment, the grade doesn't matter*. Try to first understand the material, and then the grade will become important.” What Roy, Ann, and Albert, among many of my participants, sought was for students to unlearn and rethink the appropriate prioritization of academic learning itself. No faculty member was advocating for a systemic change to their responsibility to grade student work and exams. Yet, all participants had identified some variation of a forced, narrow mindset in students that they felt compelled to address first by identifying it as an intellectual limitation to their overall process of learning, and secondly imploring students to unlearn it by owning their intellectual limitations. In other words, student progress toward intellectual humility.

Discomfort With Intellectual Limitations. Once students became aware of an intellectual limitation they had, this awareness itself was not enough to facilitate the process of unlearning. Professors noted that a student’s level of discomfort played a significant role in whether any change occurred at all. College students experienced discomfort for a large variety of reasons; however, these reasons became clear when they were contextualized to their intellectual limitations. The aim of most faculty was for their students to reach a tolerance for discomfort with their intellectual limitations—not too little or too great a discomfort.

All participants spoke to the gradation of discomfort experienced by their students in terms of coping with intellectual limitations. The most numerous examples specific to discomfort were among those faculty who taught a mathematical, linguistic, or statistical discipline. Each had a dichotomy grounded on demonstration: either you knew the material, or you did not. Maye, a clinical associate professor of business analytics, identified as a faculty of color and has

taught undergraduates for the past 23 years. She explained student discomfort of their intellectual limitations as:

> Stretching your mind…getting into unfamiliar territory. So, it's scary. It's frustrating. You're gonna fail a bunch of times. You're gonna lose points. These are things that you're uncomfortable with. You're gonna waste time. You're going to go in circles. You have to get lost a little bit…but all of this creates discomfort.

The discomfort she detailed touched upon epistemic, personal, academic, and interpersonal avenues. Student discomfort in her courses more specifically was the direct result of "learning programming concepts and a foreign language *at the same time*."

For Maye, these obstacles to learning were instructive under the right mindset. A fixed mindset about one's limitations in math, statistics, or computer programming led most students to operate with low to high discomfort. How Maye's students handled unfamiliarity with course material and concepts, including any math anxiety they held, dictated their discomfort and impacted whether or not they approached her for help. She described interactions with students who displayed intellectual humility as more willing to come to her office hours and confess:

> [quoting a student] "Professor, I'm an opera singer and never had statistics." I usually never have to worry [she laughed] because they already have an awareness that they haven't learned this. But they have the courage and the initiative to come and talk to me. They've already succeeded because they already have initiative, and they have the drive to overcome whatever presumed limitation they may have. They usually don't see that as a limitation, but they perceive a pre-existing condition. So if they have an awareness of this preexisting condition and they're driven, they become the best students in my class.

Unfortunately, many students did not have this awareness of their need to ask for help (i.e., low discomfort) or were simply embarrassed to speak with Maye (i.e., high discomfort). As a direct result of both student responses, Maye incentivized attending her office hours by giving extra credit to students. The undergraduates who worried her the most were not those too embarrassed or shy to visit her during office hours, but the ones who had not recognized their need or did not care for her assistance. “That's a bigger problem than having a limitation,” exclaimed Maye because “the motivation and the desire to get better has to come from the student.”

The challenges for most college faculty were situated on how to reveal, maintain, and cultivate an appropriate—or tolerance for—discomfort in undergraduates for the sake of their learning. Maye described her struggle this way:

> Students don't like [discomfort]. So, they're going to give you a lower evaluation rating because they feel uncomfortable in this class because they stretch their mind. So, for the student, to be able to distinguish what's good for [their] learning versus what's good for their comfort...And so sometimes I do feel like as a faculty member, I am driven to minimize discomfort which is probably bad for learning.

She described this process as a tension between creating discomfort for the student while mitigating what kind of student evaluations she might receive. Anecdotally, she perceived the greater the discomfort that students experienced, the lower their course evaluations and vice versa. Most faculty members struggled to explain what it looked like to cultivate an appropriate discomfort for their students, acknowledging that at times they too have failed or made mistakes, for instance, by misunderstanding the initial ability levels of students in their class.

Geology professor Ann mentioned her former student who was so grade-focused and lacked intellectual curiosity so much so that he avoided taking helpful classes because he was

"almost paralyzed, like unable to take a risk, unable to make a mistake." His inability to cope with discomfort reinforced a fixed mindset and an unwillingness to be open to his limitations. And so, Ann "spent quite a lot of time working with him explicitly and implicitly trying to encourage him to take risks," in large part because Ann was convinced, and hoped to convince him, that "the whole endeavor of science is making mistakes." At what point in education are mistakes celebrated?

Like many professors, Ann believed that discomfort was important to the learning process and must be embraced. She intentionally employed strategies "to get students to fail and learn how to deal with that." Similar to Maye's experience, Ann shared how her students admitted their discomfort with discomfort and had a skewed belief that it was her responsibility to assure their comfortability. "In fact, [students] feel like my job is to let them continue to be comfortable, and that's not really my job," Ann proclaimed. She reflected further, "As an academic mentor, as an advisor, or as a professor, my job is to push them and stretch them. But that's really not welcomed to the extent that it used to be."

Ann's strategies for changing student's view of discomfort with their limitations were rooted in "encouraging them in ways that are high reward and low risk." One example was having student compose and send emails to professionals in careers they are interested in and ask them about their day-to-day work. Murphy, a business professor of organizational behavior, summarized this idea of risk-taking vis-à-vis producing small wins:

> Most people at the end of the day, they care. They may not care at the same level you and I do. But they care. The greatest gift you can give someone who cares—and I'm serious—Give them a win. Just give them a win. Winning is contagious. Winning is all consuming. When you taste a win, you know what you want? You want another win.

These strategies explained by Ann, Maye, and Murphy were meant to build within students a tolerance for discomfort and then expand that tolerance to greater levels. Once students successfully completed one task, these professors would nudge students into taking greater risks. Ann confessed "that [my students are] smart enough, bright enough, motivated enough…[but] that the words only go so far with this generation" of undergraduates. Verbal encouragement on its own was perceived as not enough to relieve student discomfort. Overall, Ann is most proud of the fact that she is known for taking her students to conferences, "introducing them to everyone," and socializing them to the arcane expectations at these professional events.

Faculty perceived that building students' tolerance for discomfort with their limitation was essential to an awareness and display of intellectual humility. "That's a way of trying to nurture that intellectual humility," shared Peter, an associate professor of business. Peter's pedagogy is undergirded by how others can manage serendipity. How do people open themselves up to a greater chance for surprise collisions of ideas? In sum, invite discomfort. Peter seeks to "put [students] in a place where they're not comfortable, but they're also not too threatened, and just expose them to things they don't expect to be exposed to." This description was the closest definition I received on what an appropriate level of discomfort within students resembled. A discomfort that was not too great or too little encompassed an exposure to new ideas and methods of learning that brought discomfort and psychological safety into a perfect tension. This was how Peter hoped to manage serendipity along with intellectual humility and an open curiosity. I encountered this relationship explicitly when Lisa, a professor of music, reflected on how a former student "wrote a letter for me...and he said: 'It was when I was uncomfortable in your classes that I began to learn something'!"

Professor of Mathematics Carl impressed upon me how important this step truly was to develop an appropriate discomfort with intellectual limitations. Carl has taught all levels of college math for the past 50 years and was the most experienced teacher I interviewed. When asked whether intellectual humility mattered in math, he shared that:

> No matter how good a mathematician is, they are going to be humbled at some point. If they don't realize how difficult it can be to solve a problem, that then they haven't tried hard enough problems. Cause there's always something to do that's even harder and more challenging. So, I guess I don't think that the realization of your own limitations—that sense of humility—is so important as being able to cope with frustration. Cause you can't be a successful research mathematician without encountering serious frustration.

Carl's understanding of academic success centered on an ability to cope with frustration, a form of discomfort when faced with limitations. Moreover, he acknowledged that an awareness and ownership of one's intellectual limitations was not enough to progress as an academic. Intellectual humility and adopting a growth mindset hinged upon the ability to have a tolerance for discomfort when faced with frustrations.

Love of Learning. Thankfully, college students are not left to endure a permanent state of discomfort. The final aspect of intellectual humility is embracing the love of learning for its own sake. My participants spoke at length about the various ways students demonstrated their enjoyment and engagement of learning. Most faculty in fact acknowledged how they hoped to instill a love of learning by modeling it to their students. "I just try to model curiosity," recalled Associate Professor of Religious Studies Toni, "to set up a way of learning that thinks about learning as always a process rather than something with an end goal." A process-based approach to learning was understood as essential by my faculty participants. Take Gus, a professor of

business, for instance. When asked how students' love of learning manifested in his classroom, in interactions with him, and/or in completed assignments, Gus responded by first addressing how crucial instilling confidence was in his students. In brief, he sought to empower students to fully participate and for the right reasons. He went on to define a love of learning as:

> Not just a matter of critical thinking skills, and being able to run equations, solve problems that are well-defined, but I see [students] really take off and get excited when they realize that business done right is very generative, and they can be very active participants in that.

Gus defined learning outcomes centrally identified by each academic community—critical thinking (e.g., Arts & Humanities); ability to solve equations (e.g., Sciences); and problem-solving skills (e.g., Business)—and reoriented them as a generative process. My participants understood a love of learning as essential toward each of these community-specific aims and facilitated strategies to convince their students to proactively engage.

Undergraduates who were provided the chance to apply and connect their learning to genuine problems or real-life situations were perceived by faculty to demonstrate a love or enjoyment of learning, imbued with intellectual humility. Gus viewed it as his responsibility to provide students with the tools and skills while "listening, guiding, advising, and teaching them not just what to do, but how to do it, and giving them the space" to also make mistakes. Faculty perceived that those who were offered the chance to learn the academic material while directly applying these skills stood a greater chance at humbly reapproaching the learning process. Gus synthesized this style of learning as utilizing:

> Some level of process, so that you can take a very ambiguously defined problem, which is what the real world presents, and have a toolset that gives you the confidence that you

> can navigate through that towards great solutions…when [students] start realizing that they can be active participants, and simultaneously promote their well-being, and the well-being of society, that's where the light goes off.

Another business professor, Judy, shared one example of a finance student who switched so suddenly from being grade-focused to [quoting the student], "I actually don't care what my grade is; I'm so into this topic that I'm just gonna keep pursuing [it]." The catalyst for this change and instant love of learning was the result of actively applying the academic material to learning how to trade currency while on a study abroad trip in Budapest, Hungary. In sum, a love of learning was experienced and fostered in the simultaneous process and application of the learning itself.

However, many professors expressed a reticence that their students did not manifest a love of learning in the first place, or at all. One major contributing factor for the loss or lack of the enjoyment of learning centered on the level of stress that current college students carried. My participants described many examples of students' stress, which included: anxiety, panic, aspects of fear, despair, depression, unwillingness to change their behaviors, disengagement by displacement behaviors, self-medication behaviors, and overcommitment. Peter, adding to this list, included the volume of academic deliverables as "nurturing a mentality [in students] that says just get it off my plate." Each stressor created an opportunity for students to disengage, neglect, or become less aware of the importance for adhering to the learning process outlined by their professors. Hence, many faculty expressed the simultaneous need to (a) remain cognizant of the myriad ways students are stymied and (b) develop strategies to persuade students into operating from a mindset that trusts and enjoys their learning outcomes.

"It's actually rarer than you would expect to find students who are truly motivated by just the desire to learn," exclaimed Doug, a professor of applied science. Many of my participants

held a similar viewpoint to Doug's that from interactions in the classroom or office hours their students were motivated by external factors, such as receiving a high grade. In fact, a love of learning was problematic or misunderstood by a majority of my participants in the sciences. The emotive emphasis on love was difficult for most of these professors to address or identify in their students. Science faculty preferred to redefine the notion altogether—as the level of student engagement with them in more substantive conversations and inquiries during class or taking advantage of their office hours. In contrast, most science faculty experienced what Kim, a professor of chemistry, termed as "a high school mindset" of students. Kim went on describe this narrow, forced mindset as:

> A lot of rote memorization, a lot of learning of facts, and spitting them back out again without a whole lot of deeper analysis or ever being forced to apply knowledge you've acquired to something that you hadn't seen before.

The faculty who specifically taught introductory science courses experienced the challenges of persuading their students to (a) abandon study habits that proved successful in high school, in order to (b) adopt a new approach or mindset to applying, connecting, and synthesizing the course material advocated by the professor.

Participants identified a love of learning as most often contrasted by examples of college students who solely operated from a grade-oriented, "must-get-an-A," performative frame of mind. Faculty perceived the latter framework as limiting and required unlearning because it was antithetical to their aims—to foster a critical engagement with the learning process. Intellectual humility and a desire for good grades were not mutually exclusive. Participants understood the necessity of learning about the student's motivation and how they made meaning of their grades to more fully comprehend their position to intellectual humility. Given the highly selective

institution that participants taught at, most students had received excellent marks—and had not yet experienced failure—prior to college. So when students were unsuccessful academically, faculty concerned themselves with what truly motivated their students to succeed in the first place.

Students' willingness to let go of—unlearn—what made them previously successful in their academic pursuits was not an easy task for faculty to facilitate. "As PhDs, we clearly will run thru a brick wall to learn something new." Murphy emphasized, "Not everybody's like that. A lot of people need to feel really like they've got this." Moreover, faculty can model this curiosity and enjoyment for the learning process, but unless students developed a tolerance for discomfort, a love of learning was not renewed or secured. Similar to Gus, most participants' pedagogy centered on teaching students to "respect the process" as well as to develop the necessary tools and skillsets to be successful. Gus emphasized how his students needed to feel like they were "making tangible progress" while not knowing where they might end up. His own research on consumer wisdom heavily influenced his understanding of developing discomfort and an enjoyment of learning in students, stating "what makes us really happy isn't achieving goals; it's progress towards goals, and that people get very frustrated when they don't feel that progress." In most cases, progress meant unlearning.

Change of Mindset

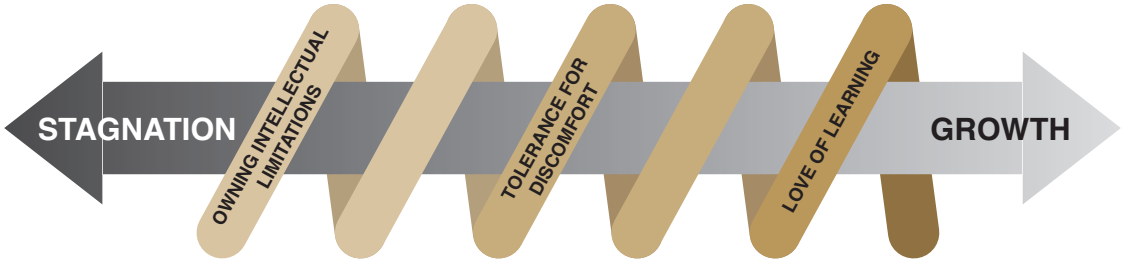
An undergraduate student's willingness to, first, own their intellectual limitations, second, develop a tolerance for discomfort with their intellectual limitations, and third, adopt a love or enjoyment of learning resulted in, what faculty perceived as, a successful process of unlearning (see Figure 7). Students' awareness and display of intellectual humility coalesced to produce this change. The three aspects of intellectual humility, first posited by Haggard et al.

(2018), were not identified or designed to have an order or process. However, my participants understood and described the process of owning intellectual limitations via these three factors as facilitating a desired change of thinking, studying, and learning for student growth and broader success.

In Figure 7, I diagrammed the way in which the nature of students' intellectual humility operated as a pathway for a mindset change based upon faculty explanations.

Figure 7

Model of Unlearning



The corkscrew, bi-directional arrow broadly represented a college student's approach and response to their intellectual limitations. Individuals who owned them and sought to move beyond them progressed along the corkscrew to the right. In other words, they operated with an open, growth-oriented mindset. Those students who denied, rejected, feared, and/or stressed their intellectual limitations remained stagnant and held onto a forced, narrow mindset toward their limits. They progressed toward the left until they properly owned their limitations. To apply Albert's student example to the model of unlearning, she entered college on the right with a love of learning about animals with the hopes of becoming a veterinarian. But she spiraled leftward as the discomfort from her academic failure increased and she left the university. Upon restarting, she *owned* the limitations of her approach to course material, assignments, and exams, and began

making progress toward a renewed enjoyment of learning. Albert emphasized for students to unlearn and reorient their success as how much learning took place.

The previous example of students who operated from a performative, grade-oriented mindset defined success externally. Faculty who perceived this as students' sole aim argued these students failed to face their limitations as a process to unlearn what kept them from succeeding. A narrow mental model had the potential to ground the learner's beliefs in an outcome: the grade alone dictated whether they learned the material. Defining success in this manner was problematic by most professors' standards because it equated success independent of what was actually learned. The first step toward unlearning and rethinking for an extrinsically motivated learner was to own intellectual limitations. Yet, some students began from the right with a love of learning and progressed backward as documented in Albert's student example.

Once the awareness of an intellectual limitation is owned as unwarranted, unhelpful, or undesirable, the second stage of this process-based change hinged on how a learner reacted to discomfort. As previously mentioned, student discomfort was experienced at varying degrees from none at all to too much. The separate ends of discomfort produced in students the same inactivity or stagnation, but for different reasons. A learner with no discomfort had no basis for change and remained stagnant or stalled in a state of passivity, carelessness, or apathy towards their limitations. Conversely, a learner with too much discomfort had become paralyzed or overwhelmed by their limitations, which also resulted in no change or movement toward growth. These different types of student owned their lack of academic success but to their own detriment. Both students moved to the left away from growth and a love of learning.

Faculty who perceived their ability to facilitate a tolerance for discomfort within students built upon student's ownership of an intellectual limitation so that a change might occur. Faculty

participants communicated the difficulty in pedagogically balancing a demanding learning environment that is also psychologically safe for taking risks. For instance, Toni, an associate professor of religious studies, recalled that if an aspect of learning is "appropriately uncomfortable—that I don't know what I'm doing—then [it] is motivating to learn and to do the research." To Toni, this tension was expressed as "if it's not causing you panic, it's motivating." Other faculty sought to reframe moments of discomfort, such as Peter's pedagogy of managing serendipity, and reframe any discomfort as an appropriate reaction for a student to have. A love or enjoyment of learning was not antithetical to discomfort, but, as previously mentioned, a tolerance for discomfort was viewed as a requirement for actual, indelible learning to occur.

An unlearning process was complete when students adopted a new mindset founded on a concern, an enjoyment, an engagement—a love—of learning. Not all professors identified with or knew how to define the term "love of learning," and some reframed it as an inquisitive engagement with the learning process or redefined academic success altogether. For instance, Professor of Geology Ann identified a student's love of learning as evident from their questions. When college students "are naturally curious by the kinds of questions they ask, they're synthesizing material…making connections across classes, making connections across experiences." To Ann, these are "the students that go beyond the grades." In other words, integrating learning for learning's sake. Once accomplished, faculty noted how students were motivated to enjoy the process they put forth to them.

Jane, a professor of English for over 34 years, explained when she witnessed a student's love of learning, they usually were "highly motivated, and just enjoy learning…[and] are going to be more responsive in conversations with me." She gave an analogy of a musician practicing a piece of music in front of their teacher where the aspiring musician, once finished, received

feedback. Those who said, “Let me try again,” or asked their teacher, “How do you think I can make sure that doesn’t happen again?” were the ones who were going to learn. Within that second question existed an awareness of unlearning. Jane, too, saw this sort of response in students with a love of learning when receiving her feedback on their written work.

There were many strategies for how faculty produced an enjoyment and engagement of the learning process, from modeling, coaching, and guiding the process themselves to instilling confidence, empowerment, and agency in their students. However, what distinguished faculty who witnessed and explained this change of mindset in their students from those faculty who failed to mention any student examples, was (a) whether or not the faculty participant had self-reported intellectual humility, and (b) how they defined the term limitation.

Defining Limitation

Throughout the 33 interviews, the question that produced the greatest variety of responses was when I asked faculty how students manifested an ownership of their intellectual limitations. How participants defined students’ intellectual limitations became an indicator for if they also identified a mindset change. Faculty held significant differences when it came to what constituted an intellectual limitation, most notably how they defined the term limitation. Overall, participants defined and understood an intellectual limitation as either fixed and thus unchangeable, or temporary in nature and a state of existence that might change under the right circumstances.

Some participants expressed a discomfort with the term limitation outright, viewing it as antithetical to both their pedagogy and understanding of student epistemic development. Alice, a professor of anthropology, came right out and advised her students, “You don't have limitations. You just don't know how to do it. I will show you how to do it.” Mark, an associate professor of

Latinx and Hispanic studies, was much more direct and interrupted himself when answering my question, “I'm finding myself like really uncomfortable with that phrase because I think there seems to be almost like a slight patina of genetics…or eugenics here.” In my interview with Mark, we ended up redefining limitations as “[an] intellectual awareness of what they don’t know” in order to more appropriately discuss examples of his student’s intellectual humility. In sum, these faculty participants held students’ intellectual abilities in great esteem, not wanting the term limitation to limit their understanding of what students could or could not accomplish.

Most faculty defined student intellectual limitations in terms of them being temporary in nature. For instance, Albert expressed this acknowledgement that limitations are temporary because they “are limitations to what you can do *right now*. They’re not limitations to what you might be able to do next year.” He viewed this distinction as crucial when advising his biology students and advisees. Toni also emphasized the significance of this distinction. “One thing that's important for me to think about is that limitations are temporary. Right!? So, we can improve. So, I try to help them see [that].” Toni went on to explain how her definition of limitations as temporary assisted her in reframing the meaning of grades to her students, and shared, “I've started using this kind of language where grades are just information for you about how well you've retained information or how well you've exercised these skills that we're working on.” Faculty who defined student intellectual limitations as temporary and not static were more likely in general to mention a growth mindset or the principles central to Dweck’s (2006/2016) mindset theory.

There were a few faculty members, who, when asked how students’ intellectual limitations manifested, answered by addressing designated learning disabilities that students have or self-manage. These examples included their own knowledge of student accommodations

and the campus services relevant for such disabilities. These faculty were quick to note how, although this kind of limitation may be fixed, they worked with students in an equitable way to provide them with the opportunity to succeed in their courses.

Unfortunately, some faculty who viewed students' limitations as fixed were less likely to make adjustments to their courses, identified far fewer examples of students they had taught, and were more likely to exhibit intellectual arrogance during our interview. One clear example of this was expressed by Professor of Music Lisa who had one of the lowest self-reported scores on intellectual humility. When I asked Lisa how she managed student discomfort, she exclaimed,

> I'll say: "What does this instrument sound like? Well, come on! … Does it sound like something that's blown? Or hit? Come on. Like, don't be a moron. Like how hard could it be? You love music? You took music lessons. Right!?"

It was unclear to me if Lisa understood the tone and word choice in her response may have the potential to negatively affect her students' learning. That included those students witnessing an interaction of this sort, especially those who may already be uncomfortable and thus unwilling to bring to bear their intellectual limitations.

Many of my participants who considered limitations as temporal in nature communicated a healthier understanding of their relational responsibility to students. For instance, Jane explained how her role as professor is "to put things in front of students that spark their development, to help guide the trajectory of their development, but certainly not to make it happen." Mark echoed this sentiment, "as a professor, I don't think I can force upon a student any sense of development, so the student has to be willing to conceptualize what growth might mean." These faculty held a balanced expectation of what they could, and should not, provide for

students. Many participants also understood that students who overcame their limitations did so, in part, because their students were motivated by and adopted a growth mindset.

Intellectual Humility by Academic Community

The nature of what specific change occurs in the learner's mindset and how to define limitations differed slightly by academic community. In the following section I outline the specific growth mindsets that professors witnessed, or desired, in their students by academic community. In sum, professors in the arts and humanities as well as the sciences were more likely to mention how prior learning in high school affected their students' approach to their college coursework. Whereas business professors expressed a general lack of desire from their students for ambiguity, uncertainty, and risk-taking. Intellectually humble students, however, successfully made the specific changes requested by their professors, whereas those unwilling to own their limitations, vis-à-vis a discomfort that was either suppressed or too great, failed to adopt a love of learning and grow through their limitations. Professors also expressed the following contingencies by academic community appropriate to each discipline: (a) the amount of background knowledge, if any, the student had coming into their course; (b) the number of times they saw or taught a student; and (c) the course level they were teaching. In addition, I discuss the various strategies each academic community employed to assist students to move beyond their limitations.

Arts & Humanities

Participants who taught in the arts and humanities had little to no trouble grasping the concept of intellectual humility as students' ability to own their intellectual limitations. Students who owned their intellectual limitations, whether it was admitting how little they understood a subject or seeking assistance on an assignment, were more likely to approach their professor

and/or positively receive feedback on their work. The most common way arts and humanities professors spoke about intellectual humility, including the lack or excess thereof, was in terms of students' writing ability and how well or poorly individual students received feedback from the professor.

Limitations as Reasoning Skills. Participants identified critical and creative reasoning skills vis-à-vis writing, argumentation, and reflective assignments as some of the primary ways students rejected, owned, or stressed their intellectual limitations. Students demonstrated these reactions in the questions asked of their professors and peers during discussion as well as in evidence-based analysis of their readings, and not merely conjecture. Professor of English Jane explained that her students' "questions are what reveal people's acknowledgement of not knowing everything…not just with me, but of their classmates." Likewise, Jane specifically identified problems with student's ability to write—and their unrealistic expectations for improvement in their writing—as a limitation where "you need a muscle memory to do it."

My participants defined learning how to write at the college level as a non-linear, gradual process. Associate Professor of Latinx and Hispanic Studies Mark actively played the role of coach with his students in providing feedback on the evidence-based analysis in their writing. Like Jane, he "realized that I teach writing as a central part of the work I do, and…writing is very labor intensive." Mark like other arts and humanities faculty critiqued high school writing as "very formulaic" and "not particularly good." In sum, students came away from high school seeing themselves as either successful or unsuccessful writers. Feedback on their papers served only to confirm or challenge these identities in students. More specifically, Mark believed that students previous to college were "taught that their writing should include quotes, but they're not taught what it means to actually analyze those quotes [to consider] the correlation or the

relationship between an argument and the quote." His students had to overcome this limitation specific to analytic reasoning to progress in their writing, and how they dealt with the discomfort associated with his feedback affected whether students made the necessary changes.

Jane also found that students came out of high school with improper writing habits. She explained how her students were very focused on the rubrics of a writing assignment. The problem with rubrics, as she put it, was that these structures hampered:

> Some quality to thinking that you can't really capture…to show progress beyond the class discussion, to show independence of thought, something that you came up with…I see the deadening effect of rubrics…it's a process that imposes something from outside rather than drawing something out from within the student.

Jane witnessed students who were extrinsically grade-focused try to convince her of how they followed the rubric without success. This mindset failed the student in her view, if all the student was focused on was how they deserved to receive an "A." Professor of Asian & Pacific Islander American Studies Bruce described the change away from grade and rubric orientation he sought from his students as "I am giving you a process…[and] trying to help you gain your own process that kind of create for you pathways and platforms towards the success that you seek for yourself. That's my outcome." The change faculty like Mark, Jane, and Bruce sought out was more intrinsically centered.

All college students will receive feedback on their writing at some point, whether a good or poor critique. Arts and humanities professors perceived to a greater extent how their feedback had a profound impact on students, specific to their identity and experience of discomfort. If a student received a poor grade, my participants routinely recalled examples of individuals shaken to their core because they had only previously received As or believed themselves to be a good

writer. “My intention is not to overturn my students' belief systems,” Mark exclaimed. “My point is to try to get them to question them in a meaningful way.” Students without a successful process to accept and evaluate faculty feedback on their reasoning skills, evidence-based analysis, and writing as a whole became susceptible to remaining fixed in their mindset either as unwilling to change or overwhelmed by an identity altering or defining experience. In either case, intellectual humility served to provide students with a process to effectively change by adopting a mindset that one could grow out of their intellectual limitations.

Strategies Employed. Arts and humanities faculty provided numerous examples of strategies they employed to encourage students to own their intellectual limitations for the betterment of their learning. One of the most prevalent and powerful examples that my participants shared was their facilitation of classroom interactions and discussion when students erred or made a mistake. Many faculty chose not to stack judgment onto students. For instance, Jane promised her students that “whatever you say in class, I will use it in a positive way, even if what you said in class isn’t necessarily going to take us to the next level.” Leo, a professor of philosophy, utilized a similar strategy to reduce the fear of speaking up in his class and said:

> I always try and use whatever students say in a positive way even it's obviously wrong, or even incoherent. I always try and pull something out of it and spin it in such a way that I can maybe raise another question or pose it back to the student or something like that.

As representative in the similarity of Jane’s and Leo’s strategy, faculty with an intellectual empathy toward their students sought to create a psychologically safe learning environment while encouraging them to take a risk when speaking up in classroom discussion. Student’s wrong or misguided answers—whether in written form or verbal during class—were

representative of intellectual limitations, and a professor's ability to remain unjudgmental or empathetic played a significant role in how they corrected mistakes.

Toni similarly employed a novel strategy that focused on the types of questions students asked in her classroom. She called it using questions of curiosity instead of questions of persuasion. In sum, Toni sought to develop in students both an awareness of the questions they asked and to facilitate better interactions across differences. "You have to practice [this skill] over time, and the classroom is actually a pretty safe space to practice it," exclaimed Toni. She continued:

> I don't want [students] to ask defensive questions, but [have] more like open-ended discussions. So that's been quite satisfying. I think that sometimes I have to remind myself that this might be the first time a student has ever tried to ask a question this way, and I give them three chances to do it over the course of the semester.

By placing herself in the mind of her students, Toni's intellectual empathy assisted her in modeling to students the kind of change that she hoped to produce of their questioning. She also provided multiple opportunities for her students to practice asking more open-ended questions catered to a posture of curiosity.

Similar to Toni's empathy for her students, some faculty described ways in which they intentionally got to know students and their preferences. Again, Jane invited her students to complete a detailed questionnaire on the first day of her classes, inquiring with students to share with her "How do you learn best?" Jane was also not shy to ask for student preferences on whether or not they wished to be called upon, "or let me know if you feel you're somebody who sometimes talks too much in class, and you want me to help rein you in." These unique insights assisted her in how she handled classroom discussion, a significant part of her own pedagogy.

Jane's knowledge of student preferences at this granule level gave her the opportunity to have a better understanding of what made them uncomfortable and how to build a classroom environment where limitations were welcomed.

Finally, some professors were outspoken to students about the change of mindset they wished to see altogether. Mark emphasized the trouble many students have when taking in his feedback on their writing as "a judgment on [their] intellectual ability." He was intentional to reorient "writing as a process" in that he was "critiquing the mechanics of writing and not the writer." To that end, Mark specifically had his students read the first 30 pages of Dweck's (2006/2016) *Mindset*, which he hoped to put into context his feedback and break the idea "that they were bad writers in their mind or disarmed their sense of themselves as [good] writers." Mark's awareness of what he called "interruptions" to the process of learning assisted him "to acknowledge that potential conflict [or] cognitive conflict" in an attempt to make his students aware of the same interruption. His goal in this strategy was to encourage students to respond in the affirmative to the question: "Are we willing to listen to ideas that make us uncomfortable?"

Sciences

Faculty in the sciences—in comparison to those in the arts and humanities—did not conceptualize all aspects of intellectual humility as students' ability to own their intellectual limitations. Two specific factors illustrated this difference. First, when asked how a student's love of learning manifested in their classrooms or interactions, most science faculty had a difficult time identifying examples. This was, in part, because students' love or enjoyment of learning was not prioritized pedagogically or even witnessed from students in the first place. Doug, a neuroscience professor, acknowledged, "It's actually rarer than you would expect to find, students who are truly motivated by just the desire to learn." I heard the same from

Associate Professor of Public Health Nora, "A lot of the work for the majority of [my] students I would say is not done out of a love of learning." In general, my participants thought science students operated from a grade-oriented, performative mindset simply as a by-product of learned habits from high school. In other cases, students had a heightened focus to do well because of the pressure to get into medical school or a competitive graduate program. These ambitions led a few science faculty, like Albert and Ann, to redefine what they perceived as a love or enjoyment of learning in the sciences because their students had lost or disregarded it.

Secondly, many science faculty noted that students were learning their academic material for the first time and questioned whether that made their ignorance a limitation in the first place. The sequential order and/or mathematical emphasis of their disciplines gave science faculty a different viewpoint for how students approached their classroom, their coursework, and their assignments. When asked about students' intellectual limitations, most faculty acknowledged that students lacked the confidence to overcome the gaps in their learning. In some cases, students lacked the awareness of how a fixed approach limited them from learning the material. For example, Ann synthesized how this manifested by student type. In general, her female students and students of color were "paralyzed," "too shy to ask questions in class" or even "follow up [with me] in office hours," and "don't think they're smart enough." Whereas some of her White male students were "insecure [and] it manifests as being overly competitive or overly arrogant." Her "neurodiverse students are not necessarily aware of the social rules of engagement around showing off information," while her first-generation students struggled with reassurance and felt like "it's my job to tell them what to do." Ann made it her responsibility to have a nuanced response to each of these student reactions to their limitations.

Limitations as Study Habits. Student limitations introduced in high school science classes—whether an overemphasis on fixed, rote learning practices or the lack of academic preparation entirely—were the most common examples science faculty mentioned. In general, participants in this study sought to develop deeper learning strategies over memorizing the material. Albert noted how students approached science in high school as a rote learning of facts and desired for his students to demonstrate a more open-ended, logic-based problem-solving in his exams. Similarly, Professor of Chemistry Kim shared:

> I find that for many students, [my chemistry class] is the first thing they've ever hit that isn't just, "Tell me what I need to know for the test, and I'm going to spit it back to you." So, I'm often the first person who's asking them to develop this higher-level thinking, and that's very, very disconcerting to many of them.

Participants in the sciences sought to convince students to change their approach to learning the material by moving away from solely memorizing formulas and terminologies, and instead create new, applied orientations and strategies to learning more deeply and critically. In some special cases, students' lack of adequate preparation from high school caused significant barriers to this developmental change. Albert offered the example of an African American male student who was so focused on "the inequities [that] went back to preparation before college and the sort of unfairness of having weaker preparation…that made it the fault of the system as opposed to something that can be overcome." Albert went on to work flexibly with this student, to go at a pace that worked best for him and to meet him in these challenges. These barriers, perceived as resulting from high school, made a mindset change difficult specifically for underprepared or first-generation college students.

Academic preparation played an enormous role for both students underprepared or who had not experienced academic failure until they arrived at college. The latter were those who had never received below an "A" in high school. My participants observed college students who had never failed, which may have meant receiving an 89 on an exam, as more likely to internalize their limitation as an afront to their identity. They had not perceived their limitations as a lack of background knowledge of scientific material. "I remind [my students] the fact that they don't have those skills is not necessarily their lack of capacity to learn it, but that they haven't necessarily been taught it in their classes," explained Kristin, an associate professor of psychological sciences. "So, I would say reminding them that it's a skill that's learned, rather than this is something that you should automatically know because you're a smart student…framing it as a skill rather than an innate ability." This distinction of regarding limitations as temporary and not fixed was critical for reorienting students' understanding of failure in any form.

Over the course of her teaching, Kim recognized a pattern in students overly focused on their academic performance. She taught Organic Chemistry I & II, a course required by multiple majors, and sometimes taken by 200–300 students at a time. On the first day of class, Kim made a pitch to approach her course differently, with a deeper focus on applying—while learning—the material. After the first exam, she witnessed student reactions to their grades and whether they prepared for her exam how she recommended. "The student has to be able to say," Kim exclaimed, "just because I've been a straight A student my whole life doesn't mean I have any idea how to study for this class." She mentioned how some students "don't believe me" and "are very stubbornly sticking to their old ways" of studying. When asked to provide an example of a successful mindset change, she mentioned how she had thousands of them. She concluded that

"the secret for teaching, at least in my discipline, is not knowing the material. It is knowing the 800 different ways that students are likely to misunderstand or misconstrue the material, and then to teach to those." This novel insight proved most important for the change of mindset Kim adopted for the betterment of her own pedagogy and student's acceptance of her advice.

Strategies Employed. Science faculty had many strategies they used to assist, encourage, and convince student to overcome perceived and legitimate intellectual limitations. Science faculty equated perceived limitations with the level of confidence—too great to not enough—students brought to the learning process, whereas legitimate limitations were associated with poor study habits or foci students held until convinced to change. Participants employed various teaching and learning strategies to persuade their students to adopt an open mindset and unlearn. In some special cases, they spoke directly to student limitations by calling them out in error. "I would actually stop the seminar," Doug explained, "and explain one of the primary rules when you're talking is that you don't bullshit. In a scientific conversation, if you don't know the answer, it's okay to just say you don't know." This approach served students well only to a certain extent because it was reliant on a student positively reacting to this kind of feedback.

A more common and effective strategy my participants emphasized was modeling their own intellectual limitations, or humanizing the process of growth, to students. Numerous science faculty mentioned how they developed a comfortability to own previous epistemic failures. This was not just humbling themselves for students' benefit. The true motivation was demonstrating for students how to recover and move forward after experiencing a shortcoming. For instance, Ann firmly believed in modeling failure to students by:

> Emphasiz[ing] when I have failed, and I try to model what my reaction to that is. My reaction isn't to get like super angry, or super mopey, or to blame someone else. My reaction is to say, *I probably could have been clearer about what my goals were*.

Modeling this kind of growth was tied to a deeper reflection, while also remaining less emotive, about the failure itself. My participants understood that owning their intellectual limitations in front of students had a powerful ability to humanize themselves and model the process of growth they hoped to see in their students. "It makes you more human," said Walter, a professor of physics for 40 years, where "I'm not this ivory tower professor with the Einstein hair that's telling them: *This is what you do*." Not every faculty member, however, was so willing to produce this kind of vulnerability.

There were a few contingencies science faculty identified when choosing, or not, to own their intellectual limitations in front of class. Albert acknowledged that faculty have a fear of receiving a bad course evaluation if they admit to any limitations. He explained how just 2 years ago he made "the biggest in-class error I've ever made on something related to science…but just corrected it and apologized" to the students. Albert, a White male who has taught for over 30 years, did not receive a single comment from his class of over 200 students about this mistake. Female participants, however, were much more hesitant to share this vulnerability, acknowledging that as assistant professors they experienced a great deal of imposter syndrome. When it came to displaying intellectual humility in their classrooms, female faculty experienced a sexist, ageist double-standard from students who were more willing to judge them if they made a mistake or exclaimed, "I don't know" in response to their questions. Kim explained her experiences this way:

> As a woman, especially as a young woman coming in, you have to be aware of this [discrimination], and I think you do have to be very careful with how you handle things that come up that you don't know. Cause if you admit too much uncertainty or not knowing, you're just gonna get eaten alive because they're already coming with that bias that you're not as smart, and you're not as capable.

Receiving tenure, becoming established as a scholar, and aging older than the typical college student improved how many of my female participants experienced an inability to display intellectual humility in their classroom. Overcoming the mentality of being an imposter and becoming more confident also helped these individuals.

Some science faculty utilized a strategy of building up students' confidence who experienced too much discomfort as a result of their intellectual limitations. "Sometimes I have to convince people that *they can do things*. Because they are sort of timid, and they say, 'Well, I don't know anything about that. How am I gonna…?'" shared Carl, a professor of mathematics. Similar to Kristen's account, he emphasized to his students how their limitations were linked, not to their intellectual abilities, but to their lack of background knowledge. The confidence that professors like Carl and Kristen sought to instill in their students was applied to the rebalancing of discomfort students had when confronted by their intellectual limitations.

Other faculty downplayed the importance of grades as a whole. For instance, Professor of Computer Science Roy explained how failing homework assignments "is a wakeup call for many [of my students]." But he continued to emphasize, "It's only about understanding the material. It's not about grades." His strategy focused the learning process as first mastering the academic material and was successful only insofar as students were willing to hold off a performative orientation. Roy acknowledged how contrary this was to his own experiences where students

were not to fully dismiss their grades but redirect their energy toward learning the academic material first. Again, my participants were not advocating for the removal of the grading system but for a reorientation that students first enjoy and understand the academic material. The aim was to have an intellectual humility that centered on growth over limitations.

Business

Business faculty participants had little to no trouble grasping the concept of intellectual humility as students' ability to own their intellectual limitations. Similar to arts and humanities participants, business faculty identified intellectual humility when students made the desired change in their approach to coursework and professor's feedback. The most common example noted by business faculty of student intellectual limitations was a lack of comfortability with ambiguity, uncertainty, and risk-taking. These postures were deemed significant given, what Peter, an associate professor of business marketing for 32 years, shared as "the shelf life of most of what we're teaching might be 5 years" —a fact that was repeated by a few of my participants. Unfortunately, most business students opposed or felt alien to operating from a position of uncertainty, whereas their professors viewed this skill as central to leaning within a business context. In addition, some faculty noted their students failed to view themselves as creative thinkers, a perceived requirement for success in business coursework.

Limitations as Grappling With Uncertainty. Business students were perceived to have overlapping responses to intellectual humility. Similar to arts, humanities, and science students, my business faculty noted how many of their students were fixated on getting an A over defining success as how much they had learned or developed. The root of this thinking originated as a result of business students operating from prior, successful mental habits and not a love of learning. Professor of Finance Judy shared that it was "hard to release that love of learning" in

students, a fact previously mentioned by science faculty, Albert, Doug, and Nora, among others. She specified the high expectations placed on students in high school resulted in most having not "had time to actually find what they really like." For instance, Maye documented in her coding course that "most people who got an A by memorizing formulas have never actually practiced statistical thinking or scientific thinking in their lives." Most students were focused instead on how they could avoid discomfort. Thus, business faculty were challenged to create a whole new reorientation around academic discomfort.

Most business faculty sought to intentionally disrupt students' perceived need for comfort through multiple channels. Clinical Associate Professor of Business Analytics Lewis, for instance, described how a love of learning "starts with the student feeling frustrated of not understanding something, things not going their way, uncomfortable spot, [and] doesn't know what's going on." This sometimes led his students to get offended or blame him for their frustrations. However, like Maye, Lewis was insistent that making his pedagogy more comfortable was detrimental to students' learning. Peter believed this was solved by teaching toward moments of serendipity, or what he described as "engaging with people who don't just support our existing worldview…by putting yourself in a position to be hit with the unexpected and allowing for the possibility that that might be delightful, rather than just unnerving." This served as the closest definition on what developing an appropriate discomfort in students looked like. Unfortunately, business students for the most part were apathetic or opposed to the uncertainty, ambiguity, and risk-taking required for serendipity to occur.

Likewise, some business faculty found their students failed to view themselves as creative thinkers. The skill of creativity was deemed an important aspect to some business classes because of its emphasis on real world problem-solving and issues related to branding,

marketing, and organizational behavior. More specifically, Kelly, a professor of marketing for over 25 years, Gus, and Peter each identified a student misconception that creative thinking was an exclusive ability for some and not all to have. To combat this, these three intentionally applied a process of design thinking (see Burnett & Evans, 2016) to assist students to (a) become active participants in the learning process; (b) learn to integrate their business toolset to tackle problems presented in the world; and (c) boost student confidence in becoming a creative problem solver. The change of mindset offered by these business professors was for students to trust the process, which hinged on them welcoming feedback and viewing their work as drafted instead of instantly final when submitted. The latter encapsulated business students' reluctance to embrace ambiguity and uncertainty in business pedagogy.

A few participants noted how their students avoided demonstrating or owning their intellectual limitations outright. Given the limited enrollment, demand of, and access to business schools, these students experienced a great deal of competition where success was measured solely by one's academic standing. My participants acknowledged the effect this had on students' willingness to either transparently own their intellectual limitations or adapt their study habits to meet the demands placed on them. "The feeling of being wrong, of feeling uncomfortable, of struggling, is a feeling that most of us try to avoid," confirmed Lewis. "We like being comfortable and we like being right." Business students were no exception, and my participants shared how their business students struggled to reveal what they did not know or understand. Maye and Lewis, among many, modeled an appropriate reaction to their own limitations in a direct hope to convince their students:

> That there's nothing wrong with it. That you can actually learn more when you're in that uncomfortable spot than if you're always in a safe spot…once you feel comfortable being uncomfortable, you put yourself in positions that allow you to learn. To grow even more.

Discomfort for business students was perceived as their choice in the level of engagement to take risks when submitting business ideas, use feedback to scaffold to better solutions, and bounce back when proven wrong.

Strategies Employed. My participants operated with a number of beliefs and pedagogies on how to convince their competitive students to own their intellectual limitations for the benefit of unlearning. These included modeling failure for students, the most common strategy across all three academic communities. Some business faculty, however, voluntarily made mistakes for the benefit of learning and/or rewarding students who caught their mistakes in real time. Another unique strategy that business faculty employed was modeling the failures made by individuals in the corporate or nonprofit world for their own pedagogical purposes. However, the strategy most frequently used by my participants was demonstrating how to apply the business principles to solve real life problems, and a few who doubled down on this by inviting former students to share how they were applying the material and mindset in their careers.

One faculty member went above and beyond through the number of strategies she employed to persuade and then witness her students change to successfully unlearn and grow. Judy, a professor who had taught business finance for over 20 years, found that her students came into her class with "a lot of mindset errors" and she employed numerous strategies to combat them. For instance, Judy believed in "throwing [my students] completely in the deep end," but unlike Lewis, not for the purposes of frustrating them. One example of this included facilitating a make-shift competition between her students and CEOs on trading stocks. By the

end of the exercise, she and the students "go through the rankings because I give [a reward] …and people lose millions of dollars and it's our top students. But if you keep it kind of jovial and fun…they've actually learned, but they failed." For Judy, failure within the proper framework was a significant contributor. She was convinced that her students needed to apply their learning immediately and to observe the application have impact in real time to be both successful and successfully engaged.

Moreover, Judy was proud of the fact that former students had taken her final projects into interviews as representative examples of their knowledge and actually received job offers. She gave the example of one student who "did 10 times more than was required on a project" as representative of her student's love of learning because it would have real impact. Judy also routinely asked her former students to "come back and speak to my [current] students" to share how the class material was applied in realistic, corporate circumstances. Toward that end, she and her students started a finance club that had a service-oriented, coaching-focused, and a supportive environment approach where "the only thing you have to do is you have to help the next person." Judy started this club to change the hyper competitive atmosphere linked to her field, and set up mentorships by pairing like-minded students, exclaiming "they listen to me more if they hear somebody else say it."

Judy demonstrated both a willingness and interest to become a better teacher, recalling a lesson she learned while a Ph.D. student, "the more senses that you use to learn something, the more you learn." Hence, she saw cultivating intellectual humility as something she intentionally fostered within business students by modeling failure in multiple ways. This looked like giving extra credit to students who caught her mistakes in class while also including the failure of others. Judy regularly used scandals—in finance or business—to make the concepts less abstract

and more relevant and to encourage her student to have an urgency and greater engagement with the material. Even if a student made a mistake, she preferred to address these by not "pound[ing] on people if they're wrong." Her colleague, Murphy, described his reaction as, "I try to really build on it, or mold it, or shape it, or steer it, or nudge it in a way that they think that what I have just said is adding value to this class." This nonjudgmental posture was highlighted by other faculty, mainly in the arts and humanities.

Finally, Judy prioritized knowing as much as she could about each of her students, their backgrounds, interests, and career aims. This information assisted her on how to coach them for success after college. "Everybody's not an investment banker, and everybody doesn't need that skill set," Judy shared. This poignant knowledge of her students created in her a greater empathy for their needs and how to support them on a daily basis, all compounding in what she perceived as making her a better professor. Judy explained her pedagogy as, "you're given your innate talents, and my job is to get you to the top of what your ability is, but not to ask more than is actually possible." Overall, Judy sought to build a growth mindset in her students "cause I feel like people can do incredible things, but come in with these preconceived notions that they're not smart enough…or they can't do it."

Conclusion

As argued in Chapter 1, educators and students are living at a time with unlimited, ubiquitous access to information and the ills that accompany it (O'Connor & Weatherall, 2019). The possibility for knowledge creation and stimulation is endless, to which proper classroom learning is essential. This study on the nature of intellectual humility in undergraduate education confirmed that unlearning is just as essential at this time. Furthermore, the process of unlearning required students to have an attentiveness to and owning of intellectual limitations. Participants

described the process as one of growth that leads intellectually humble students to unlearn old, forced, or narrow mental mindsets. Examples of these mindsets included study habits developed in high school, mental models of receiving feedback, or prior ways of thinking that no longer proved successful or were prohibitive to actual learning.

Participants' explanations of students who rejected, owned, or stressed their intellectual limitations followed a bi-directional path that outlined how they responded to written feedback, grading of exams or homework assignments, and classroom interactions or peer discussions. In sum, students remained stagnant or grew out of their limitations. This process of unlearning occurred as a result of how students responded to and managed their discomfort. Regardless of academic community, students who had intellectual humility owned their intellectual limitations, operated with a tolerance for discomfort, and developed a love of learning. In some cases, that love of learning was renewed.

In Table 8, I synthesize the process of unlearning that faculty bore witness to and actively encouraged by academic community. My participants employed numerous strategies to facilitate unlearning – and rethinking – the process of learning academic material. Professor of Biology Albert specifically emphasized that faculty "model for [students] a good way of thinking about development of their own skill and expertise…they wind up understanding that this kind of learning and problem-solving is more about the process" than the grades received. This aspect of modeling became a central nexus when faculty described how to cultivate intellectual humility in students.

Table 8

Summary of Unlearning via Intellectual Humility by Academic Community

ACADEMIC COMMUNITY	STUDENT LIMITATIONS	FACULTY STRATEGIES	INTELLECTUAL HUMILITY
Arts & Humanities: Art, Asian-Pacific Islander American Studies, Classical Studies, English, History, Latinx & Hispanic Studies, Modern Languages & Literatures, Music, Philosophy, Religious Studies, and Theatre	Students were unreceptive to feedback on their reasoning skills, evidenced-based analysis, writing ability, argumentation and inquiry in classroom discussion, and analytic reasoning.	Faculty positively directed misguided answers, turned biased questions into questions of curiosity, facilitated open-ended discussion, and reframed their own feedback.	Students who owned their intellectual limitations received faculty feedback, worked through discomfort, and demonstrated a love of learning by making a change and anticipating future feedback.
Business: Business Analytics, Business Leadership & Ethics, Business Marketing, Business Operations, Finance, and Organizational Behavior	Students failed to view themselves as creative, held little trust in the process, hesitated to embrace ambiguity or uncertainty, and preferred to hide their limits.	Faculty disrupted students' comfort, convinced them to trust the process and take risks, invited correction, applied real life scenarios, and invited former students to share how they are utilizing business skills.	Students who owned their intellectual limitations trusted the process faculty outlined, became willing to experience discomfort, and pivoted toward an adaptable mindset on business principles.
Sciences: Anthropology, Applied Science, Biology, Chemistry, Computer Science, Economics, Geology, Mathematics, Physics, Psychological Sciences, Public Health, and Sociology	Students overemphasized fixed, rote learning practices, inadequate preparation from high school, and had a lack or excess of confidence.	Faculty sought out deeper learning strategies through logic-based problem-solving, applied orientations, addressing confidence, and offering explicit feedback	Students who owned their intellectual limitations received faculty assistance, identified how their approaches to science needed to change, and adopted their own strategies to succeed.

CHAPTER 5

THE FORMATION OF INTELLECTUAL HUMILITY

In the previous chapter, I outlined how tenured faculty at a liberal arts and science university understood the nature of intellectual humility in undergraduate education. Intellectual humility was essential for facilitating an unlearning that faculty perceived as a significant component for student growth. In most cases, the process of unlearning was not explicitly outlined for students and required a certain awareness of the professor, who, like Albert, reevaluated their pedagogy. If intellectual humility is essential for both students and faculty, how then might it be cultivated?

In this chapter, I outline how my participants perceived intellectual humility to be instilled or impeded within students and themselves. Faculty members described copious examples of students who behaved with intellectual humility, including when displayed in excess or absence. Participants, as a whole, more easily described college students who displayed intellectual arrogance or servility. The former is understood to be the absence of intellectual humility, whereas the latter is its excess. In addition, my participants identified numerous strategies they employed when faced with a student, or a group of students, who displayed a lack of intellectual humility or conversely too much. Taken together in their similarities and differences, these strategies shaped a fuller narrative for how intellectual humility is cultivated. This included faculty perceptions on whether they possessed intellectual humility themselves.

Finally, I documented how these 33 associate and full professors understood their own intellectual humility, which included their perceived absence or excess of it within themselves. I also made keen observations, when asked to provide student examples, whether faculty spoke mainly about themselves and their pedagogy, or if faculty provided student examples without being prompted. I also analyzed the nearly 85 open-ended responses to my descriptive survey question, "What does intellectual humility mean to you?" All of these perspectives were incorporated, where appropriate, into my research findings.

Faculty Perceptions of Cultivating Intellectual Humility

My second research question explored how, if at all, intellectual humility is instilled or impeded in undergraduate students from the perspective of tenured faculty. As described to each participant, intellectual humility was still defined, in brief, as a virtuous ability to own intellectual limitations and operated as the golden mean between its excess (i.e., intellectual servility) and absence (i.e., intellectual arrogance). With this framework, I gathered a great deal of perspectives from university faculty on if and when their students own their intellectual limitations, including what sort of discomfort this ownership brings. In addition, I asked faculty to describe their own responses to intellectual limitations and any discomfort they experienced. As a result, I was able to capture the following: (a) faculty perceptions of students owning intellectual limitations, and (b) faculty perceptions of their own intellectual limitations. In sum, these descriptions of intellectual humility along a spectrum of its excess and absence led to the creation of multiple models of intellectual humility in undergraduate education that explained how this virtuous ability to own intellectual limitations is instilled and impeded in undergraduate students.

Faculty Perceptions of Students

All 33 faculty participants described and detailed how their students own, reject, and/or stress their intellectual limitations. These three responses—reject, own, and stress—encompassed the range of students' responses. Many shared with great specificity what they witnessed when students became uncomfortable as a result of their intellectual limitations and articulated a range of and tolerance for discomfort. In total, my participants explained students' intellectual limitations by utilizing two overarching ideas: facilitating students' awareness of their limitations and displaying their limitations whether students are aware of them. The former served as an attitudinal response from students, whereas the latter was experienced as a behavioral response. This process is outlined in Figure 8, and described in the following sections.

Figure 8

Model of Faculty Perceptions of Students' Intellectual Humility

Making Students Aware of Limitations. Students who owned, rejected, and/or stressed their intellectual limitations were first made aware of these limitations, in most cases, through the assignments, exams, readings, and group projects that faculty prescribed in their courses. When asked how students manifested intellectual humility, many professors described the awareness of students' lack of mathematical ability, language acquisition, and technical knowledge as the most assessable form of owning intellectual limitations. Either students had that knowledge—ability—or they did not. Students were not able to fake or mask speaking Spanish or code correctly. An awareness of intellectual limitations, in which case, was not negotiable. The most common example shared by participants centered on student responses to failure—whether it was on a

test, written assignment, mid-project review, classroom interaction, or overall course grade. Students' most immediate awareness of limitations took the form of responding to academic tests of knowledge and realizing their mistakes.

The difference became when students were made aware of limitations that they originally thought they did not have through faculty feedback, grading, and/or interactions. Kelly, Professor of Business for over 25 years, shared that "if you're an intelligent, self-aware person, you know you have limitations." However, his students were "uncomfortable with failure. They don't like that word, and I've tried to reimagine it as the learning process." Most similarly explained how becoming aware of one's limitations was a novel experience for their high-achieving or high performing students, in part because most of their students had never failed before college. Students perceived failure as receiving grades they thought were subpar. These students were "caught up in their failure," shared Kim as she recalled her students saying, "*I've never gotten anything below a B+ in my life…I can't improve*." Students who were obsessed with receiving nothing lower than an A, what was described in the previous section as the most common mindset contested by faculty, when they did not meet that expectation, led many into a turbulent crisis of identity.

The process of becoming aware of intellectual limitations, in most cases for the first time for students, was viewed by my participants as having a tolerance, or a lack thereof, for discomfort. "If you like learning, you have to be comfortable with uncertainty because you don't know what you're going to learn," explained Kelly. "You don't know what you're going to need intellectually [because] when you walk forward, you discover new ideas." Gabe, an associate professor of history, described student discomfort originating from a confrontation with "their own ideas in the face of evidence that challenges" their epistemic foundations. All professors

expressed their role as the academic authority and expert who provided this specialized evidence for students. Thus, intellectual humility was deemed important by faculty in order to provide an avenue to question inherited beliefs that students held. Most professors outlined how their students "put up enormous resistance to dealing with…complexity" when becoming aware of the faultiness of their inherited beliefs. As Mark shared, "the student has to want to do this work."

Tolerance for Discomfort. When asked to expound on student's responses to being made aware of intellectual limitations, my participants noted a broad spectrum of discomfort. This spectrum was laden with varying levels of tolerance. In most cases, faculty reported that students had a low tolerance for discomfort originating from their intellectual limitations. In sum, student discomfort was recognized differently if they *rejected* versus *owned* versus *stressed* their intellectual limitations. The level of awareness and response to that awareness held a significant effect on how much discomfort students tolerated overall.

Those students who rejected, denied, or were ignorant of their intellectual limitations expressed a low tolerance for discomfort exactly because they held a posture of rejection, denial, or ignorance. For instance, Mary, a professor of modern languages and literatures for 25 years, detailed how students who displayed an intellectual arrogance were mostly unaware of their limitations because they "aren't self-conscious" or "pausing to self-reflect on how they're engaging with a particular class or a faculty member." Whereas she contrasted her students who are self-conscious, especially with their linguistic proficiency, and were more apt to own or stress how great their limitations were. Classical studies professor for over 35 years, Athena, identified many science students who take her class experienced discomfort "and some of them deny or will just turn away from [my material] entirely, and say, *That's not useful. I don't want to really go there*." Likewise, Lewis' primary experience as a business professor was responding

to students with little to no discomfort with their limitations. He shared, “they can’t understand why they’re wrong. It’s like it’s something that doesn’t happen to them.” His students were in denial “of just saying *I don’t know*, or admitting that *Hey I might be wrong, I haven’t thought about that,* [or] *I haven’t given this full consideration*. They just again feel uncomfortable.” In general, faculty described overconfident students who denied or remained ignorant of their limitations as having very little tolerance for discomfort.

Faculty perceived students who stressed their intellectual limitations as too great also had a low tolerance for discomfort. However, unlike those who rejected or denied its existence, students who were hampered by their awareness expressed discomfort as too great, difficult to overcome, and/or linked to self-doubt. This sort of awareness exemplified, what many participants described as, an imposter syndrome. For instance, Walter, a professor of physics for over 35 years, explained how the students who experience too much discomfort have “some degree [of] the imposter syndrome…[and] become convinced *I just can’t do it*. In a way they almost give up too early.” Most faculty participants identified students who stressed how great their limitations were to be the most likely kind of student they experienced in their classrooms, one-on-one during office hours, and day-to-day.

Each participants addressed the powerful role discomfort played whether for the student, which many believed “leads to a much richer, rewarding teaching experience,” as observed by Leo, Professor of Philosophy. Judy summarized it best, “Learning requires discomfort. That process of learning means that you need to feel uncomfortable.” And yet, many participants also concluded that this discomfort had its disadvantages. “Students can get very frustrated and get angry at me,” exclaimed Emma, a business professor. Lewis shared how his pedagogy centered on the fact that he enjoyed placing students in uncomfortable spots and believed “the only way

that I can educate is by putting them in a situation that they don't like." He explained this conviction as:

> You have to be exposed to certain situations to start to get used to them and learn how to manage them. So the feeling of being wrong, of feeling uncomfortable, of struggling, is a feeling that most of us try to avoid.

Similar to about half of participants, Lewis' pedagogy of facilitating discomfort has resulted in a number of students becoming quite upset with him. He shared how a few of his former students voiced their frustrations by berating him as a teaching professor. So much so that Lewis has kept emails from these same students who, years later, thanked him for how his teaching impacted their lives for the better. These letters, he shared with me, are displayed in his office and served as encouraging reminders for him, that although "people might hate me, like feel that I'm asking the wrong question and pushing them to uncomfortable spots, I know that at the end of the day the lesson is going to stick with them throughout their entire life." Even though every professor might not have a note like this from a former student, all of my faculty participants were convinced of the importance that their teaching needed to promote, at best, and, if possible, facilitate a tolerance for discomfort within students.

Student Display of Limitations. As illustrated in Figure 8, faculty described when students displayed their intellectual limitation along a spectrum of manifesting an intellectual arrogance to servility. Participants were witness to students owning these limitations, if made aware by their initiative. Professors were more likely to describe the behaviors that their students exhibited in response to their limitations rather than just student attitudes. This behavioral display from college students came in many forms. After reviewing each instance where faculty

shared about student's manifestation of their intellectual limitations, I assembled a portion of their shortened responses to show the variety:

- "quickly shut themselves down" and "talk themselves out of pretty much anything," Alexander, Associate Professor of Theatrical Design
- "they freeze" or "feel overwhelmed," Mary, Professor of Modern Languages & Literatures
- "they're afraid to make a mistake," Will, Clinical Associate Professor of Business Analytics
- "refusing to move forward on an assignment or in a class," Kelly, Professor of Marketing
- "give up too early," Walter, Professor of Physics
- "they'll insist on some points of view or something, which shows they just haven't understood," Leo, Professor of Philosophy
- "embarrassment for the lack of knowledge," Gabe, Associate Professor of History
- "you see it in their body language," Gus, Professor of Business
- "they're not good listeners," Doug, Professor of Applied Science
- "they're caught up in their failure…(and say) *I can't improve*," Kim, Professor of Chemistry
- "*I just can't do it. I struggle with it so much*," Nora, Associate Professor of Public Health
- "they ask one question, two questions, and they can see why it's technical," Roy, Professor of Computer Science
- "came to see me very upset about the grade she'd gotten," Jane, Professor of English

- “when they get upset, you get a bad evaluation,” Lewis, Clinical Associate Professor of Business
- “If they’re uncomfortable, they’re not talking to me,” Toni, Associate Professor of Religious Studies
- “They're too shy to ask questions in class. They're too shy to follow up in office hours,” Ann, Professor of Geology
- “I meet with them a lot, especially the ones that are struggling,” Judy, Professor of Finance

Faculty perceived college students to display a wide abundance of reactions to their limitations, an admittance of what they did not know or were made aware of through feedback and grades. Faculty perceived individual students who denied, rejected, or were ignorant of their intellectual limitations to display an intellectual arrogance, whereas those students who were paralyzed, gave up entirely, or were too shy displayed to them an intellectual servility. This information was synthesized in Table 9. The catalyst for both was the amount of discomfort applied or connected to the learning process.

My participants expected, and in some cases deliberately taught, for the learning process to embody some discomfort for students’ benefit. “I expect what I am teaching to be uncomfortable,” shared Swift, a business professor. Georgia, a professor of art, confirmed, “I think it’s my job” to facilitate discomfort for student’s learning. Mark also emphasized, “This phrase has become like much more ubiquitous, but being comfortable in discomfort, I think, is a real thing. Are we willing to sort of listen to ideas that make us uncomfortable? That can be really hard.” When asked what skill or ability he perceived as necessary to be able to sit in that discomfort? His response was “self-awareness,” and went on to define what he meant:

> If I'm feeling uncomfortable at the moment, let me recognize that…to try to think through what is making me uncomfortable at this moment. Let me identify it and let me try to understand it…what I'm doing is trying to help my students avoid just knee-jerk reactions to things.

Table 9

Definitions of Study Terms

TERM	DEFINITION	EXAMPLES FROM DATA
Intellectual Arrogance	Rejected, denied, and/or remained ignorant of one's intellectual limitations.	*Students displayed a self-confident presumption that lacked a concern for both how others perceived them and another's viewpoint.*
Intellectual Servility	Stressed as too great, overwhelmed or consumed by one's intellectual limitations.	*Students were overconcerned by the opinions or beliefs of another and/or lacked confidence in their own beliefs and viewpoints.*
Empathy	An attentiveness or proper concern for the intellectual views, beliefs, or worldview of another person.	*Students were afraid to make a mistake, felt paralyzed, believed they cannot improve,* and/or *too shy to speak to faculty.*
Confidence	A self-accurate estimation on the epistemic foundation of one's thoughts, beliefs, or worldview.	*Students insisted on a point of view revealing they had not understood, they got upset, gave up too early,* and/or *refused to move forward.*

Like Mark, faculty were only able to address student discomfort if and when students owned and displayed their limitations, which in the most grounded form some participants described as confused faces, furrowed brows, and lack of eye contact. This was how Georgia responded to her students' nonverbals, "I'll just look at them, and I'll just say, *Right now, it looks to me like I have just piled way too much on, or I've said too much, or I need to back off.* I just ask people." Most experiences of discomfort led to a questioning. In general, the very nature of an inquisition—in

the form of an exam or classroom discussion—played a central, abiding role for whether students revealed or acknowledged what they did not understand or know.

Participants' explanations of students' intellectual humility made clear that intellectual humility had two significant forms: (a) the awareness of their limitations and (b) the display of their limitations. By the end of my interview with one participant, Murphy, a business professor who studied impression management, summarized it succinctly by explaining intellectual humility as:

> A type of self-awareness where you are making accurate assessments of who you are, what you have, and what you're able to do. That's Part A of it…but then there's a way you project that self-awareness. There's definitely a public persona that goes along with this. This thing has to manifest itself. Like, I can sit here and be like: *Okay, I know my limitations. I struggle quantitatively. I struggle with difficult methodological things, and I know that*. Right!? But that has to manifest itself too. So do I admit it? Do I tell people my limitations? Like my co-authors who are savvy in methods? Do I say to them: *Hey look, you are the expert. I'm gonna let you lead this. I'm gonna handle the writing part*. Or do I try to pony up and hang with them so that I don't feel inferior? So A) is I'm self-aware, but B) I have to then display that self-awareness, and do I choose to?

Those students who chose to display their awareness of their own limitations to their professors had a better chance of receiving helpful feedback, guidance, and/or questioning from their professors. How faculty responded to intellectually arrogance, humble, or servile students revealed the nature of how these three qualities operated along a spectrum (see Figure 8).

Intellectual Humility Displayed as Confidence and Empathy

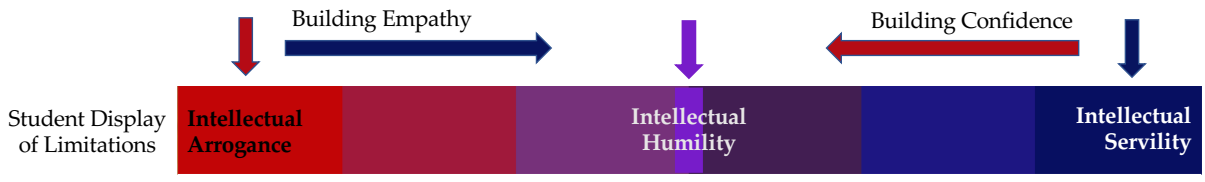
Participants perceived intellectual humility as cultivated in college students by counterbalancing for one of two trainable qualities: confidence or empathy. Faculty reached this conclusion through two lines of questioning: (a) faculty responses to students who displayed intellectual arrogance or servility; and (b) faculty examples of students who operated with intellectual humility. The former was informed by examples of strategies faculty used or employed to increase student confidence or empathy in a given situation. As outlined in Table 9, intellectual arrogance was associated with students who displayed over confidence and/or a lack of empathy, whereas intellectual servility was manifested by a lack of confidence and/or overconcern for the views of another. When asked, participants also provided examples for the manifestation of intellectual humility in students, if they recalled them. These examples were explored for any characteristics that accompanied intellectually humble students.

Counterbalancing for Confidence or Empathy

Faculty participants conveyed an agreement on how they responded to displays of intellectual arrogance and servility. In Figure 9, I illustrate the way in which intellectual humility, based upon my participants' explanations, was cultivated in students by counterbalancing for the characteristic students lacked or failed to display.

Figure 9

Cultivating Intellectual Humility in Undergraduates



The red arrow pointing down represented a display of intellectual arrogance or a high level of confidence lacking empathy, while the blue arrow pointing down represented a display of intellectual servility or a high level of empathy lacking confidence. Intellectual humility is represented in Figure 9 as the purple arrow pointing down in the center, which symbolized the mixture of red as confidence and blue as empathy combined to make the color purple.

Professor of business, Gus, described one of the best examples of this mixture in his experience of arrogant students and how they operated within a group project. He shared how in one group there were two students who:

> Instead of seeing individually what they contribute to the group as being a first draft that is just input to the group, they just want to get the darn thing done, and so they [saw] their input as final draft, and any feedback [was] offensive or just wrong, or just unwelcomed.

These business students, according to Gus, "don't have patience" and "don't have confidence with their teammates" in large part because they did not "step back and listen to other people's ideas—to be empathetic in the sense that you understand where they're coming from." Instead of helping non-business students "understand the basic language of business," business students displaying arrogance struggled with group work and tried to do it on their own even in a group project. "Where it goes well," Gus emphasized, "is when you get teams that just see each other first as people and establish a personal connection, which then makes them more open to, or at least tolerant of, someone else's perspective." To him, his business students did not need to lessen their confidence in their knowledge or abilities, but instead develop an empathy for their fellow group member and what they brought to the project.

Faculty participants expressed a similar dynamic and strategy for aiding students who displayed intellectual arrogance. Doug, a professor of applied science, believed his responsibility

to “intellectually really confident” students “was to do a little bit of ego reduction from time-to-time because…they have to realize that they’re not good listeners yet, and that’s gonna keep them from learning in the long run.” Ann directly stated how with “the kids that are not humble, I spend a lot of time trying to build empathy” in them. She explained her strategy of encouraging collaboration and discussion among all the students who worked in her lab and in the field. In one case, Ann described having to address two students who were fighting for dominance in her lab. When she told them “this is *my lab*…this is not a competition,” they were “shocked” and “apologetic,” and responded in denial, “I didn’t realize we were doing this.” Overall, most of my participants had far fewer issues with arrogant student than with those who were paralyzed by fear and failure, and that “usually the arrogance is hiding a lot of insecurities” as noted by Albert.

On the other end of the spectrum, students who had an excess of intellectual humility were found to display a lack of confidence. Ann shared “I spend quite a lot of time telling them that they’re smart enough, bright enough, motivated enough.” Likewise, Mary noted for her students who are self-conscious, especially with their linguistic proficiency, “it takes a lot more work for faculty members to build confidence in their students.” Jane identified “high-achieving students who doubt their own capacities” as lacking the self-confidence necessary to engage with her and discuss their ideas in class. Some professors like Walter, conceded and said, “other than being encouraging, I don’t know what else I can do.” Because many of these students had an attitude of fear and paralysis, the behavior my participants sought to assist students overcome was to have the confidence to move forward. Some faculty believed that verbally building confidence in this generation of college student also had its limits.

Another way faculty sought to counterbalance for intellectual servility was by building student confidence through empowerment and giving them agency. “It’s not like I’m actually

giving it to them," Albert explained. "They just don't understand the form in which they have it." Bruce described this specialized awareness as "trying to help [students] gain full agency…[and] gain your own process" to create opportunities to learn. When asked to expand on giving students agency, many faculty wrestled with the authority and perceived power they were given as professors, and sought to remain, as Gabe shared, "conscious of bias" about "the choices that we made and how we present." Some like Georgia identified their own awareness as remaining "really sensitive to reading that situation and just making sure they are comfortable in [the classroom]." While other professors recognized the fact that students who displayed an excess of intellectual humility were uncomfortable speaking up in class, unwilling to visit them during office hours, and/or easily triggered by their own failure. Thus, empowering students meant in some cases requiring them to schedule one-on-one office hour appointments as Jane and Maye did.

In special cases, professors perceived their student's confidence to be incorrectly applied to their learning. "One of the primary rules when you're talking is that you don't bullshit," Doug shared. He was known to stop his students mid-presentation when they were explaining research results inaccurately or making up an answer to a follow-up question, instead of declaring *I don't know*. "In a scientific conversation, if you don't know the answer, it's okay to just say you don't know." Doug continued, "the idea that they're going to just sort of make up an answer…we don't do that. You just admit that you don't know the answer, and we go look it up." Professors modeled to students the kind of correctly placed confidence to have in their intellectual abilities. Their hope in modeling intellectual humility was to inspire and motivate students to have a similar confidence to display their limitations. "A lot of the outcomes I care most about are really attitudinal as much as behavioral," Peter concluded. "Doing things that are out of your comfort

zone, and finding out that that doesn't kill you, I think cultivates that curiosity. That intellectual humility, if you will." These, he believed, "reinforce each other. The more you do things that you didn't think you could do…the more you tend to get that kind of mindset." If aware of your limitations, that awareness in students was encouraged to be realistic. Overall, expressions of intellectual humility and how faculty sought to instill it in students did not differ significantly by academic discipline or community.

Holding Together Confidence and Empathy

All participants were asked to identify students who displayed intellectual humility, whether individually or as a group. Only a few—Emma, Lewis, and Nora—were unable to offer a student example when specifically asked. However, the instances and examples shared by my participants allowed me to determine a second, supplemental grounding for intellectual humility as the display of confidence and empathy at the same. These abilities were held in tension or concurrently as formed from two dimensions: (a) confidence as self-focused and (b) empathy as other-focused. Confidence is defined as an accurate estimation of one's knowledge where the student was neither overconfident nor discouraged by their intellectual limitations. Empathy as other-focused operated as an awareness and appreciation for the intellectual abilities of another. Ann (Geology), Jane (English), and Judy (Finance) —one in each academic community—provided the most robust descriptions of students' displays of confidence and empathy as intellectual humility. In each instance, students were notably described to behave with a compliment of both.

Judy, when asked to identify a student or group of students who displayed intellectual humility, immediately talked about the formation of the first finance club on her campus. In most universities, finance students operated as "very cutthroat" such as "people stealing books off

library shelves and purposefully giving people the wrong information." Judy sought to change that stereotype with the help of her students and operated as if "the only thing you have to do is you have to help the next person." She described the students who received leadership positions in the finance club as "really service-oriented" who facilitate a tutoring program and were financial coaches to students who struggled with the material. Judy saw this group of finance students as operating with intellectual humility because they "have created an environment that is supportive" and not overly self-focused. She mentioned an exemplar, former student who "to this day will talk from midnight till three in the morning with current students, and he's been out for 15 years." To Judy, intellectual humility in her students was translated as a robust understanding of finance (i.e., confidence) complimented by a consideration for others and their needs (i.e., empathy).

For Jane, students who displayed intellectual humility in her English classroom had striking similarities to Judy's finance students. Jane described "a brilliant student" who:

> Everybody was always telling him [that], but he never appeared to feel that way. He was confident for sure, and I could tell that he always wanted to excel, but he somehow managed to get the conversation going and inspire other people.

Jane saw in her former student both the confidence to speak intelligibly about literature while also displaying empathy "cause he made [other students] feel like what they were doing was really important." Her student operated in class discussions with a compliment of both. At the end of the class, he recreated a whole meal from one of the novels they read, inspired by an offhand comment she made. When reflecting on why he did this, Jane shared "it was a beautiful magical gesture…[with] the kind of perfectionism that says you always do 110%." According to

Jane, her former English student displayed an intellectual humility because of his ability to show confidence to and empathy for his fellow classmates.

Ann shared one of the most powerful and descriptive examples on a student's display of intellectual humility offered by any faculty participant. She described a time in her class on geological extinctions when one of her students, Mae (pseudonym), "who was effectively mute" had to give a presentation in "a pretty competitive class." If this had happened 15 years ago, Ann noted her students would have "tittered," potentially by mocking her. But as Mae was struggling to present, another student "who was one of these hyper-competitive ones, quietly got up, and she stood in front next to Mae, and she leaned against her, and then Mae started talking." At this point, Ann confessed "it was the weirdest thing I've ever seen, just the two of them, like leaning against each other…and the rest of the class was like completely focused on, like *Mae, you can do this. You totally got this*." The student "was like I am going to make this happen for Mae" and displayed an intellectual humility to Ann for operating with both the confidence in front of her peers and empathy for Mae by standing with her in that moment of vulnerability.

Finally, multiple faculty when discussing students who behaved with intellectual humility noted a common posture they held in class or during help sessions. For instance, Albert noted multiple examples of students who "only speak up when nobody else has chimed in," or "will speak up to either ask another question," or

> Have a comment that makes me realize, *Oh, I didn't understand the first student's question, and this student is basically clarifying for me*…In fact, the questions they're answering are routinely the *most challenging* questions and problems. But they're really comfortable letting the rest of the class think and do things.

Albert acknowledged that students with intellectual humility have both the confidence to speak up, without trying to impress him, and the empathy to notice when the class or the professor needs help. Another science professor, Kim similarly identified a select group of students who "are just absolutely knocking it out of the park in the class, and yet still show up to every help session." These students, she noted, behaved with empathy, "to look around and not just recognize *Oh my neighbor could use some help*," and also confidence to "have the communication skills to be able to do that in a way that doesn't make their neighbor feel condescended to." This complement of self-accuracy in one's intellectual abilities and a leading focus on others' needs crystalized how my participants described the intellectual humility displayed by undergraduate students. In brief, faculty described students who operated with intellectual humility as:

- more resilient, open, and curious,
- having a justified confidence and much stronger learning skills,
- not overly sure about their conclusions or overconfident,
- not surrounding themselves with people who thought like them,
- willing to listen carefully, respectfully, and actively versus just thinking about what I want to say next,
- justifiably able to be proud in their abilities, but were not,
- go-getters who still recognized their need to ask for help, and
- able to recognize what they did not know and thus invested in the learning process.

Most participants believed intellectual humility in college students was rare and that in their experience, students portrayed an excess of intellectual humility (i.e., intellectual servility) on a more routine basis. As an associate professor of Latinx and Hispanic studies, Mark thought

students behaving with intellectual humility was uncommon because his students were afraid to disagree with, offend, and/or hurt each other's feelings. In sum, students were more concerned with how their classmates perceived them. This finding continued to confirm that almost all of my participants more routinely experienced intellectual servility from their students rather than either intellectual arrogance or humility.

In a group setting, Gus witnessed "clear evidence of intellectual humility" in the act of change from being overconfident to appropriately confident. When students declared to him about their group project, "Yeah, we know exactly what app we're going to develop. We've had it on Week 2," Gus watched numerous student groups make a pivot as a result of acknowledging they had "learned something from our research, and our idea in hindsight was kind of silly." It was unclear whether student groups were more or less likely to display an intellectual humility than individual students. However, most faculty admitted that those students committed to the learning process they had articulated for their class were invested because of their intellectual humility to pay attention carefully.

Modeling Intellectual Humility

All participants described and detailed their own intellectual humility. They self-reported how likely they were to own intellectual limitations by first completing the *Limitations-Owning Intellectual Humility Scale* (Haggard et al., 2018). Although scores were not shared with participants, they substantiated their scores by describing examples of their own intellectual humility from various experiences in the classroom or across the academy. They explained shifting attitudes toward their intellectual limitations as a result of receiving tenure or increased scholarship as well as corresponding discomfort, if any, they experienced. In addition, many faculty expressed how the awareness of their limitations manifested in the display of failure

mostly for student's benefit. The variation of which hinged upon how willing they were to correct themselves or declare "I don't know" in real time or after the fact. Finally, some faculty acknowledged how intellectual humility has had a significant effect on their pedagogy and approach to advising students.

Faculty Perceptions of Themselves

Faculty perceptions of their own intellectual limitations had remarkable similarities to their description of students' intellectual humility. Like their students, participants explained their ownership of what they did not know as both an internal awareness of and an external display of their limitations to others, most specifically college students. All 33 faculty participants shared ways they owned, rejected, and/or stressed their intellectual limitations during the course of their academic careers. However, faculty were better able to describe their awareness of limitations than their facilitation of making students aware. Many shared in great specificity the discomfort they experienced when confronted, either in real time or after the fact, with their intellectual limitations. This discomfort occurred for a variety of reasons, such as general uncertainty in response to student questions or the realization of an epistemological mistake made in class. This entire process is outlined in Figure 10 and described in the following sections.

Figure 10

Model of Faculty Perceptions of Their Intellectual Humility

Faculty Awareness of Limitations. I asked faculty participants how their intellectual humility influenced and/or affected their students, their teaching, and their interactions within the classroom. Hence, professors had the opportunity to describe their love or enjoyment of learning, their discomfort with their limitations, and their ownership of intellectual limitations. These three factors taken together detailed faculty's perceptions on their intellectual humility. Awareness of intellectual limitations was a central and crucial starting point for my participants as well as a personal and vulnerable position for them to confess to another. The purpose of their awareness and navigation of discomfort from that awareness led many to reconsider, reexamine, and/or rethink their pedagogical practices.

Every participant was able to describe their awareness of certain intellectual limitations as mistakes made during the course of their career. These mistakes or failures were experienced as both personal to the participant and vulnerable in their awareness of it. In many cases, faculty awareness of their intellectual limitations led them to over-prepare for teaching in the classroom when they were new, assistant professors. Deemed important, at first, many faculty over-prepared for fear of being asked a random question they might receive and not know the answer to. This, they believed, had the power to reveal their intellectual limitations. My participants described a change that occurred over time in their approach and response to student questioning which resulted in a growing tolerance for their discomfort to say "I don't know" in real time. Doug synthesized this as faculty not wanting "to spend a lot of time talking about things they don't know about, but they'll end up just avoiding a discussion that would be very helpful for the students to have." Every faculty member shared some dynamic of this discomfort.

For faculty, having a low tolerance for discomfort operated with some similarity to students. Those who denied their limitations or stressed them as too great experienced very little

tolerance for their discomfort. As she reflected on her time as a professor, Kim confessed to growing in her "confidence of just applying material and modeling the intellectual processes you're trying to teach." This shift in confidence looked like an unwillingness to explore student questions in real time early in her career, whereas now as a tenured, established scholar in her field, and slightly older, Kim more confidently answered her students' questions by using "the skills we learned in class and see what happens." Most of the female faculty shared their experiences of discomfort as managing an imposter syndrome, what Nora described as "too much discomfort with my own limitations and too much awareness of it…Where you think you're completely limited in every way and that one-day people are going to figure you out." Notably, none of my male participants expressed their discomfort with their limitations in this way. Most were more likely to explain their discomfort as a reaction to feeling overconfident. For instance, when asked about the benefits of a tolerance for discomfort, Edward, an economics professor for 40 years, answered, "the alternative is arrogance." What led some of my participants to overcome their limitations in the classroom and develop a tolerance for discomfort was centered on a perceived development of intellectual humility as they aged while college students cycled through their classes.

Outcomes From Awareness. A professor's awareness of their limitations was also described as a vehicle that kept them intellectually honest and dissatisfied in their current pedagogy. The awareness of intellectual limitations was believed to keep faculty intellectually honest about what they did or did not know. Lewis described becoming aware of his limitations as having a profound effect on his relationships. "It helped me not to discard people the first time that I see them. It's helped me grow as an individual and learn my own insecurities." He continued by concluding that teaching in this way made him "more tolerant" and "it makes

people better." Nora similarly concluded that the awareness of what one does not know "should lead to collaborations…[and] compassion for your students, and the things that they're not so great at. It should lead to an appreciation of interdisciplinarity" as a result of the admittance that "I might know something that they don't know." Intellectual honesty was a specialized awareness that faculty perceived as significant for their work with undergraduate researchers as well as their academic colleagues.

My participants also explained their awareness of intellectual limitations as creating a dissatisfaction in their current pedagogical practices. By remaining open and curious to what they did not know—maintaining a tolerance of discomfort—faculty perceived intellectual humility as facilitating a rethinking or reexamination of their pedagogy. Alexander, an associate professor of theatrical design, described "a level of fear" he carries with him that effectively keeps him "from being professionally out to pasture." He continued by quoting a scholar whom he admired who said, "if you rest, you rust." In other words, "if you become complacent [or] if you become satisfied, you inherently atrophy." Others shared how their awareness of limitations made them reconsider how they might go deeper and prepare better academically to meet their students. Gabe declared his rethinking of pedagogy was "much more satisfactory for myself, [and] led me to reconsider my own practice…and that was not as easy as I am making it sound now." Judy emphasized how she "constantly feel[s] discomfort. Even in this class that I've taught for 20 years. I'm always revising and updating and trying to look at what I'm teaching." Discomfort, as reflected by Alexander, Gabe, and Judy, was both a driver and by-product of my participants' reevaluation of their teaching. This included about half of the participants who shared how they routinely updated their academic syllabi or lectures with current material, as well as cited new ideas introduced by student insights or questions.

Faculty Display of Limitations

Professors who were willing to admit and chose to display their intellectual limitations to others perceived the potential of doing so as benefitting their students. First, most faculty admitted their own fallibility either as an intellectual expert in their field or as a teacher in the classroom. This intellectual fallibility, and how it was displayed, mattered a great deal to my participants for it impacted their very image as a scholar. Whether accidental or a function of intentionality, most participants perceived the display of their own limitations as unavoidable. A few responded with laughter at the times they misspoke, made a mistake, or faltered in front of their classroom. Every professor mentioned to some degree the importance "for the professor to acknowledge that he's not a know-it-all person," as synthesized by Gabe, an associate professor of history.

Faculty members who chose to display their intellectual limitations to students perceived of themselves as modeling an intellectual growth. This kind of modeling by faculty displayed for their students the importance of operating with intellectual humility. Faculty who were not over-confident in their expertise believed, as Alexander said, that "it never hurts to just show people how you screw up." Most of my participants had no trouble confessing to their failures or how Judy simply stated, "I don't know always to do it right." This display of failure was also perceived to have the power to produce empathy, or again as Alexander shared with his students, "that it's totally okay if this is a struggle for you. Nobody, or very few, decide to run a marathon and just like lace up their shoes." Likewise, when asked about students who fail to become finance majors, Judy stated, "I can be very empathetic" which she perceived as directly modeled by her finance professors when she was an undergraduate. She was completing the virtuous loop of showing empathy for her students. Intellectual humility when displayed and modeled by

faculty was perceived by them as holding concurrently an accurate confidence in what they did or did not know and an empathy for other's epistemic progress.

Regardless of age, sex, rank, or discipline, my participants described the display of their limits as modeling for students one of three things: (a) what life-long learning looks like, (b) how to appropriately respond to failure, and (c) the process of humanizing themselves to their students. Emma, a business professor for over 30 years, mentioned each when she modeled for her students intellectual humility by confessing:

> *I don't know that*, or *I'll see what I can find out*, or *I'm not good at thinking about those kind of questions*, just makes yourself human. [long pause] I think it's useful because it models what knowing looks like…knowing isn't about having all the answers…it also humanizes the person in modeling it and making learning a very human activity [where] having learned is just one spot on the journey that's never finished.

Most of the other professors were able to identify one or two student outcomes from modeling their limitations. For instance, Alexander stated "that work has obstacles [and] frustrations, and the more a professor can model that process of discovery" to their students, the more inspired they are to do likewise. Kristin, who recently earned tenure, shared how displaying limitations revealed to her how students "want to see faculty as human, and so if we have some faults, in that we don't know 100% of everything, then I think that improves their perceptions of the professors." Faculty, like Emma, Alexander, and Kristin, humanized the process of intellectual growth by showing that they too were still learners and perceived its benefits as cultivating a mutual intellectual humility by having confidence to admit what they did not know while also empathizing in their students' limitations.

Contingencies on Displaying Limitations. Some professors acknowledged that the display of their intellectual limitations was course-level specific, in which case sometimes led to generative learning with students. When asked how, if at all, course-level impacted owning their intellectual limitations, some described foundational courses as inappropriate places to do so, where, as Will exclaimed, "students expect you to know your stuff." While in more advanced, seminar courses, students had an expectation that professors "point out where things are not completely settled" and demonstrated a greater tolerance for faculty admittance of intellectual uncertainty. Professor of applied science, Doug described how in his upper-level seminar classes he does "a fair amount of just being willing to stare at the board with a partially solved problem with the students…modeling being comfortable with the answer not being immediate." Likewise, when Lewis admitted the limits of his technical knowledge, he found his students were energized "in a way [that] says, *Wow! He hasn't explored this. I really like this…This is somewhere where I can shine, and I can show my contribution to whatever it is*." Professors—like Will, Doug, and Lewis—perceived their intellectual limitations as providing an opportunity for students to join them in the search for knowledge. However, not everyone admitted a comfortability with (a) displaying their intellectual limitations or (b) co-generative learning with students.

Some participants perceived their sex, age, and tenure status as contingencies that affected whether they willingly displayed their intellectual limitations at all. As shared above, almost all 16 female participants expressed some degree of experiencing a bias that dissuaded or prevented them from displaying intellectual humility. "If you're too friendly, and too collegial, and call me by my first name sort of thing as a woman," Nora described, "sometimes that

translates into not being respected" by students. Likewise, when asked, Mary did not hesitate to share in her experience how:

> For young female faculty, it can be really, really hard to—in front of a classroom—feel vulnerable and own those limitations because it's easy to have that turned into sort of a really negative classroom experience where you're being attacked.

Both Nora and Mary translated their experiences, as well as those like them, as hindering many female professors from appearing as an effective instructor to college students. When asked for more details, one female participant shared how she became aware of students' bias based on her sex from teaching evaluations that both she and a male colleague received on their team-taught course. Students, she explained, wrote, "He's not as good as she is, but it's because he's just so smart. He can't bring it down to our level," highlighting a double-standard female faculty faced. If students "think a woman is not a good teacher, they tend to be very harsh in a different kind of way." Before they were tenured, these female professors struggled to overcome both feeling like an imposter while not appearing as one in front of their students.

Most female participants identified receiving tenure, becoming established in their field and older as marking a change to their concern of college student bias against them if they were to admit mistakes. Kim acknowledged as a young woman in the sciences she had to walk "a very narrow line…because you're not that much older than your students…but now I have this reputation [and] 20 years of experience…I have no problem admitting I don't know stuff." In the same way, Nora concluded "as I've gotten older and more established, I think I've felt more and more safe to be myself." Kim, Nora, and Mary's experiences highlighted the discrepancies and conflict when deciding to admit intellectual limitations, if at all, between the sexes. Only a select few male participants acknowledged how receiving tenure allowed them to feel more

comfortable owning their intellectual limitations, as Bruce said, “I think intellectual humility may not be a luxury that junior faculty can afford.” Most male faculty neglected to describe any hesitancy about sharing their mistakes or concern for faltering intellectually in front of students.

Teaching for Intellectual Humility

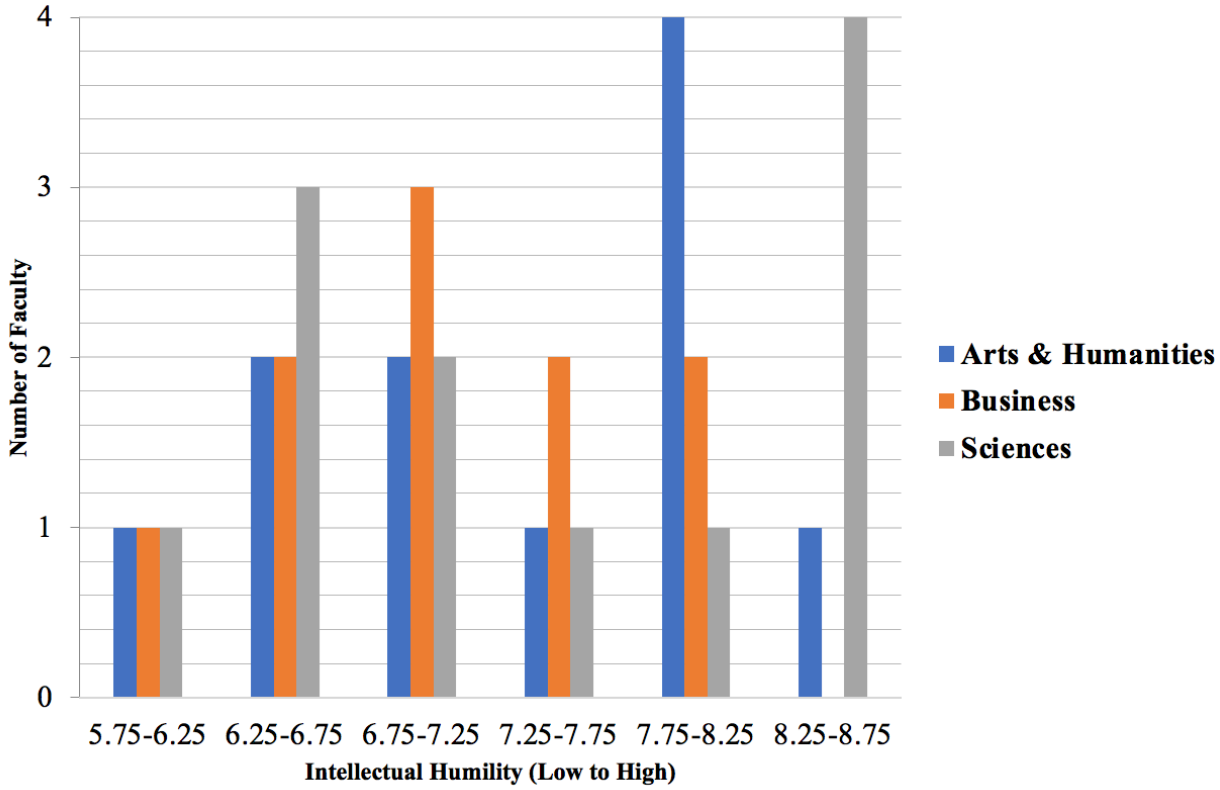
All 33 associate or full professors were asked by the end of the interview what outcomes, if any, they perceived resulted from teaching in an intellectually humble way. There was unanimous agreement, regardless of how high or low they rated themselves on the *Limitations-Owning Intellectual Humility Scale* that their teaching and pedagogy benefitted from having intellectual humility (see Figure 11). For example, no one stated that having or displaying intellectual humility was incongruent to their learning objectives, assignments, or classroom discussions. Most participants returned to answers they gave, or shared for the first time, about the importance of modeling and/or humanizing intellectual limitations for students’ benefit. Some went so far to share intentional practices they employed to normalize discomfort, adopt a teaching persona “to show raw enthusiasm,” or set up learning situations that reveal the limitations of students’ current knowledge.

A higher discussion, and in some cases an internal debate, occurred among and within my participants about how much of their identity as an expert or scholar to display or cede in relation to owning intellectual limitations specifically while teaching undergraduates. The context was deliberately grounded in their handling of prior classroom discussions. For instance, Alexander delineated between “the expert who will then evaluate the quality of the response” from students or being “someone who’s engaged in a conversation that they don’t know the answer to, [where] it’s less about evaluating and more about engaging that discourse.” The latter persona was perceived as more aligned with teaching for intellectual humility. But conflict remained as to

how much, if any, of the expert persona to shed. Mark shared a very important pedagogical moment for him where his classroom "who were almost exclusively female, got really angry at our discussion" even though he "had done so much work to set this up in an evidence-based, analytical way; like I did ALL of this work, and it didn't work."

Figure 11

Faculty Participants' L-OIHS Scores by Academic Community



Note. Mean scores for each academic community were 7.39 (Sciences; *n=12*), 7.31 (Arts & Humanities; *n=11*), and 7.01 (Business; *n=10)*. The Limitations-Owning Intellectual Humility Scale (L-OIHS) is a 12-item, nine-point Likert scale – 1 (Strongly Disagree) to 9 (Strongly Agree) – with five items reverse scored (Haggard et al., 2018).

After receiving feedback from students, setting up a listening session, and reconsidering why he assigned the explosive text in the first place, he confessed:

> Look, there is no way out of this power differential. I have a PhD. I did the work. I've been hired. I'm doing the work I've been asked to do. I will grade you. That is what the university expects of me.

Mark visibly struggled to remain empathetic toward his students while subsuming the power of his role, scholarship, and expertise. Similarly, Emma explained how her enjoyment of "ambiguity [and] complexity" required in teaching business classes was not shared by "a significant portion of students" which routinely led her to "going back and reconsidering how I teach and try and be very deliberate in balancing that." For Mark and Emma, it was inherently challenging for faculty to successfully navigate both the discomfort they experienced from relinquishing parts of their identity as expert while also managing the discomfort of their students. This sensitive dynamic was exasperated from classroom discussions that occurred in real time.

Habits and Practices. Lastly, my participants owned their intellectual humility, and instances of its excesses or absences, by sharing what habits, practices, and behaviors they valued in their pedagogy. Those who accurately understood their intellectual humility acknowledged, for instance, their openness to considering another's viewpoints or vocalized how they changed by embracing a healthier balance in assisting students. Gus confessed to watching Fox News "to stay open to like making sure that I'm not getting half of the story" as a way he fostered intellectual humility as also "the attitude I want to instill in my students—Don't be overly sure about your conclusions. Don't be overconfident. Don't surround yourself with people who think and say the same things." In contrast, some faculty acknowledged the absence of intellectual humility in having little to no discomfort with their limitations and believed they were "the fount of knowledge" and existed "to spew that out onto students and they absorb it," as

Athena described. When asked about how they responded to student's discomfort, one professor responded, "I've never thought about that consciously. [long pause] I've never really thought about that. I sort of have my shtick." The absence of intellectual humility resulted in some professors placing the blame on students for misperceiving faculty's behaviors or assigned academic material; instead of having intellectual humility and empathy, which led some to reevaluate their approaches to teaching.

As outlined in Chapter 4, faculty employed numerous strategies to convince, persuade, or illuminate students to the benefits of cognitive flexibility. Participants described how they positively directed misguided answers that their students gave in class. They also had a sharp ear for the types of questions asked of them and fellow classmates. Like Toni, some faculty turned biased student questions into questions of curiosity. For instance, instead of asking how something is true or not, faculty taught students to ask why, using symbolic imagination. Professors like Alexander were also more interested in facilitating open-ended discussions with students than operating as a 'know-it-all' teacher. Some, like Mark, sought to reframe how their students received feedback altogether.

Faculty disrupted students' comfort as another practice for facilitating intellectual humility in the classroom. Many sought to convince students to trust the process they outlined and take risks in their learning objectives. Faculty like Ann and Albert concerned with modeling intellectual humility invited their students to—formally and informally—correct them. Some like Judy went so far as to give extra credit for identifying their mistakes. Faculty explained another common strategy as giving students the opportunity to course-correct or pivot when applying their limitations to real life scenarios. These deeper learning strategies offered students insights into how to correctly apply academic material. Only one faculty, Judy, mentioned going a step

further by inviting former students to speak to how they are integrating their knowledge. Yet, most faculty were concerned about how students logically reasoned, provided evidence for their thinking and creatively problem-solved – each of which intellectual humility was perceived to positively influence.

Conclusion

Philosophers and psychologists argued that to better understand intellectual humility, and how to cultivate it, research needed to be conducted in a live, interpersonal setting (Jarvinen & Paulus, 2017; Porter & Schumann, 2018). The findings from this study confirmed these assertions. When intellectual humility is contextualized to an undergraduate, liberal arts and sciences university setting, tenured faculty described how they instill this virtuous ability by counterbalancing for confidence and empathy. Students who responded to their intellectual limitations by denying, rejecting, or remaining ignorant of them (e.g., display intellectual arrogance) lacked empathy to consider the position of the professor or a peer providing the feedback. Nearly all of my participants shared that they were more likely to experience the converse, students who—when receiving feedback—stressed their limitations as too great. In order to counter this display of intellectual servility, tenured faculty described ways they built student confidence by encouraging the adoption of a growth mindset toward their limitations. Intellectual humility was understood as the proper mixture of two trainable qualities: confidence and empathy.

My participants went a step further by explaining the manifestation of intellectual humility in their students as holding confidence and empathy concurrently. When asked to provide examples, nearly everyone included their brightest, most talented, or brilliant students in the classroom. Intellectual humility was perceived as a quality that accompanied these learners.

Albert described his first-year advisee who successfully operated with intellectual humility by the time she graduated as having "more resiliency" and "a justified confidence" with "much stronger learning skills." Gus, too, identified intellectual humble students as "more open" and "remain open to other ideas or perspectives," and are "more curious because you know you don't know it all." These students are not "overly sure about [their] conclusions," not overconfident, and "don't surround [themselves] with people who think and say the same things." College students who displayed intellectual humility were able to remain sure of their intellectual abilities (e.g., confidence), without becoming overly sure of themselves, and to equally consider the intellectual positions of others (e.g., empathy).

Tenured faculty also confirmed their own attentiveness to and owning of intellectual limitations. They concerned themselves with the attitudes that accompanied an awareness of their weaknesses or mistakes, like Peter's care for the right outcomes, or Ann's struggle with an imposter syndrome. They also concerned themselves with the behaviors that aligned with modeling for students how to react and respond appropriately to one's limits. For instance, Judy who offered extra credit to students who caught any mistake in real time or Mark's willingness to conduct a listening session for his disgruntled students or Albert's assertion that it is not about him when experiencing frustration. Each of these faculty, who scored in the top quartile of their academic communities, spoke with conviction about the necessity, utility, and power of intellectual humility to produce a better pedagogy and learning process for their students.

CHAPTER 6

IMPLICATIONS OF INTELLECTUAL HUMILITY

Associate and full professors from this study considered intellectual humility a valuable and, in some cases, necessary intellectual virtue for undergraduate students. College students who attended to and owned their intellectual limitations were perceived as more likely to change antiquated habits of mind and adopt a new, growth-oriented mindset to their collegiate learning. Professors described intellectual humility as the combination of two dispositional qualities—confidence and empathy—that students either displayed a lack of one or held both at the same time. They also perceived intellectual humility, its excess and absence, within themselves and spoke at length about how this affected their own pedagogy including their interactions with students.

All of these findings have what Strauss and Corbin (1998) termed as explanatory power, an ability to predict a social phenomenon situated within a given environment. Accordingly, my findings are predictive in explaining what might occur in a university setting similar to which they are derived. The faculty who teach at Alma Mater University (AMU) pride themselves in offering an elite liberal arts and sciences education with a strong emphasis on teaching instruction and AMU operates as a R2 Carnegie classified research university. The strategies used by participants in my study to build intellectual confidence and/or empathy in students who displayed intellectual servility (i.e., majority), arrogance (i.e., minority), and humility (i.e., least) have the descriptive power to inform other professors at similar institution types. Professors'

concerns for better, more effective teaching strategies to assist college students through their limitations are transferrable.

The following sections of this chapter outline how my findings confirm, counter, and/or inform current research on intellectual humility as an intellectual virtue worth wanting. A synthesis of my findings is instructive most importantly on how to teach for it in higher education. Furthermore, I developed a proposed model of intellectual humility in undergraduate education as a reasonable, empirical extension of the two models described in the previous chapter. In this chapter, I discuss how these findings relate to research addressed in Chapter 2 as well as how unexpected insights on intellectual humility apply and connect to extant research on social cognition, mindset, and the cultivation of character. In addition, I address implications for university pedagogical practices, grading policies, and faculty training. Finally, I make recommendations for future research based on the findings of this dissertation study.

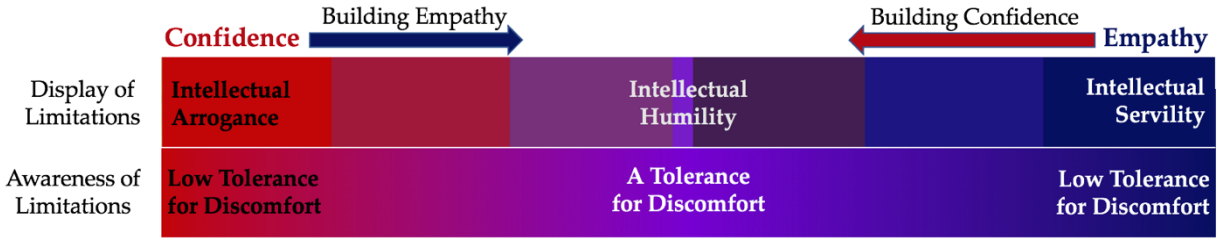
Discussion of Findings

The diagrams of faculty perceptions of (a) students owning intellectual limitations (see Figure 8), (b) cultivation of intellectual humility in students (see Figure 9), as well as (c) faculty perceptions of their own intellectual limitations (see Figure 10) each have similarities and significantly overlap with each other. These figures outline how the awareness of intellectual limitations is experienced through a tolerance for discomfort, or lack thereof, and displayed as a spectrum between two poles of intellectual humility's excess (i.e., intellectual servility) and absence (i.e., intellectual arrogance). Participants in my study understood both their students' and their own display of intellectual humility as determined by how much confidence and empathy they held based on the nature of their intellectual limitations.

Based on these findings and their implications, I developed a proposed model of intellectual humility contextualized to a four-year, liberal arts and sciences, undergraduate education. In Figure 12, I diagram how intellectual humility operates as both an internal awareness and external display of a person's limitations. This tentative model serves as a synthesis of three significant findings from my study: (a) faculty's perceptions of students displaying their intellectual limitations, (b) how faculty perceived to counterbalance for intellectual arrogance or servility, and (c) faculty perceptions of their own intellectual humility. Faculty participants understood their role as making students aware of their intellectual limitations. They then bore witness to college students display their intellectual limitations by reacting with varying levels of confidence and/or empathy. Based on their students' responses, faculty counterbalanced for the quality that was missing within students, either a lack of intellectual confidence (e.g., intellectual servility) or empathy (e.g., intellectual arrogance). Lastly, faculty noted their own modeling corresponded to becoming aware and displaying of their own limits for students. These three ideas encapsulated both the attitudinal awareness and display of intellectual limitations.

Figure 12

Proposed Model of Intellectual Humility in Undergraduate Education



This proposed model functions by determining a positionality for a student and faculty member's attentiveness to and owning of their intellectual limitations. More specifically, their

denial, ignorance, or rejection of a limitation as a display of intellectual arrogance (e.g., left and red) or display of intellectual servility as a paralysis, fear, or stressing of a limitation (e.g., right and blue). The mixture of confidence, represented by red, and empathy in blue fosters the notion of holding the two in tension through the color purple. The color gradients across the spectrum represent how much of each quality a person displays. An individual's level of discomfort in response to being made aware of an intellectual limitation also plays a critical role in determining how a person chooses, if at all, to display that awareness.

Positionality is significant for several reasons. First, a student or professor's level of confidence in their cognitive beliefs or abilities has the power to position them to reject or deny whether they perceive a limitation as evident at all. Confidence, not buoyed by empathy or a consideration of another's beliefs and/or feedback, resulted in the perception and potential manifestation of intellectual arrogance. The reverse proved true that empathy without a confidence in the basis of one's beliefs or cognitive abilities had the power to lead a person to overemphasize or stress their intellectual limitations as too great. Second, positionality along this spectrum of intellectual humility, and its absence or excess, was perceived as able to be cultivated based on whether a person needed a counterbalance of confidence (e.g., intellectual servility) or empathy (e.g., intellectual arrogance). Awareness of this entire process proved most critical and significant for a professor and their recognition of intellectual humility in students and/or themselves.

Faculty Awareness of Their Limits

As a grounded theorist seeking to uncover how processes develop and change, I began to see this tentative model at work throughout the interviews with participants. At the start of the study, each of them self-reported their intellectual humility via the L-OIHS (Haggard et al.,

2018). These scores were then used to purposively select participants—42% of whom scored in the top quartile—to capture a range of perspectives on intellectual humility. By the time I had completed an initial round of open coding and had begun axial coding, or categorizing my transcribed interviews, I had noted dispositional similarities and differences of faculty participants based on their intellectual humility score. New questions emerged as a result of my data analysis. Did faculty who scored higher on the self-report scale have a firmer grasp of intellectual humility? How did faculty's perceptions of what constituted a limitation affect, if at all, their understanding of intellectual humility and its cultivation?

In sum, participants' attentiveness to and ownership of their intellectual limitations—in real time—communicated to me their level of awareness, tolerance for discomfort, and display of intellectual humility. I then took these data and included them with their examples of students, or lack thereof (e.g., how much confidence and empathy did they have for students during the interview?) and aligned each element along the spectrum. For instance, Edward, a professor of economics for over 40 years, and Lisa, a professor of music for 30 years, both scored in the bottom quartile on the L-OIHS. During the interview, both displayed an over-confidence in their answers and lack of empathy for others, including me as the interviewer. Edward shared his awareness this way:

> I have had students who are off put by my office humor. I'll have students who I'm saying, "One plus one is...One plus one is...And you can't get it." And I'll make a joke, or I'll roll my eyes, and I'll smile. And some of them, eat this up and dish it back to me. Others have been turned off and have stopped coming. So once again, I'm human. I make mistakes...So, it is hard *for me* to deal with students at [my university] who all are seemingly very good, who have an extraordinarily difficult time making what *I perceive*

to be very simple, logical connections, and I'm sometimes at a loss for figuring out how to deal with it.

The awareness of his overconfident personality led him to place blame on students, instead of reevaluating his approach to teaching. When asked whether he adapted his course material for students and their limitations, Edward responded "I've never thought about that consciously. [long pause] I've never really thought about that. I sort of have my shtick." I witnessed firsthand from participants who rated themselves low on intellectual humility display a lack of empathy, concern for another, and how they were being perceived by me. For instance, in the previous chapter I quoted Lisa reprimanding a student for their slow response to her questioning. Lisa displayed in real time her disinterest toward me and our time together in general by responding to a text message from her mother, interrupting our interview.

In contrast, those faculty who scored in the top quartile displayed a greater consideration for our time together and a careful attentiveness to my questioning. Albert (Biology professor), Judy (Finance professor), and Mark (Latinx and Hispanic Studies associate professor) each had one of the highest self-reported scores within their respective academic communities. First, I noticed how attentive they were to my interview questions and how well they listened. In response to my interview questions, each showed a propensity to ask follow-up questions in order to better understand what I was asking of them. *Let me make sure I understand the question. Can you say it one more time?* Albert, Judy, and Mark each displayed intellectual humility to me by modeling in real time what they expected of their students. For example, Mark explained that "a willingness to listen carefully…to consider that you might not know everything about a topic…to consider that other might have an understanding that you don't, or you can be benefit from" was what he believed to be "my responsibility to model intellectual humility, and

also a deep respect for intellectual curiosity." I, too, expected my participants' manifestation of intellectual humility to mirror an empathetic willingness to listen and a rejection of over-confidence on a topic that they were recently introduced to. Albert modeled both by confessing:

> Whenever I feel myself getting upset, or offended, or angry, or whatever, at a student…it's really easy for me to stop myself now…and go, *Wait a minute! I'm letting it be about me because those are all emotions I have with my response to the student, and that should never be*. It should always be about them.

The empathy required of Albert to make this shift in perspective counterbalanced the self-focused emotions that faculty without intellectual humility blatantly owned. For instance, Alice responded to a question about working with overconfident students and stated, "I out arrogant them…I don't have Ivy League doctorates for nothing, honey. Let 'em try it…But it's not that I'm so smart. It's that I've learned the vocabulary of arrogance from the arrogant." Doubling down on the manifestation for an absence of intellectual humility, Alice confessed at the end of our interview that she had not realized this study was both (a) qualitative in nature, and (b) about faculty perceptions of students. I kindly responded by sharing how both were outlined in the invitational email and consent form that she agreed to.

Individuals who lacked empathy for others or confidence in themselves failed to display intellectual humility, whereas their tolerance for discomfort in their limitations corresponded to their rejection, ignorance, denial, or accentuation of them. These insights coalesced around the left, red side of the proposed model (see Figure 12). When a student displays a low tolerance for discomfort, a faculty member is best served by asking the student what is the root cause of their discomfort? Is the student rejecting their feedback? Overwhelmed by a low grade? Or the cause of something unrelated? The sheer volume of possibilities is enough to alert a concerned

professor. The answer to student's discomfort will inform how a professor should respond to the student. Faculty are best served by facilitating an awareness of their overconfidence and/or lack of empathy, or on the other hand, they may need to build student confidence to view any limitation as temporary and something they can overcome.

Discussion of Reviewed Literature

Based on my analyses of intellectual humility contextualized to undergraduates, a liberal arts and sciences education should develop both intellectual confidence and empathy (e.g., a proleptic attitude) within students. Intellectual confidence and empathy are both necessary in order to cultivate intellectual humility in undergraduate students. This finding is in contrast to Jones' (2012) argument that intellectual confidence and humility ground a university education. Instead, intellectual confidence (e.g., the strength of one's knowledge and beliefs), when displayed, is already embedded within intellectual humility. My proposed model identifies intellectual confidence, not as a complementary virtue to intellectual humility, but as one of two abilities required to successfully own intellectual limitations. The other was the development of an intellectual empathy, most specifically a proleptic attitude where a student is able to recognize and argue the counterpoint to their own held beliefs.

Philosophy

Jones (2012) emphasized a "reflective epistemic awareness" (p. 710) as critical to the teaching and cultivation of intellectual virtues such as humility. He termed this specialized reflective activity as "*necessary*" and "the right starting point for achieving both" the awareness and development of intellectual humility (p. 710). His argument was confirmed by faculty participants from both the arts and humanities as well as the sciences. Faculty identified awareness of intellectual limitations as foundational to student responses and those who

prioritized a process of unlearning made reflection and inquisition a central part of their pedagogy. My study expanded Jones's (2012) argument for developing intellectual humility within the business academic community.

Elder and Paul (2012) identified intellectual virtues worthy of critical thinking abilities. Among them were both intellectual humility and intellectual empathy, where they viewed them as interconnected traits. My findings confirmed the importance of intellectual empathy, "the capacity to sympathetically enter into a point of view that differ from their own" (p. 31). Elder and Paul also argued that to develop intellectual humility, in specific, individuals had to "learn to actively distinguish what one knows from what one does not know" (p. 30). They conceptualized nine outcomes of intellectual humility directly for students, most of which pertained to the accuracy and awareness of one's knowledgeable beliefs and worldview. Their last outcome, "understanding the importance of intellectual humility in thinking at a high level within any discipline and profession" (p. 31), touches upon the purpose of my study seeing how faculty participants all agreed in the significance of owning intellectual limitations as they became experts in their fields.

The findings of my study suggest an empirical confirmation of a limitations-owning perspective of intellectual humility (see Haggard et al., 2018), including both a majority of Whitcomb et al.'s (2017) predictions and the operationalizing of intellectual humility along a spectrum. First, intellectual humility was perceived in all three factors of the limitations-owning scale (Haggard et al., 2018). My proposed model confirms and explains how intellectual humility operates along a spectrum of its absence (i.e., intellectual arrogance) and excess (i.e., intellectual servility). Whitcomb et al. (2017) put forward their definition of intellectual humility as "a proper attentiveness to and owning of one's intellectual limitations" (p. 510), which emphasized

an excessive-deficient attentiveness as relationships between proper pride, humility, arrogance, and servility. It also builds upon their understanding of intellectual humility by identifying the fundamental choice of individuals to display intellectual humility. Individuals may be solely attentive to their limitations, but how they are perceived in their decision to display intellectual humility (e.g., confessing "I don't know.") also mattered.

Whitcomb et al. (2017) identified 19 predictions philosophically associated with their model of intellectual humility. An intellectual humble student who is "appropriately motivated to pursue epistemic goods, e.g. truth, knowledge, and understanding" (p. 510) corresponded with my model of unlearning via intellectual humility (see Figure 7). Students who are extrinsically motivated (e.g., have to get an A) changed to become intrinsically motivated to learn via the three factors of intellectual humility. If this change occurred, undergraduate students were perceived by faculty to display dispositions associated with their intellectual arrogance, servility, or humility. Most of Whitcomb et al.'s 19 predictions were confirmed by participants' explanations on the propensity to display—an increase or a decrease—specific to their intellectual humility. These included the following predictions of those found to have intellectual humility as a propensity to:

1. Increase admitting to oneself and others their intellectual limitations.
2. Decrease a disposition to pretend to know or to answer confidently when one does not know – admit "I don't know" more frequently.
3. Reduce the rejection or explain-away intellectual shortcomings.
4. Increase a collaborative deferral to others who have strengths in an area one is weak.
5. Increase a concern about limitations.
6. Reduce feelings of anxiety and insecurity about limitations.

7. Reduce confidence in or revise a held belief.
8. Increase willingness to consider alternative ideas or understand where another is coming from—empathy.
9. Increase the willingness to seek another's help.
10. Hold a belief with confidence based on the merit of evidence.
11. Increase an epistemic justification for what one knows and does not know.
12. Reduce an expectation or seeking out recognition and praise for intellectual accomplishments.
13. Reduce treatment of intellectual inferiors with disrespect.
14. Decrease focus on self (confidence aspect), increase focus on others (empathy aspect).
15. Increase self-accuracy of one's intellectual strengths. (Whitcomb et al., 2017, pp. 521–534)

Intellectual humility as both an awareness of and a choice to display one's intellectual limitations deepens and creates a fuller understanding of how these philosophically founded predictions operate in classroom interactions.

Furthermore, a motivation and care for epistemic goods, such as knowledge, truth, and understanding, were found to be congruent with a change of mindset from grade-oriented to a love or enjoyment of learning as a desired end in itself. My proposed model as a positionality along a spectrum fits Baehr's (2016) conclusion that intellectual virtues, such as humility, are possessed in degrees from low, moderate, to high amounts. In addition, participants detailed strategies they employ to spur college students to behave with intellectual virtue by "thinking,

inquiry, question-asking, self-reflection, intellectual risk-taking and conceptual understanding" of—and on—evidence-based knowledge (Baehr, 2016, p. 127).

Psychology

Faculty's self-reported intellectual humility via the L-OIHS suggest moderate agreement between their identifying students' display of intellectual humility as well as an awareness of their own intellectual limitations. Hence, most faculty who were in the top quartile on the L-OIHS perceived to have both an accurate understanding of intellectual humility and a relative ability to identify it in students and themselves. Whereas those participants who rated themselves lower on the L-OIHS were found to (a) speak about themselves more when asked to describe their students, and (b) display either an intellectual arrogance by speaking overconfidently about their intellectual abilities or an intellectual servility by stressing how great their intellectual limitations were.

When considering how intellectual humility is quantitatively measured, current scales are based on identifying either an absence or a relative amount of intellectual humility. Hence, these measurements only capture whether an individual has a relative degree of intellectual humility or very little (e.g., intellectual arrogance; see Haggard et al., 2018; Krumrei-Mancuso & Rouse, 2015; Leary et al., 2017). No scale or measurement of intellectual humility, to my knowledge, has sought to calculate whether an individual had an excess of intellectual humility (i.e., intellectual servility). My proposed model of intellectual humility contextualized to an undergraduate education identifies a significant gap in this thinking. If it is accurate, then a quantitative measurement is needed to determine a low, moderate, to high positionality of intellectual humility, and functions along an Aristotelian understanding of intellectual virtues as a spectrum between two poles wherein the desired virtue (e.g., intellectual humility) operates as

the golden mean. This philosophical grounding of virtue requires intellectual humility to be specifically measured for its absence *and* excess. Thus, a new intellectual humility scale should be developed that includes a level of confidence for one's viewpoints, beliefs, and knowledge, as well as an empathy for another's.

As previously confirmed in psychological research, participants described intellectually humble students as more open and curious to new experiences, more willing to take risks and have a tolerance for ambiguity, more creative and collaborative, and more interested in learning for the sake of learning (Davis et al., 2016; Leary et al, 2017; Porter & Schumann, 2018; Zmigrod et al., 2019). Similar to Jarvinen and Paulus's (2017) findings on emotional security, faculty described college students who displayed intellectual arrogance or servility as emotionally insecure or dictated by an underlying insecurity. The students manifesting the former were described as overconfident and lacking empathy, denying or ignorance of their intellectual abilities, whereas the latter displayed insecurity to faculty through their anxiety, panic, aspects of fear, despair, depression, or avoidance of speaking or approaching others. In contrast, intellectual humble students were perceived as brilliant and willing to assist their fellow classmate when appropriate. However, Krumrei-Mancuso et al. (2019) found intellectual humility in students to be positively linked to general knowledge but not to cognitive ability. In essence, grade point average was not correlated to the level of a student's intellectual humility. One of their main conclusions reinforced intellectual humility as positively associated with more reflective thinking, need for cognition, intellectual engagement, intellectual curiosity, intellectual openness, and open-minded thinking.

Participants emphasized the importance of modeling and humanizing themselves to college students in order to demonstrate and encourage a virtuous disposition in those they

taught. The explanations of faculty on modeling intellectual growth to students corresponded with Owens and Hekman's (2012) qualitative inquiry of leader humility as legitimizing growth to their followers. Moreover, their identification of three behaviors that humble leaders displayed—owning their limitations and mistakes, highlighting the strengths and contributions of their followers, and modeling teachability—had remarkable similarities to faculty's understanding of their own intellectual humility. Faculty in my study, like leaders, legitimized how to fail well and what an appropriate response to one's limitations looked like. They modeled and communicated these behaviors for the benefit of their followers, the students. In addition, Owens and Hekman's (2012) contingencies of leader humility by age and sex mirrored my findings that faculty's sex and age affected whether they admitted, or felt comfortable owning, their intellectual limitations to students or another faculty member.

Discussion of Relevant Literature

A grounded theory of intellectual humility contextualized to undergraduate education held unexpected linkages to research topics in a few meaningful areas. Social cognition theory, mindset theory, new understandings of general humility, and research on character and virtue development each had interesting and valuable connections and applications to the nature and formation of intellectual humility when situated to undergraduate students.

Social Cognition Theory

Participants' other-reported judgments of college students held striking similarities to the stereotype content model, the impression that a person concludes of another. In their empirical analysis of stereotypes, Fiske et al. (2002) concluded that groups of individuals were labeled based on their perceived warmth and competence. Moreover, a person's status and propensity for competition were found to have a predictive effect on whether they were perceived as warm

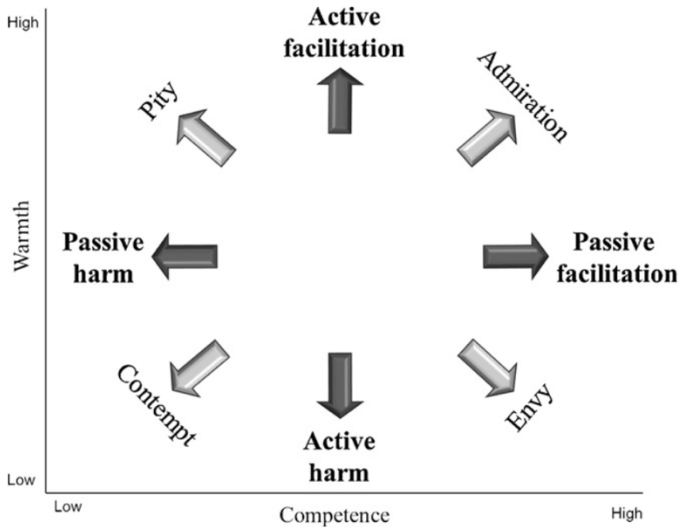
(e.g., low competition) or competent (e.g., high status). A growing body of research has revealed intergroup and interpersonal relations—or social cognition—to have two dimensions, warmth and competence (Cuddy et al., 2008; Cuddy et al., 2011; Fiske, 2018; Fiske et al., 2007). In other words, people working together are largely perceived by their levels of warmth and competence. Referred to as the Big Two, the former was comprised of "such traits as morality, trustworthiness, sincerity, kindness, and friendliness," whereas the latter was made up of "efficacy, skill, creativity, confidence, and intelligence" (Cuddy et al., 2008, p. 63). Here, intellectual humility as the display of confidence and empathy held in tension is found to overlap with stereotype content model.

However, most research conducted on stereotype content model has explored these warmth and competence as separate, independent variables. For the most part, individuals are described as high in one dimension and low in the other. Few studies have explored linking the two. For instance, what does a person who exhibits both high warmth and high competence look like? Are these mutually exclusive dispositions? For instance, Cuddy et al. (2011) studied warmth and competence in organizations as "the central dimensions of group stereotypes" and concluded that judgments were either "ambivalent—characterizing groups as warm but incompetent (e.g., older people, working mothers) or competent but cold (e.g., 'model minorities,' female leaders)" (p. 73). This is significant based on my findings given that intellectual humility, when displayed to another, was perceived as holding the competence dimension (e.g., confidence) and warmth dimension (e.g., empathy) in tension.

Based on Figure 13, Cuddy et al. (2011) posited that high warmth and high competence predicted the emotion of admiration, whereas moderate levels of both warmth and competence determined how active or passive their behaviors were perceived.

Figure 13

Stereotype Content Model Predictions for Emotions and Behaviors



Note. Adapted from "The dynamics of warmth and competence judgments, and their outcomes in organizations," by A. J. C. Cuddy, P. Glick, & A. Beninger, 2011, *Research in Organizational Behavior*, *31*, p. 81. (https://doi.org/10.1016/j.riob.2011.10.004). "Stereotype content (high or low warmth and high or low competence) is represented by the horizontal and vertical axes. Emotions are represented by the lighter arrows and behavioral orientations by the lighter arrows within the figure" (p. 81).

Perhaps most noteworthy is the gaping hole in the middle of the model itself where warmth and competence meet. Cuddy et al. (2011) concluded that individuals who were judged or perceived by others as both warm and competent displayed positive behaviors and emotions linked to how greatly they were admired. They understood this combination as associated with high-status or dominant ingroups who elicited admiration. Cuddy et al. (2011) concluded in the summary of their findings:

> While warmth and competence judgments are partially inferred from stereotypes of an individuals' group, people have some control over the impressions they make along the two dimensions, not only through their overt behaviors (e.g., helping a colleague finish a project, performing well in a negotiation, etc.), but also through their body language. It

> seems that many, if not most, nonverbal behaviors do, at least at a general level, convey *either* warmth *or* [emphasis added] competence. Assuming this is accurate, one may argue that people are constantly, and subtly, projecting warmth/coldness and competence/incompetence through nonverbal cues in virtually all of their social interactions. (p. 88)

What is striking about this passage is the either/or designation and a lack of integration of the big two dimensions, even when associated with nonverbal behaviors. In contrast, professors admired intellectually humble students for their high confidence and empathy as qualities held together. As participants noted, these tandem qualities showcased in students as "service-oriented" (Judy), "really open, brilliant" (Jane), and "unconcerned about impressing me" (Albert) served to enrich the betterment of their classroom and fellow classmates.

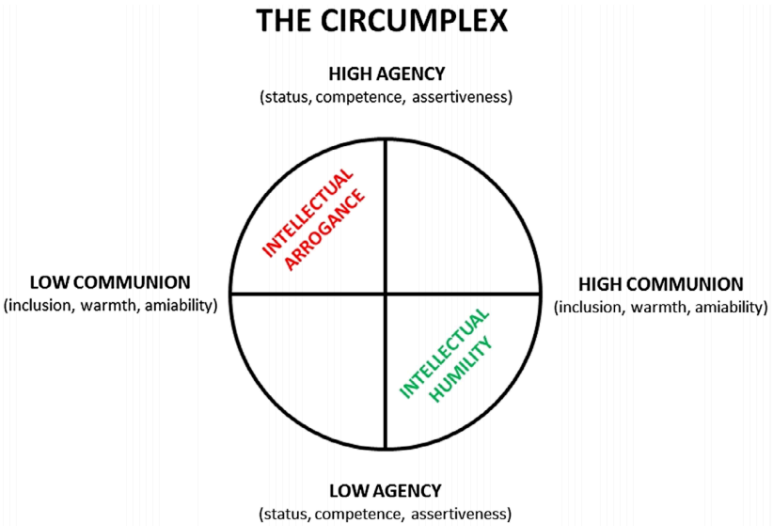
Building off the stereotype content model, Gregg et al. (2016) Circumplex Model made connections to intellectual humility by including competence and warmth as part of their dimensions (see Figure 14). They defined the circumplex model as "a general model that features a pair of orthogonal super-dimensions characterizing a diversity of psychological phenomena" (p. 62), and cited Cuddy et al. (2008) in its formation. When measuring for warmth and competence, they used a 7-point Likert scale on the following adjectives: caring, helpful, supportive, friendly, kind, gentle, and nice (e.g., warmth dimension); and effective, strong, powerful, capable, intelligent, and talented (e.g., competence dimension). Both lists encompassed a range of adjectives participants used to describe intellectually humble college students, most especially helpful, supportive, intelligent, and talented.

Through their analysis, Gregg et al. (2016) found that their participants' self-reported levels of warmth (high) and competence (low) predicted "*correct* normative evaluation of"

arguments based on a rational objectivity (p. 68). In sum, a person who exhibited intellectual humility had high warmth and low competence whereas high warmth and high competence was left undefined (see Figure 14). The upper right quadrant of their model where these ideas are represented contains nothing, literally. Their study failed to explore the disposition of a person who has both high warmth and competence. Intellectual servility is missing entirely in their model.

Figure 14

The Circumplex of Agency and Communion



Note. Adapted from "Intellectual arrogance and intellectual humility: Correlational evidence for an evolutionary-embodied-epistemological account," by A. P. Gregg, N. Mahadevan, & C. Sedikides, 2016, *The Journal of Positive Psychology*, *12*(1), p. 63. (https://doi.org/10.1080/17439760.2016.1167942).

Although competence and confidence, like warmth and empathy, are not interchangeable concepts, their connections are unmistakable. The intellectual dimension of intellectual humility is comprised of how one perceives oneself (e.g., confident or not) and how others perceive that same person (e.g., competent). The same dynamic exists within the humility dimension as how one perceives oneself (e.g., empathetic or not) versus how others perceive someone (e.g., warm).

Thus, intellectual humility as the integration of two dispositions has the potential with future research to significantly correlate to Cuddy et al.'s (2011) and Fiske's (2018) research on how others are perceived by explaining how people perceive themselves within the same situation.

In her metanalysis of research conducted on stereotype content model, Fiske (2018) concluded that social groups perceived as high in competence and warmth included "the middle class, citizens, and dominant religionists [wherein] people report[ed] pride and admiration for these groups" (p. 68). Immigrants and the homeless were judged or perceived by others as low in both. What remains undetermined is an excess. For instance, can a group of people have an excess of competence and/or warmth as perceived by another? How is an individual perceived who is overly competent or warm in a social setting? What I am challenging here is how an excess of the two dimensions is understood given that intellectual humility in its excess manifested an intellectual servility. These ideas remain unexplored within the social cognition literature.

Mindset Theory

In her metanalysis of literature examining mindsets, Dweck (2012) acknowledged the significant differences in a fixed versus growth mindset. Individuals who operated with the former viewed their intelligence as fixed, avoided challenges, feared being exposed as unintelligent, were less resilient, and more easily discouraged when faced with setbacks. In sum, like intellectually arrogant or servile students, they had a low tolerance for discomfort. In contrast, individuals with a growth mindset believed their intelligence was in the process of development, sought out challenges to their learning, showed resilience in failure, and were more motivated to achieve even when faced by negative stereotypes. These students faced their limitations as temporary in nature and as something that could change with the appropriate

effort. Though not yet empirically confirmed, a growth mindset has potential significant overlap with the process of unlearning through intellectual humility.

One problematic aspect to mindset research is the insufficient evidence offered for successful interventions that facilitate a change of mindset within a liberal arts and science education. Most of Dweck's samples were either kids or adults, not college students. No process is outlined through which individuals changed their mindset from fixed to growth. In an updated edition of her book, *Mindset*, Dweck (2006/2016) mentioned interventions, which included cognitive therapy, "simply learning about the growth mindset," and a consolation that "change is also hard" (p. 234). Implicit within her examples of operating from a fixed versus growth mindset was simply an acknowledgement to *give up* a fixed mindset by offering a specialized awareness of what a growth mindset should look like. When she personally tried to make the change of mindset, Dweck shared how "acutely aware of how unsettled" (p. 235) she felt. In other word, discomfort played a role in this change. A tolerance for discomfort was central to my model of unlearning as individuals progressed toward a love of learning.

Intellectual humility as an owning of intellectual humility, a tolerance for discomfort, and a love of learning showcased a process for unlearning that was perceived to occur within students. Although not specifically based on Dweck's mindset, the unlearning process that faculty described has symmetry with her work. Unlearning a habit of the mind (e.g., a student's approach to studying or receiving feedback) resembles a fixed mindset in students' experience of failure or setback. In addition, how students responded to discomfort made all the difference in whether they (a) continued in their academic pursuits, (b) showed resilience, or (c) sought out help from the professor. Given future research, the process of unlearning vis-à-vis intellectual

humility has the potential to unveil an important avenue for shifting from a fixed to a growth mindset in college students.

Dweck (2006/2016) also explained three misunderstandings of acquiring a growth mindset, which she described as a false growth mindset. First, Dweck argued that simply equating an openness or flexibility as having an "open mindset" is not enough to "do the hard work of cultivating their own abilities" (p. 215). Second, it was damaging to the learner if a teacher unlinked praising the effort from the desired pedagogical outcome. In other words, do not give false encouragement. Dweck further explained, "we indeed praise the process, but we *tie it to the outcome*, that is, to children's learning, progress, or achievements" (p. 216). The third misunderstanding most had with a growth mindset was empty or shallow praise (e.g., You can do anything!). She emphasized the importance of instructors assisting students gain the skills and resources they needed to be successful at whatever goal or outcome that was being taught.

Unfortunately, there is limited research that connects mindset and intellectual humility, and even less research situating these concepts within a university context. The quantitative research that does exist has proven significant in linking the two. One study of seven within Porter's (2015) dissertation found her university students who had a growth mindset:

> Had significantly higher intellectual humility and were significantly more open to the opposing view relative to those in the fixed mindset condition. Moreover, the mindset induction significantly affected participants' intellectual humility, which, in turn, shaped participants' responses to disagreement. That is, the growth mindset induction boosted participants' intellectual humility, which, in turn, made them more open to the opposing view relative to those in the fixed mindset condition. (p. v)

Following up on these findings, Porter and Schumann (2018) identified a growth mindset of intelligence as "*a potential psychological lever*" (emphasis added, p. 154), wherein the greater a person's intellectual humility the more agreeable and open to learning differing perspectives. In sum, students with a growth mindset were more likely to have intellectual empathy. In cases of disagreement, they suggested that "intellectual humility undergird[ed] a persistent motivation to learn" (p. 153). Under these circumstances, intellectual humility, a growth mindset, and an openness to alternative perspectives are arguably critical structural supports for the process of learning—and unlearning—within a 4-year, liberal arts and science, university education.

New Research on General Humility

Researchers have argued for a new definition of humility since Richards' (1988) argument on why humility should be considered a virtue. He stated, "unlike self-contempt and low self-regard, [humility] is a virtue which could be present without paradox in a person who deserves *high* regard" (p. 259). The complexities of measuring for humility, however, have proven difficult to adequately capture (Haggard, 2019; Tangney, 2000, 2009). New philosophical definitions of humility within the past few years have been followed by the development of original scales. Nadelhoffer et al. (2017) argued a humble person held middle ground between an egotist and solipsist and defined humility as low self-focus and high other regard. Wright et al. (2018) developed a new measurement scale to capture this account of humility.

My proposed model of intellectual humility has corresponding elements to Wright et al.'s (2018) dual-dimension description of humility as a low self-focus and high other-focus. Their understanding of humility overlaps with my findings that intellectually humble students had both an appropriate confidence as self-focus and empathy as other-focus. To measure this notion of humility, Wright et al. (2018) created the *Dual-Dimension Humility Scale*, a 25-item, 7-point

Likert scale with five factors: religious low self-focus, cosmic low self-focus, environmental low self-focus, high other-focus, and valuing humility. They identified this view of humility as two dimensional—intrapersonal and interpersonal—mitigating for any motivational or behavioral aspects. To identify a low self-focus the team of psychologists and philosophers argued for an awareness of both religious (e.g., God's glory in comparison to my own) and secular (cosmic—e.g., interrelated sense of how small we are in the universe) aspects. Given their findings in verifying a new measurement, Wright et al. (2018) suggested humility was a "meta" virtue as "a *pre-condition* for developing other virtues" (p. 118). Other scholars have also concluded that humility as the foundational virtue, necessary for the exercise of all other virtues (Owens et al., 2013; Wright, 2019)

Character and Virtue Research

The development of character and virtues in college students is also experiencing a renaissance in higher education. Although humility is most commonly listed within this research (see Brooks et al., 2019; Callina et al., 2017; Murray et al., 2019), intellectual humility has yet to be fully included. My conclusions on the nature and formation of intellectual humility within undergraduate education speak directly to the cultivation of virtue as developing a tolerance for discomfort in the learning process.

Lamb et al. (2021) put forward seven strategies for cultivating virtue in postgraduate, emerging adults through "an Aristotelian model of character education" (p. 1). These strategies were based on the Oxford Character Project in the United Kingdom. They included:

- habituation through practice,
- reflection on personal experience,
- engagement with virtuous exemplars,

- dialogue that increases virtue literacy,
- awareness of situational variables,
- moral reminders, and
- friendships of mutual accountability. (Lamb et al., 2021, pp. 4–5)

Their emphasis on practicing, engaging, and dialoguing with others on virtues corresponded with the virtuous cycle that participants described as modeling intellectual humility in real time to students. Lamb et al.'s strategy of reflection also mirrored Jones' (2012) belief in the importance of reflective activity for the cultivation of intellectual humility.

Using the Oxford Character Project data, two additional studies explored the following virtues—gratitude, humility, service, wisdom, and vocation—in connection to thematic expressions of ethical leadership and the development of character. The definition of humility used in these studies was an accurate self-assessment of oneself where "the humble person will consider others' needs and be open to new developments and ideas and willing to revise their own positions" (Brant et al., 2020, p. 421). Based on three years of qualitative, open-ended questions and answers, Brooks et al. (2019) "reported positive growth in self-reflection and increases in virtues such as humility and gratitude" (p. 174). These studies, however, focused solely on postgraduate student populations. Researchers are just starting to apply the seven strategies for cultivating virtue to undergraduate settings. Another group of character and virtue scholars sought to apply principles of humility to postsecondary education.

Callina et al. (2017) were interested in the character development of United States Military Academic cadets that "build trust, inspire honorable living, and reduce risks to professionalism" (p. 16). Of their character strengths, humility was one of five identified as influencing trust, honorable living, and professionalism. However, no analysis was provided in

their research as to how humility was (a) defined, (b) measured, and (c) proposed to be developed in cadets. In fact, they concluded that "researchers cannot learn about the specific character strengths that mark an individual (his or her signature strengths) by studying a group of people within which the individual is embedded and computing means about inter-individual differences in character attributes" (p. 23). This admission speaks directly to the importance of prioritizing qualitative, interpersonal inquiries into the nature and formation of character and virtues, like intellectual humility, in education.

Building on Callina et al. (2017) research, Murray et al. (2019) identified "five distinctive performance profiles, uniquely related to specific character factors" (p. 1). Their analysis was based on 1,297 cadet performance scores, ranging from academic (e.g., grade point average [GPA]), military (e.g., leadership), and relational (e.g., humility), among many. Three of their five profiles included varying levels of academic performance and cadet's confidence, wherein "relational character, commitment, and honor were associated with the *High GPA and Confident* profile" (pp. 7-8). Murray et al. (2019) concluded that the most problematic profile was a cadet profile of *Low GPA but Confident* because they were "somewhat unaware of their shortcomings or that they are insensitive to differences between their performance and those of high-performing cadets" (p. 8). These cadets—overconfident and ignorant of their limits—held similarities to the intellectual arrogance described by professors of their undergraduates. Although intellectual humility was not explicitly defined outside the use of the Relational Humility Scale (see Davis et al., 2011), overconfidence was juxtaposed with humility. Empathy was mentioned in one scale but never brought up in their findings.

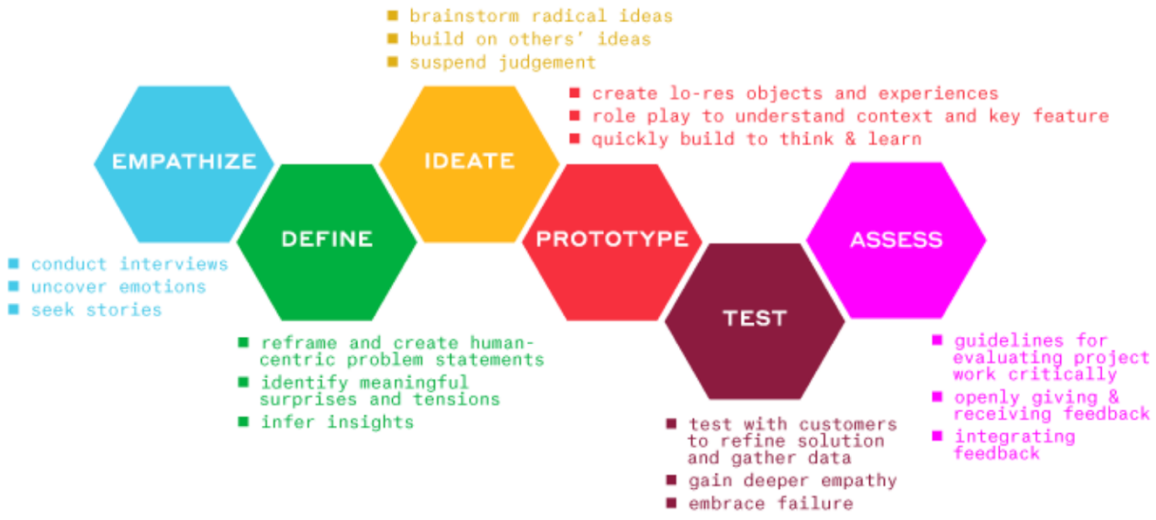
Development of Empathy

Intellectual confidence and empathy were central to faculty's understanding on how to cultivate intellectual humility. This finding led me to question where empathy specifically is taught and developed within the academy. A few places explicitly taught for empathy in business entrepreneurialism and design thinking as well as specific disciplines within the arts and humanities.

Drs. Bill Burnett and Dave Evans (2016) have popularized the process of design thinking in their bestselling book, *Designing Your Life,* which is also a course they teach at Stanford University of the same name. In Figure 15, the most recent version of their design thinking process is outlined in six steps where learning how to empathize initiates the entire method.

Figure 15

Design Thinking Process Diagram



Note. Adapted from "Empathize@it," by R. Balcaitis, June 15, 2019, Hasso Plattner Institute of Design at Stanford University, d.school Executive Education, retrieved from https://empathizeit.com/design-thinking-models-stanford-d-school/

The ability to empathize is primarily understood to assist students in reframing problems by creating human-centered design solutions, used to brainstorm, test, and assess their solutions along the way.

Design thinking as a pedagogy is utilized for teaching the importance of empathy, the first stage of design thinking. Business faculty in my study actively taught the principles of design thinking, most specifically Kelly, Gus, and Peter in their marketing classes. Each emphasized entrepreneurial and creative thinking as stemming from the development of empathy for the other, in this case their customer. Most of the business faculty argued how business students needed to have an adaptive, pro-risk-taking orientation to solving complex problems within corporate and nonprofit settings. Most undergraduates, however, were perceived to struggle with both the process that was taught to them as well as viewing themselves as creative enough to operate within it. The development of intellectual humility, in which case, was noted as salient and complimentary to the tasks assigned in class.

Arts and humanities' disciplines like theater and religious studies intentionally develop empathy in their students by requiring them to present, embody, or act as if they were a historical or fictional character. A definitive example shared by one participant called this process developing a sympathetic imagination. Class assignments or projects designed for students to embody a historical character and placing them in dialogue with another character from the same time period. Toni described her major class project in religious studies as designed to "cultivat[e] sympathetic imagination [by] trying to treat people that belong to groups that you don't belong to as real people, just as complex as you are, with agency, with families, with histories." The outcome of such an assignment, according to Toni, is meant to assist students from rejecting or writing off as insignificant whole groups of people. Toni acknowledged the difficulty in

measuring a change or growth in students' empathy by using a sympathetic imagination. However, in their course evaluations, they unanimously comment that embodying and characterizing someone else's experience were significant takeaways. In essence, students learn to intellectually empathize.

Implications for University Pedagogy

How faculty address student limitations, the discomfort that arises, and whether students reach or recover a love of learning all have enormous implications for pedagogical practices. While intellectual humility may not be explicitly added as a learning outcome in course syllabi, my recommendations center on the levers to cultivate intellectual humility via an evident pedagogy that builds intellectual confidence and empathy. My findings support a greater faculty awareness of how their learning strategies promote these two cognitive abilities. Intellectual humility—its existence and display—has profound influences on faculty and students alike. I address these implications in the following three educational arenas: (a) the pedagogical practices faculty employ in their classrooms, (b) the revisitation of assignments and grading rubrics, and (c) faculty training and development to teach with intellectual humility.

Pedagogical Practices

Participants made an underlying assumption when it came to students' mindset in their classroom: students achieved and learned more when they were motivated by their own interest in the subject rather than a desire to get a good grade. Faculty implicitly suggested the order of this approach affected everything else in the classroom. They perceived students who were extrinsically motivated (e.g., How do I get an 'A'?) as operating without a proper care for learning, whereas they believed their teaching was successful when students were implicitly

motivated to succeed. The importance for student interest to precede any grade-orientation is backed up by research on the effectiveness of university teaching.

In his award-winning study of what makes a teacher great, Bain (2004) systematically identified how to spot the habits of successful, effective university teachers. Although Bain was unaware of intellectual humility—the term was not coined yet—he concluded outstanding teachers have an expert knowledge of their subject, care about truth and love learning, have high expectations of and create a strong trust with their students, practice decency, and collect routine feedback on their teaching. Each of these attitudes and behaviors speak to the nature of intellectual humility as described by participants in my study, such as modeling virtue, adopting an open-mindedness, and desiring to become a better teacher. In essence, these professors "want students to do something that human beings don't do very well: build new mental models of reality" (Bain, 2004, p. 27). This idea squares with unlearning old, narrow, or constricted mental models as essential to the aims of effective, intellectually humble teachers. What professors intended to develop in students was a habitual love of learning, or as Bain (2004) described:

> Multiple perspectives and the ability to think about their own thinking; that they tried to understand ideas for themselves; that they attempted to reason with the concepts and information they encountered, to use the material widely, and to relate it to previous experience and learning. (p. 10)

Effective professors, in sum, facilitated an awe and fascination in students to realize the limits of their knowledge. Grades that students received were viewed as a by-product to successful teaching or entirely tertiary after understanding one's own limitations. There were not primary. Intellectual humility is essential to outstanding teachers, "in part, from the willingness to

confront their own weaknesses and failures" (Bain, 2004, p. 19). These faculty modeled the high expectations they had of themselves to their students.

How did faculty build new mental models of reality? Aligned with my own findings that students must first own their limitations, the best teachers created "an expectation failure" (Bain, 2004, p. 28). Bain described this as intentionally facilitating "a situation in which existing mental models will lead to faulty expectations, causing their students to realize the problems they face in believing whatever they believe" (p. 28). Instead of explicitly telling students how they are wrong or where their thinking had erred, these instructors employed a strategic line of questions they hoped would illuminate to students their own mistakes or epistemic inconsistencies. As described by many of participants, Leo synthesized his pedagogical practice as:

> I always try and use whatever students say in a positive way even it's obviously wrong, or even incoherent. I always try and pull something out of it and spin it in such a way that I can maybe raise another question or pose it back to the student or something like that.

Teachers additionally avoided blaming students for difficulties they themselves experienced and were willing to acknowledge the collaborative effects of other teachers that made their classroom better and more enjoyable.

Even though intellectual humility was not defined as a term in 2004, outstanding professors as outlined by Bain taught for and with it. Per my proposed model in Figure 12, these teachers overcame their discomfort, modeled a tolerance for it, and were willing to display intellectual limitations for the benefit of classroom learning and their students' well-being. They did not perceive intellectual humility as incongruent to the pedagogical outcomes of effective, integrative learning. The limitations of faculty and students were both welcomed. Not only that, these teachers sought to expose student limitations for the direct purposes of facilitating a change

to their mental mindsets. My study of tenured faculty largely confirmed and aligned with these findings. College students developed new ways of thinking—and unlearned old mental models—as a result of their own intellectual humility which was affected by outstanding faculty modeling the process too.

Revisiting Assignments and Grading Rubrics

University faculty are wise to consider how their own assignments, rubrics for grading, and policies surrounding revisions and make-up exams impact college students and a willingness to own intellectual limitations. A crucial consideration hinges on how to revise undergraduate course deliverables and encourage students to reform, what participants described as, a "get-it-off-my-plate" mentality in order to build a greater tolerance for discomfort.

Normalizing Failure. Instead of overloading college students with deliverables, smarter approaches are available to faculty for facilitating their learning outcomes. A concern for cultivating intellectual humility should lead faculty to hone their assignments into a dialogue with students on the limits of current mental models and fostering a tolerance for discomfort. For instance, strategies may include prescribing more reflecting or integrative assignments that test the epistemic foundation for student thinking on a subject. Gus made intellectual limitations a theme of his classes by focusing on how students define and understand success. Students, he believed, "have learned to measure success in a fairly narrow way." Student reflections via blog posts or podcasting are a central strategy he uses to make students aware of the process:

> Because they're so eager to know, [quoting a student] "Show me what an A looks like. Show me what an example project looks like." Rather than sort of looking for the answer, they start getting curious about what's the next step in the process.

This approach directly aligns with conclusions made by Jones (2012), Baehr (2016), and Lamb et al. (2021) that teaching for intellectual virtues, such as intellectual humility, requires a greater reflexive activity by students.

In addition, faculty should incorporate failure—of others, of students, and of themselves—more intentionally into their course pedagogy, assignments, lectures, presentations, and discussions. As argued by Bain (2004), an expectation failure is a powerful tool to illuminate faulty thinking, and when done right, should include a caring sensitivity and plan for the discomfort that will most likely result. Failure is not an end in itself, but a process for learning from and normalizing the display of limitations. In fact, individuals become aware of another's intellectual humility, lack or excess thereof, when displaying a response to their intellectual limitations. Hence, the first step of normalizing failure starts with faculty modeling how to properly display the limits of one's knowledge in real time.

Applications in Real Time. What are the proper ways limitations are displayed? The answer lies within classroom communication between faculty and students as well as students and their classmates. Faculty are required to be adept at knowing how to facilitate intellectual debate and disagreement while still retaining a faculty-student connection, good rapport, and trust. As she reflected on her time as a professor, Kim shared, "you also grow in your confidence of just applying material and modeling the intellectual processes you're trying to teach." This shift in confidence looked like an unwillingness to explore student questions in real time early in her career, whereas now she says, "Let's use the skills we learned in class and see what happens."

Most importantly, instructors can convert these uncertainties and potential disagreements into, what Peter described as, moments of serendipity—where comfortability is not prioritized,

and yet students do not feel threatened. While these moments may be intentionally fostered, in most cases they remain spontaneous. What is possible is pedagogically planning for the conversion of discomfort into serendipity when it is occurring. Perhaps the most common form of serendipity may come from inviting former students to openly share their experiences of applying and/or failing at the course objectives. A strategy Judy consistently employed. Here in my study, many faculty emphasized how students' love or enjoyment of learning was captured when class outcomes or skills were successfully applied to a real problem or situation. Former students as guest speakers also provide ample chances for the right message to stick.

Pedagogy of Gratefulness. Faculty should also identify assignments that align with moral character development and virtuous practices. If admitting what one does not know is a desirable outcome within a course, professors have every reason to foster virtuous habits in students. One specific strategy identified by Lamb et al. (2021) was instituting a pedagogy of gratefulness. This approach may look like cultivating grateful reflective journal entries or sending a handwritten letter to a friend who impacted one's character for the better. The creation of moral reminders and engagement with scholars who model character is also shown to cultivate the same virtuous cycle and leave a lasting imprint on student learning. In sum, assignments infused with desired character traits and intellectual virtues have the chance to outlast a traditional task with greater implications for life-long learning and a sustained change of mindset.

Blind Grading. Finally, faculty concerned with intellectual humility are wise to examine their grading policies and rubrics given the significance students place on receiving their grades. Most students experience the awareness of their intellectual limitations firsthand by course grades. Moving students along a spectrum of their intellectual arrogance or servility is more

effectively done when ensured by trust. Trust of the process and position of faculty in how students are being graded. Thus, students will either reject, stress, or accept their grade as representative of their trust in the process that is clearly outlined and followed. A faculty member's decision to release, communicate, and follow-up with students plays a significant role in which reaction students choose. One recommendation therein is for professors to admit the potential of bias and institute a policy of blind grading where homework, papers, and exams omit students' names. This policy could reassure students that when their work is graded, faculty are not taking into consideration any interactions—positive, negative, or otherwise—including personal characteristics of their race/ethnicity, sex, or other identities. Where this policy has the potential to unravel is on faculty's review of multiple drafts or arguments within assignments. However, it has the power to off-set any first-impression biases of students.

Faculty Training and Development

A long-standing debate exists within higher education that has split academic communities on the order of student learning (Bain, 2004). On one side of that debate, faculty have argued that college students need to learn the basic facts and foundational knowledge of a discipline before they learn how to apply their understanding for practical use. Another school of thought has rejected the either/or dichotomy and put forth that students "must learn the facts *while* learning to use them to make decisions about what they understand or what they should do" (Bain, 2004, p. 29). Faculty who used the latter approach to instruct students prefer an integrative pedagogy that dismisses the traditional bounds of disciplines. They center their instruction on integrating knowledge and facts by making them practically applicable, connected, and synthesized to a desired context or situation. In sum, they prioritized an integration of learning (Barber, 2020).

This debate is significant given the expectations of faculty that are laden within the order of student learning. Students who are taught to first memorize or learn foundational principles are instructed implicitly with the expectation that any failure is an invalidation of their ability to apply their learning. In other words, student limitations are not welcome. They must first learn to master the material. This expectation is flipped when instructing from the alternative perspective. Students who simultaneously learn the facts and skills to apply them are aided by a reverse expectation that misuse, uncertainty, or failure is a by-product of learning. Student limitations, in essence, are exposed so that they are overcome and corrected. The priority of order has a significant effect on the unlearning process engaged by intellectual humility. The emphasis of this framework is akin to unlearning. Students who receive feedback from a posture of "Did I apply this correctly?" are allowed to unlearn and rethink their process. The result of which orients the learning from a place of tolerance for discomfort. How students react to their limitations matters.

As a researcher, I was overcome by the sheer variety of student responses to their limitations and the corresponding awareness and appropriate reaction required of faculty to properly respond to each instance. Students when confronted by discomfort may express any variation of anxiety, panic, fear, despair, depression, unwillingness to change their behaviors, disengagement, displacement and self-medication behaviors, and/or avoidance from overcommitment. Empathetic faculty members made it their priority to know by asking their students to admit the nature of trouble with their intellectual limits. One step was just becoming aware of the complexity of student discomfort, how faculty reacted from this point was dependent on how intellectually humble (e.g., confident or overconfident) they were.

This dynamic of confidence and empathy within faculty has strong linkages to how students successfully navigated the academy via "a roughly chronological sequence of predictable major challenges" (Chambliss & Takacs, 2014, p. 3). In sequential order, identifying friends, making academic choices, broadening their network, and consolidating their gains into preparations for after college. What made the difference between completing and launching from college, or not, was "encounters with the right person" (p. 3). More specifically, Chambliss and Takacs's (2014) 10-year case study analysis of 100 students at Hamilton College in Clinton, New York resulted in a central finding that what mattered most in college were "the right people" made up of interpersonal relationships, connections, and long-lasting friendships with fellow classmates and faculty (p. 5). A professor who operates with intellectual humility may in fact become that right person for a struggling college student. The same could be said of classmates and friends who are also intellectual humble.

Thus, faculty should be made aware of the power and process of owning intellectual limitations—their own and modeling for students to do likewise. My findings suggest the development of intellectual humility in faculty is a possibility given the trainability of confidence and empathy. A meta-analysis of studies on empathy training found most programs were effective in increasing empathy. More specifically, developing empathy in university students was identified with positive statistical significance over other types of individuals who received the same training (Teding van Berkhout & Malouff, 2016). Common approaches to empathy training included role play, lecture-based demonstrations, modeling behavioral skills, and feedback training. Research on confidence on the other hand is commonly separated into how to increase self-esteem, self-efficacy, or academic confidence. With that said, any trainings should begin with a working definition of intellectual humility as a proper attention to and owning of

intellectual limitations (Haggard, 2019; Whitcomb et al., 2017). From there, faculty are expected to self-report on their own intellectual humility by completing a measurement tool. Second, their positionality on my proposed model along a spectrum of intellectual arrogance, servility, or humility will illuminate how to counterbalance for any lack or excess of confidence or empathy as a practical tool for faculty development. Faculty open to this kind of feedback are ready to receive pedagogical strategies to own in real time what they do not know and, more specifically, learn how to facilitate classroom discussion when asked a question by their students that illuminates the gaps within their own knowledge. My proposed model of intellectual humility in undergraduate education serves as a powerful tool to both (a) identify a positionality on what faculty may or may not lack according to their pedagogy and (b) cultivate strategies to develop a tolerance for discomfort and a mixture of confidence and empathy.

Recommendations for Future Research

Additional Disciplines. Future research should investigate the following questions brought up by this study. First, my proposed model of intellectual humility contextualized to undergraduate education requires additional research that includes the many perspectives not captured in this study. From an academic standpoint, those perspectives include engineering, pre-law, additional minority studies departments, and education-focused disciplines, among others. How do professors who teach in these departments situate intellectual humility, if at all, in terms of their pedagogical practices and academic material? Additional perspectives are encouraged in order to more adequately ground my model of intellectual humility in a broader university education context.

More Diverse Backgrounds. Any future research on intellectual humility within undergraduate education must also include more diverse faculty backgrounds. Although this

study did not prioritize faculty member's racial/ethnic identities, forthcoming studies should capture the unique and important perspectives from minority and first-generation professors. Overarching questions include: Is intellectual humility a virtue that these disciplines and faculty members view as worth wanting? How does a faculty member's race or ethnicity affect, if at all, their display of intellectual limitations? What are first-generation Ph.D. faculty's lived experiences of intellectual humility?

Including Undergraduate Student Perspectives. Subsequent studies of intellectual humility should also incorporate the qualitatively gathered perspectives of undergraduate students. This study did not prioritize their perspectives in part because most intellectual humility scales utilized student self-reported intellectual humility in their creation. College students, however, make up the majority of physical or—in a pandemic—virtual bodies in the classroom. Thus, how do college students' experiences align, correspond, and/or differ from faculty's perspectives of them within the classroom? What additional ways do undergraduates express their intellectual limitations? What hinders them from displaying their limitations to others? These questions remain unexplored and are significant for the confirmation of my proposed model of intellectual humility contextualized to undergraduate education.

New Scale and Measurement Tool. Based on the limitations of current measurements and scales, future research is recommended that adequately captures the entire spectrum of intellectual humility. As previously argued, most psychological scales were developed with a deficit-appropriate dichotomy of self-reported intellectual humility and lacked the ability to capture if someone had too much intellectual humility. My proposed theory, if proven accurate, requires a new scale that reports a deficit-excessive measurement of intellectual humility. Part of this scale needs to measure levels of confidence and empathy as significant factors of

individual's positionality. A scale that captures a deficit-excessive spectrum of intellectual humility can then be used to assist in the proper cultivation of an Aristotelian notion of this virtue.

Administrative Leaders. Finally, more research is necessary on how intellectual humility can benefit university leaders and administrators. This study made a few important linkages between intellectual humility in education and leader humility in business. Specifically, faculty, like leaders, model the way by humanizing themselves for the benefit of the individuals they instruct. Additional studies should explore how intellectual humility in university leaders affect their decision-making, effectiveness, and reputation across their institution. More specifically, what impact do higher education leaders have when modeling leader humility? How does their ownership of intellectual limitations affect the institutions they lead?

Conclusion

This dissertation study was guided by three main research foci: (a) to discover the nature of intellectual humility contextualized to a liberal arts and sciences, undergraduate education; (b) to understand how, if at all, intellectual humility was cultivated in college students; and (c) to examine faculty's perceptions of their own intellectual humility. Toward these ends, I conducted 33 interviews, and then transcribed, coded, analyzed, and member checked with participants each interview. In an effort to ensure the quality and robustness of the coded used and categories determined, I peer debriefed 20% of the coded interview transcripts with two Ph.D. colleagues. My findings revealed intellectual humility was perceived to facilitate a process of unlearning, essential for the success of studying and learning at the undergraduate level. The content of what students needed to unlearn differed slightly by academic community. Arts and humanities professors focused primarily on the quality of student writing, whereas science professors were

concerned by student's study habits. Business faculty perceived student's unwillingness to operate within ambiguity and uncertainty.

In addition, faculty explained ways in which they sought to mitigate for the excess and absence of intellectual humility. Faculty counterbalanced for the lack of confidence or empathy they perceived in their students. When students displayed little to no intellectual humility, participants described strategies they used to build empathy in or reduce the confidence of students. In contrast, those students who responded by stressing the discomfort of their intellectual limitation received affirmation and motivation from faculty to increase their confidence and view their limitations as temporary in nature. Professor of Computer Science, Roy summarized the student experience that most faculty described as:

> A wakeup call for many students where they realize, *I was A+ student. I was a Rhodes Scholar. I was a [special honor]) scholar. I cannot follow your classes. This is difficult stuff.* That discomfort I see over and over. I keep telling them this is going to be…the most difficult class you've had up to now in your lives. And some people come back from graduation and say, [quoting a student] "This was indeed the hardest class I've ever had in my life." A big percentage says that. So you see…They have to face their limitations, and some of them for the first time.

Similar to holding confidence and empathy at the same time, a tolerance for discomfort with one's limitations was understood as the desired state for those students who were aware and displayed intellectual humility. Hence, faculty believed they could cultivate intellectual humility by having this specialized awareness of student's discomfort, their reaction to it, and counterbalancing for manifestations of inappropriate behaviors.

Finally, all 33 participants explored their own intellectual humility, including its excess or lack thereof, by naming times they failed, their handling of those mistakes, and the perceived benefit of those experiences for students. Faculty described in detail their own discomfort from making an erroneous calculation or comment, a misguided reaction to students' discomfort or classroom interaction. Their awareness and display of intellectual arrogance, humility, or servility mirrored the spectrum and levels of confidence and empathy that they perceived in students. Participants explored consciously, and in select cases without awareness of, how their own intellectual humility affected their pedagogical approaches and practices, and whether they reevaluated them, if at all. Overall, faculty understood intellectual humility to benefit both students and them for the purposes of unlearning and rethinking as a direct result of owning intellectual limitations.

Appendix A

Researcher-as-Instrument Statement

August 31, 2020 | Acknowledging My Positionality as a Researcher

Exactly one year ago, I began looking into foundations to apply for one of their programs funding dissertation research. One of those foundations was the John Templeton Foundation. Within their website, *Character Virtue* was one of their top research agendas, and more specifically, *Intellectual Humility*. This was the first time I had read or heard the term used. Upon further investigation, I became engrossed by the guiding purpose of intellectual humility, the fractured debate surrounding the topic, and where and who was publishing research on it. I began collecting as many publications on intellectual humility as I could find. In addition, I made intellectual humility the central focus of the EPPL 704 Advanced Qualitative course I had enrolled in for Fall 2019, determined to identify a research agenda. To my surprise, I could find nothing within the research journals of higher education on intellectual humility. So, I cast my net wider and found all dissertations published on the subject, most of which were within the past five years. My intense interest grew. The studies were mainly completed by Ph.D. candidates in psychology and theology. As I mined further, I discovered none had contextualized their findings within higher education, and none had studied intellectual humility using qualitative approaches.

All other research interests for me ground to a halt. I began seeing intellectual humility everywhere I went, in each article I read, and throughout conversations with family and friends. I even started a document that I titled "Daily IH" where I began storing quotes and their sources on what I perceived to be representative of intellectual humility. My favorite to date is taken from a *New York Times* piece in November 2019 on Fred Rogers. "If we can somehow rid ourselves of illusions," Rogers said, "the illusion that we are greater or lesser than we are. The illusion that we're going to save the world. There are a lot of illusions that people walk around with" (Laskas, 2019, para. 10). The notion of an accurate appraisal of oneself struck me as paramount for the existence of humility in general, and perhaps intellectual humility. That document is now several pages long. And since, I have reached out to family and friends to begin gathering their perspectives on where they see intellectual humility within their daily professional and personal lives.

At the outset of any qualitative inquiry, I am mindful of my responsibility in data analysis. My orientation into the nature of inquiry and my own historical background as it relates to higher education have ample opportunity to affect the study. Hence, it is critical to acknowledge in what ways the generation and analysis of qualitative data may be influenced by the role of the researcher. With this in mind, it is relevant to discuss my background as well as the orientation I have to research as it pertains to my topic.

First, my initial interest in the nature and qualities of humility as a subject was instilled from my religious upbringing and education. As a teenager I attended Protestant, non-

denominational church activities once or twice a week, and was exposed to and read numerous passages from the Bible on humility. One of my earliest memories was writing a three-part devotional reflection as an 18-year-old on a passage of scripture that read, “Clothe yourselves, all of you, with humility toward one another, for ‘God opposes the proud but gives grace to the humble’. Humble yourselves, therefore, under the mighty hand of God so that at the proper time he may exalt you” (1 Peter 5:5-6, English Standard Version). My reflections on humility, in fact, began my journey as a writer, and became part of a weekly series of devotions that were published online by an international Christian youth organization in 2001, although they have since been taken down.

Second, I have enjoyed a career in higher education in large part because of my professors, mentors, and friends who have exemplified intellectual virtues such as humility. The professors I had as an undergraduate and graduate student who made a significant impact on my intellectual development were naturally curious, open to new ideas, and excellent questioners. Those who served as mentors to me were likewise great listeners who also challenged me to investigate the origin of my beliefs and assumptions. My mentors in college were the first to consistently and over time demonstrate what I came to understand as humility. My professional experiences over nearly a decade and a half in higher education were shaped by roles as an admissions counselor, academic advisor, course instructor, mentor, scholarship advisor, and graduate/research assistant.

Finally, I espouse a social constructivist perspective on the nature of research and certainty that argues for the inclusion of diverse viewpoints to make fuller, richer meanings of phenomena. I am personally drawn for this reason to the process of discovery in grounded theory as a methodological approach and believe that there is more to uncover about intellectual humility as a potential mechanism for depolarization and its creative potential within individuals. I acknowledge that my optimistic perception of the world has influenced these characterizations. As a White male who studied at a small, private, Christian liberal arts institution (Gordon College) as well as completed graduate work at a state-flagship, public, research intensive R1, doctoral university (University of Maryland, College Park), I am also cognizant of the potential impact on how I engage with literature surrounding intellectual humility, my participants, data analysis, and my findings.

This study is guided by a number of assumptions pertaining to the nature and value of higher education in the twenty-first century, the potential of the topic to produce a grounded theory, and the modern role of faculty in universities. First, as an individual privileged to have the opportunity to attain a terminal degree in my field, I believe firmly in the role education plays in the development of intellectual virtues. These virtues include, but are not limited to, moral and character formation, critical and creative thinking, as well as social and civic responsibilities. Humility is one of those intellectual virtues that educators are tasked with integrating into their teaching and learning strategies.

Secondly, I am operating out of the assumption that intellectual humility has a discoverable model or theory. Venturing into the unknown is a vocational pursuit and a luxury of

the able-minded researcher. However, the possibility of uncovering something you did not set out to find, or worse nothing at all, must also be taken into consideration when deciding whether to begin in the first place. The assumption that my research topic, previously explored by philosophers, theologians, and psychologists, has something more – a model or theory – to discover is a calculated risk that I as the researcher have made given the importance of the topic in today's society and for educators in general.

Lastly, I am operating out of a compelling assumption that faculty have significant influence over students' cognitive development. The way faculty teach, what preferences they institute in the classroom, and the assignments they prescribe all coalesce to hold meaningful value for students. Whether or not there are significant axioms given these differences of method, mode, and strategy undertaken by faculty is fodder for another study. However, intellectual humility, it is assumed, has parallel and/or convergent properties within the robust empirical evidence on the stages of student cognitive development.

As a grounded theorist, I am the primary researcher with ethical responsibilities to my participants, their privacy and confidentiality, the academic field of higher education, and myself. I realize that I bring all aspects of my identity shared here to the data generation, analysis, conclusions, and implications of my research on intellectual humility. I take this task seriously with the utmost respect toward my participants and the conformity to a rigorous standard as outlined in Strauss and Corbin (1998) grounded theory.

Appendix B

Reflexive Journal Entry Sample

March 2-6, 2020 | Dissertation Discussions

The dissertation is starting to get real as I enter the tunnel of writing. Our dissertation course (EPPL 790) is also helping me a great deal narrow the study and is encouraging further reflection as part of my colleagues' suggestions and first-takes on how I am reasoning. It has become clear to me through these dissertation discussions that I have multiple studies going on. I am convinced that interviewing faculty AND students for perceptions of/on intellectual humility is one such case.

I have also had the time to connect with both Dr. Barber (Chair) and Dr. Harris (Committee Member: Methodologist) regarding abductive analysis. It seems the decision is up to me, and that I will need to argue persuasively for it – in alignment with my study. Upon further review of abductive reasoning, I am not fully persuaded to use this approach. Primarily, I am not convinced that starting with inductive coding, and then later using abductive thematic coding, is inappropriate for generating or building new theory. There is room for both, especially as it relates to reaching data and theoretical saturation.

My research questions are also becoming more refined. At first in 790 dissertation seminar, I proposed the following RQs:

1. What is intellectual humility within the context of a university education?
2. How, if at all, is intellectual humility cultivated (inculcated?) in undergraduates?

I wrote them very broadly and without care for methods, data sources, and data analysis. After much tweaking and honing, my research questions are now more focused and include helpful qualifiers. Today they are:

1. What are faculty perceptions on the nature of intellectual humility in undergraduate students?
    - 1a: How, if at all, does their notion of intellectual humility differ by academic communities (e.g., Arts & Humanities, Natural & Applied Sciences, and Business)?
2. In what ways do faculty perceive how intellectual humility is inculcated or impeded, if at all, in undergraduate education?
    - 2a. How, if at all, does a faculty's teaching experience matter (e.g., teaching first-year versus fourth year students)?

Appendix C

Memo on Evolving Interview Questions

November 4, 2020 | Interview Questions

After completion of nearly half of my interviews including the transcription and coding of my early interviews, I have begun the process of building toward theoretical saturation. This process has included the introduction of a number of interview questions to further capture aspects of my study. More specifically, I have begun to hear and experience similar or near duplicative explanations of answers to my interview protocol. When a professor begins to share their willingness to admit intellectual limitations for instance, I have started to inquire for instance about how they developed this capacity or awareness. This follow-up question has led to a fuller understanding for where or when faculty experienced a display of intellectual humility.

I have compiled the additional lines of questions that have become important into the following list:

- Where or when did you learn the ability to admit what you don't know in class?
- What level of background knowledge do students typically have coming into your class?
- How much corrective teaching do you have to do?
- What strategies do you use to work through student limitations and/or ignorance?
- How does a faculty member's sex (male/female) play a role in their admittance of limitations, if any?
- Explore the connections between a faculty's power and student's agency…

One of the significant reasons I have started to use these types of questions was to allow my participants to bring up more details on their student examples. My hope is to gather more information on students. When I ask about background knowledge, I am specifically thinking about Jones' (2012) argument about the epistemic positionality of the academic communities. How much scaffolding, if any, does a science professor acknowledge more than an arts and humanities professor?

Appendix D

Email Invitation to Participants

Dear Professor XY,

As a doctoral candidate, I would like to invite you to participate in a dissertation study entitled, *Intellectual Humility: A Grounded Theory Study on Faculty Perceptions of Undergraduate Students*. Given increasingly inundated with misinformation and plagued by divisive ideological polarization, my dissertation study seeks to uncover faculty perceptions of intellectual humility within the context of undergraduate education.

Participation in this study includes the following:

- A 5-minute survey that includes one 12-item scale, one open-ended question, and six background questions. (Use the following Qualtrics link to begin the survey.)
- One virtual interview lasting 60 minutes, if selected.
- One follow-up invitation to member check the accuracy of the researcher's interpretation.

Intellectual humility is properly understood as the ownership of one's intellectual limitations, and a virtue that operates upon a spectrum as a golden mean between its excess (intellectual servility) and absence (intellectual arrogance). If willing to participate, please follow this Qualtrics link to view my Informed Consent Form.

Lastly, I will ensure your confidentiality for participating in this study by never using your full name, attributing a pseudonym for you in every transcript and reference, and protecting all data by locking it behind a firewall. Your full participation is voluntary at each stage of the study.

Thank you for your consideration,
Johann Ducharme

Appendix E

Informed Consent Form

Purpose of the Study

This study, entitled *Intellectual Humility: A Grounded Theory Study on Faculty Perspectives of Undergraduate Students*, is designed to explore faculty perceptions on the nature and formation of intellectual humility within the context of undergraduate education.

Importance of Your Participation

Studying your current perceptions of intellectual humility within undergraduate students will assist me in answering: What is the nature of intellectual humility in education? How, if at all, may it be instilled or impeded in students? As a William & Mary doctoral candidate with interests in teaching and learning as well as college student development, this dissertation study fulfills the requirements for Doctor of Philosophy in Educational Policy, Planning, and Leadership.

How You Were Selected

You were identified through the Office of Institutional Research using the following criteria: (a) associate or full professor, (b) within the Arts/Humanities, Natural/Applied Sciences, or Business (including Clinical), and (c) have taught at the institution since Fall 2018. This study will include your voluntary responses as a tenured professor by purposively selecting 24-30 individuals to participate in one virtual interview based on a heterogeneous range of academic and background characteristics.

Timeline

Data generation will occur from September 2020 through March 2021. Within this timeframe, participants will complete one survey (will take no longer than 5 minutes to complete) and the approximately 30 participants will be invited to engage in an interview lasting 60-90 minutes. After the interview portion and throughout the study, I will conduct member checks with participants on the interpretations of the information shared with me.

What Is Requested of You

- Completion of one survey is initially requested. Before any interviews are conducted, this survey includes basic questions about your awareness of the study topic, a brief 12-item scale, and background information.
- If selected as a full participant, I will request your participation in one interview via video conferencing (e.g., Zoom) or telephone, according to your preference. This interview will last approximately 60—90 minutes and will be audio recorded with your permission.
- Titles and descriptions of roles held will be requested when applicable. Also, any descriptions of additional education, training and/or professional programs may also be requested.

- Following the initial interview, the researcher will contact all participants via email to member check a summary of his understanding of the information that you shared. The researcher will request that you confirm, append, and/or change any of the summary's contents so that it accurately reflects your thoughts, opinions, perceptions, and experiences.

Additional Information

Please know that:

- The confidentiality of your personally identifiable information will be protected to the maximum extent allowable by law.
- Your name and other identifiable information will be known only to the researcher through the information that you provide.
- Neither your name nor any other personally identifiable information will be used in any presentation or published work.
- The audio recordings of the interviews described above will be stored and protected behind a firewall at all times.
- You may refuse to answer any questions during the interview, if you are selected to participate.
- You may terminate your participation in the study at any time. (To do so, simply inform the interviewer of your intention.)
- Any actions of refusal or termination will not incur a penalty of any type with the College of William and Mary.
- Your participation in this study is completely voluntary.
- There is no compensation for participating in this study.
- Benefits of completing this study may include:
    - Contribution to the growing body of knowledge on intellectual humility, college student development, and liberal arts and science education.
    - Self-reflection and personal growth.
- There are no foreseeable risks in study participation.
- A summary of the results of the study will be sent to you electronically once the study is complete.

Contact Information

If you have questions or concerns about this study, please contact the interviewer, Johann Ducharme (jfducharme@email.wm.edu) at The College of William and Mary, Williamsburg, Virginia (202-258-5378) or his dissertation chair: Dr. James P. Barber (jpbarber@wm.edu) at 757-221-6208. If you have additional questions or concerns regarding your rights as a study participant, or are dissatisfied at any time with any aspect of this study, you may contact, anonymously if you wish, Dr. Tom Ward at 757-221-2358 (EDIRC-L@wm.edu) Dr. Jennifer

Stevens at 757-221-3862 (jastev@wm.edu), chairs of the two William & Mary committees that supervise the treatment of research study participants.

This project was found to comply with appropriate ethical standards and was exempted from the need for formal review by the College of William and Mary Protection of Human Subjects Committee (phone 757-221-3966) on 2020-09-15 and expires on 2021-09-15.

By clicking “I Agree” below, you are stating agreement to voluntary participation in this study, and are confirming that you are at least 18 years of age.

A copy of this consent form will be given to you via email upon request to keep.

Appendix F

Semi-Structured Interview Protocol

RAPPORT BUILDING

1. What role does the professor play in the intellectual development of their students? In the classroom?

The purposes of this section are to build rapport with my participants, allow them to reflect on their time as a faculty member, and begin a broader conversation on their understanding of the professoriate given their academic discipline. My goal is to create an open, amicable space for my participants to disclose their viewpoints and beliefs about their interactions with students, the course material, and the classroom with the assumption that intellectual humility is mainly expressed here.

OTHER-REPORTING VIA THREE FACTORS OF L-OIHS

2. How would a student's *love of learning* manifest in the classroom? In interactions with you? In completed assignments?
3. How would students' *ownership of their intellectual limitations* manifest in the classroom? In interactions with you?
4. Are there circumstances where a student can display too much or too little *discomfort with their own limitations*? If so, when?

I have made the assumption that my participants are not yet primed and ready to address head-on my research topic. Thus, instead of mentioning intellectual humility directly, I have inserted the three-factor analysis of Haggard et al.'s (2018) *Limitations-Owning Intellectual Humility Scale* (L-OIHS) into these questions. My goal in this section is to capture a succinct picture of faculty other-reporting on their students by addressing the three main factors that encompass intellectual humility. Hence, I have kept interactions with students, course material, and the classroom in a central focus.

SELF-REPORTING

5. How, if at all, might a professor's *love of learning* and/or *ownership of intellectual limitations* influence his or her students? Interactions in the classroom?
6. What does an *appropriate discomfort with limitations* lead to for faculty? For their students?

These two questions are designed to give faculty the opportunity to self-report on their own intellectual limitations. Similar to the section above, I invite them to share via the three factors of intellectual humility. This comparative inquiry between other- and self-reporting is designed to match where, when, and how, if at all, faculty perceive intellectual humility within the students they teach and interact. It is my goal to capture as much rich, thick descriptions of the research topic by this line of inquiry and to remain here as long as the participant feel comfortable.

DISCUSSION COALESCENCE

7. Describe a situation where you observed a student, and/or group of students, behaving with intellectual humility.
8. What exactly did the student(s) do when they behaved that way? What role, if any, did you have in facilitating or observing?
9. What outcomes, if any, result from teaching in an intellectually humble way?
10. What relationship(s), if any, exist between intellectual humility and student creativity and/or productivity?

Finally, I provide my participants the opportunity to address intellectual humility – in students and their pedagogy – directly. Once my participants have expressed as much as they can, I wish to conclude by inquiring about intellectual humility in relation to its positive correlations in psychology and business. The former as it relates to curiosity, open-mindedness, and cognitive flexibility, the latter regarding performance and productivity. It is at this point in the interview that I believe my participants are ready to summarize their perceptions of intellectual humility. Furthermore, asking directly may result in new ideas posed and capturing all possible variations on intellectual humility as it relates to the generation and construction of a grounded theory.

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CURRICULUM VITA

JOHANN F. DUCHARME

Contact: jfducharme@email.wm.edu

EDUCATION

Doctor of Philosophy, Educational Policy, Planning & Leadership
College of William & Mary, Williamsburg, VA
Concentration: Business Leadership
August 2017 to August 2021

Master of Arts, Education Leadership & Policy
University of Maryland, College Park, MD
May 2010 to May 2012

Bachelor of Arts, Communications
Honors Graduate; Minor in Biblical & Theological Studies
Gordon College, Wenham, MA
August 2002 to August 2006

PROFESSIONAL EXPERIENCE

POSTDOCTORAL FELLOW, Program for Leadership & Character
Wake Forest University, Winston-Salem, NC – August 2021

ONLINE TEACHING ASSISTANT, Studio for Teaching & Learning Innovation
William & Mary, Williamsburg, VA – May 2020 – August 2021

GRADUATE ASSISTANT, School of Education
William & Mary, Williamsburg, VA – August 2017 – May 2020

GRADUATE RESEARCH ASSISTANT, Mason School of Business
William & Mary, Williamsburg, VA – June 2019 – May 2020

PROGRAM MANAGER, KAUST Gifted Student Program
Institute of International Education, Washington, D.C. – July 2013 – June 2017

ADJUNCT INSTRUCTOR/ COLLEGE STUDENT MENTOR
American Studies Program, Washington, D.C. – August 2014 – April 2017

ACADEMIC ADVISOR, College of Arts & Humanities
University of Maryland, College Park, MD – May 2010 – May 20

ADULT EDUCATOR, Catholic Charities
AmeriCorps, Washington, D.C – August 2009 – July 2010