

ABSTRACT

Student Experiences with Wonder through Higher Education

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The purpose of this study is to understand the process by which students engage with wonder through experiences in higher education. Wonder as an emotion and practice has been studied extensively from a theoretical, philosophical, and theological perspective, and research suggests that wondering has positive implications for learning. However, empirical research about how students experience wonder has not previously been collected. The findings of this study provide a model that illustrates the process by which students wonder and eventually begin to engage in wonder as a practice. Additionally, the findings present sources within a college setting that have provided opportunities for students to wonder. This study lays a foundation for continued inquiry into the subject of student wondering and provides educators a starting point from which to consider how their practices can further contribute toward opportunities for students to wonder.

Student Experiences with Wonder through Higher Education

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DEDICATION

To the friends who
encourage me to dream
and never tire of my tears.

CHAPTER ONE

Introduction

Wonder is a valuable part of the human experience that drives a desire to know that which is beyond current understanding. Throughout history philosophers, theologians, and artists have sought to characterize wonder and its effect on those who are inclined toward it. A person may experience wonder from the peak of a mountain, in the mystery of a starry night, at the conclusion of a symphonic masterpiece, and of course, at the beginning of wisdom. But wonder is also present in the most ordinary of day-to-day happenings as morning dew, laughter, the sound of a ticking clock, and each new breath provide opportunity to reflect on what it means to be an “impossibility in an impossible universe” (Bradbury, 1975).

Eden Phillpotts (1918) wrote that “the universe is full of magic things, patiently waiting for our senses to grow sharper” (p. 19). Wonder contributes toward the sharpening of senses by raising questions that reflect appreciation for the unknown and heightening awareness of relationship between an individual and the surrounding world. By prompting the reflection and questions that sharpen these senses, higher education serves as the open doorway by which the magic things of the world are made accessible to students.

In this study, I will identify how students may engage in wonder through experiences in higher education. Personal accounts that provide opportunity for exploration of this process have not been collected in an official capacity, and although

this information about student wondering could provide great meaning for education, there is no empirical evidence to indicate that this is currently a significant part of the college experience. To understand the student experience with wonder, it is important first to understand how wonder is defined, the effect it has on individuals, and how students encounter and benefit from learning to wonder through educational experiences. After all, “the simple things are also the most extraordinary things, and only the wise can see them” (Coelho, 1993, p. 94). If wondering cultivates wisdom within students, then it is critical for educators to understand the unique ways that higher education can contribute toward this experience.

Defining and Identifying Wonder

Wonder can be difficult to define because interpretations vary greatly across the spectrum of existing scholarship. Wonder is most often understood as an emotion that causes one to pause in reflection at something that motivates some level of surprise or cognitive dissonance (Frijda, 1986; Fuller, 2006). However, wonder differs from other emotions due to its lack of consistently identifiable physical attributes (e.g., facial expression, tears, change in breathing) (Keltner & Haidt, 2003). For this reason, depending upon the commonly agreed-upon outcomes or benefits of wonder help to better identify it within the human experience.

The effect that wonder has on a person’s thinking is a commonly looked-to identifying quality for what makes it a unique experience. Wonder has been explained as “a fundamental component of human nature that leads us to ask essential questions about existence” (Musaio, 2012, p. 15). These questions result in the development of creativity and imagination, and allow people to avoid cognitive presumption and narrow-

mindedness (Musaio, 2012). Wonder may be simply described as a form of reflection that yields an appreciative disposition toward the otherness of things previously situated beyond one's scope of understanding (Nussbaum, 2001). This appreciative disposition is developed through a process beginning with initial interest that spurs further inquiry and ultimately leads to the accommodation of information that an individual was previously incapable of comprehending (Fuller, 2012). This act of accommodation, or of "modifying our previous cognitive structures to include those new features of the environment learned through new or unexpected perceptions" (Fuller, 2012, p. 73), helps individuals transition from being unaware of differences to being empathetic toward that which they do not understand. The common result of accommodation is a continued desire to engage with that which is different. This desire combines with a general cognitive expansion that allows the individual to synthesize higher-order thoughts to make sense of the relationship between a previously-held belief and the new understanding or experience (Fuller, 2006; Musaio, 2012). Nussbaum (2001) describes this process as one that connects individuals with each other and draws people into relationship without self-interest, but instead with increased empathy. As new ways of thinking become available to the wonderer, the knowledge of all that the wonderer does not yet know also becomes more available. This process naturally leads to an appreciation for the vastness of the world and for the same process that is likely occurring in other people as well (Nussbaum, 2001).

Although wonder is generally believed to provide positive benefits to people primarily by laying a foundation for appreciating new or different encounters, it is important to note that there are multiple types of wonder that differ in effect. Common

descriptors of wonder include "*passive wonder* (Matravers, 2012), *active wonder* (Schinkel, 2017), and *deep wonder* (Schinkel, 2018). Passive wonder is often presented as a cause for concern as it is seen as a state of being immobilized through fascination or appreciation of the newly encountered experience (Matravers, 2012). Passive wonder, then, is concerned primarily with the pleasure brought about by reflection, but does not as readily produce engagement beyond self. This form of wonder is often what is referenced when somebody is described as "wonderstruck" in a way that perception is altered but action is not taken in response (Schinkel, 2018). Active wonder involves a drive to explore and explain (Schinkel, 2017). Wondering actively is what leads people to draw closer to the object or idea that caused the initial interest. When an inability to understand something that exists outside of one's personal realm of knowing leads not to investigation to uncover every detail about it, but to continued inquiry for the sake of appreciation, active wondering is taking place (Schinkel, 2017). Deep wonder is a slower process that is displayed as less inquisitive, but has the important motivational effect of making people aware of their own limits in understanding. This form of wonder is what most closely contributes to individuals seeing themselves more appropriately in context with the rest of the world, and also results in a sense of connection and accountability to creation (Schinkel, 2017). Schinkel (2017) further describes this type of wonder as one that embraces the mysteriousness of "the *being*, rather than the *how* of beings" (p. 546). Schinkel (2017) is describing how this form of wonder essentially elevates the intrinsic value of an object of mystery as worthy of attention apart from its functionality or extrinsic reason for being. Engagement in each type of wonder benefits individuals by providing them with opportunities to understand the world more fully, piece together

differences of experience (both concrete and philosophical), and understand one's context within the world.

This increased ability to empathize with others, see oneself rightly, and also to be comfortable with a world that is not fully knowable lends itself to what Vasalou (2012) refers to as an ability to witness the ordinary found within the extraordinary. An example of this reflection on the wonder found in the ordinary is offered by Paolantonio (2018) in reference to how one may question a broken watch. A person who is not predisposed to wonder may consider only questions pertaining to how the watch works and how it can be fixed, whereas one who wonders at the watch may engage with it in a much different way:

With wonder a person would pause and look at a watch in a very peculiar way, perhaps wondering about the human relationship to time and our curious attempt to parcel and measure time in this way rather than that way, as well as wondering why everything seems to become so quickly antiquated today (Paolantonio, 2018, p. 48).

The difference presented in this example is that the wonderer is not only concerned with the watch's functionality, but rather with its relationship to the world. The wonderer has asked questions regarding the watch that do not have distinct answers and instead, present more questions. As a result, it is likely that the wonderer will experience a stronger sense of appreciation for the watch and for the human influence that went into its original creation (Paolantonio, 2018). In this way, a seemingly insignificant object opens a window into creation and for the appreciative reflection on the wonderer's place within it. Appreciative reflection enables people to think imaginatively about how to improve upon their world. This ability allows for the creative utilization of an education to contribute meaningfully to one's sphere of influence, profession, or society.

Comparable Emotions

Wonder is a particular kind of experience that happens to share many characteristics with similar emotions. For this reason, it is necessary to identify the similarities and differences in how wonder is experienced in comparison with emotions such as curiosity and awe. To some extent, both of these emotions are more easily recognized than wonder, so considering research pertaining to these emotions provides insight into how wonder is experienced and interpreted.

Though the two are unquestionably linked in that both begin with a question that instills a desire to discover, there are notable differences between curiosity and wonder. Like wonder, curiosity is an emotion that motivates investigation into a phenomenon that one does not yet understand (Fuller, 2006). The primary differences between the two are found in the motivation of the learner and the application of what is learned. A person who is curious is motivated to find solutions or answers to a question. This curiosity results in an attempt to organize and interpret a new experience and to investigate the relationship between one's current ideas and the experience (Fuller, 2012). Through this form of thought, "curiosity helps individuals refine their conceptions of the world to correspond more closely with the actual facts of the experience" (Fuller, 2012, p. 74). Thus, someone who inquires with curiosity increases in domain-specific knowledge by assimilating new patterns into a working order of understanding and behavioral pattern. So, if the accommodation of wonder leads us to reorient our own cognitive structures to facilitate a new understanding, curious assimilation results in the thoughtful interpretation of new concepts to make sense within existing cognitive structures (Fuller, 2012). Although this is useful in the process of aligning thought and behavior with reality, it

falls short in some real of cognitive growth as curiosity does not help an individual to make connections between different kinds of things or to put concepts together in more abstract ways (Fuller, 2012; Paolantonio, 2018).

Curiosity also does not have the given positive association with learning that wonder does. Whereas wonder is always linked to an appreciative affective state, curiosity may be used as a means to an end for either noble or nefarious purposes (Merrick, 2007; Schinkel, 2018). This happens because curiosity naturally results in an acquisition of knowledge that allows the learner to consider what has been learned a resource to be used or disregarded if it does not meet a need (Paolantonio, 2018). Because curiosity allows the learner to assign value to a piece of information or experience, it does not have the same effect of drawing a person closer to that which is other in a spirit of creating connection. Instead, this form of understanding gives the curious person a sense of ownership over the newly acquired information.

Awe is another emotion that is often compared to wonder. This may be primarily because much like wonder, awe is often difficult to identify through a person's physical disposition and also does not fit cleanly within the standard adaptation accounts of emotions (Keltner & Haidt, 2003). Both emotions result from an initial source of surprise or novelty that causes individuals to reconsider their relationship to the world as it has previously been understood (Fuller, 2012). Additionally, both emotions are characterized distinctly by the need for cognitive accommodation to help an individual's perspective shift to create mental space for the new happening (Keltner & Haidt, 2003). However, a key difference presented in this accommodation is that it may or may not be satisfied in awe (Keltner & Haidt, 2003). Although a wonderer can achieve accommodation through

the surfacing of new, reorienting questions (Fuller, 2012), a person experiencing awe will either successfully accommodate and become enlightened by the experience or will unsuccessfully accommodate and become fearful (Keltner & Haidt, 2003). In both instances, awe has a conclusive endpoint that serves to reorient an individual in relationship to the being or experience that initially caused the emotion. This endpoint highlights another key difference, as wonder can often lead to new wonder without a discernable end whereas awe results in a transformation in which a person “embraces new values, commands, and missions” in light of a newly understood context (Keltner & Haidt, 2003, p. 299). Embracing a new understanding of self in relation to that which caused awe either solidifies or creates a new social status as the person weighs his or her self-perspective against a new sense of context within the world. In this way, awe will inevitably serve as a way for individuals to identify their relationship specifically as it is concerned with the object of awe. This new orientation often leaves a person submissive rather than willing to draw close in understanding to the source of dissonance (Fuller, 2012). This process differs from wonder because wonder inevitably causes a person to draw closer to the source not for how it influences the person, but because of its own value. Finally, Keltner and Haidt (2003) specify that for awe to be triggered, a stimulus must require accommodation and must be vast in relation to the individual. This vastness represents an additional difference between wonder and awe. Although wonder can be inspired through an encounter with something vast in comparison to the wonderer, it is important to remember that one can also wonder at more ordinary things (Carlsen & Sandelands, 2018; Vasalou, 2012). The necessity for vastness to initiate awe results in the modification of relationship to surroundings that the person engaging in awe

undergoes. This is why awe typically results in submission that is not necessarily accompanied by appreciation. Because of this, Keltner and Haidt (2003) suggest that individuals in the upper sections of social hierarchies are less likely to experience awe since they are less susceptible to external events that may result in feelings of inferiority. Awe-inducing events may be one of the fastest methods of personal change or growth because individuals are challenged to reconsider their relationship to the world in a moment (Keltner & Haidt, 2003). Those who wonder, however, engage in a slow process that leads to reorientation through a questioning accommodation rather than a necessity for accepting accommodation.

Wonder as Practice

A unique attribute of wonder is that it can be engaged in as practice. Vasalou (2012) highlights the ways in which wonder has occupied many activities and pursuits in human life, often serving as tradition or a standard of excellence. Vasalou's (2012) research on wonder is centered upon the following conceptualization of *practice*:

Any coherent and complex form of socially established cooperative human activity through which goods internal to that form of activity are realized in the course of trying to achieve standards of excellence...with the result that human powers to achieve excellence are systematically extended (MacIntyre, 2007, p. 161).

Thus, much like the practice of any skill, the practice of wonder leads ultimately to an extension of human excellence.

To understand wonder as practice, it is necessary to differentiate between natural wonder and practiced wonder. However, the contrast should not be drawn too strictly as one may lead to another as a relationship with wonder leads to a broader understanding of its nature (Vasalou, 2012). For these purposes, *natural wonder* begins with an

occurrence outside of the self that results in the individual engaging in wonder to best accommodate the new experience. *Practiced wonder* may be self-initiated or initiated by external circumstance, but is a “willfully cultivated response” through which engagement that may extend beyond the initial cause of wonder may continue (Vasalou, 2012). These concepts may be otherwise understood as “wondering at” and “wondering about” (Carlsen & Sandelands, 2018). Carlsen and Sandelands (2018) further illustrate the cycle for how these two types of wonder work together in practice:

Wonder *at* may trigger wonder *about* when the appreciative experience evokes curiosity and presses new questions that instigate search or when empathetic immersing in fields of study gives rise to new explanations. Wonder *about* may trigger wonder *at* when the expansion of search results in a desire to be immersed or when a felt beauty and rightness marks the arrival of a new insight that stimulates further search (p. 377).

In this description, wondering *at* is akin to natural wonder that results in a passive state of appreciation while wondering *about* is the active pursuit of understanding regarding the source of wonder.

The Process of Wondering

Different stimuli can result in wonder, however there is a somewhat predictable pattern of how wonder may be experienced and understood. A process of wonder inevitably begins with the brief response of *surprise* resulting from an unexpected event that mobilizes an individual to alter cognitive structures to ensure continued well-being (Fuller, 2012). Surprise is the most general “orienting response” because it instigates a process of growing beyond concrete thought by quickly setting the stage for a more sustained response of curiosity or wonder (Fuller, 2012). Although a short-lived phenomenon, surprise is an important component in the process of wondering. Some

scholars believe that recovering an ability to be surprised is a crucial part of developing the ability to engage in deep learning (Musaio, 2012). If deep learning is inspired by initial surprise, then identifying opportunities to introduce surprise in education could serve as an important starting point for investigating wonder in the student experience.

As surprise gives way to interest, an individual becomes curious. This curiosity is an attempt to make sense of an unfamiliar experience by assimilating that experience into an existing schema of understanding (Fuller, 2012). A curious individual will ask questions that have definitive answers and will seek to understand the new experience or person in full, concrete detail. Thus, curiosity results in knowledge acquisition that deepens one's understanding about details or specifics (Fuller, 2012; Grossnickle, 2014).

If an individual fails to assimilate the new information into a previously existing worldview, then he or she may turn away from that which initially caused surprise in fear, or perhaps disinterest. Reigniting an interest at this point will be more difficult as the individual is less prone to investigate that which previously caused unresolvable frustration (Keltner & Haidt, 2003). Alternatively, an individual could choose a path of inquiry that looks different from that of a curious questioner. As a person begins asking more fundamental, reflective questions about what this new occurrence means for the self or for previously-accepted notions of the world, that person enacts a state of wondering (Fuller, 2012; Musaio, 2012). Wondering leads to a shift in behavior or thought that results in expanded cognitive capacity that allows for the existence of ideas that previously did not make sense as a part of the person's original understanding (Fuller, 2012). This accommodation process results in the benefits commonly associated with wonder: an increased cognitive ability, sense of connectedness and responsibility with the

surrounding world, and development of good moral commitments (Fuller, 2012; Nussbaum, 2001; Schinkel, 2018).

The Capacity for Wonder

The regenerative nature of wonder – that as one engages with wonder, one is more likely to continue this type of engagement – is what provides reason for wonder to be understood as an emotion that can be practiced (Vasalou, 2012). As a person chooses to engage in wonder either as a result of a momentous happening or through the continued experience of externally-induced wonder, that person will participate in various forms of wonder that will eventually develop into a capacity for wonder. The work of Carlsen and Sandelands (2015) helps one to visualize how this may take place as they describe different states or “moments” of wonder and how each moment may contribute toward a person’s ability to continue wondering. These moments do not necessarily occur in a linear way, and an individual may experience any combination of them at any time (Carlsen & Sandelands, 2015), but each is likely to contribute toward the development of a capacity for wonder.

It is important not to rely too heavily on wonder explained primarily through extraordinary happenings or primarily as a psychological state when considering how a capacity for wonder may be developed (Carlsen & Sandelands, 2015). Narrowing the scope of how wonder can initially occur only serves to limit an understanding of how it can continue. The four moments of wondering that encompass the various ways in which people can engage with new concepts are *arousal*, *expansion*, *immersion*, and *explanation* (Carlsen & Sandelands, 2015).

Arousal may be thought of as the initiating moment of wonder; often stimulated by aesthetic experiences or exciting sources that cause people to pause at their habitual way of viewing the world (Carlsen & Sandelands, 2015; Fuller, 2006). Arousal that does not evolve into other moments may result in a sort of astonishment that does not inspire more active forms of wondering. Expansion is the moment of wonder that takes hold as an interest is pursued (Carlsen & Sandelands, 2015). This is marked by a stretching toward something outside oneself and losing some aspects of self that no longer fit within a new understanding of the world (Carlsen & Sandelands, 2015). This moment of wonder is what researchers tend to describe as the disposition that produces research and fuels imagination (Paolantonio, 2018). The moment of immersion is marked by a desire to be a participant in a new understanding of the world rather than just an observer (Nussbaum, 2001; Carlsen & Sandelands, 2015). This is the type of engagement with wonder that most often produces empathetic feelings toward others (Nussbaum, 2001). Explanation is a moment accompanied by a feeling of coming to know from a hopeful perspective as individuals are able to combine previously held beliefs with new understanding in an imaginative, unifying way (Carlsen & Sandelands, 2015; Fuller, 2006). This moment of wonder may be seen as an endpoint similar to that which results from curiosity or awe. But instead, this moment of explanation is uniquely marked by the way that a new synthesis of information paves the way for moments of arousal and awareness of the mysteriousness to renew engaged wonder (Carlsen & Sandelands, 2015).

Although an *experience* that results in wonder may yield valuable growth, a *capacity* for wonder is what results in continued growing. Engaging in each form of wonder helps a person to connect to the surrounding world in a unique way that "sustains

inquiry and enables imagination” (Carlsen & Sandelands, 2015, p. 377). A capacity for wonder also removes the need for external inspiration to take place as wondering may be internally initiated by the individual through imaginative questions and acceptance of indefinite answers. If wonder can be practiced, then a capacity for wonder is the likely result of such practice. This capacity serves people by helping to increase cognitive understanding, create connections to the surrounding world, and positively influence morality as a disposition changes from merely inquisitive to appreciative.

Wonder in Education

Clear connections exist between the effects of wonder and the desired outcomes of higher education, and those invested in education tend to recognize the importance of wonder for the student experience (Carlsen & Sandelands, 2015; Musaio, 2012; Paolantonio, 2018). The effects of wonder on an individual’s cognitive, emotional, and moral development are excellent points of focus for educators interested in further investigating how students benefit from wondering.

The capacity for wonder to stimulate higher-order thinking capacities that are historically linked to some of humanity’s highest cognitive and culture achievements is a compelling reason to consider its relationship to the higher education experience (Fuller, 2012). Elevated cognitive capability is often brought about through self-reflection and inquiry which represent two major components of a well-rounded education (Musaio, 2012; Jones, 2011). Additionally, these higher-order thoughts stimulate imagination and creativity (Carlsen & Sandelands, 2015). Creative thinking, expanded as divergent (generating unique ideas) and convergent (synthesizing several ideas into a positive result) thinking, allows students to “envision new possibilities” and “feel less inhibited by

barriers that threaten their learning potential” (Gross, 2011). Scholars are concerned that students have lost the ability to think creatively and further suggest that this ability is becoming more critical in a wider variety of professions (Selingo, 2015). For this reason and because of the existing connection between creativity and wonder, helping students to develop a capacity for wonder may be a beneficial practice when considering how best to prepare students for life after college. As students wonder, their cognitive capacities grow, and their ability to consider possibilities compounded with reality help them to think in constructive manners about how they can best contribute to the world beyond themselves (Fuller, 2012).

Students may also experience more of a connection to the world through wonder-centered education. Paolantonio (2018) provides reflection about how implementing habits of wonder in educational experiences may soften “mechanical” systems of learning by helping students to overcome thoughtlessness. This is achieved by considering how education should inspire treatment of persons and the world (Paolantonio, 2018). The author further describes institutions of education as the primary facilitators of cultivated thinking, or thinking that fosters imagination, and maintains that wonder enables thinking in this most ideal manner (Paolantonio, 2018). Wonder allows students to think creatively past rational capacities and introduces them to the delight that comes from engaging in their complex relationship with the world (Matravers, 2012). This appreciative disposition toward both naturally occurring and human creation inspires students to take responsibility for their own contributions.

The ability to wonder also contributes toward the moral development of students. Because wonder compels students to reevaluate the importance of people, surroundings,

and lessons, it results in a retreat of the personal ego and a renewed focus on the intrinsic value of the other-than (Schinkel, 2018). This reevaluation provides opportunity for a developmental fostering of empathy, love, compassion, and reverence for life that often results in a humbler demeanor (Merrick, 2007; Schinkel, 2018). Wonder is accompanied by a nonexploitative approach to learning that allows students to see themselves rightly in light of a new understanding (Schinkel, 2018). Doron (2012) writes about the nonexploitative nature of wonder when he reflects on scientists who experience self-transformation through their work because they have sought wisdom in understanding rather than in the mere discovery of truth. What these scholars describe is a posture of learning that does not seek to manipulate new information for a personal agenda, but rather to delight in the opportunity to know. Researchers believe that because of this and because of the virtues that are often linked with those who wonder, that the incorporation of a practice of wonder in various avenues of higher education could not only prepare students to be more effective professionals, but could also elevate the student experience while in school (Geller, et al., 2018).

Beyond the developmental benefits of wonder, it is worth considering how an educational experience may be greatly enhanced by the experience of wonder, notwithstanding the outcomes that have previously been described. Selingo (2015) writes that the most important aspect of the academic experience is not what students study, but how they acquire knowledge. Selingo (2015) further argues that students should seek broad exposure to knowledge from multiple disciplines and sources through meaningful research, transformative global experiences, and creative risk-taking. Of course, graduating with well-rounded experience and the ability to adapt makes students more

marketable professionals, but the process of becoming well-rounded and adaptable is marked by opportunities to engage in present wonder. Wonder effects people positively as they respond to something novel in a way that averts attention from the self and toward the subject of learning (Schinkel, 2018). Students often feel a pressure to be successful or to achieve a certain career status through education (Selingo, 2015). However, engagement with experiences that do not directly serve self-interests provides students with the opportunity to pursue wisdom by connecting more deeply to the world rather than connecting the world to themselves.

Educational Models Reflective of Wonder

One helpful way of envisioning the relationship between higher education and a capacity for wonder is through the *learning paradigm*. The learning paradigm is characterized by a belief that college exists to produce student learning and not simply to provide instruction (Barr & Tagg, 1995). This is juxtaposed with the predominant approach to higher education, or the *instruction paradigm*. In some ways, the learning paradigm reflects what it would look like for an institution of higher education to wonder. It challenges educators to consider how existing systems may be reconstructed to provide opportunity for learning that extends beyond what is currently facilitated in most college settings. The learning paradigm acknowledges that there is no single correct method of instruction and “requires a constant search for new structures and methods that work better for student learning and success, and expects even these to be redesigned continually and to evolve over time (Barr & Tagg, 1995, p. 20). It is the shared responsibility of educators and students to avoid reducing education to routine by standardizing student personalities and relationships rather than for observing how

dissimilarity, originality, and diversity can be considered in forming a more effective learning environment (Musaio, 2012). Thus, those responsible for institutions who wish to shift toward a learning paradigm must also wonder at the ways in which student learning can be improved that may not yet have been envisioned.

Recommendations the authors provide for shifting to a learning paradigm framework also reflect values of wondering. Barr & Tagg (1995) suggest that a college should focus less on the transfer of knowledge and more on creating environments that allow students to construct knowledge for themselves through discovery. This construction of new knowledge is much more akin to the practice of wondering about than to the investigative curiosity that is often cited as the fuel for inquiry in the current college climate (Musaio, 2012; Paolantonio, 2018). Students are also changed through engaging in wonder as previous understanding is modified to make room for new possibility. Finally, the learning paradigm rejects an individualistic, competitive approach to education and thrives in environments that are “cooperative, collaborative, and supportive” (Barr & Tagg, 1995, p. 23). This leads to students being drawn toward each other in much the same way that Geller, et al. (2018) propose a developed capacity for wonder could facilitate. Other researchers also suggest that wonder is often more effectively exercised in a communal setting because self-reflection combined with dialogue helps students practice the behaviors associated with wonder’s benefits (Carlsen & Sandelands, 2015). The rejection of competitive education inspires students to acknowledge the value added by each of their peers in an appreciative disposition that lends itself to further wondering.

Mezirow's *Theory of Transformational Learning* also offers insight into how some concepts here associated with wondering have been applied meaningfully in approaches to adult education. Transformation theory has been described as a psycho-cultural approach that results in the construction or reconstruction of the interpretation of meaning in one's experience (Taylor, 2000). His process results in a shift in one's basic thoughts, feelings, and actions (Kitchenham, 2008).

In Mezirow's eleven-stage model, learners navigate a transformative process fueled by critical reflection that begins with a disorienting dilemma and results in a new integration into life that has been altered by the shifting of perspective (Kitchenham, 2008). Students engage in three types of learning: *instrumental*, *dialogic*, and *self-reflective*. In each type, learners engage in three processes. The first process is *learning within meaning schemes*, and occurs when students work with the boundary of what they already know by revisiting present knowledge to consider the disorienting dilemma (Kitchenham, 2008). In the second type of learning, students are *learning new meaning schemes*. This happens when a new system must be applied to navigate the dilemma, but this system fits within a student's previous perspective (Kitchenham, 2008). This process closely resembles curiosity in that it facilitates deeper understanding within an existing schema. Third, students experience *learning through meaning transformation*. Through this process, students become aware of how current understanding is based in an incomplete scheme, and through reorganization of meaning, transform their understanding (Mezirow, 1985). Students essentially resolve the new dilemma by redefining it within a new scheme. This process is similar to wondering because it may result in a perspective transformation in which altered or completely new meaning

schemes are acquired for the continued meaning-making of the transformed individual. Mezirow's work provides context for how a combination of reflection, feeling, and communal aspects of learning contribute toward a restructured form of thinking. However, as closely as transformational learning reflects key aspects of wondering, it does not demonstrate a pattern of self-initiated, continued restructuring of understanding comparable to that which is produced by a capacity for wonder. Mezirow's theory offers some insight into what it might be like for the experience of wonder to transition to a more reflective practice.

Contribution of the Cocurricular

To foster learning environments that enable a capacity for wonder to be developed within students, one must examine the experiences offered from both the curricular and cocurricular spheres of education. Prior to the 20th century, the moral development of students was a core focus of higher education, and this focus was primarily maintained through faculty and the curriculum (Schuh, Jones, & Torres, 2016). Faculty also played a primary role in supervising the conduct of students outside of the classroom by embracing the role of *in loco parentis* and fulfilling the role of both educator and parent (Schuh, et al., 2016). As demand rose for more practical or profession-specific courses of study, a shift away from the previously championed liberal arts curriculum began to take place, and faculty were uninterested in and unable to maintain a high level of focus in specialized fields and in matters of student conduct (Schuh, et al., 2016). This change resulted in a decreased emphasis on whole-person development in the curricular, and thus the responsibility for character and moral development was inherited by college administrators (Reuben, 1996). As a result, the American Council on Education

eventually drafted the first document that would provide clarification for the nature of work for which student affairs professionals would be responsible (American Council on Education, 1937). In this way, the Student Personnel Point of View (SPPV) was written as the foundational document stating that student affairs administrators should take responsibility for the holistic development of students (American Council on Education, 1937).

The objective of holistic development is what makes it crucial to observe the ways that cocurricular experiences influence a student's ability to engage in wonder throughout college. Students benefit from cocurricular educators who allow them the autonomy to take responsibility for their involvement, whether it be through a campus organization, athletic activity, or leadership position, and allow them to experience the breadth of satisfaction and frustration that comes with the associated challenges (Davis, 2011). These experiences are a primary way that students learn to apply personal thinking to their actions and to articulate their own reflections in community with their peers (Benjamin & Hamrick, 2011). The ability to wonder is deeply connected to students' cognitive development, affective experiences, and even aspects of character, which makes student wondering a worthwhile point of focus for those responsible for cocurricular student experiences.

A capacity for wonder encompasses the full spectrum of an individual's cognitive and affective functions (Fuller, 2006). It requires students to engage in self-reflection and inquiry that extends beyond the instruction they receive within classrooms. For this reason, student affairs professionals have the opportunity to contribute uniquely toward a student's development of a capacity for wonder. The programs and services provided in

the cocurricular setting give students opportunities to intentionally apply learning that has taken place in the classroom as well as build community with their peers (Benjamin & Hamrick, 2000; Boes, 2000). The continued practice of learning in community sets the stage for students to wonder as they are exposed to various perspectives on fresh subjects. Therefore, since students are likely to encounter new perspectives through cocurricular involvement, professionals responsible for these areas of education have the opportunity to encourage habits that promote further wondering after an initial interest has taken hold. Encouraging wonder can even be accomplished by reframing necessary, existing programs such as diversity training or service-learning opportunities to provide students with a necessity to “wrestle with new ideas and enter diverse environments” (Gross, 2000, p. 119). Scholars also suggest that student affairs professionals should strive to think of themselves as educators responsible for supporting students through the challenge and emotional experience of deep learning; even when this learning does not appear to result in a steady increase of maturity (Benjamin & Hamrick, 2000; Davis, 2000). A suggestion for student affairs professionals to consider their contribution toward deep learning implies that the learning happening in the classroom also occurs in the cocurricular, which means that wonder eliciting moments are likely to be present in diverse areas of the student experience. Student affairs professionals are often best suited to guide students in the personal initiative required for them to engage in deep learning (Benjamin & Hamrick, 2000). Thus, student affairs professionals could also be specially situated to guide students through the development of a capacity for wonder.

Some scholars suggest that an ability to envision the bigger picture beyond their current perspective and to recognize patterns is one of the most highly desirable attributes

of educated individuals (Selingo, 2015). Part of learning to see the big picture is actively engaging with different parts of it. Benjamin and Hamrick (2000) write that the most salient form of learning occurs “while students are actively engaged in their lives as university community members, through the very real lives they are experiencing as students, in and outside of the classroom” (p. 33). Cocurricular involvement provides opportunity for students to learn through engagement by thinking more broadly about new interests, connecting with their surroundings, and acting with care toward one another. If approached intentionally, each of these areas of involvement have the ability to result in experiences and eventually practices of wonder that could help students to engage deeply by acting upon an interest to grow in understanding. The cocurricular connects student experiences with the potential for continued learning while also developing their moral character. Wonder is believed to directly benefit students not only in mind, but also through helping them to develop the attributes commonly associated with morally upstanding people, and these attributes of wonder are often specifically mentioned as objectives of cocurricular education. For this reason, a connection between wonder and the cocurricular should be evident and professionals responsible for cocurricular experiences would benefit from examining the possible influence a capacity for wonder could have on students.

Statement of the Problem

Although a wide array of research has defined and described wonder, identified the value it adds to peoples’ development, and has even considered the positive relationship between wonder and higher education, few authors have specifically addressed how students first encounter and then continue to practice wonder. Students

who are taught to ask questions not just with a desire to complete assignments or even increase knowledge, but instead with the expectation of discovering new questions are more likely to experience holistic growth through their education (Tayaka, 2013). A form of inquiry that rejects a predefined direction will likely inspire people to continue learning in a self-motivated manner (Paolantonio, 2018). Shifting focus from only specific objectives promotes a regard that extends beyond the self and enables individuals to reach out with humility, appreciation, and a desire to not only learn what will be advantageous to them, but to participate as part of the community. Being an active part of community implies a desire to serve and reflect with others as the wonderer's ability to value differences and contributions of people around them grows. If higher education seeks to prepare students for meaningful service, then a valuable part of this process could be identifying opportunities for students to wonder.

Despite the supposed positive effects wondering has on individual's ability to learn and interact with the world, empirical research has not been conducted to demonstrate how this capacity is acquired. This qualitative study will investigate further by addressing the following question: *By what process do students engage in wonder through experiences in higher education?* Additionally, the following questions will provide deeper context for the study:

- What educational experiences have led students to wonder?
- How do curricular and cocurricular settings contribute toward opportunities for students to wonder?
- In what ways does wondering have a lasting effect on students?

Significance

This study will contribute to existing research about the value of wonder in learning and education. It will provide insight not only into how students engage in wonder through curricular and cocurricular experiences in college, but also into whether or not this experience tends to lead to a practiced habit of wondering. These findings could provide educators with an opportunity to reflect upon how educational experiences and programs could be reimagined in such a way that provides students with opportunities to wonder. Since many byproducts of wonder are theoretically linked to educational objectives, this study will help to demonstrate whether this connection exists in the current student experience, and if so, how this is brought about. Identifying whether or not wonder is an active component in students' educations will provide a starting point from which to begin discussions about what space wonder should occupy in higher education settings and what type of lasting influence it may have on students.

CHAPTER TWO

Literature Review

Although wonder is often regarded as mysterious, it has been a focal point of a broad range of literature throughout history and has more recently become a conversation topic for its relationship to human learning. However, many scholars agree that wonder is under-researched (Carlsen & Sandelands, 2015; Fuller, 2012; Matravers, 2012). Contemporary researchers focus primarily on identifying the experience of wonder (Nussbaum, 2001; Vasalou, 2012), exploring the relationship between cognitive and emotional aspects of wonder (Fuller, 2012; Matravers, 2012), and on emotions closely related to wonder (Grossnickle, 2014; Keltner & Haidt, 2003). In this study, I consider two aspects of the experience of wonder that have not been thoroughly explored: the way in which people learn to practice wonder and how this could occur through students' higher education experiences.

Consensus on a definition of wonder is difficult to establish because of the highly-individualized ways in which people experience it. This necessitates a reliance on literature first to describe the human relationship to wonder. After reaching an understanding about how humans experience wonder, literature regarding the context within which wonder may be situated in education will provide further direction for this study. Fuller (2006) describes the multiple ways in which an individual engages with wonder from the cognitive, to the attitudinal, to the phenomenological. He later explains how wonder across these spectra helps that individual to build upon existing cognitive structures by constructing higher order patterns of thought that are capable of stimulating

philosophical reflection (Fuller, 2012). The abilities to synthesize thoughts, ask creative questions, and imagine innovative possibilities are often hoped-for characteristics of individuals that have completed studies in a variety of fields. Thus, desired educational outcomes for college students may be closely linked to the extent to which students are engaged in wondering in school. Recent authors have begun considering the role of wonder in education (Musaio, 2012; Paolantonio, 2018; Schinkel, 2017). However, this work, although valuable, is often speculative rather than empirical. Current scholarship not only acknowledges the importance of wonder-filled education practices, but also offers a critical lens through which to consider the restructuring of academics to create space for wonder (Schinkel, 2018). Significant writing about the experience of wonder and its influence on the cognitive and emotional functions of people also exists (Carlsen & Sandelands, 2015; Fuller, 2012; Vasalou, 2012). However, empirical data to substantiate claims for how incorporating wonder into education positively affects students or to explain how students currently engage with wonder through existing educational conditions is still lacking.

Wonder in Practice

Existing literature focuses largely on defining wonder and describing its many forms. A common theme of this research is that wonder is a disposition or state of being that can be acquired through practice (Geller, Caldwell, & Merrit, 2018; Schinkel, 2017; Vasalou, 2012). Vasalou (2012) describes the difference between wonder that happens to someone and wonder that is cultivated as a result of continued reflection that allows the wonderer to “see something as extraordinary where we did not do so before” (p. 4). This act of seeing ordinary things in an extraordinary light is what Vasalou (2012) regards as a

practice that eventually allows one to continue engaging in appreciative wonder even once explanation at the original cause of wonder has been secured. Although events can happen that cause individuals to be wonderstruck at the unfamiliarity or the vastness before them (Fuller, 2012; Schinkel, 2018), scholars have presented compelling reasons why wonder itself can be an inhabitable state or disposition that people develop through habit (Vasalou, 2012). This understanding of wonder as a replicable or cyclical occurrence that typically results in cognitive benefits to the engaged individual reveals a need for further investigation into how this practice can be initiated or encouraged.

The Process of Wonder

Some scholars highlight the necessity for an explanatory model incorporated in a wide range of disciplines. Fuller (2012) describes the process by which interest moves from initial surprise to curiosity to wonder. Through this progression, Fuller (2012) attempts to explain how wonder widens an individual's ability to think as an active search for knowing coupled with appreciation for the unknown leads to cognitive expansion.

Carlsen and Sandelands (2015) propose a description for how wonder enters inquiry in their writing about the usefulness of wonder in organizational thinking. In this description, wonder triggers imagination through four primary moments: *arousal*, *expansion*, *immersion*, and *explanation* (Carlsen & Sandelands, 2015). These moments are identified through analysis of notable theoretical writings and explored through reflections of other individuals who the authors deemed to be active wonderers. Through an analysis of each form of wondering, Carlsen and Sandelands (2015) conclude that wonder must not be relegated to the arts or to philosophy and must be incorporated more intentionally into organizational thinking and perhaps other disciplines.

Wonder in Education

If a capacity for wonder can, in fact, be developed, it seems that institutions responsible for cultivating an interest in the search for truth should be incorporating this development into the student experience. Although there is a growing interest in the benefits of wonder, there is less study regarding how these may be brought about specifically through higher education. Additionally, there is sparse information about the effect that suggested practices have had on the student experience.

Researchers typically agree that wonder is an important educational component. Specifically, scholars are interested in its ability to broaden intellectual capacity through the stimulation of further inquiry as well as through its ability to instill an intrinsic appreciation for the world in all of its mystery (Schinkel, 2018). This appreciation for what lies beyond the limits of understanding promotes a desire to learn and encourages students' full engagement with the surrounding world through questioning and reflection (Schinkel, 2018).

Some researchers regard the loss of wonder as primary problem of modern education and the occurrences responsible for an increased cynicism in today's graduates (Turley, 2001). Schinkel (2017) advocates for the importance not only of active, investigative wonder in educational settings, but also for the practice of deep wonder. Deep wonder is what helps learners acknowledge that there are truths that they do not know as well as mysteries that will always remain unknown (Schinkel, 2017). This acceptance of what one does not know and potentially cannot know is what sustains a continued interest in the world (Schinkel, 2017).

Along similar lines, Paolantonio (2018) presents an argument for the pursuit of wonder in education that causes students to engage more deeply in appreciating people or things in the world that are distinctly “other” from themselves. Rather than focusing on the contemplative aspects of wonder that Schinkel (2017) highlights, Paolantonio (2018) chooses to emphasize a sense of wonder that instills heightened connection to the external world. The primary benefit for education presented here is the community cultivated as students begin questioning ungraspable things in a way that draws them away from their previous conceptions and toward new imaginings (Paolantonio, 2018). This drawing out of students is believed to help them reject thoughtlessness and the utilitarian treatment of the natural world in education (Paolantonio, 2018). Instead, students are encouraged in their processes of becoming and in thinking rather than in acquiring knowledge. This is a valuable approach to inspiring students to exercise concern and choose to contribute to society with interest that reaches beyond self and toward serving others. Rather than pursuing an education exclusively for self-fulfillment, students are challenged to seek an education that will enable them to serve humanity.

Researchers also present a necessity for educational institutions to consider a balance between curiosity and wonder in learning (Paolantonio, 2018; Opdal, 2001). In his research, Opdal (2001) describes how curiosity actually creates limitations in learning because it leads to research with a pre-determined goal. This necessary type of inquiry helps students learn to solve problems and fill in gaps in their current understanding within a subject. However, an education that does not emphasize the merit of asking questions that do not have definitive answers does not move beyond knowledge acquisition toward philosophical inquiry (Opdal, 2001). Paolantonio (2018) expands

upon this concept by describing how promoting curiosity as the primary foundation of learning results in a view of the world as a resource that can be worked upon and disposed of as needed while students narrow their learning only to what they must know in order to stay relevant. Wonder, on the other hand, offers the inspiration necessary for a change in or furthering of perspective which Opdal (2001) cites as the primary goal of education.

Wonder and Educators

The role of educators in cultivating a sense of wonder by creating engaging experiences and stimulating students' desire to learn is a focus of the relationship between wonder and education. One of the primary calls for educators in instilling students with a sense of wonder is the creative rethinking of how outcomes-based assessments are utilized (Musaio, 2012; Paolantonio, 2018). Instead of looking for students all to exhibit the same traits after completing an education, Musaio (2012) challenges educators to consider the ways in which student learning has been reduced to routine in an inhibitive manner and to think how differing educational paths can still lead to the desired outcomes. To consider this, educators must also engage in the process of wonder. This process is what will enable educators to consider the differences in students and the way that their relationships differ depending upon the student context. This appreciation of the "otherness" of each student inspires educators to avoid a blind acceptance of the standard way of doing things in favor of creating new approaches to teaching that favor the context of each student and is strengthened by the dissimilarity and originality present within each classroom (Musaio, 2012).

Teachers are also encouraged to think beyond their own relationship with students, and further about the value of a student's unique experience and self-realization in the context of education (Paolantonio, 218). A practice of engaging in admiring wonder toward students serves as a mean by which educators can shift away from harmful assumptions about student learning and toward the nurturing of individualized appreciation for the world and thoughtfulness (Paolantonio, 2018).

Tayaka (2013) discusses the necessity of focusing less on instilling a sense of wonder in young children and more on rekindling wonder in the minds of older students in an effort to move away from knowledge acquisition and toward the creation of lifelong learners. Research suggests that emotional engagement through academics is useful not simply as a way to progress society but as a way of developing better relationships between people and with the natural world (Tayaka, 2013). Tayaka (2013) describes a focus on pedagogical techniques for engaging older students in child-like thinking processes as a starting point and further provides explanation for how foreign language studies may be a great starting point for this focus.

Scholars also focus on the role that an educator should play in satisfying the need for the younger generation to recover the ability to be surprised (Musaio, 2012). Musaio (2012) draws connection between a reflective approach to education that includes critical, creative, and caring thinking to the act of wondering in such a way that new questions are constantly generated. She offers three suggestions of ways to help students practice their wonder ability including the encouragement of an attitude of care toward reality, regular self-assessment and reflection, and a practice of expressing gratitude and appreciation toward others as well as themselves (Musaio, 2012). Through these practices, educators

function as philosophers who are capable of identifying educational possibilities in students.

Wonder and Moral Education

Although wonder offers many benefits to students' cognitive development, it is also often linked to the development of morality. The moral development of students is a key component of a well-rounded education. The link between moral education and wonder merits consideration of how to intentionally connect the two in educational settings. Research examining the connection between wonder and moral education concludes that a moral education without regard to wonder cultivation is incomplete and that only intentional wonder that has been formed into a disposition in response to the world is effective in sustainable moral formation (Schinkel, 2018). The striking effect of wonder may result in a "morally formative experience" if the wonderer takes time to reflect on the experience and adjust self-perception accordingly (Schinkel, 2018). However, an isolated moment of wonder does not yield the lasting effects of contemplative wonder that must be incorporated into a meaningful educational experience (Schinkel, 2018). The difference in effect implies that contemplative wonder itself should be developed as a practice that allows students to move beyond a one-time experience and toward the cultivation of good moral behavior that is partially sustained by active wonder, though the elements of such a practice have not yet been verified.

Scholars also maintain that a capacity for wonder could be a contributing factor in virtue development. Wonder has been connected to the cultivation of courage, humility, curiosity, gratitude, respect, compassion, and hospitality (Geller, et al., 2018; Merrick, 2012; Nussbaum, 2001). In their research, Geller, et a. (2018) express concern about

how the premedical learning environment fosters a type of competitiveness that undermines virtuous behavior and inhibits students' ability to develop ethical character. The authors believe that the virtues cultivated by wonder would help better prepare students to exercise care in future medical practice and would also help to create a healthier learning environment (Geller, et al., 2018). This research is supported by the work of others as it suggests that efforts to cultivate greater humanism should stem from innovative pedagogical methods and an effort to overcome systemic forces that discourage compassionate learning (Geller, et al., 2018; Paolantonio, 2018). Geller, et al. (2018) specifically call for researchers to expand upon their work with empirical research designed to consider ways in which a premedical learning environment can be reimagined to cultivate a capacity for wonder. Empirical research would also be useful in a more general sense as implications for wonder in higher education are further explored.

Wonder in Higher Education

Encouraging a development of a capacity for wonder reflects the values expressed by scholars who focus on college student learning. For example, the *learning paradigm* presents a framework for shifting the focus of higher education from instruction to student learning (Barr & Tagg, 1995). Within the learning paradigm, students do not simply receive instruction, but instead are provided with an education that is being continually reevaluated to ensure that learning and change occur (Barr & Tagg, 1995). This approach to higher education deviates from what the authors consider to be the common practice of instruction-based education. By contrast, the learning paradigm promotes a practice of educating students in whatever way is most likely to promote continued learning through ownership of the learning process. As students are provided

with freedom to direct their own experiences, they cultivate the reflective qualities that lead to further learning development. Thus, the learning paradigm serves as a helpful foundation for conceptualizing how wonder may be elicited through educational experiences and an emphasized value on the student process above uniform outcomes.

Mezirow's (1985) *Theory of Transformational Learning* is a model for adult education that also reflects several components of wonder. Students engage in a meaning transformation process that helps them to reflect upon how their current understanding exists in an incomplete frame (Mezirow, 1985). The process that learners transition through to reach this point involves self-reflection and affective characteristics similar to those described by researchers who focus on the effects of wonder. Suggestions for how to initiate the process of transformational learning are helpful in considering how the process of wonder can be incorporated into college student education.

Researchers are also interested in the distinctiveness of educating college students in comparison with children (Musaio, 2012; Tayaka, 2013). Older students often exhibit a lack of interest in learning when compared with children and are typically less engaged in academics simply for the sake of learning (Musaio, 2012). For this reason, there is need for an increased focus on wonder-cultivation in high school and college-age students (Tayaka, 2013). Elementary-aged students are often inclined to wonder because they have been provided with fewer answers to abstract questions and because they have not yet adjusted to the lessons presented to them, so the lessons feel engaging and communal (Musaio, 2012; Tayaka, 2013). For these students, school experiences are still novel and often include interactive, experiential components to encourage participation (Tayaka, 2013). Although younger students are naturally inclined to wonder through the

type of learning that they are often presented with, students transitioning to college tend to become bored with their studies and lose the intrinsic desire to learn as they become more concerned with completing a specific set of course requirements (Tayaka, 2013). Musaio (2012) attributes this disenchantment to the pressure students feel to complete courses that will provide them with career-oriented opportunities when learning would most likely be better fostered if students were taught to value it as an intrinsic good. The pressure to perform at a high caliber, to achieve the best grades, and to compete with other students also contributes to the disenchantment students often feel (Geller, et al., 2018). Observations presented in the existing research serve as a call to educators to consider ways to rekindle wonder in college students through educational practices aimed at emotional responsiveness and at exposing students to experiences typically unencountered in the classroom (Musaio, 2012).

Cocurricular Contribution

Literature regarding wonder in education focuses primarily on academic components of wonder as it relates to curriculum and pedagogical design (Musaio, 2012; Tayaka, 2013) and cognitive benefits (Fuller, 2012). However, a capacity for wonder is a practice that cannot be fully supported only in a classroom setting. Thus, although the cocurricular has a part to play in facilitating experiences that elicit wonder and promote its practice, to date, scholars have invested little attention in the cocurriculum.

Since the publication of the Student Personnel Point of View in 1937, researchers have explored the contribution of cocurricular experiences to students' overall development. Researchers highlight the way that cocurricular involvement contributes toward the student experience by providing space to reflect intentionally upon the

substance and application of learning (Boes, 2000), to build community with diverse peers (Benjamin & Hamrick, 2000), to personally encounter new ideas or environments (Gross, 2000), and to actively engage with their surrounding community and wider world (Benjamin & Hamrick, 2000). Each of these experiences contributes toward students' ability to wonder by providing new contexts and opportunities to engage with others who may think differently and by encouraging reflection that synthesizes new experiences with learned concepts in a way that requires more abstract thinking. Although the cocurricular contributions highlighted in the literature are practices that have been associated with wonder, the way that these experiences combine with curricular engagement to develop a capacity for wonder has yet to be explored.

Summary

A common thread presented throughout the literature is the call for empirical research regarding how the practice of wonder is carried out in an individual's experience (Carlsen & Sandelands, 2015; Geller, et al., 2018). This research has not yet been pursued because wonder does not fit into a homogenous experience, thus making it difficult to interpret in a coherent manner (Schinkel, 2018; Vasalou, 2012). However difficult it may be, gaining an understanding of how people have experienced wonder, been taught to wonder, and learned to practice a sustained sense of wonder is the next promising step in understanding how learning is influenced through meaningful experiences within and beyond formal education.

The importance of wonder in a person's development in the realms of high-order thinking (Carlsen & Sandelands, 2015; Fuller, 2006) as well as moral development (Schinkel, 2018; Vasalou, 2012) has previously been explored. Additionally, the

importance of instilling a sense of wonder in students has also been addressed through existing research (Musaio, 2012; Paolantonio, 2018; Tayaka, 2013). However, the lack of empirical study to demonstrate how students are engaging in wonder indicates a need for further study. Although most existing research would point to the importance of wondering, the process by which people engage with wonder has not yet been identified. Thus, an understanding of this process and how it impacts college students through experiences within the curricular and cocurricular is an important addition to the existing literature.

CHAPTER THREE

Methodology

The Conceptual Framework

A conceptual framework is critical for this study because there is not yet a widely agreed-upon understanding of how to interpret wonder and more specifically its potential role in the college student experience. A conceptual framework provides coherence by highlighting connections between theory and research design so readers are able to understand the researcher's study (Leshem & Trafford, 2007). In this project, the conceptual framework provides a lens through which the process of wondering can be understood. This framework supports understanding for a process of wonder by highlighting key components from multiple perspectives in the literature while providing a way to conceptualize how students engage in this process. The proposed model will be used to identify elements of wonder within student experiences in an effort to determine how students engage in wonder in different contexts of higher education.

The model for wondering (Figure 1, below) is representative of how a person engages with an experience that could elicit wonder by depicting how students engage with surprising information, ideas, or experiences. Fuller (2012) suggests that cognitive growth requires more than simply the acquisition of skills and draws upon the influence of Piagetian theory to explain how the related emotions of surprise, curiosity, and wonder contribute toward a move beyond knowledge acquisition toward greater cognitive expansion. An understanding of this process provides the lens through which I plan to further explore the way in which students respond to opportunities to wonder.

Wonder is initiated first by surprise, which “instigates the process whereby we grow beyond concrete thought and become capable of more abstract, fully operational thought” (Fuller, 2012, p. 73). Part of understanding how wonder occurs requires identifying the initial cause of surprise. I interpret the concept of surprise as a highly individualized element that changes according to a person’s context and ability to take interest in something that represents a difference in thinking or experience. In this process, surprise is viewed as the initial reaction to an unexpected occurrence that mobilizes reactionary thought (Figure 1, part 1). This mobilization may move a person toward fear which ultimately results in withdrawal from the source of surprise (Figure 1, part 2). Withdrawal due to fear or disinterest makes it more difficult for a person to engage with potential future surprises as an increase in wariness leads to more hesitance than the person initially would have had (Fuller, 2012).

Alternatively, surprise may initiate a process of contemplation that begins with curiosity (Figure 1, part 3). Curiosity motivates a sustained investigation between ideas and experience that ultimately enables people to reach a conclusion about how the new experience corresponds with their previous understanding of the world (Fuller, 2012). The act of determining how the source of dissonance can be incorporated into a previous cognitive understanding is defined as *assimilation* (Fuller, 2012), and it results in the acquisition of knowledge that satisfies inquiry (Figure 1, part 4). Assimilation marks the achievement, or endpoint, of new discovery.

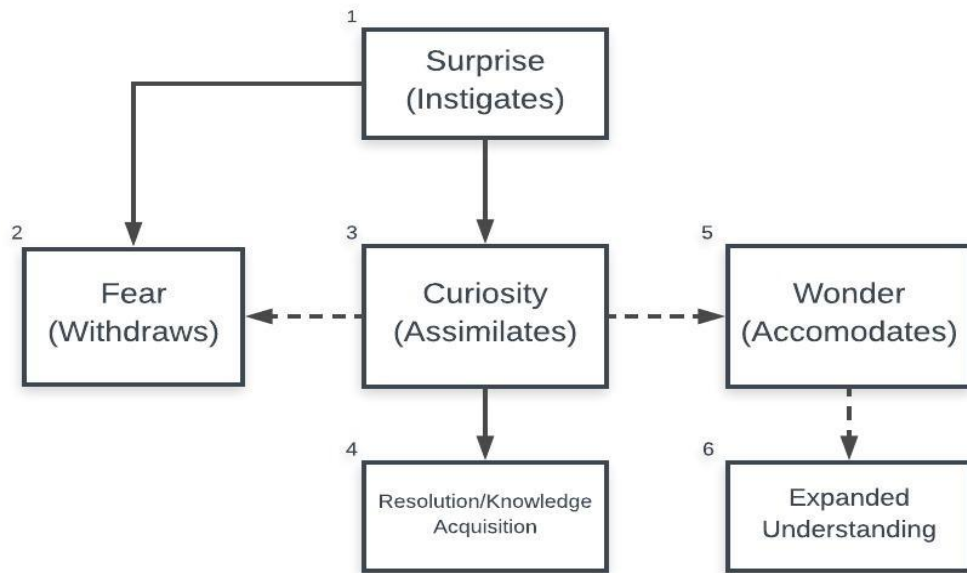


Figure 1. The Process of Wondering

When the surprising experience does not fit within a person’s existing cognitive schemata, several possibilities may result. Being unable to adjust to the surprising experience could move a person to withdraw, or it could motivate a person to pursue further inquiry that modifies previous cognitive structures to align with the new experience in an act of accommodation (Fuller, 2012). Unlike assimilation, which fills the gaps of current knowledge with newfound information, *accommodation* requires an individual to restructure their understanding in such a way that concepts that would not otherwise have fit a previous worldview can occupy their thinking (Fuller, 2012). Accommodation results in the ability to synthesize existing experiences with new possibilities. Wonder is inquiry that necessitates accommodation (Figure 1, part 5) because it requires that higher order concepts be employed to create a connection between a new concrete experience and a worldview that is being re-formed (Fuller,

2012). This piecing together of more complex abstract thoughts requires people engaging in wonder to reach beyond their current realm of understanding to explanations found in the surrounding world (Fuller, 2012). Such an act will result in an expanded understanding (Figure 1, part 6) that may also increase a capacity for moral conduct through learning to appreciate otherness (Fuller, 2012; Nussbaum, 2001). The increased capacity for moral conduct is a byproduct of being drawn toward a pronounced difference in another person's way of being or experiences in a way that inspires empathy and humility (Nussbaum, 2001).

Fuller (2012) writes that “wonder elicits sustained accommodation to the widest possible range of human experience even as it triggers the construction of cognitive categories that make it possible to seek...’final’ causes that affect our well-being” (p. 76). *Sustained accommodation* is the growing capacity to respond in wonder as new, surprising circumstances arise throughout an individual's life. This capacity shifts the focus from isolated experiences of wonder to a disposition that fosters wonder within an individual. If the proposed model for a process of wondering provides better insight into how students engage with wonder through experiences in higher education, then further research into how students sustain experiences with wonder as a practice could be a valuable next step in understanding how educational settings could foster such a capacity for wonder. The research of Carlsen & Sandelands (2015) regarding moments of wonder in combination with what is learned through this study about student engagement with wonder would provide a foundation for further investigating this subject.

Through this study, I sought to understand student engagement with wonder through experiences in higher education. By developing a model based upon the research

of Fuller (2012), I hoped to identify first whether students resonated with the suggested process of wondering. Additionally, through use of this model, I sought to identify college experiences that students feel contribute toward the process.

Methodology

For this study, I assumed an ontological perspective consistent with a qualitative approach that suggests meaning is discovered and constructed through experiences and interactions. The study relied upon the student participants as “knowers” to share interpretations of their experiences with the researcher. I chose an interpretive approach to qualitative research because the participants’ interpretations of their experiences are the richest source for understanding this topic, and this approach acknowledges that meaning is largely constructed from the human interpretive process (Hesse-Biber & Leavy, 2011). This study depended upon students’ self-reflection to indicate how their experiences in college may have affected their dispositions toward the surrounding world and potentially resulted in identifiable experiences with wonder. Previous research is limited in that no empirical connection has been made between student experiences and college and engagement with wonder. Therefore, this study was exploratory in nature as it sought to gain understanding concerning how students perceive their experiences and how this could align with the proposed process of wondering (Hesse-Biber & Leavy, 2011).

A conceptual framework was useful in the interpretive approach because it served as an aid for linking abstract concepts to empirical data to help the researcher make sense of findings (Leshem & Trafford, 2007). Once the data was analyzed, applying the conceptual framework provided coherence in this study by offering a lens for viewing

student interpretations of their experiences in relation to a proposed understanding of wonder while also providing perspective about areas of speculative research did not fully represent the participants' experiences.

Data Collection

I collected data for this study from students in their last year of study at a private, faith-based, research university. Selecting participants from the same institution provided some consistency to the setting of students' stories, however the eight participants were representative of a variety of different majors, which ensured a diverse pool of experiences reflective of the emergent nature of inquiry in this area (see Table 1). I used purposeful sampling to select participants based on the recommendations of faculty and staff who have worked with the students. Purposeful sampling involves finding information-rich cases that specifically provide insight into the desired study (Patton, 1999), so utilizing recommendations from faculty and staff who personally knew the students ensured the selection of participants that were able to provide meaningful reflections that appropriately contributed toward the purpose of the study.

Once selected, students participated in semi-structured interviews that were audio recorded and transcribed verbatim. To prepare for these interviews, students were asked to reflect on a prompt related to the study prior to our meeting (see Appendix B). The prompt provided a brief description of how wonder was conceptualized for this study and asked them to consider times in their lives that they could remember encountering wonder as it was described. They were then asked to come prepared to share however many stories or thoughts they had as a result. Thus, each interview opened with students openly sharing their perspectives as a result. This provided me with a rich set of data

in which students self-identified experiences in their lives where wonder was most present. I also piloted my interview protocol once to ensure the effectiveness of the prompt before the actual study.

Table 1

Participant Demographics

Name	Gender	Major	Ethnicity
Abigail	Female	International Studies	Caucasian
Amber	Female	English Lit., Writing, Great Texts	Asian American
Brian	Male	Mathematics, Linguistics	Caucasian
Connor	Male	Political Science, Philosophy	Caucasian
Dalton	Male	Computer Science	Caucasian
Jack	Male	Philosophy	Caucasian
Mayra	Female	International Studies	Asian American
Rachel	Female	Psychology	Hispanic

Data Analysis

Data was analyzed using a two-cycle coding process. After the initial verbatim transcriptions were complete, I employed Initial Coding, which is a coding method that allows the researcher to “reflect deeply on the contents and nuances of data and to begin taking ownership of them” (Saldaña, 2016, p. 115). This form of coding was useful because student experiences and language used to describe this subject differed and empirical research had not previously been applied to the topic of wonder development. The Initial Coding process helped to identify and tie related concepts together, and allowed me to connect similar experiences to the framework that I used to interpret

participants' accounts. For the second cycle of coding, I used Pattern Coding. Pattern Coding helped me to identify emergent themes from the data to make them more manageable to organize within the context of my study (Saldaña, 2016).

Participant Protection

To pursue confidentiality for participants, each participant was given an informed consent form prior to participating in the study. This form explained the purpose of the study, participants' rights to choose whether to answer questions during the interview, and participants' right to withdraw from the study at any time. I assigned each participant a pseudonym that I used in all written materials related to the study. All audio recordings and transcriptions of interviews were saved under the given pseudonyms. I was the only person with access to the participants' real names, and further pursued confidentiality by replacing the names of identifiable locations, people, or events mentioned during interviews. I also verbally reminded participants of these measures to protect confidentiality in person prior to the beginning of each interview.

Trustworthiness

I considered the four elements of trustworthiness to measure the validity and reliability of this qualitative study. These elements include *credibility*, *transferability*, *dependability*, and *confirmability* (Lincoln & Guba, 1985). To achieve *credibility*, or the assurance that findings reflect the participants' reality, I subjected my study to the scrutiny of a thesis chair and committee. Relying on the critical reading of others provided confirmation that my conclusions are consistent with the expressed experiences of the participants.

To ensure *transferability*, or the ability to apply findings to different contexts, I have written in-depth descriptions of the processes for data collection and the circumstances surrounding the participant experience and context. This provides clarity for the position of my study, which allows readers to determine whether the findings may be applicable to their own institutions and also highlights how differing contexts may impact a comparable study in the future. By providing a thorough description of all of my research processes from institutional information, data collection, and analysis procedures, I strengthened the *dependability* of my study. Dependability pursues findings that are consistent and the potential to successfully replicate the study at another institution based upon the information provided by the initial researcher (Lincoln & Guba, 1985).

The final element of trustworthiness is *confirmability*, which concerns the personal bias or assumptions that a research may approach the study with (Lincoln & Guba, 1985). To pursue confirmability, I worked to maintain awareness of how my personal association with the study could influence the research and meaning-making process. I have provided a positionality statement that outlines my relationship with the topic of study and any identifiable biases that may have been present as I interpreted the findings. Lincoln and Guba (1985) also recommend the use of member checks to identify any congruency issues between participants' accounts and my interpretation. I sent transcripts to my participants for them to review and comment on as they saw need. Asking for participants to confirm that my interpretation accurately represents their own understanding maintained confirmability and helped me avoid inserting personal bias into my conclusion.

CHAPTER FOUR

Findings

The goal of this research was to begin to understand the way in which students encounter wonder or develop the ability to wonder through experiences in higher education. The following sub-questions guided the data collection and analysis process:

- What educational experiences have led students to wonder?
- How do curricular and cocurricular settings contribute toward opportunities for students to wonder?
- In what ways does wondering have a lasting effect on students?

In this chapter, I will discuss findings that answered these questions and also informed my understanding of the ways in which students perceive and encounter wonder through their college experiences. First, I will discuss the way participants' accounts of wonder align with the proposed framework and offer examples of how students chose to define and describe wonder. Then, I will present specific sources that students have identified as being catalysts for wonder. Finally, I will describe ways that students identify themselves as having been either changed or affected by wondering or the ability to wonder.

A Framework for Wonder

Through their stories, students demonstrated alignment with the proposed framework for wondering. The key elements of surprise, curiosity, and wonder were present in the reflections that each student chose to share. Additionally, students were able to describe the relationship between these concepts through the lens of their

experience and interpretation. In the following section, I will highlight student responses representative of each of these elements.

Surprise

Surprise, or instigating events that mobilize students' thoughts or behavior toward continued investigation, serves as the foundation for the wondering process. Several students began their stories with instances of surprise that continued to influence their thoughts and behaviors as they were motivated to respond to the source of surprise with active interest. In each case, this surprise led to some form of individualized contemplation that mobilized a reactionary thought or behavior. Some students did not initially share a source of surprise for their story, and instead began with a concept or idea that represented wonder for them. In these cases, students were able to trace their wonder to sources that were more often than not linked to an experience or thought that caused initial interest and propelled them toward the thinking that they described.

For example, Rachel offered a general reflection that travelling is exciting to her and she often thinks of time spent abroad as a time connected to wondering. When asked if she could identify what about travelling inspired wonder, she described the diversity she experienced through exposure to other cultures and also a more specific experience where she surprised herself by learning to navigate a new city where she did not fluently speak the language. Although Rachel associated the entire idea of travelling with wonder, moments of surprise and continued interest within her experiences abroad are what caused her to develop that association.

In many stories, students first focused on an occurrence or location that took them out of their normal perspective and provided them with something new to consider.

Some students also described times when they surprised themselves as being the starting point for a wonder process. Amber described one of her first college classes as one that inspired the trajectory for the rest of her studies in an unexpected way:

I never thought I would be a Great Text or English major, but I think after that class, it kind of snowballed into taking more literature classes because I was just so excited to see what all these authors and what all these texts had to offer me.

Amber later referred to her experience in this class as the reason that she continued exploring subjects throughout college that similarly surprised her or piqued her interest in things outside of her major. She further expressed that she always loves opportunities to be surprised by her own capability and is encouraged when she finds that she is not simply a “one trick pony,” but someone who is able to learn and succeed in various contexts.

Brian also experienced surprise resulting from his course of study. Although he knew upon entering college that he wanted to study math, Brian was taken aback by how little he understood prior to beginning his studies. He described his surprising lack of awareness as something that ultimately resulted in a deeper desire to learn and appreciate mathematics:

I don't think I knew exactly what upper-level math entailed, right? The way you do math shifts so much more from just calculating things. Like calculating intervals and derivatives like in calculus, to proving things, and proving how calculus actually works and proving the underlying bases of these things. And so I didn't know that coming into college, but then as I went through the program more and started to do more and more math, that was really the side of things that I enjoyed. It's that critical thinking and being creative and trying to find a proof to something – trying to find the underlying structure.

Through his example, Brian further demonstrates how a surprising event or circumstance can lead one to draw closer to the source of surprise.

Connor focused primarily on travel experiences as times that instilled a sense of wonder in him. One such instance took place on a study abroad trip. Connor had taken a class that required him to study the geography and art of the areas that he would be visiting, but he still felt completely surprised by what he saw when he got there:

I really had no idea what to expect from it. You know I thought I would just be pretty much in a room reading most of the time and maybe we would go out and see other stuff...And it's almost I think impossible not to have your breath taken away in [this country]. It's one of the most gorgeous places I've ever seen. Heaven on earth. Never really planned. So yeah. Caught off guard with that.

Connor further described how he had no idea that the landscape he would see while driving through the countryside would actually match the art that he had studied in preparation for his trip, and expressed the excitement he felt when he discovered that real life was even more gorgeous than he expected. Being caught off guard by the beauty allowed Connor to engage deeply with what he later described as “the wonder of his surroundings.”

Amber, Brian, and Connor each shared moments at the beginning of their stories in which experiencing surprise motivated them to further reflect upon or make decisions that situated them closer to the source of surprise. The stories also highlight the varying ways in which an initial surprise may take place: within oneself, as a result of learning, or as a result of an overwhelming moment of beauty. The experience of being surprised provided these students with opportunities that had a lasting effect on them. Amber was inspired to pursue her current major, Brian gained a deeper sense of appreciation for a subject he already loved, and Connor was drawn into a reflective state that he has continued to revisit in his mind over the years.

Withdrawal. Several participants noted that political activities and the general climate around a recent election often left them feeling surprised. Out of all the participants, only one provided an example of how he had withdrawn as a result of being surprised. Dalton's withdrawal was connected to his political beliefs that he described as more conservative than anybody else that he knows. When Dalton arrived as a first-year student, he was surprised that most of the students in his classes did not seem to align with his values and views. Dalton shared a story about the first time he was challenged to consider how he had substituted cultural values for faith values. Of this experience, Dalton said:

I would say I tended to cop out in those conversations or just kind of listen and not say anything because I don't want to either offend that person or get into a conversation where I am not really able to defend my viewpoints. I guess I thought that part of being open is keeping my mouth shut, and I think that's part of how I was able to maintain friendships with a lot of different people because I didn't really talk about my political views a lot on certain things...I'm not a fan of feeling very personally challenged, especially with a person who is standing right in front of me who is challenging some very basic moral assumptions about my life. I would say it was difficult for me.

Through this reflection, Dalton explained how it was difficult for him to learn from perspectives that are different from his own and that he tended to rely upon the familiarity of home and family to get him through these struggles. It eventually took Dalton finding some trusted friends for him to feel brave enough to consider the truth in other peoples' experiences. He shared his reflection on how friendships found through his academic program and residence hall helped to reform his thinking about otherness:

I think it's something that I've learned here. Coming to college has let me be more open...I still believe that there is truth and that I am trying to move towards what that truth is. But I also recognize that I don't have all the answers and I don't think my family or anybody else has all the answers. And so it's ok to disagree on certain things, because we're moving towards it. We need to have conversations instead of just yelling at each other.

Although Dalton initially chose to withdraw, he demonstrated an ability to engage in the process of wondering and offered reflections on how his perspective has shifted as a result of intentionally considering the experiences of others. Dalton essentially shared about moving from a state of withdrawal toward curiosity as he was presented with more opportunities to respond to surprise.

Curiosity

Students often either referred to curiosity interchangeably with wonder or at times seemed to conceptualize curiosity as a smaller component of wondering. If students used the word curiosity or referred to themselves as being a curious person during the interview, I asked them to further describe what they meant. Some participants offered their own definition of curiosity while others opted to describe the similarities and differences that they perceived between curiosity and wonder. These descriptions mostly tended to reflect the definition of curiosity presented in the framework for wonder. For instance, when asked to describe what it means for a person to be curious Amber provided a description of curiosity:

I think the end goal of curiosity...is for us to keep asking questions which will hopefully lead us to then have to think really hard and engage in conversations, and ultimately lead to a sense of conviction; thoughtful conviction.

Amber essentially described curiosity as a form of active questioning that results in a resolution, or conviction. In this way, she demonstrated an understanding that while curiosity is pursued through continued investigation, it is goal oriented. In Amber's case, the goal at the end of curiosity is a sense of conviction.

Instead of offering his own definition of curiosity, Brian defined curiosity as it relates to his understanding of wonder:

I mean I think curiosity and wonder go hand in hand. But I feel like curiosity, at least in the way that I think of it, curiosity is more like on the surface. Where there's something that just piques your interest once you look at it. But I feel like wonder is, you have to dive into it a bit more. And also like curiosity I think just in the way that I think of it, like curiosity is something that you're interested in it for the sake of that one interest. And like the object that you're interested in is what drives your curiosity.

According to Brian, if a person is curious then he or she wants to know all there is to know specifically about the thing that invoked curiosity. Brian later offered a more thorough definition of wonder as well, however in this instance he differentiated between wonder and curiosity by explaining that curiosity does not necessarily result in the depth of understanding that wonder yields.

Like Brian, Jack relied upon a comparison between curiosity and wonder to make sense of how he would define curiosity. To Jack, curiosity is a more negative form of knowledge acquisition in comparison to wonder:

Curiosity is bad. Wonder is good. Curiosity is pursuing knowledge in an undisciplined way. Say I have a test tomorrow, but instead of studying and using those two hours to prepare for the test the next morning, I get on my phone and look up Wikipedia articles about Philosophy. It would be, well, it would be a waste of time; an undisciplined way of pursuing knowledge. You see that curiosity is situational.

Although this does not necessarily reflect the definition of curiosity presented in the framework, it does further support the idea that students recognize some delineation between the way they approach learning from a curiosity versus a wonder-motivated perspective.

Assimilation

Assimilation was most commonly demonstrated through students' desire to fill in the gaps in knowledge that they already possess. Many of the participants described this

version of learning as one where they developed conviction or found support for why they believe what they believe. Through her response when asked about the value of asking difficult questions, Amber described her desire to better articulate her beliefs and find answers that will allow her to more fully form the beliefs she already holds:

I hope that at the end of the day in asking those questions after I've really thought about it and hopefully engaged in conversation with others about it, that I end up with some sort of conviction...I hope that I know where I stand on particular issues whether that's I don't know, like border security or abortion, or segregation or whatever. I hope I can come up with thoughtful answers that I can back up.

Through her response, Amber discussed why she believes that asking hard questions is an important part of learning. Later in the conversation she described times at which she has not necessarily wanted to learn for the sake of having answers. However, in this instance she was able to articulate that at times she seeks primarily to find the information that she needs to best support her current understanding. In doing this, she purposefully found information that she could assimilate into her beliefs while also deepening her perspective. Mayra also expressed a desire to support her already-existing beliefs by acquiring information that will affirm her understanding of the world:

I knew when I came into college what I believed, but I also wasn't strong, like I didn't have a lot of backing in what I believe, you know what I'm saying? So I had to like expose myself to new information and new experiences. So I could back up the things that I said or the things that I did.

Like Amber, Mayra asserted that college offers opportunities to have ideas re-shaped through new experiences. However, Mayra also identified one of the purposes of college as "finding yourself" and further explained that a key component of finding oneself is deciding what you believe and learning ways to support that belief.

Other students, such as Connor and Dalton, also described a mentality that they held when first beginning their college studies that they wanted to learn what would most

accurately support their current understanding of the world so that they could graduate and embark upon their already-mapped out futures. For Connor, this meant getting answers to the questions he brought to college so that he could “go out and save people” when he graduated. Dalton described his version of assimilation as a reliance on familiar sources such as family to satisfy his inquiry as he found himself in a new place and surrounded by people he was unsure if he could trust. Rather than initially choosing to expose themselves to the unexpected, Connor and Dalton both sought information that would align with their previous experience.

Curiosity to Wonder

The process by which students move from curiosity to wonder proved to be a more salient part of the overall framework than previously assumed. Students often shared their emotions about this transition or reflected upon the ways in which they recognized a change in their thinking. For example, as she was preparing her research proposals for graduate school applications, Amber realized that she was drawing inspiration from a narrow perspective of her chosen topic. Amber drew upon her experience of learning to ask hard questions through her classes to help her progress from goal-oriented learning to learning that provided opportunities for further inquiry. When discussing this transition, she described the importance of this type of shift:

I guess it means asking the questions that people don't really pay a lot of attention to and recognizing their importance and seeing how in not asking those questions, we're actually doing everyone a disservice.

Amber recognized that her narrow approach to her interests not only failed to satisfy her desire for understanding, but also failed to serve a larger purpose. Thus, she sought new

approaches to learning that would better support continued inquiry and provide expansive learning opportunities for others as well.

Even as Amber found this transition to be empowering, others described this as a challenging experience. Students often used negative words and seemed to consider this process a deconstruction of their previous understanding of the world that ultimately led to a more expansive one. Connor specifically described this shift as a traumatic time of his life:

I had a very, you know, this is what I want to do, and this is how I want everything to be, and this is how the world is because this is how I view it. And as I went along, questions kept being posed to me through my education, which was a very traumatic, in some cases, experience – having those old walls broken down. But at the same time, it caused me to have this thirst for more knowledge...I went through a very serious bout of depression because of that. And other things, obviously, as with anyone. But with that experience and being like “I have no idea who I am; I have no idea what the world is.” And so it’s you know, two dots, unrelated, unidentifiable, moving around everywhere, and me being like “everything’s chaos and I don’t know what to do.”

For Connor, recognizing that the questions he had been asking could only be explored using ideas that existed outside of his previous frame of understanding was incredibly daunting. Because of this, he experienced a brokenness that ultimately pushed him out of a more curious form of learning and into wonder as it is being defined in this study.

Ultimately, Connor reached a point at feeling at peace with this process:

I appreciate kind of that tearing down of everything now that I’ve been able to find some sort of footing now. How you rebuild it and how you go about education afterwards, I think first you have to go through a process of grieving of sorts. Not a grieving for any physical thing, but a grieving almost for yourself because you come out sort of as a new person of sorts. The old you, dies seems a little to dramatic, but definitely phoenixes; creates a different understanding of the world that really reflects a lot of how you think. And so whenever you start to rebuild, I think a lot of it is revisiting some of the same ideas that you used to have from a new perspective.

Although this process was intense for him, Connor was able to describe the way in which his approach to learning and even to relationships was altered as a result of this shift.

Like Connor, Abigail experienced difficulty as she practiced changing her learning habits. After referring to how she had always believed herself to be a tolerant person who asks thoughtful questions, Abigail described the frustration she felt in her international studies major as ideas she previously thought she understood were deconstructed in classroom settings and afterward as she felt alone in finding ways to reconstruct meaning out of these experiences:

Since I've been in college it's been a whirlwind and things have been turned upside down and it's shocking to watch the climate as a whole nationally, and it's shocking to watch within the microcosm of a university campus and with the people you encounter. That's a thing that's definitely weighed heavily. I think confusion has been something that I've felt a lot. And frustration...But I think that's the most important part. I think that understanding and leaning into tensions and difficult parts, that's the point, right? You don't learn for warm fuzzies. That sometimes comes along the way, but I think that those darker parts of it are necessary and difficult. They're important to understand if you really want your education to make a difference...If we're moving towards the better, towards this ideal, these essences, then you have to understand where you are and what the reality of something is. I guess that's kind of where I stand on that.

Abigail believed herself to be open to having her perspectives challenged, but found that the difficulty of tearing down some beliefs about people and about the world was actually an important part of the learning process for her and made her ultimately more able to approach new ideas with an open mind.

Relationship between curiosity and wonder. Ultimately, most of the student participants were able to differentiate between times when they felt curious and when they wondered. When asked to describe the relationship between the two experiences, Amber offered this description:

Because of my sense of wonder, I became curious about what grad school could look like. So I feel like the two are very much in a circle and they're chasing each other. I think that's the relationship, I don't think it's like a linear X produces Y and it's always going to be this one flow.

In Amber's experience, the sense of wonder she gained studying abroad provided her with more to be curious about. She used this as an example to demonstrate how she typically finds herself in wonder as she pursues various areas of interest in a curious manner.

Dalton specifically spoke about times when he knew that he needed to choose curiosity or wonder by describing the way the two focuses of his education formed his thinking patterns. He concluded that his interest in ethics is specifically rooted in the tension he has learned to balance of seeking answers to technical problems through his computer science backgrounds and being challenged to reflect upon the "good life" through the liberal arts classes required through his honors program:

What I love about my combination is that I now both understand my vocation practically, but I also understand it in the larger context of the world. Which is why I'm so focused on ethics. I'm very pleased that I have both perspectives because I think that it's very easy to get locked into one or the other and I am able to use both.

Dalton later described times when this dual perspective is helpful, like when he is frustrated at being unable to find answers to the questions he is trying to solve through his work. He shared that those moments of frustration, he is able to consider the larger picture and find comfort in his own belief that some mysteries will remain mysteries. This way of thinking is one that Dalton believed he would not have acquired without learning to wonder in addition to pursuing his curiosity.

Defining Wonder

Throughout our conversations, students told stories that exemplified wonder and also offered descriptions of how they chose to define wonder for themselves. When asked how he typically views wonder, Brian offered this reflection:

I think that...wonder is surprise or awe that causes you to want to investigate further. Like not really with a goal in mind, I guess, but just with investigation as the goal itself. Like when I am able to find the intricate details in a solution to a problem that I have found, I know that this solution means that there are more problems that I need to investigate. I guess wonder inspires the investigation.

In comparing this investigative process with one inspired by curiosity, Brian said that "...with wonder, especially in the way that I think about it in math, yes, the object is interesting, but I think that wonder is, you see something that is really interesting and that draws you further to enjoy the creation." Brian essentially described the process of drawing closer to something that inspires appreciation as his conception of wonder, and he was able to place this within the context of his academic pursuits.

Abigail identified wonder as something that motivates her to question everything. When asked if she could expand upon why she wished to question everything, she offered this explanation:

I think that the value in asking questions to me is not to get answers necessarily. That's a benefit of it, and obviously a goal, but the value is in the curiosity and then in maybe finding more questions along the way and learning how to think about things differently.

Abigail described how she learned to think in ways that she had not before and also how her goal in asking questions shifted from finding answers to finding more questions. In this example, Abigail equated wonder with her value of continued learning. Connor expressed a similar value as he shared how his approach to learning shifted throughout his time in college and as he considered times when he had been led to wonder:

I'd always had a thirst for knowledge in the sense of I'd wanted to know everything. I'd wanted to be like this is the universe and now I know everything about it. But now it's more of a thirst for knowledge in a sense of like what's next? Really, it's less about seeing the end and seeing every single step and thinking that hopefully there is no end in my mind. I kind of don't want there to be an answer at the end of this tunnel. It's almost like reading a good book now. And thankfully I don't think there's an end to this kind of learning.

Like Abigail, Connor described the shift he experienced from wanting to know answers to wanting to learn. Connor primarily credited classroom experiences and books with helping him to develop a learning mindset even after what he previously described as a traumatic transition from one way of understanding the world to his current one.

Amber also associated wonder with a thirst for understanding that combines elevated positive emotions and cultivated habit:

I think the point of wonder is to engage in the world around us and to see where there is joy present in our lives...I genuinely believe that wonder...comes whenever you arrive upon something serendipitously...but I think you also have to, it's also a habit that you cultivate. And hopefully the end result is the joy you get from just the small things...Yeah that has been so life-changing to me, like actually looking forward to class and actually wanting to do the readings because I know that the text holds something of wonder for me.

Amber later summarized her statement by sharing that “wonder is a sense of joy in seeing the beautiful in the everyday.” Amber, like other participants, recognized wonder as an event that could happen to someone but also chose to focus on the potential of wondering to be a regular presence in her life if she made a habit of it.

Jack also shared similar sentiments to Amber by referring to wonder as “a disciplined way of pursuing knowledge” that allows him to “find deeper understanding about whatever situation was encountered; whether a person, thing, or etcetera.” Jack focused less on the positive affective experience of wonder and more on creating a habit

of wondering that leads to a search for deep meaning. For Jack, “Wonder expresses itself most beautifully in truth.”

Accommodation

When she described the effects of wondering, Abigail focused on how learning to empathize with others allows her to broaden her own perspective:

And to me it's been kind of a call to empathy...And I think it's important for me to understand that even if they have radically different value sets, they still are speaking from a set of values. They might not be the same values I have, but that doesn't mean I don't have things to learn from it even if I do not agree with all that they're saying. So I think that is how I approach it and also I think that there's importance for looking. Even if you have radically different belief systems, most people you can find something in common with. And some sort of bridge to connect the two. And I think if we start looking for those, then maybe you can expand and find something more.

Abigail described how building bridges that allow her to create connections between herself and others who are different from her also provides her with a larger frame of reference for viewing the world and others in it. Building those bridges necessitated accommodation as new concepts were introduced to Abigail's previous scope of understanding. Connor also experienced a similar form of accommodation by learning to appreciate the views and experiences of others:

I always want to give others their due. And by being so open to giving them their due, I'm not as surprised whenever I find my own things that challenge or question me. It's just sort of one of those acts, like ok, I can see it from a multitude of perspectives. Rarely does it completely tear down whatever I thought before, but sometimes it modifies my thoughts.

Connor took his example of learning from others in a slightly different direction than Abigail did. Rather than speaking about empathy, Connor described the way that viewing one idea from multiple perspectives may change the way he thinks. Connor's thinking was shaped by an appreciation of others.

Jack specifically discussed the way that his experiences as a philosophy major provided him with opportunities to wonder:

I realize that one cannot reduce religious beliefs to science alone. You have to use philosophy. And when you use philosophy from non-Christian authors, so, you know Aristotle right? You can expand your religious beliefs. And Muslims do this too. In ways that go beyond the reductionist labels we use from science or whatever political party we use. So philosophy, I think, is the key to expand upon something that has that gap...Philosophy is a way to expand your reason to hit the limits. You still have to make it happen, and maybe it's still like yeah, maybe now I can reap benefits from things beyond science and not have this reductionist worldview.

In his description, Jack offered examples of how he used his studies to expand upon his beliefs once he reached a limit of his own understanding. Through learning to wonder within his academic discipline, Jack was able to reason differently in a way that accommodates ideas that previously sat outside his scope of knowledge.

Variations of Wonder

Consistent with existing research, students defined wonder in many ways. Some were able to quickly identify with the interview prompt as the way that they have experienced wonder in the past. A few had to work harder to reconcile their idea of wonder with the definition being studied. These students were typically able to tell stories about times when they had experienced wonder, but had to think differently about times that they had sustained wonder as a result of their experience.

Passive Wonder

Students most often equated wonder with an experience of rediscovering a belief or truth that they held, and they focused largely on their emotional response to his discovery when explaining those moments. For several participants, this process was

present in spiritual practice. Dalton described this version of wonder as an emotional realization he had while singing a song that God loves him unconditionally. Jack described a similar experience in worship. In both instances, the resulting behavior was not necessary one of further inquiry, but rather a moment where both men experienced positive emotion and appreciation for the source of wonder. In this case, the source was God.

Connor first identified wonder as a moment that happens to an individual. He chose to highlight this passive version of wonder by sharing a powerful experience he had travelling. In his depiction of hiking to the top of a mountain, Connor described the weight of feeling small in a powerful and positive way. Although he experienced appreciation for the beauty of creating and for his connection to it, Connor did not necessarily feel moved to act further upon his emotion. Due to his lack of responsiveness, Connor's description more closely resembles that of awe as described in chapter one of this study. However, Connor associated this occurrence with wondering. Because he continually pointed back to this mountaintop experience as one that laid a foundation for his later ability to actively engage with wonder, his reflection provides helpful insight into how he perceives it:

I seek out moments where I feel small, but rarely do I find them. They usually find me. And they do fill me with wonder. The impact is something I think that doesn't reverberate for a very long time, and that's why you kind of need the recurring events. You know? Like if you have one moment of wonder in your life, that's a really slow life. In life you should have recurring moments of wonder.

Through this reflection, Connor described the importance of moments of wonder in keeping him inspired, but also emphasized that these mountaintop experiences are

moments when wonder happens to a person and not necessarily moments when the person feels moved to engage more deeply with the source of wonder.

Active Wonder

Almost every participant resonated with the idea of wonder as an experience that expanded the self and elicited an active response. Most stories offered in response to the prompt were reflective of this type of wonder, and students seemed most readily able to equate learning experiences with active inquiry. Amber and Abigail's descriptions of asking questions to more fully understand and appreciate different perspectives provided great examples of what active wondering can be in college. Abigail referred to asking questions in this way as learning "to push into questions and tensions and uncertainty despite being uncomfortable." Amber further expanded upon this idea by asserting an opinion that education should be about this type of inquiry. She described not it is one thing to read a good book that teaches you something new for class, but a better thing to "want to know more because of the things we discussed because of this book."

Brian also described how he views wonder as an active form of engagement with what he learns in his mathematical research:

So probably immediately the first story that comes about was the summer after my Sophomore year I was doing a research program at another university in math. So it was two full months of just doing math research and really diving into a specific problem and trying to find a cool question to ask and trying to find like a good solution for it. And throughout that whole process, wonder was the word that kept coming back to my mind when I was trying to decide, or like trying to explain what I was doing and why I was doing it. So there is just like this sense of wonder as I was digging deeper into the math and really exploring the problem and trying to find some underlying structure of it. That was in my mind my main motivation for doing it. It was the sense of wonder I had while exploring ideas and discovering an underlying structure of things.

For Brian, math provided him an opportunity to engage with active wonder because he saw value not only in finding a solution to the problems he worked with but also in discovering more questions in the process. Active wondering led Brian to think more deeply about what he referred to as the underlying structure, or connectedness between the concepts he was working with in a way that then equipped him to continue wondering beyond a solution.

Deep Wonder

Students did not typically offer reflections that highlighted deep wonder as part of their initial responses to the interview prompt. Deep wondering may be harder to identify, as it is connected to how people make sense of their relationship to the world with more concern for “being rather than the *how* of beings” (Schinkel, 2017, p. 546). However, with further conversation, several participants demonstrated a capacity for this type of wondering and also provided examples of when it has taken place in their lives. Brian was able to describe the ways that finding limits to his understanding of math led him to wonder more deeply about the world:

The world works in a certain way and we can sort of model the ways that the world works and the sort of patterns, so those patterns represent a sort of beauty in creation. Another way to look at it is what we’re doing with math is really pushing the frontiers of the human mind and the way that the human mind can conceptualize things. So when you’re doing math you also see the beauty of the human mind and the reason that God gave it. And so it just feels like when you view that and when you view the beauty of math and the beauty that humans are able to do math, then I think there’s a sort of wonder... There’s sort of like this reverence that is like “in order to appreciate this, I should go and study it more and really dive into the depths of it” and I think that’s where wonder comes from.

In his description, Brian communicated an understanding that the *how* behind math is not always as wonderful as the math itself. In this way, he has learned to approach his

studies not only with a desire to appreciate what he is learning, but also with perspective that what he is learning is good simply because it is; regardless of his understanding of it.

Jack also provided insight into what it means to wonder deeply by sharing about how he uses his imagination to help him see the source of his wonder as it is and not only as he perceives it. Jack referred to this practice as “thinking philosophically” and credited it with his ability to appreciate the reality of something without knowing all there is to know about it:

I recognize that beauty is actually again not from my ideology but it’s actually within that thing itself. Like a sunrise is beautiful not just because I think it, I feel that it’s beautiful, but it’s beautiful because of the way that scientific particles have lined up...equations are beautiful because they reflect the world...So the fact that I can think about beauty in that way, not just something that I experienced, you know like feelings and pleasures, is important.

Jack later offered perspective on how thinking imaginatively about other people allows him to see the goodness in them when their expressed version of goodness does not align with his. Jack engaged in deep wonder as he allowed a sense of connectedness and intrinsic value to motivate his appreciation of otherness.

Mayra experienced deep wonder on her first trip to her home country. She shared that she was adopted when she was still young and did not remember living there, however as she wandered the towns she could not stop imagining what her life would have been like and how her current life is connected to that part of her identity.

I got very emotional. I had never been to my hometown where I was adopted from. I keep saying I’ll go with my family, but hadn’t yet. It blew my mind that there were these huge boulders around the town we were in, and it was just amazing to think about that and think about my place in this world. It makes you realize how big the world is and how much little space you take up. It is mind-blowing and hard to process.

Mayra was not stricken by the beauty or with questions about the place that she was visiting. She experienced wonder at the weight of this place in the context of her own life. The questions she had as a result were unanswerable, but still important to her and to her ability to appreciate her connection to the rest of the world.

Sources of Wonder

Through stories and by reflecting on college experiences, students were able to identify sources of origin for their experiences with wonder. I will focus on the sources of wonder that were referenced most frequently in student reflections below.

Travel

Many students discussed experiences with moments of wonder through time spent travelling. More specifically, they focused primarily on encountering different cultures through travel. Rachel immediately connected her travel experiences to times when she had experienced wonder in the past:

Something that has always brought wonder to me and has always piqued my interest and yeah, I just always have a deep-rooted urge to travel, and the different cultures of the world always brought me a lot of joy and curiosity. That is something that is super different and maybe uncomfortable to experience, but it is something that energizes me instead of making me feel uncomfortable.

Rachel shared how one trip gave her an appreciation for other cultures in a way that made her desire to travel more. She also later described how this passion kept her inspired in her psychology studies to understand how different perspectives can shape the way a mind works. Like Rachel, Mayra spoke of travelling when she was younger as a primary source of wonder that has inspired her educational pursuits as an international studies major. When explaining how she decided on her major, Mayra shared “I always want to

learn more. I always love learning and have been a curious person, and travel made my curiosity into something more.” Mayra equated the “something more” to wonder.

Study Abroad. Students who traveled specifically for study abroad purposes seemed to have experiences that they could link in more direct ways to their encounters with or continued ability to wonder. In his reflections about college experiences, Connor offered several memories of his time studying abroad as one filled with what he called “moments of wonder” and also what he called “lasting impressions.” Because Connor had taken a course prior to his trip, he believed himself to be prepared for what he would see when he arrived, but his surprise at what he experienced led him to a state of wonder:

I thought back to a lot of the paintings we had seen, because we were taking a class that covered history, art, architecture - just a really great course. When I was prepping for the trip I had to write several papers, and we’d seen paintings and I thought ‘wow that looks really pretty’...but like you could never get that full idea across in a painting as whenever you were standing there. So like so many people have looked at this landscape and tried to transpose it into other peoples’ minds and couldn’t. And so that created a real sense of wonder on how long this has been here. How long it’s been beautiful. And that I get to experience it in this moment is really cool...It made me feel small and just honored to experience that.

Like Connor, Amber also considered her study abroad experience as one that inspired a continued state of wonder. Amber had prepared for a year by reading specific texts and creating a research proposal before her trip. Once she arrived, her preparation allowed her to be fully immersed in the academic community she was joining:

And so being there and living in a place where the buildings are older than America, older than the Aztec empire and just seeing, just like being a part of this I guess tapestry of education that has continued on for a millennia and I get to be a part of that. Like that sense of awe and that sense of being a participant in this historic scholarly conversation. That makes me so excited.

Studying abroad gave Amber new perspective into how she relates to the world and how she wanted her research to contribute toward her field. Ultimately, she credited her study abroad experience with her desire to apply to graduate school and become an educator herself.

Faculty or Academic Discussions

Students often referenced influential faculty members or classmates when describing their experiences with wonder. All of the participants connected wonder with learning, and most of them pointed to specific assignments or conversations that happened in the classroom setting as a source of dissonance or surprise that sparked curiosity and eventually wonder. For example, Amber described how faculty members modeled wonder for her:

[My professor] just made texts so accessible to us, and not only accessible but really relevant. And I think that was the first time I realized that literature and books weren't just like this thing to be studied or a thing to derive knowledge from, but are actually important to my own life. And I left that class just feeling so excited and feeling like I finally understood what the point of a university education was. I think after that class it kind of just snowballed into my taking more literature classes because I was just so excited to see what all of the authors and texts had to offer me.

Amber credited this class and professor as the primary inspiration for her graduate studies and eventual life goals. Similarly, Connor was influenced toward active wonder by a professor who spent time encouraging personal inquiry by providing new texts for him to read. When Connor became entrenched in the complexity of all that he was learning, this professor offered time and mentorship to help him explore new questions and process his experience.

Similarly, Abigail was grateful to influential professors for asking difficult questions of her and teaching her to ask difficult questions as well. She believed that asking unanswerable questions is what ultimately led her to wonder:

My education has really been something that has made my life much richer. And connection, and meaning. I think I have professors to thank for that. Professors who ask me good questions and difficult questions. And I think professors in general and classes that have taught me how to think. I think those are valuable skills in helping to understand your world. And now when I am going about my day and I see a painting or I see a piece of poetry or whatever it may be, I'm thinking of connections and I think that's made my life infinitely richer because nothing is ever just isolated. There's always a bigger picture.

When asked how professors taught her to question in this way, Abigail described classes where all students were able to feel that their contribution to the conversation was important and felt empowered to pursue their curiosity.

Diversity

Diversity of thought and experience were commonly mentioned as causes for surprise or awareness that ultimately resulted in wonder. Several students specifically referenced times that they recognized their own thoughts being shaped by perspectives that they had never been exposed to. Some participants, when asked if they believed this would have happened regardless of their decision to get a college degree, noted that they were unsure if they ever would have placed themselves in situations where such a wide array of perspectives were presented to them.

Some students experienced wonder via diversity through the materials that they were exposed to in their classes. For example, Brian found that courses offered outside of his academic discipline were critical in his overall appreciation of learning, and particularly to his approach in his specific studies. Brian believed that the specifically

liberal arts aspects of his education outside of mathematics have equipped him to approach the world from a more empathetic and inquisitive viewpoint. Brian's experience also resembles Dalton's description of how his Great Texts and Computer Science courses worked together to provide him with perspective about how he can combine his vocation with his passion for ethics to contribute toward improving the world.

Relationships. Students also noted that the diversity of lived experience exhibited by peers within their classes and other social circles on campus specifically contributed toward their own experiences with wonder. Brian appreciated not only the diversity of perspectives he was exposed to through his course requirements, but also those represented by his peers in classes required for his specific honors program:

I think the organizers of the program are really conscious of having a diverse range of students that do different academic studies. Because of that you get a lot more varied viewpoints of how to approach academics and faith together. So because of that you get a lot more viewpoints and there are people where the main paradigm of their study is something that's not really apparent in your study, but you can still pick that up and apply it to yours.

Brian expressed believed that he received a more holistic education because the people he shared it with were able to challenge his thinking in ways that he would have been unable to on his own. He attributed his sense of wonder within his field partially to this experience of learning from his peers with different interests.

Jack spoke about how his ability to discuss differences in a classroom setting and to apply the ideas of diverse philosophers to his own learning gave him a desire to experience diversity of thinking in other settings as well. As a result, he sought opportunities to engage with people who have different worldviews. At one point he

described his decision to begin attending atheist club meetings as a Christian; not to share his own beliefs but because of the opportunity it afforded him to challenge his existing viewpoint. Abigail similarly reflected upon experiences that she sought outside of the classroom to provide her with a more diverse set of perspectives as she found that the opportunity to wonder in an academic setting instilled a desire to continue befriending and learning about people she may not have otherwise come in contact with. In this way, Abigail found additional opportunities to wonder through relationships. She mentioned a group of friends that she made through her affiliation with a campus organization as one that has been formative in her ability to wonder:

There are like thirteen of us and it's all very tight knit, but with a very diverse group of backgrounds and personalities and worldviews. But having that tight-knit community has been something that really made my college experience... Having people that think differently than I do and ask me new questions and have different traits and strengths than I do is really incredible.

Abigail acknowledged that many of her ideas or experiences with wonder would not have been possible had she not shared them with others who were different in many aspects from her.

Residence Life

Several students focused on the influence of their specific living communities as places where they experienced more opportunities to wonder. This was commonly attributed to the time and availability of people to engage in deeper conversations because of the amount of vulnerable life shared with one another.

Amber found such value in her on campus residential living experience that she chose to remain in the community for the entire duration of her studies. When asked why this was important to her, Amber offered this reflection:

There's so much value in not choosing who your neighbors are and having to wrestle with people who have different opinions from you, and literally sitting at the same table as them and being curious about them. I have the rest of my life to live in an apartment and to choose who my neighbors are, and I get to complain when the noise gets too loud, but how do I do that when I can't choose? So that is the main reason that I decided to stay all four years, and I honestly believe that because of it, when I go off wherever I go off to, I will be a better neighbor and a better friend because of that and I'll actually want to know who my neighbors are because I've learned who my neighbors are here, you know? And I'll get to practice intentionality and initiative in friendship, and that's really important to me.

For Amber, learning about the people she shared her life with was an important part of developing a desire to know her neighbors with intentionality. She believed that living in a residential community with her peers was the best way to do that.

Dalton also expressed that his decision to continue living in an on-campus community contributed toward his ability to wonder:

I mean the dorm where I live has been a huge part of that because again I'm interacting with a lot of people with a lot of different perspectives and it's a lot of smart people in one place so there are bound to be conversations. So let me tell you there are great philosophical conversations being had at three in the morning. So I'd say that a lot of my perspectives have been shaped through my interactions in that community... There's been a lot of spiritual perspective changing through that just because I've gotten to see how different brands of Christianity interact with God in different and personal ways.

Dalton then described the ways that various groups of students practice their faith and the unique viewpoint that sharing a living space with others gives someone into this highly personal part of their lives. Through this deeper insight, Dalton was challenged by the faithfulness of his peers and also became more open to different practices that he had either been unaware of or not tolerant of before living in community with them.

Nature

Connor described wonder as a feeling that overcomes him whenever he thinks about how small he is. One such moment was brought about by a nature hike to the top of a mountain:

Just being up there and feeling the weight of that storm and seeing everything around you makes it feel like you could almost be lifted up and pushed off like Mary Poppins-esque in that moment. And it makes you very much wonder about everything. The universe, the world, this place, what makes that sort of thing...and I feel so small compared to everything I'm seeing. Like I could easily be brushed aside and this place would remain the same. And that just makes you, you know, create stories in your mind and the history plays out.

Connor was also able to describe other moments that nature caused him to pause in wonder. From changing leaves, to sunsets over his favorite buildings, Connor consistently referred to these moments as the moments that “found him” and that he drew upon to get him through times when he was overly burdened by what he was learning and unlearning throughout college.

Jack also attributed some of his ability to wonder to being inspired by the beauty of nature. He described how walks around parks and other lovely places would instill a sense of peace and sometimes wonder in him and that he would turn to experiences like these when in need of inspiration to get through challenging times in school.

Connectedness

Experiences with wonder were also inspired by connectedness. In situations where participants could identify their part in a larger narrative or when concepts from various sources aligned, students described thinking or perspective shifts that reflect wondering as it has been described in this study. For example, when she shared ways in

which one of her professors facilitated class in a way that caused her to wonder, Abigail explained how connectedness resulted:

I loved the way he would bring in a painting...he'd come in with a folder and it'd maybe be a passage from C.S. Lewis or a video clip and we'd sit there and talk about it and analyze it and he'd connect it to some larger theological concept or question and ask us our thoughts. How cool is that? To be able to look at all of the things that this world has to offer and be like well here's these influences and here's how I understand it in relation to this, and this is what questions it brings up about my faith and how I understand God.

Later in the conversation, Abigail further reflected that “asking questions and connecting to larger themes, using all sorts of mediums and influences” showed her that “education is not just in a classroom, you are living your education, and your education should be more than just for your own personal interest or gain.” Abigail claimed that the larger purpose she was able to connect to her educational pursuits frequently put her in a state of wonder.

Effects of Wonder

Students were also able to identify the way that their experiences shaped their learning or continued thinking as they progressed through college. In every account, students acknowledged that moments of wonder or an ability to wonder resulted in positive outcomes and experiences.

Appreciating Otherness

Students often shared that experiences that led them to wonder also helped them to see other opposing perspectives as valid, and often as valuable. Jack formed an appreciation for other perspectives out of a practice that he referred to as “improving upon others’ ideas.” He described this practice as challenging himself to remember that

people who believed differently from him are believing out of the same type of commitment to their own truth as he does. Through remembering this, he could try to combine perspectives to improve upon both:

I think learning to disagree with someone through my education and then forming a friendship out of that outside of the classroom has been key in college. I mean you shouldn't be friends with people you just agree with all the time. And it's like everyone knows that...but do people actually apply it? Do you check out when someone tries to argue your point of view or do you actually build up that person's point of view even when it feels awkward? I feel like using dialogue in that way feels less combative, more "I'm trying to see your point of view from the best possible angle no matter how much I think I disagree with it." It's helped me a lot in the classroom and with my friendships.

Jack believed that this practice helped him to avoid reducing people to labels and to better understand the context of those around him in a way that led him to connect better as a result.

Connor developed a similar practice when faced with academic content perspectives that he struggled to reconcile with his own:

I developed a good skill of eventually putting myself in that writer's shoes and seeing what they were trying to do. And I grew an appreciation for what they were doing. And so I'd look at Hegel and I'd think "I disagree with him," but "I see what he's trying to do here." And I can see how that's helping. That this could help people. And so the process of doing that over and over again, I actually became comfortable with saying "I'm ok if there's holes in things." What do I think is the best...not only to believe in but to study and see and help out with. It was just a process of reading more and more and not being afraid to study different things.

Through continually exposing himself to conflicting perspectives, Connor was able to differentiate between what he agreed and disagreed with, but still see the value and helpfulness present in the viewpoints of other scholarly material. The practice of engaging with alternative viewpoints allowed Connor to appreciate their value in ways that he would not have otherwise.

Mayra shared her deep struggle to appreciate the value of alternative perspectives before she started college. She described herself as quick to anger when others did not see eye to eye with her and reflected on the process she experienced as she learned to wonder at how others see things:

Sometimes it was hard for me, or maybe just hard in general. When you're presented with opposing information from what you believe, it sometimes strengthens your own belief because you automatically reject this new piece of information whether it's true or not because it is not what you think. And I've tried to be better about that. In the past I used to get all rage-y and angry and be like "how dare you?" And now I'm like "ok I'll look at it and consider it," you know? I am more calm now when someone thinks my belief is wrong.

Mayra attributed her ability to respond with patience to opposing beliefs to the opportunity she had in college to hear stories from people from other backgrounds. Having more context about how people develop their beliefs provided Mayra with an opportunity to wonder at the larger picture and appreciate the viewpoint regardless of the difference.

Moral Development and Self-Awareness

Every student provided reflections about how they had grown personally as a result of their experiences with wonder throughout college. This growth most often presented itself through a deeper understanding of their personal perspectives and values. The first time that Abigail felt empowered to speak in class is one that she identified as having opened the door to wonder. She explained that her ability to express herself felt like inviting others in to share as well. An important note that Abigail took from that experience was that it is important to understand the "why" behind your beliefs because "identifying the 'why' helps you to understand the 'how' a little more, too." Connor

found that he is now more comfortable in a state of not knowing than he used to be when he believed he had more answers:

I think maybe students come in knowing more than when they leave. In the sense that you think you know so much more whenever you come in [to college], and by the end of it you are far less certain about so many things, but you've learned a lot more along the way.

Empathy. One of the most common themes of students' personal growth was their ability to empathize with others as a result of their college experiences with wonder. Abigail further reflected upon the class that helped her understand the value of understanding her beliefs by describing some of her key takeaways:

To me, reading that [book] was kind of a call to empathy...It spoke to me a need to have empathy and understanding because other approaches are not going to further their thinking or mine. And I think it's important for me to understand that even if they have radically different value sets, they still are speaking from a set of values. They might not be the same values I have, but that doesn't mean I don't have things to learn from it even if I do not agree with all that they're saying. So I think that is how I approach it and also I think that there's importance for looking, even if you have different belief systems, most people you can find something in common with. And some sort of bridge to connect the two. And I think if we start looking for those, then maybe you can expand and find something more.

The text Abigail read in class inspired her to find common connections with people she otherwise would have difficulty relating to. Her class discussed the idea of common struggle in a way that helped Abigail appreciate the journeys that the people around her are on and inspired her to step into those journeys with more understanding and compassion.

Connor also was challenged to find common ground with others through what he learned in academic contexts. He spoke specifically of a professor who consistently provided multiple frames of thinking for every contentious subject in his class:

Trying to open your eyes up to recognizing that other people are not irrational. Other people aren't crazy. The other person isn't just hateful. There's stuff here that they can latch onto that they can see that would lead them to this sort of understanding. And that was really powerful for me because it instantly – just I looked at it, and I was like “yeah that's right. You can't ignore this other stuff that's also here”...And so through that I kind of want to do that in a lot of ways. I want to always give others their due. And by being so open to giving them their due, I'm not as surprised whenever I find my own things that challenge or question me.

Connor believed that experiences in this class helped him to be “a voice for the defenseless opinion” when he finds himself in situations where others seem to be limited in their thinking. Connor expressed that being challenged to wonder at the values of others in class made him consider ways in which he can extend empathy to others in more social settings.

Charity. Students also observed ways in which being exposed to a multitude of perspectives through different experiences made them more charitable in the way they approach learning new things. Amber specifically mentioned an ability to think in a positive manner about new ideas in a way that also shaped her ability to be a better listener and learner in interactions with her community:

I think Baylor has made me a more charitable academic. And I think in turn, being a more charitable academic has made me a more charitable person. And yeah...asking myself why people believe what they believe or why they hold the convictions that they have, even if their convictions are totally different from mine.

For Amber, being a more charitable person meant believing the best of others even when she was unable to understand their convictions. When Amber found herself unable to step into someone else's shoes the way that Abigail or Connor described, she could at least operate from a place of understanding that there is goodness in otherness.

Desire to Learn

Many students shared that they desire to continue learning because of the questions they have been asked and the experiences they have had in college. Some students shared that they plan on attending graduate school to further their studies. Several referred to themselves during our conversation as lifelong learners. Connor hoped that there would never be an end to the learning he experienced in college, and Abigail shared that she hoped to always find more questions to ask. Brian also believed this desire to learn to be of the utmost importance:

I think one of the most important things that I've learned, and I've learned it through the people around me a lot of times. It's approaching what I'm learning with generosity and to know that there is always more to know than what I've already learned.

Finding that the limits of learning are open-ended seemed to provide a sense of hope for students as they excitedly shared of their future dreams or ambitions.

Responsibility through Connectedness

Similar to a desire to learn, the ability to wonder helped some students develop a sense of purpose through understanding their connectedness and responsibility to the rest of the world. The context provided to their studies through the experiences that led them to wonder seemed to positively influence the way that the participants thought about their futures vocationally and relationally. Abigail believed that these experiences provided her with a more complete perspective of the real purpose of her education:

I think probably because I've had an education that focuses a lot on justice, that education is a great way to work towards a more just society and a more just community. I've been really lucky to have a place that emphasizes that and values that and I hope that going forward I am able to do the same. I think that my education has made me, or I like to think that my education has made me a better person. And a more thoughtful person, a more open-minded person. And

when I look at our society today and our nation in particular, I think that we need a lot of that.

Abigail connected her education to a higher call to pursue justice. Other students, such as Brian and Amber, were inspired by their professors or mentors to become educators that would help future students to seek out diverse perspectives and difficult questions.

Engaging in wonder provided these students with awareness of how their interests connect to the world. In their experiences, this connection led them to consider ways that they could personally contribute toward goodness.

CHAPTER FIVE

Discussion and Conclusion

Scholars have suggested that to wonder allows a person to develop in creativity and imagination by expanding upon cognitive presumption and cultivating an appreciative disposition toward otherness (Musaio, 2012; Nussbaum, 2001). Additional researchers suggest that wonder may be experienced as part of a process beginning with a surprising event that inspires curious inquiry and results in a continued state of wonder (Fuller, 2012). This process is likely beneficial for college students, but there is little existing research to suggest how students identify and engage with wonder, particularly through college experiences.

The guiding question for this study was: *By what process do students engage with wonder through experiences in higher education?* To make sense of student experiences, I used a conceptual framework for understanding the process of wonder drawn from existing literature. The model that developed was based upon Fuller's (2012) research identifying how people experience wonder that built upon his previous writing about how people have historically engaged in wonder (Fuller, 2006). The model served this study by highlighting sources or moments that caused students to wonder and also providing language for related abstract concepts. Although this model was developed from a study based upon an interpretation of others' experiences, the goal of determining if students identify similar elements in their lived experiences proved worthwhile.

This study provides empirical data to demonstrate that people in college learn to wonder and experience wonder through similar processes and as a result of identifiable

experiences. Additionally, this study highlights the ways that a college education has contributed toward this experience for the student participants. In this chapter, I will discuss ways in which the proposed model reflects and at times fails to represent experiences shared by the student participants. I will then discuss changes to the proposed framework, limitations of this study, and implications for further research and practice.

Conclusions: The Conceptual Framework

In chapter four, I detailed the ways the elements of the suggested framework are reflected in the stories shared by students. In this section, I will discuss how different elements of this model relate to one another to make sense of students’ experiences with wonder by presenting conclusions that I have drawn from the interviews. I will also suggest modifications to the model that could help to reflect the nuance of different experiences as seen in Figure 2 below.

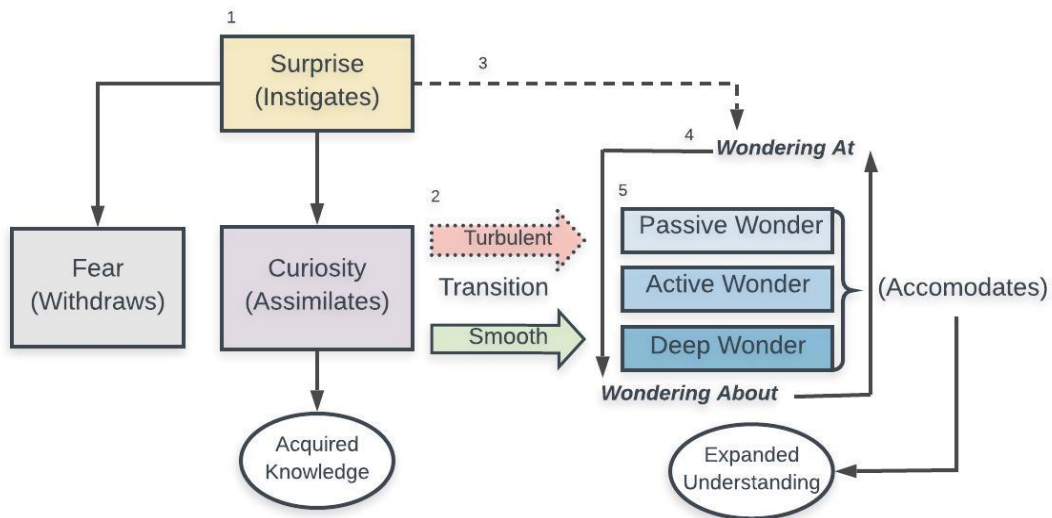


Figure 2. The Process for Wondering (Modified)

Fear and Withdrawal

In this model, moments of surprise serve as instigating events that mobilize students' thoughts or behavior toward continued investigation (Figure 2, part 1). Surprise may take place as a positive or negative occurrence and may also result in either experiences of withdrawal or of increased interest. Only one student provided insight into what Fuller (2012) described as the withdrawn state that could stifle further inquiry. Dalton differentiated between how he approached situations of dissonance after being put off by surprising perspectives in his first year of college and the mindset that he now has after taking more opportunities to engage with otherness through the encouragement of trusted peers.

Because the idea of withdrawal seemed to receive little attention in the literature about wonder, I hoped that students would provide more clarity into what makes the difference in their ability to press into surprise rather than pull away from it. However, through these interviews, it seems that students are less apt to focus on such experiences. Dalton's reflection on his hesitancy to become more open to other potential surprises later in college is consistent with Fuller's (2012) description of the inhibiting effect of wariness on a person's ability to engage with wonder. Being introduced to the alternative perspectives that originally felt threatening to Dalton through trusted friends eventually helped Dalton to investigate such perspectives. Additionally, Dalton had engaged in other forms of wonder through spiritual practice and through his fascination with data analysis in ways that potentially contributed toward his willingness to wonder at a new form of difference. In this way, Dalton's ability to wonder *at* may have positively contributed toward his ability to wonder *about* (Carlsen & Sandelands, 2015).

Although it is representative of a solitary account in this study, Dalton's experience suggests that under the right circumstances, it is possible for a student to approach a source of surprise with renewed interest even after previously withdrawing from it. Further investigation of similar experiences could help clarify motivating factors in stories like Dalton's and could provide additional insight into what practices may help students to remain open to surprise, even after responding with fear or disinterest to the initial source.

Transition from Curiosity to Wonder

The transition from curiosity to wonder is a more salient experience among my participants than previously expected (Figure 2, part 2). Research dealing with the concept of wonder does little to suggest that this shift of mindset from an assimilative goal toward a new way of knowing would create such difficulty. However, the experience described by some students is consistent with developmental theories that suggest the necessity for cognitive dissonance for students to move toward an appreciation of otherness (Chavez, Guido-DiBrito, & Mallory, 2003). Connor expressed grief at the necessity of reconciling what he once believed to be true with a broader understanding that gives voice to conflicting truths. His response to this transition provides perspective on how the experience of shifting from curiosity to wonder may be as critical as actually engaging in curiosity or wonder.

This transition is typically rooted in dissatisfaction, but is not necessarily always characterized by negative experiences. Students may shift from a curious to wondering mindset when they become dissatisfied with their inability to find answers or meet goals within their existing cognitive schemata (Fuller, 2012). For example, for Jack and Brian

this dissatisfaction proved simply to be a motivator to reframe their questions or seek input from more diverse perspectives without the added stress of fully deconstructing beliefs before gaining the ability to accommodate new ones.

Similar to the initial exposure to surprise, the experience of first shifting from curiosity to wonder appears to be highly individualized and contextual in nature (Figure 2, part 2). Connor, who shared his previous desires to “know everything” and to “save the world” when he graduated seemed to struggle more than some other participants with a shift in thinking. His description of a “grieving process” that led to time spent in mourning over who he used to be provides insight into how drawn out and turbulent the transition period can potentially be. Similarly, Mayra, who had felt isolated for most of her life, had a hard time giving up the comfort of old ways of knowing for the sake of appreciating the newness of some of her college experiences. On the other hand, students like Jack and Amber who enthusiastically exposed themselves to new situations or people experienced less dissonance when first encountering opportunities to wonder in college. Jack and Amber both specifically mentioned the presence of older students who acted as friends and mentors throughout their first and second year of school. Although it is unclear whether or not this contributed to their ability to readily respond to newness, it is likely that they experienced more comfort as a result of the support of these peers through this transition.

Relationship Between Curiosity and Wonder: Wonder as Practice

This study considers the beginning of curiosity as the point at which surprise becomes a sustained form of inquiry with the goal of finding answers or solutions (Fuller, 2012). Wonder resembles curiosity in many ways, but instead of seeking answers, people

ask questions that are reflective and challenge previously-accepted notions for the sake of better appreciating the source that instigated inquiry (Fuller, 2012; Musaio, 2012).

Students resonated with both forms of questioning and offered reflections about how they have perceived them within different contexts of their lives and more specifically educations.

Additionally, students were aware of a connection between curiosity and wonder. Amber explained how her decision to attend graduate school required that she engage in both forms of thinking interchangeably. She considered the relationship between curiosity and wonder to be cyclical because she wondered about the broad concepts that she would like to research and then she formed questions that she had not previously known to consider. Amber thought that these new ideas led both to continued wonder but also to opportunities to pursue curiosity as she searched for answers to questions that she had not known to ask. Because Amber was able to recognize this cycle, she was able to reflect on how this happened in different areas of her life. Although she could not have chosen this language herself, it seems likely that Amber is engaging in the moment of wonder that Carlsen and Sandelands (2015) call *arousal*. Arousal is wonder that is essentially self-initiated as an individual builds upon previous experiences with wonder (Carlsen & Sandelands, 2015). This process is depicted as a time when wonder “evokes curiosity and presses new questions that instigate search,” and then the new search “results in a desire to be immersed or marks the arrival of a new insight that then stimulates further search” (Carlsen & Sandelands, 2015, p. 377). Amber’s ability to instigate this process for herself provides some insight into how the process of wonder

became a practice as she allowed wondering *at* to inspire wondering *about* (Carlsen & Sandelands, 2015; Vasalou, 2012).

For Amber, a continued cycle of wondering occurs simultaneously through her research and academic experiences and her relationships with friends and roommates. Like Dalton, who learned to approach sources of dissonance in some social spheres only after he had engaged in wonder in other contexts, Amber was influenced by academic experiences to consider times when approaching others from a perspective of wonder or curiosity is most fitting.

Other students who identified both concepts also were able to choose which form of inquiry they employed in various circumstances. Consider Brian, who shared his ability to understand when it was most valuable to find the solution to an equation and when it was most valuable to consider the greater implication of the problem being solved; or Dalton who recognized that searching for the perfect code for the program he is developing did not necessarily build upon his ability to consider the ethics of how he uses the data. Both Brian and Dalton recognized that there are times when investigation toward a specific goal is important, but that learning to appreciate the greater context in a way that leaves them flexible and prepared to listen to alternative views is also necessary. The ability of these students to assess for themselves the best way to engage with the source of surprise or interest suggests that they have taken opportunities to practice wondering through their college experiences. Brian further expanded this idea by sharing about how his ability to wonder beyond the equation has given him the ability to approach his academic work from a hopeful perspective. Brian appreciated the process and purpose of his work and not only the functionality of it. In this way, he offered a

glimpse into how a student may be positively influenced toward appreciation and continued reflection per Schinkel's (2017) depiction of deep engagement with wonder.

Participants' interpretation of the relationship between curiosity and wonder supports the idea of wonder as a practice because students chose to stay engaged with the process even after the initial source was no longer the primary motivation (Vasalou, 2012). Instead, students remained engaged because of their sustained interest. Students who have opportunities to wonder in multiple contexts either academically, relationally, or otherwise become familiar with the way wondering elevates their experience. For example, Abigail, Jack, and Mayra all noted that their abilities to appreciate the perspectives of others were enhanced by experiences with wonder in classroom settings. Because they had engaged in wondering academically, they allowed themselves to wonder at unfamiliar opinions or lifestyles presented by their peers. Mayra described how this experience made her "calmer," Jack believed himself to be more considerate of the experiences of others, and Abigail found herself better able to find commonality between herself and people who she previously would have discredited for their opposing values. Thus, these students have seen the value of continued wondering as it ultimately leads not only to expanded understanding, but also an ability to identify the goodness in the process (Vasalou, 2012).

Responding to Surprise in Wonder. The practice of wonder is further recognizable through student accounts that reflect an ability to respond to an external stimulant of surprise with wonder. This seems to be most frequently exhibited as a passive form of wonder as in Connor's mountaintop experience or Jack and Dalton's spiritual experiences. These students were surprised in ways that did not inspire further

action, but still positively affected or perhaps even changed them for the better. Dalton described feeling “new” although he had done nothing to achieve it. “Doing nothing” implies that these students did not necessarily proceed through the modeled process of surprise, to curiosity, to wonder. However, both Dalton and Connor believed that their experiences contributed toward an ability to respond actively to new or profound occurrences later in their lives.

Similarly, students like Amber and Abigail who had previously gone through a process of learning to participate in active wonder by failing to assimilate new experiences into their existing understanding were also able to respond to external surprises in wonder. Abigail mentioned the political climate as something that continually shocked or surprised her, but also recognized that she is able to wonder at the perspectives and values held by others in confliction with hers because of the process she has gone through of learning to do the same in her academic contexts. For her, the practice of remembering a larger narrative has allowed her to respond to surprise in wonder rather than with a need to find answers for why differences exist. In this way, it is once again evident through the experiences present in this data that wondering can be practiced.

Differentiating Between Types of Wonder

The participants related to the definition of wonder used in this study, and students self-identified ways in which wondering had a lasting effect on their attitudes toward learning and toward others. Through these reflections, students offered insight into how they learned to challenge previously-accepted notions of the world through considering more reflective questions (Fuller, 2012; Musaio, 2012). Additionally,

students were able to describe how learning in this manner benefitted them in ways consistent with research that aligns wonder, including a greater sense of connection, empathy, and appreciation for otherness (Fuller, 2006; Musaio, 2012; Nussbaum, 2001). Although the original model consolidates all forms of wonder into one element, student stories demonstrated nuance associated with the more specific types of wonder (passive, active, and deep) outlined in chapter one.

Summary of Changes

The new model (Figure 2) is a modification of the previously proposed framework with student experiences taken into account to further clarify what the process of wondering is like. This model is still not a fully conclusive representation of the process, since a single image could never fully encompass the nuance experienced by students based upon their individual context and perspectives. Conversations with my participants also provided additional considerations for how this process may contain even more potential nuance than described in their experiences, which can only be clarified through further research. Thus, this depiction is reflective only of the research done in preparation for this study and the collected data; not of any speculation about what future study may depict.

The process depicted in the new model still begins with an event that surprised an individual (Figure 2, part 1). As seen through student accounts, surprise may result in withdrawal or in a heightened interest in the source. If the heightened interest manifests in curiosity, but the individual is unable to assimilate the surprise into a previously established understanding of the world, then a transition from curious inquiry to wondering occurs (Figure 2, part 2). Student descriptions of the transition period indicate

that it is significant enough to merit attention as a part of the wondering process independently of curiosity and wonder. This transition may be smooth, or it may be turbulent as students must take time to reconcile their inability to assimilate new knowledge and prepare themselves to think in more expansive ways. With this in mind, it could be tempting to search for a way to help students make the transition smoother. However, Abigail and Connor both experienced some difficulty with this process and both shared that the “chaotic” and “frustrating” period was valuable to their personal abilities to approach new concepts with wonder.

Fuller (2012) emphasizes that the mindset change from curiosity to wonder happens as a result of dissatisfaction. The lived experiences of these students indicate that this dissatisfaction is a more salient experience than Fuller’s interpretation of others’ experiences revealed. The present data does not suggest that any form of transition is more ideal in helping students to engage in wonder. However, more focused research on this part of the process could provide insight into whether the context and experience of transition influences the way students engage with different forms of wonder.

The adapted model also provides a visual representation for a direct connection between surprise and wonder (Figure 2, part 3). This connection is indicated with a dotted line because it is not necessarily an experience that all students share and also because it breaks a more easily identifiable progression of how I would have expected students to move through this process. Additionally, further research is needed to indicate how exactly external surprise inspires wonder. The most evident form of this occurrence was illustrated through Dalton and Jack’s experiences of responding to surprise with a passive form of wonder. Abigail’s account of previously learning how to

wonder in a way that informed her response to later sources of surprise also demonstrates this shift directly from surprise to wonder. Because there is little consistency represented in the data for when and how this occurs, further examination or experiences could help to clarify how this could be represented in future iterations.

I have also emphasized the relationship between wondering at and wondering about in the modified version of this model (Figure 2, part 4). This language was adapted from Carlsen and Sandelands (2015) to demonstrate how students are able to cultivate wonder within themselves as they continue learning about the object of their interest in a way that yields further opportunity for wonder. This cycle reflects the concept of wonder as practice, or as an extended form of engagement that lasts beyond the initial source of surprise (Vasalou, 2012). Including this in the model is necessary because students shared experiences in which the source of wonder was internal or was built upon previous experiences. Amber provided an excellent example of this as she described how in studying great texts she learned not only to wonder at the larger context for the story but also how to ask reflective questions of herself that helped her to build an awareness of her own identity and her relationship with the world. Amber did not necessarily rely on external sources of surprise to enact this chain of thinking, but rather continued to sustain reflective thought on her own. Connor and Abigail both expressed similar patterns as they shared thoughts about hoping there is never an end to their learning and always having something new to consider. These perspectives, like others, provide foundational ideas for further research about how more specific forms of wondering inspire one another and also the affect they have on students. The four forms of active wonder: arousal, expansion, explanation, and immersion outlined in the research of Carlsen and

Sandelands (2015) and briefly highlighted in previous chapters of this study may provide deeper insight into how students practice and are influenced by the practice of wonder.

Finally, when initially proposing a framework for the process of wondering, I was uncertain as to whether or not student experiences would clearly reflect the different forms of wonder described in existing research. However, after hearing students dissect their stories, it is evident that they engage with wonder differently depending upon context, initial source, and amount of time present in this type of reflection. Thus, the modified version of this model identifies passive, active, and deep wonder as separate experiences that lead to a similar outcome of expanded thought and appreciation for otherness (Matravers, 2012; Schinkel, 2018). Further, more direct research could provide more clarity as to how these forms of wonder interact with one another and whether students have some agency in choosing how to engage with each, but the present study indicates only that separate experiences exist and not necessarily the process for how students arrive at these various forms.

Sources of Wonder: Curricular and Cocurricular

The most prominent sources of wonder described by students were study abroad experiences, residence life, and academic conversations with faculty or peers (Table 2, below). Through each of these settings, students often pointed to the diversity of thought and experience present as the initial cause of surprise. Upon further examination, it appears that students do not perceive a difference between the curricular and cocurricular when describing experiences with sources of wonder. The data indicates that students who are adequately prepared through conversation, previous experience or academic engagement readily engage with wonder. Additionally, experiences that encompass both

curricular and cocurricular elements are frequently recognized by students as contexts that inspire wondering. Finally, students are motivated to wonder as much by how concepts are modeled or presented as by the actual concept or experience itself. Below, I will further detail the ways student preparedness for encountering wonder, a partnership of curricular and cocurricular involvement, and the presence of mentorship or models in participants' lives contributed toward sources of wondering.

Table 2

Sources of Wonder by Participant

Pseudonym	Major	Sources of Wonder
Abigail	International Studies	Curriculum, Faculty, Peers
Amber	English Lit., Writing, Great Texts	Residence Hall, Faculty
Brian	Mathematics, Linguistics	Curriculum, Residence Hall
Connor	Political Science, Philosophy	Curriculum, Faculty, Study Abroad
Dalton	Computer Science	Curriculum, Residence Hall
Jack	Philosophy	Curriculum, Faculty, Peers
Mayra	International Studies	Study Abroad, Mentor, Peers
Rachel	Psychology	Study Abroad, Faculty, Peers

Preparedness

Study abroad and experiential learning assignments that required off-campus visits were often mentioned throughout student reflections as participants offered examples of how the diversity that they were exposed to through these experiences inspired wonder. Furthermore, the students who described these experiences in light of

their academic pursuits or previous personal context provided deeper insight into how preparedness informed students' abilities to wonder.

Connor, who completed a course prior to his travel experience, spent time detailing the richness of knowing the history of the country he visited and of being familiar with the art and stories connected to the area. Spending time with such materials beforehand built his expectancy and provided him with some reflective perspective prior to his experience. Connor's exposure to class discussion meant that he was able to put concrete concepts he had already considered into a new context and worldview by thinking philosophically about his relationship to a new setting (Fuller, 2012; Schinkel, 2017). Connor was better prepared to engage with wonder than other participants, like Rachel, who was inspired to wonder through her travel experiences but did not necessarily prepare in a way that would set her up for extensive surprise and reflection when she arrived. Rachel benefitted from her experience as she considered her previous concept of self in relation to a new cultural context, but was unable to offer the depth of reflective insight provided by some other participants. Connor, on the other hand, was able to piece together personal reflection, expectation, and an understanding of a larger narrative, which allowed him to engage in wonder in a way that not only influenced his appreciation for his experience while traveling, but also resulted in a continued practice of wondering even after his return.

Mayra was prepared differently than Connor for a powerful travel experience through her life context as an adopted child. Her first visit to her home country resulted in extensive reflection about what life would have been like had she experienced this new place as home. Mayra contemplated how the place she was born all at once felt familiar

and yet completely foreign to her. She then summarized her response by discussing how small her place in the world appeared after such a momentous occasion. Mayra did not receive formal preparation for wondering in this context, but years of internal questions and personal experiences prepared her to wonder on this particular trip in a way that another person without Mayra's perspective would not.

The time that Connor and Mayra spent in preparation for their experiences resulted in an increased ability to experience surprise as they made connections between the things they had learned or expected and the experiences they had that were impossible to fully anticipate. The work that these students put into understanding what they expected to learn ultimately led to a greater surprise, but also provided more context with which to begin more deeply understanding their experiences.

Cocurricular and Curricular Blend

Students engaged most intentionally in wonder when they were able to translate their experience with it to multiple contexts within their lives. In addition to the study abroad experiences previously addressed, this combination is often achieved through classes or programs in which cocurricular and curricular experiences are blended together. Jack shared his experience of visiting a Mosque as part of a class assignment. This visit helped Jack to appreciate a culture that he had never experienced firsthand, but also caused him to further consider what the experience of listening to students discuss such visits in class would be for students who do not practice the majority faith. Jack eventually connected his academic, personal, and relational experiences in wonder as he considered the larger context of social climate on campus for minority students. This wondering led him to take some responsibility for ensuring that students of minority

faiths in his classes were heard and cared for. Learning opportunities presented through his academic program provided Jack with questions as well as campus resources to help him find community for further investigating his newfound interest.

Models and Mentors

Students often experienced wonder as a result of new, interesting subject material being presented in their classes, but many also spoke of specific faculty members or mentors who helped them to understand what it actually is to wonder. Consider Abigail, who drew upon her experience in a capstone course to help her better consider the commonality she shares with people who differ from her politically. What she described as something that would have previously been difficult for her became a practiced habit as she remembered the lessons she learned about the relatedness of the various texts that she studied and the way different characters and historical figures inspired her to wonder and eventually to empathize. Abigail further mentioned her relationship with a professor who demonstrated genuine interest in all of the diverse perspectives held by students in his class and asked questions that brought into focus a larger context for all of the perspectives. This professor's ability to connect seemingly unrelated thoughts or questions left Abigail inspired to do the same in her personal life.

Other students also attributed their ability to wonder to professors or mentors. Connor's philosophy professor, Amber's first English professor, and Mayra's librarian all directly inspired students to wonder. Something that these educators all seemed to have in common is a sincere appreciation for their subjects and a commitment to creating space for students to construct their own knowledge through conversation or discovery. In other words, these educators exemplify some key components of Barr and Tagg's

(1995) Learning Paradigm by creating collaborative classroom environments where students are encouraged to engage with one another to make meaning of the material being learned. A critical consideration of other Learning Paradigm elements as they relate to wonder may provide a good starting point for helping professionals to further instill the practice of wondering in students.

Effects of Wonder

Existing research suggests that wondering helps students think imaginatively about learning possibilities (Carlsen & Sandelands, 2015; Paolantonio, 2018), contributes toward the ability to respond with empathy and hospitality toward the “other” (Nussbaum, 2001), and cultivates a sense of appreciation, responsibility and connectedness to the surrounding world (Fuller, 2012; Schinkel, 2018). The students who participated in this study affirmed these ideas as they reflected on the growth they have experienced as a result of engaging in wonder through experiences in higher education. Because students were able to identify the positive effects that wondering has had on them, their lived experiences provided some confirmation that the theoretical benefits of wondering are substantial enough for individuals to feel them.

The ability to wonder inspired these students to consider the possibilities that exist beyond the limits of their current experiences in education. Jack’s commitment to building up ideas that conflict with his own and Connor’s decision to continually be a voice that represents perspectives that would otherwise go unheard in his social circle are reminiscent of the appreciative reflection described by Paolantonio (2018) that enables people to imaginatively improve upon their world. Abigail, who believed that her academic experiences are what have most meaningfully inspired her to wonder, also

believed that it is her responsibility as an educated person to look for ways to appreciate and contribute toward the good in the world. Likewise, Amber shared that she once believed her research should provide answers to her questions, but now looks forward to writing in a way that provides an opportunity for perspectives that have not historically been highlighted to be read. Wonder has inspired students to not only recognize the ways that they personally connect to their surrounding community, but also to use their experiences and knowledge to contribute positively as they continue to explore their interests.

Almost every student recognized a growth in their ability to respond to otherness or conflict with empathy and more patience after having accommodative learning experiences inspired by wonder. Dalton, who described himself as defensive and previously unable to handle opposition does not necessarily believe that his overall values have changed. However, he now maintains friendships with people he regularly disagrees with because he is able to appreciate that they believe and act in accordance with their own values just as he does. Abigail, Jack, and Mayra all shared similar reflections, demonstrating alignment with the speculation that wondering would ultimately help students to appreciate the otherness found in people and to respond in a hospitable manner (Geller, et al., 2018; Nussbaum, 2001; Schinkel, 2017).

Additionally, every participant expressed a desire to obtain additional degrees after completing their undergraduate work. Although this cannot necessarily be attributed to their experiences with wonder, this commitment to continued learning holds some weight in determining how students were positively influenced by their education up to this point. Several students reflected upon the value of having been asked questions

that challenged their previously held understandings and also of learning to ask better questions as a result. Keltner and Haidt (2003) distinguish the experience of wonder from other similar emotions by explaining how accommodation in wonder is achieved through questioning. That these students indicate an ability to ask the very questions that first inspired them to wonder implies that they have grown in response to the asking.

Also notable throughout the interviews was the generally hopeful and positive attitude students had as they described times when they had been inspired to wonder. Even Connor, who experienced the most difficulty in arriving at a point where he was able to wonder, expressed excitement and gratitude for his learning process. Wonder is generally associated with positive affective experiences (Fuller, 2012; Schinkel, 2017), so the ability of students to reflect with gladness on some challenging and stretching circumstances is an indication of wondering as a salient part of their experience.

Limitations

A primary limitation of this study is the homogeneity of the participants. All but one of the students were involved in at least one honors program at the same institution. Additionally, all of the participants currently aspire to graduate studies, and several of them plan to become educators in their own fields. These students are exemplars of wondering in many respects, and between their honors curriculum and a desire to invest in the learning of others, they were well-equipped to reflect extensively on the concepts related to this study. Thus, the experiences of these students provided a wealth of insight for beginning to understand the process of wonder, but future studies may build upon this contribution by collecting data from a less focused group of students. However, despite the similarities shared by the participants, the data set is diverse in academic focus,

gender representation, and to some extent in faith and social ideologies. This diversity provided a great source for an initial identification of the presence of wonder in the lives of students who represent a multitude of interests and academic focus.

The abstract quality of this study was limiting in some ways as well. Because there is no widely agreed upon definition for what wonder is, presenting a definition for how it is being treated in this study was necessary to ensure that participants were able to reflect in ways that would contribute toward a better understanding of the subject; even one difficult to articulate.

Implications

Implications for Future Research

Through analysis of student accounts of wonder it is possible to conclude that the proposed framework accurately reflects the student experience within the context that it was used at this institution. That being said, it also appears that students experience a sustained relationship with wonder as they become accustomed to thinking in this more flexible fashion. Additionally, some students reflected on the choice between approaching a source of surprise from a curious or wondering perspective. These reflections suggest that students are aware enough of how they engage with wonder that they have learned to treat it as a practice and not just as an experience. Theoretical research that provides language that may more accurately depict student reflections exist, so a more focused investigation into forms and styles of engagement with wonder may provide even clearer insight into how this process is sustained in practice (Carlsen & Sandelands, 2015; Vasalou, 2012). A good beginning point could be the development of

an additional conceptual model that focuses specifically on practiced wonder and incorporates the four wonder processes (arousal, expansion, explanation, immersion) outlined in Carlsen and Sandelands (2015). With more foundational insight, additional research could also investigate ways to help students practice wonder with more intentionality. This would help them engage in the reflective work that these graduating participants found valuable in their later college experiences.

Although the model is reflective of a current understanding of student engagement with wonder, this research presents opportunity for further refinement of the model. One area of unexplored interest is whether the type of transition experienced between curiosity and wonder has any influence on how students ultimately engage in wonder. If there seems to be a pattern in student experiences, then there could be potential for developing programs or initiatives to foster a particular type of wondering.

Further research regarding how wondering may or may not vary based upon populations would also provide a wider understanding of how students engage with wonder as a whole. It could be valid to consider whether the process of wondering varies by socioeconomic class or ethnicity. In a similar vein, a deeper look into different types of study with a more intentional focus on students in professional degree plans such as business or engineering could also provide more perspective into how the process of wondering is initiated and engaged in through educational experiences.

Implications for Practice

Through the accounts of these students, it is evident that participants engaged in wonder through various college experiences and relationships. Because these students specifically reflected upon ways that their time in college contributed toward their ability

to wonder, it stands to reason that this process may be initiated intentionally with some professional guidance. Each of the participants also identified ways in which they had benefitted from experiences with wonder. If students are able to self-reflect upon the ways that they have been positively shaped through this form of thinking, then it is important that educators provide opportunities that can build upon this positive experience. In many cases, individual mentors, usually faculty members, were responsible for helping students to begin wondering. This research should help educators consider ways that their practices may be reformed or enhanced to best contribute toward opportunities for students to wonder.

Participants in this study shared several practices that faculty and mentors employed in helping them to engage in wonder. These reflections could serve as foundational suggestions for ways to create opportunities for wonder in other educational contexts as well. Experiences that the students frequently mentioned as helpful included being asked questions that represented new perspectives or that did not necessarily have an answer, being affirmed when they chose to share their thoughts, and learning to identify connectedness to the larger narrative present in whatever is being taught.

Fewer students described experiences with deep wonder, however research suggests that this form of wondering is what forms one's ability to bestow value upon the other without questioning functionality or status (Schinkel, 2017). Exposing students to opportunities to engage in this form of wonder could contribute toward their moral development in areas such as hospitality, empathy, patience, and in cultivating a sense of responsibility to preserve and build upon the goodness that they are able to identify in the world. Students who presented experiences with this form of wonder associated it with

encountering beauty. Finding ways to help students observe beauty or goodness in the ordinary may be a good first step to helping them practice deep wonder.

APPENDICES

APPENDIX A

Positionality Statement

My interest in understanding how students engage in wonder through experiences in higher education is rooted in my own experiences with wonder. I have always been a voracious reader of fiction and that has contributed toward an imagination and wide range of emotional expression. Thus, I have long found myself reflecting upon matters of connectedness and how my life relates to that of the people around me and to creation. In more recent years, this reflection has turned to considering what it means to wonder and how I would describe my own experiences of wondering. In this way, the inspiration for this research is primarily birthed out of substantial time spent in reflection, in my favorite fictional worlds, and in conversation with dear friends who share similar experience. My perspective is further shaped by my Christian faith as it informs the way that I choose to think about beauty, goodness, and connectedness as being grounded in mysterious Truth.

Finally, my desire to study wonder as it is experienced by students is also related to my time as a music student. Through my studies, I found that I regularly experienced moments of what I would describe as wonder in my classes, rehearsals, and performances. As a student I often considered whether my peers pursuing other disciplines had similar opportunities to consider wonder. As an educator I continue to find myself curious about whether this is an identifiable experience for most students, and because of the positive association I have with such experiences, about how professionals can provide opportunities for all students to wonder.

My hope is that I will find that students do identify wonder as a salient part of their educational lives and can provide some perspective as to where and how they most frequently experience it. I also have an assumption of what this may look like based upon my personal experience and conversations with trusted friends and mentors and acknowledge that it would be difficult for me to find that wondering is not an experience or concept that students are able to identify.

Biases

Because of my interest in wonder and the way that my ideas about it have shaped my own thinking about the subject, I will have to resist any temptation to look specifically for similarities between the reflections of my participants and my own. I am further biased because I desire to learn that students not only wonder, but also attribute positive experiences in their lives to an ability to wonder. Thus, I must practice caution as I separate the interviews from my expectations so that I do not misinterpret the experiences of my participants.

Addressing Biases

To keep my bias from influencing my ability to interpret the findings of this study with integrity, I will take certain steps to ensure that participants are represented faithfully. I will conduct member checks and also regularly consult with a faculty advisor throughout the data analysis and writing process.

APPENDIX B

The eight interviews took place in December and January of 2018 and lasted between 48 to 95 minutes in length. Participants were provided with a prompt to consider prior to arriving to the interview and were then asked a series of questions that varied slightly based upon their response to the prompt. Immediately after their initial response, students were asked any clarifying questions needed to make sense of the stories that they shared. Additionally, the order in which the questions were asked varied between participants based upon responses to the prompt. Regardless of such variability, each interview ended with the same question.

Interview Prompt

Students received the following prompt via email prior to their interview. Each interview opened with them sharing a response to this prompt followed by questions directly related to what they shared.

This study is about the concept of “wonder,” where it comes from, and how it works, and what it looks like. As I am defining it in this study, wonder happens in response to an unfamiliar circumstance, experience, information, or person. As a result, the person may then be motivated to pursue deeper understanding. When people wonder, they usually have positive feelings. They may come to new ways of seeing or understanding the world and the people in it. They may also consider new possibilities and questions as they learn to think in differing ways.

Please reflect upon this concept and how it may or may not relate to your own experience. Can you think of a time or times when you have experienced something similar? Think of any stories you may be able to share that reflect some of the previously described concepts, even if they may not seem to fit perfectly. We will begin by discussing whatever experiences you are able to identify through this personal reflection. Please note that there are no wrong

answers to this prompt. I appreciate your thoughtfulness in sharing your insight with me.

After asking any clarifying questions about what was shared, students answered to initial questions as applicable:

- How do the experiences that you have shared relate to your idea of wonder?
- Can you describe in more detail how you thought and felt during these experiences and how you feel about them today?

Interview Questions

By what process do students engage with wonder through experiences in higher education?

What educational experiences have led students to wonder?

- If you were to condense your entire college experience into a few meaningful insights, what would you choose to share?
 - Why did you choose to highlight those things?
- Can you identify what contributed toward your ability to wonder about what you've described?
- How do you typically respond to the unexpected?

How do curricular and cocurricular settings contribute toward opportunities for students to wonder?

- How has your entire college experience contributed toward stories like the ones you previously shared?
 - Are there any experiences outside of the classroom that you would share in this regard?
- In what ways do you think college environments contribute toward the type of thinking you have described?

In what ways does wondering have a lasting effect upon students?

- How do you approach something or someone that challenges your thinking?
- What is it like for you when another person reaches different conclusions than you? How do you respond?
- Would you say that these experiences affected you in a lasting way, and if so, how would you describe it?

Final question of every interview:

Prior to this conversation and without regard to anything that we have discussed, how would you personally define wonder and how would you identify its presence in your life?

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