

DISSERTATION

FORGETTING THE SELF: NONDUAL AWARENESS AS A KEY COMPONENT OF SELF-  
TRANSCEDENT EXPERIENCES

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## ABSTRACT

### FORGETTING THE SELF: NONDUAL AWARENESS AS A KEY COMPONENT OF SELF-TRANSCENDENT EXPERIENCES

Self-transcendence (ST) and self-transcendent experiences (STEs) have been described as a positive component of human experience and as predictors of wellbeing across a diverse and multidisciplinary literature. As a trait, self-transcendence (ST) has been conceptualized as a developmental process (Levenson et al., 2005; Tornstam, 1996), a coping mechanism (Reed, 2014), an aspect of personality (Cloninger, 1987), and as a value (Kasser, 2019). STEs have been described as a type of experience marked by a reduced sense of self and greater feelings of connectedness, as seen in awe, flow and mystical experiences. Recent scholarship has suggested that these diverse approaches have hampered the development of ST theory (Yaden et al., 2017), and identified a need to conceptually link these independently studied domains. There is need for a subject-agnostic measure of STE—an instrument that can measure STE irrespective of the type of experience. Nondual awareness (NDA)—a blurring of the distinction of self and other—is proposed as the construct best suited to these ends. Two studies were designed to improve our understanding of this construct and how it relates to STEs and ST. Study 1 was a correlational study to expand the nomological net of a new measure of NDA (the NADA-T) and examine connections to other ST/STE constructs and wellbeing variables. Study 2 utilized a sample of experienced meditators, with measurements before and after an intensive meditation retreat to track co-occurrence of awe and flow states, and connect them to increases in NDA. These studies found evidence of a strong connection between awe and NDA, and a weaker connection with flow. Some initial but limited support was found for the notion that NDA may lead to

development of trait ST. The implication of these findings and limitation of these studies is explored, as well as suggestions for future research. *Keywords:* Self-transcendence, positive psychology, transpersonal, nondual awareness.

## DEDICATION

I am so grateful for the support of many people and their kindness in the completion of this project specifically, and this doctoral degree in general. I wish to express my gratitude to my wife, whose unwavering support and faith kept me afloat in moments of doubt and stress. I am grateful for my family and especially my parents, who instilled in me an appreciation for things greater than the self and the bodhisattva urge to help others. I am grateful to my dissertation committee, advisors and mentors who helped shape my training as a scholar and clinician. I am grateful for my Zen teachers, and the wisdom of this tradition of self-transcendence directly transmitted through many generations of seekers. I wish to thank the American Zen community who shared their experiences to further our scientific grasp of the ineffable. I have met many bodhisattvas on this path, too numerable to name. This work is dedicated to them all.

*“To study the Buddha way is to study the self. To study the self is to forget the self. To forget the self is to be actualized by myriad things. When actualized by myriad things, your body and mind as well as the bodies and minds of others drop away. No trace of realization remains, and this no-trace continues endlessly” (Dōgen & Tanahashi, 1985, p. 70).*

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## CHAPTER 1: INTRODUCTION

Many years after his seminal hierarchy of needs was established, Maslow began to have doubts that “self-actualization” represented the peak of individual development. He observed that once optimum health was achieved, some people continued to develop in ways unaccounted for by the self-actualization construct; there was some level beyond merely achieving health and success as an independent organism. Maslow came to recognize that people could develop a capacity to “fuse with the world, with what was formerly not-self” (Maslow, 1999, p. 125). While the initial hierarchy of needs charted a development of identity, he came to understand that the next stage of development meant transcending that narrow identity in some form—in a word: self-transcendence (Koltko-Rivera, 2006).

Viktor Frankl agreed with these observations and saw self-transcendence as a core part of his “will to meaning” theory. He said that being human “...always points, and is directed, to something other than itself,” and that this is a function of one’s search for meaning (Frankl, 1966, p. 97). He believed that self-interest provides an incomplete view of human motivation, saying that “man is pushed by drives but pulled by meaning” (Frankl, 1966, p. 99). This drive towards meaning, for Frankl, involved some element of reaching beyond the narrow boundaries of the individual’s sense of self.

For both Frankl and Maslow, self-transcendence (ST) was an essential part of the human experience, but in practice it has proven a difficult construct to operationalize and define. As a result, the study of ST has since fragmented into various conceptualizations approached in a diverse range of fields. As a trait it has been broadly viewed as a developmental process (Erikson, 1982; Levenson et al., 2005; Tornstam, 1996), a positive coping skill (Reed, 2014), a personality trait (Cloninger, 1987), a value (Kasser, 2019), a component of worldview (Triandis,

1989), and as an element of motivation (Koltko-Rivera, 2006). ST has also been conceptualized as a psychological state (Yaden et al., 2017). While the exact operational definitions of each of these applications of ST differ to a degree, all have something to do with going “beyond” self-related concerns, an expansion of self-boundaries, and an increased sense of connectedness. In each of these conceptualizations, ST is viewed overwhelmingly as positive and has been implicated in a host of wellbeing outcomes (e.g., Coward, 1996; Kang et al., 2017).

Recent scholarship has suggested that there is a critical need to synthesize these literatures to better understand the ST construct and how these separately conceptualized parts relate to one another (Kitson et al., 2020; Yaden et al., 2017). The current research identifies two significant gaps in the theory of ST. The first is lack of an empirically supported understanding of the hypothetical connection between self-transcendent experiences (STEs) and development of trait level ST. While trait-based ST may represent relatively crystalized ST values and behavioral tendencies, STEs involve visceral experiences where awareness moves beyond its usual self-focused content. It is unclear if those experiences lead to persistent changes in those that have them, particularly in trait ST, but theory suggests that such a process is possible (e.g., Cloninger, 1987; Reed, 2014).

The second gap is in understanding the overlap between a diverse array of constructs categorized as STEs, such as flow, awe, meditation experiences, and mystical experiences. Each construct has been a fertile area of empirical study, but to date there has been scant empirical work on the overlap between these constructs. What is needed is identification of the common ingredient(s) that make these experiences “self-transcendent.” The present research will explore nondual awareness—a state of awareness where subject-object relationships appear to dissolve—as the possible common link between these various forms of STE. This paper positions nondual



awareness as the active ingredient that makes STEs “transcendent” and determines their intensity. Identification of a generalized measure of STE will significantly help in establishing connections between STEs and the development of trait level ST. This is the primary contribution the present research seeks to make.

To address these two gaps, it is first necessary to review literature on ST, STEs, duality, and nondual awareness. First, we will address the literature on trait ST, its measurement, and associated outcomes. Next, four specific domains of STE—flow, awe, meditation experience, and mystical experiences—will be similarly explored, highlighting their common ground. Next, the concept of duality—the sense that objects in the phenomenal world are separate from one another—will be explored as a conceptual ground from which STEs can be defined. Lastly, nondual awareness—a blurring of the distinction of self and other—will be explored as the potential common link between disparate forms of STE. Two studies designed to test the propositions put forth in this paper will be discussed.

### **Trait Level Self-Transcendence**

ST research has been particularly fruitful in the field of nursing, where it has been envisioned as a positive coping mechanism that helps people deal with loss and illness. Reed (2014) offers a succinct definition of ST that effectively captures the predominant themes in ST explored throughout this section, and is the definition which grounds the current research. Reed describes ST as an “awareness that extends beyond physical and temporal dimensions” (2014, p. 111). Most relevant to current research, is the notion that ST expands self-boundaries beyond the physical body and creates a greater sense of connectedness to the world, nature and others (Reed, 2014). This general construct has been applied to behavioral tendencies, personality/character traits, and values, as will be explored in the remainder of this section.

In Reed's Self-Transcendence Scale (Reed, 2009), ST is assessed via relatively ordinary behaviors and tendencies that point to self-acceptance (e.g., "accepting myself as I grow older"), greater connectedness with others/oneself (e.g., "helping others in some way"), spiritual connection (e.g., "finding meaning in my spiritual beliefs), and to acceptance of the conditions of life (e.g., "accepting death as part of life"; p. 5). Reed identifies ST as a "human resource that demands expression," likening it to other important developmental milestones like walking (Reed, 2014, p. 111). Reed believed that ST was a function of developmental maturity, making age a key predictor, but not the only determinant of this conceptualization of ST (Reed, 2014; Walker, 2002).

Closely related to Reed's developmental conceptualization is Tornstam's "gerotranscendence" (1996) which suggests that successful aging involves transcending the self through acceptance of death, decreases in self-centeredness, lessened focus on the physical body, and a refocus on the next generation. Qualitative research with older adults has shown that these themes emerge when older adults are asked about the components of successful aging (Troutman-Jordan & Staples, 2014).

In both Reed's and Tornstam's conceptualizations, ST can adaptively develop in response to difficulties caused by disease/hardship and natural aging processes (Reed, 2014; Weiss, 2014; Williams, 2012). However, the construct is also relevant to healthy and non-geriatric populations where it has been found to positively relate to self-esteem, a sense of coherence, emotional wellbeing, purpose in life, and confidence (Coward, 1996). Gerotranscendence was found to be positively correlated with mindfulness, subjective wellbeing, and quality of life (Zappala, 2007). Some support has also been received for Gerotranscendence being cross-culturally invariant (Lee et al., 2015).

Self-transcendence as a personality trait has been captured in a subscale of the Temperament and Character Inventory (TCI; Cloninger, 1987). The TCI also has a developmental conceptualization, proposing that individuals progress along the dimensions of 1) self-forgetful vs. self-conscious experience, 2) transpersonal identification vs. self-isolation, 3) spiritual acceptance vs. rational materialism, 4) enlightened vs. objective ST, and 5.) idealistic vs. practical ST (Cloninger, 1987; Garcia-Romeu, 2010). Included in this conceptualization is the notion that people may differ in their relative expression of ST on each subscale.

A relatively new measure of trait ST has been created in the Questionnaire on Self-Transcendence (QUEST; Fishbein et al., 2020). This measure is built from the perspective of contextual cognitive behavioral therapies, which all employ some aspect of meditation or mindfulness (e.g., Acceptance and Commitment Therapy). The instrument is designed to measure trait ST developed from practice of the skills in these types of therapy. The measure is relatively new and little research has been conducted with it, though it has been validated. Since this represents one of the few conceptualizations of trait ST that is not explicitly connected to age, it is very relevant to the research at hand. Additionally, included in this conceptualization is the sense that certain practices and experiences can lead to lasting changes in trait ST, which is a central assumption of this paper (Fishbein et al., 2020).

Self-transcendence has also been studied as a value guiding one's behavior beyond self-interests. In the Aspiration Index, ST is situated as orthogonally opposed to physical-self values (Kasser, 2019). Similarly, in the Schwartz Value Scale it is viewed in opposition to self-enhancement values. In concordance with previously cited research on ST as a developmental process, ST values appear to serve some adaptive and protective value. For example, those higher in ST values were demonstrated to be less neurologically reactive to threatening health

messages (Kang et al., 2017). ST values were also found to have an impact on satisfaction with life that was moderated by gratitude (Oriol et al., 2020). In a large telephone survey with heterosexual couples, ST values were positively related to humility, positivity and compassion, key elements for harmonious partnerships (McDonald & Hirt, 1997).

In these conceptualizations of ST as a developmental process, personality trait, and value, ST emerges as largely positive and predictive of wellbeing outcomes. Included in these three conceptualizations are a sense that 1) people individually differ in their expression of ST, and 2) that trait ST can develop throughout the lifespan. While ST appears to be predicted by age and difficult experiences, another pathway may be through self-transcendent experiences (STEs).

### **Distinguishing Self-Transcendent Experience**

Yaden et al. (2017) identify a broad variety of experiences, including mindfulness, flow, love, awe, peak experiences, and mystical experiences as all having some feature of being self-transcendent. According to Yaden et al., there are two major criteria for defining STEs: annihilation of the self and increased feelings of connectedness. Annihilation occurs when the self's usual boundaries are replaced with a more spacious sense of self that goes beyond one's physical body boundaries. In parallel with this, STEs are thought to increase feelings of connectedness to others and the world at large. When the self is "annihilated," one's sense of self becomes inclusive of things that were not formerly seen as self, thus increasing perceptions of connectedness (Yaden et al., 2017).

While these two core features are theoretically present in every variety of STE, Yaden et al. conceptualize STEs as existing along a continuum of intensity ranging from transient loss of self (e.g., "losing oneself" in a task, or "flow") to profound and life-altering experiences (e.g., mystical experiences). It is important to note, however, that while these extremes can be

somewhat pinned to specific constructs, the intervening constructs are not easily sorted into a hierarchy (Figure 1), as each exists on a spectrum. By coalescing these various experiences under the banner of STE, a conceptual space has been created to investigate their commonalities (Kitson et al., 2020; Yaden et al., 2017). In the following sections, we will first explore four well-studied domains of STE—flow, awe, meditation, and mystical experiences—to better understand each of these constructs and their related outcomes. This will help build the necessary conceptual bridge to explore nondualism’s link between these domains.

### **STEs and Flow**

Flow describes an affective state that emerges from complete engagement with an interesting or challenging task. These experiences are described as “autotelic,” meaning they are pursued for their own sake rather than some extrinsic reward. Flow is thought to absorb attention to such a degree that it results in reduced self-consciousness and increased present-centered awareness. These experiences are so positive that Csikszentmihalyi described them as “optimal experiences” (1991, 2014). The reduced self-consciousness represents what is perhaps a low-level form of STE, since it offers temporary reprieve from self-related processing.

Flow states have been noted as predictors of productivity in work (Lavigne et al., 2012). In addition, flow has been demonstrated in research to be positively associated with satisfaction with life, positive affect (Collins, 2006; Fritz & Avsec, 2007; Fullagar & Kelloway, 2009), emotional wellbeing (Wanner et al., 2006), creativity (Collins, 2006), and psychological wellbeing (Steele & Fullagar, 2009).

### **STEs and Awe**

Yaden et al. (2019) describe awe as a “complex self-transcendent positive emotion” arising in a variety of contexts. Working from Keltner & Haidt’s (2003) model, awe is thought to

arise from two dimensions of appraisal: perceived vastness and a need for accommodation. Vastness can be a function of scale (e.g., overlooking the Grand Canyon), or can be conceptual (e.g., a mathematical concept), but in general, this vastness is viewed in relief against the smallness of the self. Encountering this vastness results in a need to modify existing mental schemas to integrate an understanding of the experience. During the experience of awe, perception of time is altered, often with a sense that time is expanding or slowing. Awe seems to result in some level of self-loss or diminishment; for example, feeling very small when looking up at the stars. Awe also tends to invoke feelings of connectedness, whether to others, the environment, or the world at large (Yaden et al., 2019).

Some evidence suggests that awe may result in reductions in hedonic behaviors (Rudd et al., 2012; Yang et al., 2020). This may contribute to a reorientation toward eudemonia, which some scholars suggest is the basis of psychological wellbeing (Ryff & Singer, 2008). Awe has shown some promise in increasing social acceptance via increased tolerance for norm violation (Sawada & Nomura, 2020). Awe experiences have been linked to greater incidence of prosocial behaviors (Guan et al., 2019) including increases in patience and volunteering behaviors (Rudd et al., 2012). Additionally, awe has been demonstrated to be positively related to satisfaction with life (Anderson et al., 2018; Rudd et al., 2012), positive emotions (Anderson et al., 2018), subjective wellbeing, and meaning in life (Zhao et al., 2019). One study found that awe also stimulated religious and spiritual feelings, and increased feelings of oneness in participants (Cappellen & Saroglou, 2012).

### **STEs and Meditation/Mindfulness**

Jon Kabat-Zinn has succinctly defined mindfulness as: “paying attention in a particular way; on purpose, in the present moment, and non-judgmentally” (Kabat-Zinn, 2009, p. 4).

Mindfulness can be cultivated at any moment in one's life, whether one is washing dishes, exercising, working, etc.; to be mindful, one is attentively present to the current activity without judgement. Meditation generally refers to a concerted period of practice, where one's full attention is focused on a predetermined point (e.g., awareness of breath or body, koan introspection, mantra focus, etc.). Meditation helps one cultivate mindfulness and bring it to bear in daily life (e.g., Tanner et al., 2009).

The subject of meditation and mindfulness has been a particularly fertile area of inquiry in the social sciences. Mindfulness and meditation are important components of several empirically supported psychotherapy modalities, including Dialectical Behavioral Therapy (Koerner & Linehan, 2000; Linehan, 2014), Acceptance and Commitment Therapy (Bluett et al., 2014; Hayes et al., 2004; Swain et al., 2013), and Mindfulness Based Cognitive Therapy (Goldberg et al., 2019; Piet & Hougaard, 2011; Segal et al., 2004). All these therapies leverage mindfulness in some way, usually to facilitate acceptance and counter pathological avoidance tendencies. This focus on the present moment also helps to disengage from unhelpful pathological self-focus (e.g., rumination, negative self-talk, etc.).

Aside from its utility in clinical interventions, meditation and mindfulness have also been extensively studied as general tools to promote wellbeing. Meditation interventions have been demonstrated to reduce general stress (Manocha et al., 2009) and psychological distress (Shonin et al., 2014). Meditation has been positively associated with emotional wellbeing (Keune & Perczel Forintos, 2010); psychological wellbeing and compassion (Crowley & Munk, 2017); cognitive flexibility and attention (Moore & Malinowski, 2009); and subjective wellbeing (Kumar & Ali, 2003). Cross-sectional data has demonstrated that having a regular meditation

practice is related to better physical health, and moderates the effect of age on life satisfaction and psychological health (Allen et al., 2017).

It is important to note here that flow relates somewhat to the focused attention practiced in mindfulness traditions. Zen traditions speak of “work practice,” which involves complete absorption in whatever one is doing. If one were sweeping the floor, the imperative would be to *only* sweep the floor, and do so with full attention (Loori, 2002). The important distinction here is that such mindfulness practice involves a purposeful orientation of attention on a task that may not seem intrinsically interesting or challenging, while flow experiences tend to rely on an engaging activity to initiate attentiveness (Csikszentmihalyi, 1991; Loori, 2002). In short, flow requires autotelic experiences, while mindfulness does not.

### **STEs and Mystical Experiences**

Mystical experiences (MEs) are believed to exist on the more intense end of the STE spectrum. Of all of these constructs, MEs have the longest history of research in psychology, dating at least back to William James’ seminal work *Varieties of Religious Experience* (1902). MEs tend to be transient, overwhelming, ineffable, and possess a “noetic quality,” or a feeling of being real. While awe and flow diminish the sense of self, in some MEs the sense of self and ordinary body boundaries can disappear completely, replaced with a sense of unity and connection with one’s surroundings (Yaden et al., 2017). MEs have been operationalized in several self-report instruments including Hood’s Mysticism Scale (Hood et al., 1993), and the Mystical Experiences Questionnaire (Barrett et al., 2015; MacLean et al., 2012).

Psychedelic substances are an especially powerful catalyst for mystical experiences. Prohibition of such substances hampered study for decades, but recently access has improved for researchers, leading to promising findings for these substances as therapeutic tools. The benefits



of using psychedelics to study MEs is in the ability to study in vivo effects, rather than relying on retrospective accounts. As a result, this has been one of the most fertile areas for the study of MEs and has proven to be a reliable way to invoke STEs.

The Multidisciplinary Association for Psychedelic Studies has undergone many well-designed, FDA approved clinical trials to study the therapeutic characteristics of psychedelics. Recent breakthrough research has demonstrated that MDMA assisted psychotherapy had greater impact on post-traumatic stress disorder (PTSD) when compared to the gold-standard treatment of prolonged exposure (Amoroso & Workman, 2016). It is thought that part of its effect may be due to its tendency to increase a sense of openness in subjects (Wagner et al., 2017).

Many other psychoactive substances have shown promise, including ketamine for depression (Murrough et al., 2013), psilocybin for depression (Carhart-Harris et al., 2018; Griffiths et al., 2016), lysergic acid diethylamide (LSD) for anxiety (Gasser et al., 2014, 2015), and ibogaine for opioid dependence (Brown & Alper, 2018). Some preliminary research has found that subjective mystical experience accounted for treatment impact, rather than the strength of the drug's direct effects (Garcia-Romeu et al., 2014). Since MEs are a particularly powerful form of STE, this finding seems to suggest that STE may be a key active ingredient in these therapies' effects.

It is important to note that intense experiences, like MEs, have the potential to be positively or negatively valenced (e.g., van der Tempel, 2018). The impacts of MEs, however, have been demonstrated to be largely positive, and some evidence suggests that even difficult experiences are often ranked as being meaningful and worthwhile retrospectively (Carbonaro et al., 2016). Research has identified positive effects from drug-induced mystical experiences including increases in gratitude, life meaning, purpose, death transcendence, interpersonal

closeness (Griffiths et al., 2018), prosocial attitudes (Griffiths et al., 2018; Schmid & Liechti, 2018), life satisfaction (Nicholas et al., 2018; Schmid & Liechti, 2018), and mindfulness (McCulloch et al., 2021). Hendricks (2018) argued that a key ingredient in psychedelic mystical experiences may be the stimulation of awe, incurred by the sense of vastness perpetuated by the substance. This corresponds with the position that different domains of STE may be interrelated.

### **STEs' Measurement Problem**

STEs generally represent highly positive and meaningful experiences that are associated with many wellbeing outcomes. There is considerable overlap in the outcomes and characteristics of flow, awe, meditation, and mystical experiences. The issue with these different forms of STE is that their respective instruments are designed to measure a very specific type of experience, and hence are not able to measure STE as a general construct. The lack of a subject-agnostic measure of STE makes it difficult to understand how different forms of STE relate to or differ from one another, how they rank relative to each other in intensity (Figure 1), and how that intensity relates to outcomes.

Some theory suggests that STEs might also serve a role in the development of trait ST, hence serving as a gateway to ST's adaptive outcomes. For example, in the TCI's conceptualization of ST, having "self-forgetful" experiences is the first stage in the development of ST (Cloninger, 1987). In our working definition of ST from Reed, ST emerges from an awareness that expands beyond typical body boundaries (2014). Reed acknowledges that ST can emerge from altered states of consciousness, as a consequence of developmental maturation, or in response to illness/hardship. Reed does not focus on the role of altered or special states of consciousness due to the applied nature of her ST theory in a nursing context. Her inclusion of this suggests STEs have a role in the development of ST, a perspective shared by Yaden et al.

(2017). What is unclear is whether changes in consciousness generated during STEs, as defined by Yaden et al., result in lasting changes in trait level variables. Research on psychedelic therapies and mystical experiences suggest that many lasting positive changes do occur, such as decreases in psychopathological symptoms (e.g., Griffiths et al., 2016), but it is unclear which of those changes relate directly to trait ST as this is typically not a primary variable of interest in such research. Given Reed's (2014) perspective that STs have a significant role in adapting to illness and hardship, this appears to be a relevant and important connection.

This theory and related empirical research suggest that STEs may possibly represent one non-age or hardship-related pathway to the development of ST. The challenge with creating an empirical link between ST and STEs lies in the fragmented state of STE measurement and theory. There is a need for research looking holistically at the varieties of STE to develop a comprehensive model of how they relate to development of trait ST. To serve these purposes there is a need for a generalized measure of STE, or a related construct, that can reliably address the commonalities between flow, awe, meditation, mystical experiences, and others.

In the next sections, nondual awareness is put forth as an existing construct well suited to these ends. To understand nondual awareness, we must first define duality and how it relates to self-transcendence.

### **Nondual Awareness: A Common Ingredient in STEs**

Dualism is characterized by any effort to distinguish between things. Our use of language tends to function in a comparative manner (e.g., hot/cold, wrong/right), and such comparisons assume the existence of separate objects with enduring characteristics. These sorts of distinctions are clearly useful for getting things done; it is by the nature of dualism that we understand that steel makes better bridges than hotdogs, or how we realize what is food and what

is poison. However, some scientific work suggests that dualism provides only a very limited view of the universe. In quantum physics, distinctions between objects fall apart on a quantum scale, suggesting that interdependence and connectedness are a fundamental feature of the universe (Theise & Kafatos, 2016).

The most important aspect of dualism for the current discussion is that of subject/object relationships. In a dualistic view, when we define a sense of what is conventionally thought of as self (all that is within our body boundaries), we also define what is *not self* (e.g., my friend, my spouse, etc.). This is to say that in defining an “I,” a “you” is implied. If dualism is distinguishing between self and other, then nondualism is dissolving such distinctions. In a pure nondualistic view, self has no boundaries (see Figure 2).

### **Nondual Awareness**

Nondual awareness (NDA) is best conceptualized as a special form of awareness that transcends duality (Schuhmacher, 2009). In transcending duality, distinctions between self and other dissolve. Sometimes called “awareness of awareness,” Hanley et al., describe NDA as “a background field of awareness that is unified, immutable, and empty of mental content, yet retains a quality of cognizant bliss” (2018, p. 2). Pure awareness lacks thought content, and hence also lacks reification of the self through one’s thoughts. In these states, one’s sense of self is no longer defined by body boundaries; there are increases in feelings of connectedness with others/the world and a sense of bliss (Hanley et al., 2018).

Notions of this sort of connected awareness exist in many wisdom traditions, including Christianity, Hinduism, Kabbalah, Sufism, and Buddhism. In the book of Genesis it is the eating of the fruit from the tree of knowledge of good and evil that banishes humankind from “paradise” and creates suffering (Schuhmacher, 2009). Here notions of “good” and “evil”

represent a dualistic splitting, from what was originally a unified nondual state. Although many connections can be made among the various wisdom traditions of the world, Buddhism, and especially Zen, offer both an extensive literature describing NDA as well as methods for its cultivation. D.T. Suzuki claimed that Zen is “not necessarily the fountain of Buddhist thought and life alone,” but represents experiences available and possibly endemic to all of the world’s wisdom traditions (Suzuki, 1956, p. 111). Zen’s broad applicability and nontheistic stance makes it well suited as a means to guide research on NDA.

Zen broadly puts forth the idea that we are all capable of accessing NDA. Efforts to access this awareness focus on stripping away our attachment to self and dualistic thoughts (Dunne, 2011). In Zen, meditation is the technology used to cultivate NDA. One feature of Zen practice is the tradition of sesshin: long periods (3-10 days) of silent intensive meditation practice. Sesshins often inspire “breakthroughs” for practitioners, where they have intense experiences with NDA (Kapleau, 2000). This characteristic makes sesshin participants a compelling sample for studying the impact of increases in NDA.

Some scholars have criticized that normal research methods are insufficient to study something as ineffable as NDA (Krägeloh, 2020). How can you use dualistic language to describe something that transcends duality? At first blush, it can seem a bit of a paradox. From these critiques, we can well assume that efforts to categorize and understand NDA can never completely capture its essence; however, in fairness, error in measurement is an issue with all latent constructs (Borsboom, 2008). The more relevant question is if the degree of error overwhelms the ability to measure the construct. Given the history of successful measurement in similarly ineffable constructs like mystical experiences, a case for measuring NDA seems supported (Hood et al., 1993; MacLean et al., 2012).

## Measuring NDA

The Nondual Awareness Dimensional Assessment (NADA; Hanley et al., 2018) was designed to measure NDA both as a state (NADA-S) and a trait (NADA-T). The items on the NADA-T ask how often a person has experienced various aspects of NDA. The NADA-T (Appendix I) was developed by administering several instruments of self-transcendence, and then using principal components analysis to identify items that loaded onto two theoretical dimensions of NDA: self-transcendence (e.g., “I have had an experience in which the boundaries of my self dissolved”) and bliss (e.g., “I have been surrounded and filled with a blissful warmth or energy”). These scales included the Mysticism Scale (Hood, 1975), Mystical Experiences Questionnaire (Barrett et al., 2015), Ego-Dissolution Inventory (Nour et al., 2016), Altered States of Consciousness Rating Form (Studerus et al., 2010), Dimensions of Meditative Experience Questionnaire (Osis et al., 1973), and Effects of Meditation Scale (Reavley & Pallant, 2009). The authors wrote an additional six new items to ensure full construct coverage. They removed items that loaded poorly or cross-loaded on the two factors, resulting in a 13-item scale. They confirmed this two-factor solution using bi-factor exploratory structural equation modeling (Hanley et al., 2018).

The NADA-T’s relationship to affiliated constructs largely followed the authors’ predictions. Those with meditation practices scored significantly higher on the NADA-T than non-meditators, and scores were also related to quantity of practice. The highest relationships between related constructs were seen with decentering (observing thoughts and feelings without overidentification with them;  $r = .59, p < .001$ ); on several measures of interoceptive awareness (awareness of our inner bodily processes), including attention regulation (e.g., “I can return awareness to my body if I am distracted”;  $r = .46, p < .001$ ), emotional awareness (e.g., “I notice

how my body changes when I am angry”;  $r = .37, p < .001$ ), self-regulation (e.g., “I can use my breath to reduce tension”;  $r = .48, p < .001$ ), and body listening (e.g., “I listen to my body to inform me about what to do”;  $r = .48, p < .001$ ); and on the construct of “trusting” (e.g., “I am at home in my body”;  $r = .41, p < .001$ ; Hanley et al., 2018, p. 10). Additionally, the NADA-T was found to positively relate to subjective and psychological wellbeing, some aspects of dispositional mindfulness, openness, extraversion, agreeableness, conscientiousness and emotional stability (Hanley et al., 2018).

A short 3 item version of the NADA-T was developed to measure state-based NDA (NADA-S; Appendix J) by modifying the tense of items to relate specifically to very recent experiences (Hanley et al., 2018). Additionally, the response scale was slightly altered to a 10-point scale addressing intensity of experience. The NADA-S underwent initial validation in a small, randomized control trial. In the trial, college students were randomly assigned to either a focused attention condition, or a brief 11-minute meditation exercise. Comparison of pre/post NADA-S scores indicated that participants in the meditation condition had significant increases in nondual states, and the control conditions did not (Hanley et al., 2018).

### **Nondual Awareness and Self-Transcendent Experiences**

NDA provides a new framework for understanding what makes STEs “transcendent.” While self emerges from duality, transcending the self seems to involve some level of NDA. The self-transcendence subscale of the NADA-T overlaps well with Yaden et al’s criteria for STEs: annihilation of the self, and increased feelings of connectedness with others (2017).

Additionally, the bliss subscale of the NADA-T captures the general positive valence of STEs. It is important to note the strong connotation of “annihilation” in Yaden et al’s STE criteria, as it suggests that the self is completely dissolved, while in NDA it is spoken of more as an expansion

of self beyond body boundaries. This annihilation should be understood as a fundamental change in the usual makeup of self, not necessarily as its complete destruction. In strong NDA experience, the more one is connected with things outside body boundaries the further one gets from the typical sense of self. In a sense this self is thus “annihilated” to various degrees. This seems to be an unfortunately strong word choice. Self-annihilation and expansion of self appear to be referring to the same processes but describing them in different ways.

Embedded into the genesis of the Nondual Awareness Dimensional Assessment (NADA) is the notion that NDA is a factor in many different forms of STE, since the measure was derived from instruments meant to study multiple specific forms of STEs (Hanley et al., 2018). Though the measure mainly borrowed from the more intensive forms of STEs (e.g., meditative and mystical experiences), it seems plausible that it may also be a factor in less intense forms of STE as well (e.g., awe, flow, etc.), albeit to a lesser degree.

Evidence for this can be found in initial testing of the state version of the NADA (NADA-S; Hanley et al., 2018) where participants were randomly assigned to a control or a short 11-minute meditation condition. In this very short treatment, an increase in NDA was measured with the NADA-S. Though the scale of change was small, the result suggests that the NADA-S may be sensitive to minor changes in NDA. It follows that if NDA exists in all STEs then it should be somewhat measurable using this instrument even in the case of less intense experiences. If this is the case, NDA may provide a way to relatively distinguish between the intensity of different forms of STE and help to identify the main active ingredients in STE (Figure 3). NDA may provide a valuable tool for understanding the connection between STEs, trait level ST, and relationships to wellbeing variables; and it could help in conceptualizing a non-developmental pathway to increases in trait ST (Figure 4).



## **Present Research**

This paper aims to contribute to two significant conceptual gaps in the ST literature: 1) missing links between ST and STEs, and 2) links between disparate forms of STEs. The primary reason for these gaps seems to be due to a lack of a subject agnostic measure of STE. NDA is proposed in this research as the ingredient common to all forms of STEs that makes them “self-transcendent.” By establishing a generalized measure of STEs, it will help future researchers further investigate the hypothesized link between STEs and ST.

NDA has been operationalized primarily in its relation to relatively intense forms of STE, mainly mystical and meditative experiences. Little is known about how the NDA construct, as defined by Haney et al. (2018), maps onto other forms of STE. If NDA is a component in all forms of STE at varying intensities, then the NADA should be able to measure NDA in the context of awe experiences and flow states.

Study 1 sought to expand the nomological net of the NADA-T in a convenience sample and probe for its relationships with STE and ST constructs. Of primary interest was NDA’s relation to each subject’s propensity to experience awe, flow, and mindfulness. Secondly, we were interested in whether higher levels of NDA experiences might be predictive of increases in trait level ST.

Study 2 featured a sample of relatively experienced meditators with measurements occurring before and after an intensive meditation retreat. This sample provided several unique benefits and opportunities. Firstly, it provided an opportunity to test the NADA’s sensitivity to change with experienced practitioners. Secondly, it represented a content-valid activity where NDA should occur. This could further support the validity of the instrument, and test if NDA co-occurs with flow and awe during intensive meditation practice. Lastly, it allowed us to

investigate how characteristics of meditation practice and retreat experience might impact NDA attainment.

## **Research Questions and Hypotheses**

In the below section, research questions for each study are detailed, and related hypotheses are stated. For a list of measures for each study, see chapters 2 and 3.

### **Study 1**

The first set of questions primarily deal with connecting NDA to different measures of self-transcendence. Since the sample for this study was of relatively young people, and ST may relate to age, it was anticipated that the strengths of positive relationships between NDA and ST constructs would be somewhat lower than what would be observed in a more heterogenous sample.

**- RQ1:** Will NDA relate positively to each measure of ST?

These first three hypotheses address the connection between NDA and dispositional awe, flow, and mindfulness.

- H1: NDA scores (NADA-T) will correlate strongly with dispositional awe (DPE-S).

- H2: NDA scores will correlate moderately with flow state scores (AFSS).

The NADA-T was developed in part using items from several meditation scales, but all these scales related to meditation experience, not trait mindfulness. A positive relationship to trait mindfulness was assumed given that meditation experience predicts mindfulness.

Interestingly, Hanley et. al (2018) found that several subscales of the Five Factor Mindfulness Questionnaire, had a slight negative relationship to NDA. Here the association was tested with a different measure.

- H3: NDA scores will be strongly positively correlated with trait mindfulness scores (MAAS).

**- RQ2:** Will NDA be positively related to trait ST?

This research question addresses the assertion that STEs are one potential pathway to developing trait ST. If NDA is a primary component of STEs, then NDA should relate positively to each trait measure of ST.

- H4: NDA scores will be moderately positively correlated with developmental ST (ASTI).

- H5: NDA scores will be moderately positively correlated with trait ST (QUEST).

- H6: NDA scores will be moderately positively correlated to self-transcendent values orientation (SSVS).

**- RQ3:** Will NDA relate positively to wellbeing variables?

ST and STEs have demonstrated relationships to several wellbeing variables. If NDA is a component of STEs than it ought to be positively related to wellbeing outcomes. However, since a considerable number of constructs impact wellbeing, this relationship would likely be moderate at best. To help account for this, we controlled for socio-economic status and distress.

- H7: NDA will have a small positive correlation with satisfaction with life (SWLS) when controlling for SES and distress (DASS-21).

- H8: NDA will be moderately positively correlated to transpersonal gratitude (TGS) when controlling for SES and distress (DASS-21).

The next research questions address the assertion that various forms of STE are thought to all cause increases in NDA, which then increases trait ST.

**- RQ4:** Will dispositional awe, flow states and mindfulness be predictive of NDA?

- H9: Dispositional awe (DPES) will predict positive NDA scores.
- H10: Flow (AFSS) will predict positive NDA scores.
- H11: The adjusted  $R^2$  will increase with the addition of flow to the regression model.
- H12: Mindfulness (MAAS) will predict positive NDA scores.
- H13: The adjusted  $R^2$  will increase with the addition of mindfulness to the regression model.

**- RQ5:** Will NDA scores predict positive trait ST scores?

- H14: NDA will predict positive scores on self-transcendent value orientation (SSVS).
- H15: NDA will predict positive scores of trait ST (QUEST).
- H16: NDA will predict positive developmental ST scores (ASTI).

## **Study 2**

The first set of research questions for study 2 dealt with establishing convergent and criterion validity of the Nondual Awareness Dimensional Assessment-State Expanded (NADA-SX). This was a slightly altered version of the NADA-T designed to provide a longer alternative to the existing short NADA state scale (NADA-S).

**- RQ6:** Will the NADA-SX demonstrate convergent validity?

The Spatial Frame of Reference Continuum (SFoRC) was validated in relation to the NADA-T, so if the NADA-SX is psychometrically equivalent to the NADA-T, that relationship was expected to hold with the NADA-SX.

- H17: NDA (NADA-SX) will be strongly positively correlated to the SFoRC.

**- RQ7:** Will the NADA-SX demonstrate criterion validity?

If the NADA-SX measures what it is designed to measure, there would be observable increases in NDA scores between pre and post meditation retreat measurements.

- H18: NDA will be significantly higher at time two than at time 1.
- H19: Experience of emptiness (see Appendix Q) will significantly predict positive NDA scores at time 2.

The next set of research questions sought to find if other forms of STE (awe and flow) emerged during a meditation retreat, and how these related to NADA-SX. The goal was to establish a conceptual link between NDA and flow/awe.

**- RQ8:** Will a meditation retreat increase incidence of awe (AWE-S) and flow (AFSS) experiences?

- H20: Awe experience scores will be significantly higher at time 2 than at time 1.
- H21: Flow state scores will be significantly higher at time 2 than time 1.

**- RQ9:** Will levels of flow and awe be predictive of NDA levels?

- H22: Awe experience scores will be a significant predictor of NDA.
- H23: Flow state scores will be a significant predictor of NDA.

The next set of research questions addressed the impacts of practice characteristics and subjective retreat experience on NDA scores. These would be measured using two questionnaires developed for this study (see Chapter 3). Ultimately the goal was to show that characteristics of practice impact NDA. Since regular meditation practice has been demonstrated to result in higher trait NDA (Hanley et al., 2018), it seemed reasonable to predict that greater meditation experience and average practice time would lead to increases in NDA states.

**- RQ10:** Will experience levels positively impact participants' NDA baseline?

- H24: Years of meditation experience will significantly predict NDA at time 1.
- H25: Average hours of meditation will significantly predict NDA at time 1.

- **RQ11:** Will the quality of participants' retreat experience positively impact their NDA attainment?

This research question leveraged data from the Retreat Experience Questionnaire (see Appendix Q) to see how experiences during the retreat impact NDA.

- H26: Retreat hours of meditation will be a significant positive predictor of NDA at time 2.

- H27: Depth of meditation practice will be a significant positive predictor of NDA at time 2.

## CHAPTER 2: STUDY 1 METHODS & RESULTS

Study 1 was developed primarily to contribute to the first gap in self-transcendence (ST) and self-transcendent experience (STE) literature: to help establish links between STEs and ST. We proposed that STEs might lead to increases in trait level ST. Additionally, study 1 serves as an initial exploration of the premise that NDA is a feature in all forms of STEs. If these hypotheses were supported, NDA would be predictive of increased trait level ST and there would also be meaningful connections between NDA and flow, dispositional awe, and mindfulness. The measure of NDA, the Nondual Awareness Dimensional Assessment (NADA-T; Hanley et al., 2018), is a relatively new instrument, and so this study served the additional purpose of expanding understanding of its nomological net.

### **Participants and Procedures**

Power analysis indicated a need for at least 266 participants to find correlations above  $r = .20$  ( $\alpha = .05$ ) between measures at a power of .95. This  $r$  was selected since it represented the lower end of what would be a significant finding per the assertions of this research. The sample was drawn from a pool of undergraduate university students who received course credit in return for their participation. Participants were told that the study was investigating characteristics of individuals' attention. Participants completed a basic demographics form, and then each of the measures in the following section. All responses were collected anonymously.

We oversampled due to concerns about poor response quality in student samples, receiving 588 complete responses. Any participants ( $n = 96$ ) who responded "affirmatively" to 2 or more of the attention check items from the Insufficient Effort Responding Scale had their data excluded from analysis (Huang et al., 2015; see following section for description), leaving 492 participants. This was a higher than anticipated fail rate for these attention check questions and

may partially relate to the survey being relatively long. For each measure, it was planned that participants who scored 1.5 times above or below the interquartile range would have their data removed for that scale (Hoaglin et al., 1983). The number of outliers coincided exactly with those excluded using the attention check items, providing additional evidence for this being a valid exclusion criterion.

As anticipated, participants were largely of normative age for early college ( $M = 19.76$ ,  $SD = 3.11$ ). Most participants were of the age expected for second year college students ( $n = 242$ ). The vast majority of participants identified as female (76%;  $n = 375$ ). Of the remaining participants, 22.2% identified as male ( $n = 109$ ), 1% as non-binary ( $n = 5$ ), .002% as agender ( $n = 1$ ), .002% as genderfluid ( $n = 1$ ), and .002% as “unsure” ( $n = 1$ ). 74% of participants identified as White ( $n = 366$ ), 9% as Asian or Pacific Islander ( $n = 44$ ), 5% as Central/South American ( $n = 22$ ), 2% as African American or African ( $n = 8$ ), and 1% as either American Indian or Alaskan Native ( $n = 5$ ), with the remainder declining to disclose this information. Most participants considered themselves to be non-religious (66%), but participants were closely split between considering themselves “spiritual” (52%) versus “not spiritual” (48%). Most participants did not have a religious preference (55%); 38% identified with Christianity, 3% “Other”, 2% Judaism, 2% Buddhism, and less than 1% Hinduism or Islam. For SES levels, of those who reported household income, 36.4% were over \$100,000; 15.2% were between \$80,000-99,999; 9.2% were between \$65,000-79,999, 9.6% between \$50,000-64,999; 6.1% between \$35,000-49,999; 6.9% between \$20,000-34,999; and 3.1% under \$19,999.



## Measures

### Activity Flow State Scale

The Activity Flow State Scale (AFSS; Payne et al., 2011) was developed to provide a general measure of flow states that would be applicable to any activity (see Appendix A). This was needed since existing flow measures were developed for specific domains, such as video game playing and sports (Payne et al., 2011). The AFSS was developed from the existing Flow State Scale (Jackson & Marsh, 1996) which was primarily intended for sports applications. This altered scale allows participants to choose a task they performed in the past week from which to base their ratings. In a validation study the authors found that those who scored highly on this measure of flow tended to have a balance between the cognitive demands of the task and their abilities, known as the “Match Hypothesis” in flow literature (Payne et al., 2011).

The AFSS has 9 subscales, each representing a theoretical component of flow experience. The authors conducted a CFA to confirm consistency in the factor structure of the modified scale in relation to the previously validated structure of the Flow State Scale. In the validation study internal consistency of each subscale was good: merging actions and awareness ( $\alpha = .83$ ), clear goals (.83), concentration on the task at hand (.81), unambiguous feedback (.90), challenge skill balance (.76), transformation of time (.78), sense of control (.86), loss of self-consciousness (.71), and autotelic experience (.89; Payne et al., 2011).

This scale was chosen due to a lack of an open-source measure of trait flow, and its adaptability to participants’ differing normal activities. For the current study, primary interest was in the total scale score.

### **Adult Self-Transcendence Inventory (ASTI)**

The Adult Self-Transcendence Inventory (ASTI; Levenson et al., 2005) is a 15-item self-report instrument designed to measure self-transcendence as a developmental process in adults (see Appendix B). The authors built their conceptual model from the previously developed Gerotranscendence Scale (Tornstam, 1996), addressing both its psychometric shortcomings and generating a measure more applicable to a general adult population. The scale is comprised of two dimensions: self-transcendence (e.g., “I feel that my individual life is a part of a greater whole”; “material things mean less to me”) and alienation (e.g., “I am less optimistic about the future of humanity”; “I feel more isolated and lonely”). Internal reliability was acceptable for the self-transcendence subscale which will be utilized in this study ( $\alpha = .75$ ). The ST subscale was found to be negatively correlated with neuroticism ( $r = -.28$ ). It was positively correlated with openness ( $r = .20$ ), agreeableness ( $r = .23$ ), conscientiousness ( $r = .20$ ), and having a meditation practice ( $r = .30$ ; Levenson et al., 2005).

Respondents answered the measure in comparing their present self to themselves 5 years ago, making this measure somewhat appropriate for a younger sample. Supporting this notion, the ST subscale was found to have little relationship to age ( $r = .01$ ; Levenson et al., 2005). For the current study the self-transcendence subscale was the primary measure of interest.

### **Demographics Questionnaire**

This was a basic demographics questionnaire to help with description of the final sample, and to provide relevant control variables. Questions related to participants’ gender, socio-economic status, ethnic identity, age, and spiritual/religious orientation (see Appendix D).

### **Depression and Anxiety Stress Scale (DASS-21)**

The Depression and Anxiety Stress Scale (DASS-21; Lovibond & Lovibond, 1995) is a 21 item self-report scale intended to measure the presence of specific stress symptoms often seen in depressive and anxiety disorders (see Appendix E). The DASS-21 can be used as a global measure of clinically relevant distress. It is comprised of three factors, all of which had acceptable internal consistency: depression ( $\alpha = .91$ ), anxiety (.81), and stress (.89). The scale was found to correlate highly to the Beck Depression Inventory ( $r = .74$ ) and the Beck Anxiety Inventory ( $r = .54$ ; Lovibond & Lovibond, 1995). The present study utilized the total scale score.

### **Dispositional Positive Emotion Scales (DPES)**

The Dispositional Positive Emotion Scales (DPES; Shiota et al., 2006) is a 32 item self-report measure designed to assess respondents' tendency to experience seven positive emotions (see Appendix F). Internal consistency of each scale was good: joy ( $\alpha = .82$ ), contentment (.92), awe (.78), pride (.80), compassion (.80), amusement, (.75), and love (.80). Each subscale positively correlated with each other at a range from .05 to .75. The awe subscale was found to correlate positively with self-rated extraversion ( $r = .34$ ) and openness to experience ( $r = .49$ ). It demonstrated weak relationships to self-rated conscientiousness ( $r = .07$ ), agreeableness ( $r = -.02$ ) and neuroticism ( $r = -.05$ ; Shiota et al., 2006). This is a standard instrument used in most research on dispositional awe, and this study utilized the awe subscale.

### **Insufficient Effort Responding**

Huang et al. (2015) developed 8 self-report items designed to detect insufficient levels of effort in responding to survey measures. The 8 items contain content that is extreme or impossible (see Appendix G). If participants endorse these items in the affirmative (any response that is not negative or neutral), it could indicate that they are not reading instructions at an

acceptable level. This likely suggests that they are providing poor data and should not be included in analysis. The authors found that the scale was significantly negatively related to total survey time ( $r = -.30$ ) and the number of letters typed in a survey response ( $r = -.19$ ), suggesting that those with high scores on scale items may have engaged in the survey in a less effortful manner. The authors found no negative impact from use of the IERS in comparison to social desirability items. All items were shown to load on one factor, and internal reliability was good ( $\alpha = .85$ ; Huang et al., 2015).

### **Mindful Attention Awareness Scale (MAAS)**

The Mindful Attention Awareness Scale (MAAS; Brown & Ryan, 2003) is a 15-item self-report measure designed to assess participants' trait mindfulness (see Appendix H). This scale specifically targets sensitive awareness of the present moment in whatever one is doing or experiencing. Important to this study, the items do not directly reference the practice of mindfulness or meditation explicitly, nor any specialized content. Rather, items address how one attends to day-to-day tasks, which is likely the most effective way to measure mindfulness in a sample that will largely be comprised of non-meditators. Importantly, this measure is still sensitive to the impacts of mindfulness and meditation practice, while being accessible for non-practitioners. Internal consistency of the total scale score was good in multiple samples ( $\alpha = .82-.87$ ). The scale was found to negatively relate to neuroticism ( $r = -.56$ ), the Beck Depression Inventory ( $r = -.41$ ), the negative affect subscale of the Positive and Negative Affect Schedule ( $r = -.39$ ), and a measure of rumination ( $r = -.39$ ). The scale positively related to the Mindfulness/Mindlessness scale ( $r = .31$ ) and to the Trait Meta-Mood Scale ( $r = .46$ ; Brown & Ryan, 2003).

### **Nondual Awareness Dimensional Assessment-Trait Version (NADA-T)**

The trait version Nondual Awareness Dimensional Assessment (NADA-T; Hanley et al., 2018) is a 13-item self-report measure designed to assess the frequency at which respondents have experienced nondual awareness in their lives (see Appendix I). The measure was developed using extant measures of mystical and meditation related experiences; in addition, the authors generated a few newly written items. The authors selected 13 items: nine items belonging to a self-transcendence subscale (e.g., “I have had an experience in which the boundaries of my self dissolved”), and the other four belonging to a bliss subscale (e.g., “I have been surrounded and filled with a blissful warmth or energy”). Composite reliability scores were excellent for the self-transcendence subscale (.94), for the bliss subscale (.81), and for the total scale score (.93). The two dimensions were demonstrated to be highly positively correlated ( $r = .62, p < .001$ ). In one sample this measure was shown to reliably distinguish between a group who engaged in mindfulness practice (there was no specific definition of this practice), and practice naïve participants. The scale positively related to subjective ( $r = .29$ ) and psychological wellbeing ( $r = .19$ ). A more varied relationship was found with dispositional mindfulness using the Five Facet Mindfulness Questionnaire. Positive relationships were found with the subscales of “observing” ( $r = .41$ ), “describing” ( $r = .19$ ), and “non-reacting” ( $r = .41$ ), while negative relationships were found on “acting with awareness” ( $r = -.06$ ) and non-judging ( $r = -.12$ ). The authors suggested that the reason for these negative relationships may be that a sense of agency and judgement entirely disappear in the context of NDA due to diminishment of the self (Hanley et al., 2018). For this study the total scale score was used.

### **Satisfaction with Life Scale (SWLS)**

The Satisfaction with Life Scale (SWLS; Diener & Emmons, 1985) is a 5-item unidimensional self-report instrument designed to assess global life satisfaction (see Appendix M). The scale is constructed in a way that attempts to avoid transient impacts of affect, and overlaps with other wellbeing constructs. Internal reliability in an initial validation study was reported as being excellent ( $\alpha = .87$ ). The measure was found to be positively related to the Differential Personality Questionnaire ( $r = .68$ ), the Bradburn Positive Affect Scale ( $r = .50$ ), and the Summed Domain Satisfaction scale ( $r = .57$ ). The authors found that those scoring highly on the scale tended to be “well-adjusted and free from psychopathology” (Diener & Emmons, 1985, p. 73).

### **Short Schwartz Values Survey (SSVS)**

The Short Schwartz Values Survey (SSVS; Lindeman & Verkasalo, 2005) was developed to provide a brief approximation of the 10 value dimensions measured in the original Schwartz Values Survey (SVS; Schwartz, 1992). In this context, values are defined as standards that guide one’s behavior. In the Schwartz model, the 10 values include: universalism, benevolence, conformity, tradition, security, self-direction, hedonism, stimulation, achievement, and power. These ten values are arranged in a circumplex model with two opposing dimensions: self-transcendence (vs. self-enhancement), and conservation (vs. openness to change). The SSVS is a 10-item self-report measure (see Appendix N) comprised of one item for each value (Lindeman & Verkasalo, 2005). The SSVS demonstrated similar relationships between values when compared to the SVS, and each value was acceptably correlated with its counterpart ( $r = .45-.70$ ). Correlations for the two dimensions were better with conservation at  $0.75$  and self-transcendence at  $0.78$ , suggesting that this measure functions best as an approximation of the

SVS at a broad level. General reliability coefficients were .78 for conservation, and .72 for self-transcendence, which is the variable of interest in this study (Lindeman & Verkasalo, 2005).

### **Transpersonal Gratitude Scale (TGS)**

The Transpersonal Gratitude Scale (TGS; Hlava et al., 2014) is a 16-item self-report measure designed to measure a different side of gratitude than was covered in existing scales (see Appendix O). Hlava et al. (2014) describe ordinary gratitude as the recognition of some benefit the self has received from an identifiable source (e.g., another person). In transpersonal gratitude the distinction between self and other is blurred, and one feels gratitude for things that have no obvious source (e.g., gratitude for just being alive). It was thought that the transpersonal conceptualization of this measure would translate well in comparisons to measures of NDA. The TGS has 4 dimensions, each of which demonstrated moderate to excellent internal consistency: expression of gratitude ( $\alpha = .59$ ), value of gratitude (.86), transcendent gratitude (.68), and spiritual connection (.93). Internal consistency for the total scale score was excellent ( $\alpha = .88$ ), which is what will be utilized in analysis. Each of the measure's subscales related positively to the Gratitude Questionnaire ( $r = .39$  to  $.69$ ), and the Toronto Empathy Questionnaire ( $r = .20$ -.52). Each subscale was negatively related to the negative reciprocity subscale of the Personal Norm of Reciprocity Scale ( $r = -.36$  to  $-.47$ ). The authors found significant effects with this scale for individuals who self-identified as being “a grateful person” versus those who did not (Hlava et al., 2014).

### **Questionnaire of Self-Transcendence (QUEST)**

The Questionnaire on Self-Transcendence (QUEST; Fishbein et al., 2020) is a 21-item self-report scale designed to measure trait self-transcendence (see Appendix P). This measure was grounded in a contextual cognitive behavioral therapy (CCBT) perspective, to develop a

measure pertinent to these specific psychological treatments (e.g., Acceptance and Commitment Therapy, Dialectical Behavioral Therapy, etc.). Specifically, this measure is designed to focus on elements of self-transcendence endemic to these treatment approaches, which are thought to be active ingredients in promoting wellbeing. Analysis yielded three positively correlated factors: observing self (e.g., “I see a connection between who I am at all places and times”), inter-transcendence (e.g., “I experience myself as more than my thoughts and feelings”), and distancing (e.g., “I feel connected to all living beings, including plants and animals”). The observing self factor relates to a sense of there being a part of oneself consistently present throughout life that experiences and observes life. Inter-transcendence relates to a sense of connection to other beings. Distancing refers to reduced identification with one’s thoughts and feelings as comprising the self. Omega reliability coefficients were acceptable and ranged from .78 to .91. Across samples of community adults and undergraduate students, the authors found the total scale score to correlate positively to satisfaction with life ( $r = .39$  to  $.48$ ), the presence subscale of the Meaning in Life Questionnaire ( $r = .42$  to  $.52$ ), the decentering subscale of the Experiencing Questionnaire ( $r = .61$  to  $.70$ ), and to total score on the Five-Facet Mindfulness Questionnaire ( $r = .51$  to  $.64$ ). The scale was negatively related to the stress subscale on the Depression Anxiety and Stress Scale ( $r = -.23$  to  $-.38$ ) and to the Multidimensional Experiential Avoidance Questionnaire ( $r = -.44$ ; Fishbein et al., 2020). This study utilized the total scale score.

## **Results**

All data analysis were conducted using the R statistical computing software and associated packages (R Core Team, 2018).



## **Scale Building and Checks**

Each scale was scored according to the authors' instructions, yielding scores for each dimension and total scale (as applicable). Cronbach's Alpha was calculated for each scale (or subscale) to be utilized in analysis to assess for internal consistency in this study's sample. All alphas ranged from "acceptable" to "excellent" ( $\alpha = .07-0.9$ ; see Table 1), except for two. The self-transcendence subscale of the SSVS had questionable internal consistency ( $\alpha = .61$ ). This is not far off from the alpha found by the measure's authors in its validation study ( $\alpha = .72$ ; Lindeman & Verkasalo, 2005), but it is prudent to exercise caution interpreting analyses utilizing this scale score. The SWLS demonstrated poor internal consistency in this sample ( $\alpha = .55$ ), suggesting that it may not be the most consistent measure of wellbeing in our sample. The distributions of key analysis variables were plotted (Figure 6), and most appeared to be roughly normal in form, except for satisfaction with life, which was left skewed. This was verified with a Shapiro-Wilk test ( $p < .001$ ) which suggested the distribution was significantly non-normal.

## **Correlations**

A correlation matrix was calculated to test hypotheses related to the NADA-T's nomological net (H1-6; see Table 2). We predicted that NDA scores (NADA-T) would strongly correlate with dispositional awe (DPES; H1) and trait mindfulness scores (MAAS; H3). NDA scores were only moderately correlated with dispositional awe scores ( $r = .36, p < .01$ ), and surprisingly were not significantly correlated with trait mindfulness. We predicted that NDA scores would moderately correlate with flow state scores (AFSS, H2), but the relationship was weak ( $r = .16, p < .01$ ).

Moderate correlations with NDA were predicted for developmental self-transcendence (ASTI; H4), trait self-transcendence (QUEST; H5), and self-transcendent value orientation

(SSVS; H6), in anticipation that NDA should increase trait self-transcendence. Only a weak non-significant positive correlation was observed with the SSVS, but it is unclear how meaningful this result is given the measure's poor internal reliability. The weakest significant correlation was observed with the ASTI ( $r = .25, p < .01$ ). As predicted, trait self-transcendence (QUEST) scores were moderately correlated with NDA ( $r = .43, p < .01$ ), supporting the notion that NDA may result in lasting impacts on self-transcendence orientation.

Since distress and social-economic status can confound the measurement of wellbeing variables, partial correlations were calculated with satisfaction with life (SWLS) and transpersonal gratitude (TGS) scores, while controlling for distress (DASS-21) and socio-economic status. NDA scores had a moderate positive relationship to satisfaction with life ( $r = .35, p < .001$ , utilizing the Spearman method to address non-normality) and with transpersonal gratitude ( $r = .34, p < .001$ ). The relationship with satisfaction with life was higher than predicted (H7), while transpersonal gratitude was exactly as predicted (H8).

### **Regression**

To test the relationship between NDA and the predictors dispositional awe (DPES; H9), flow state (AFSS; H10-11), and mindfulness (MAAS; H12-13), a hierarchical linear regression was calculated, gradually introducing predictors, and comparing adjusted  $R^2$ . First the predictors were each plotted in relation to NDA with a linear fit line added to the plot (Figure 7). We observed a visible positive relationship with dispositional awe, a weaker relationship with flow, and a very questionable negative relationship with trait mindfulness. In the first iteration of this model, dispositional awe scores (DPES) were a significant predictor of NDA (NADA-T), explaining 13% of its variance ( $\beta = .36, F(1, 482) = 69.91, p < .001, adj. R^2 = 0.12$ ; Table 3). The addition of flow state (AFSS) as a predictor did not yield any meaningful change in  $R^2$  ( $R^2 =$

0.13,  $F(2, 477) = 35.96, p < .001, \text{adj. } R^2 = 0.13$ ; Table 3) and flow state was not a significant predictor of NDA ( $\beta = .06, p = .22$ ). The addition of trait mindfulness (MAAS) yielded similar non-significant results for the new predictor ( $\beta = -.05, p = .20$ ) and no further improvement in the model ( $R^2 = 0.13, F(3, 475) = 24.20, p < .001, \text{adj. } R^2 = 0.13$ ; Table 3). In summation, dispositional awe was a significant positive predictor of NDA, but flow state and trait mindfulness were not.

The next model explored the relationship of self-transcendent values (SSVS) to NDA (H14). The extremely low amount of variance explained suggests these two constructs do not have a meaningful relationship ( $R^2 = 7.82e-03, F(1, 474) = 3.73, p = 0.054, \text{adj. } R^2 = 5.72e-03$ ; Table 4), as clearly reflected in a plot of this relationship (Figure 8). These results may be partly related to the questionable internal consistency of the SSVS self-transcendence scale, and a lack of construct coverage due to its single item design.

A regression was computed to measure the relationship between trait self-transcendence (QUEST) and NDA (H15). A plot of this relationship suggested a significant positive relationship, but also considerable variation in that relationship (Figure 9). Trait self-transcendence was a significant predictor of NDA ( $\beta = .43, p < .001$ ) and the model explained 18% of the variance in NDA ( $R^2 = 0.18, F(1, 481) = 107.03, p < .001, \text{adj. } R^2 = 0.18$ ; Table 5).

A regression was calculated to determine the relationship between developmental self-transcendence (ASTI) and NDA (H16). Visualization suggested a positive relationship between these variables (Figure 10). Developmental self-transcendence was a positive predictor of NDA ( $\beta = .25, p < .001$ ), but the model only explained 6% of the variance in NDA ( $R^2 = 0.06, F(1, 476) = 32.58, p < .001, \text{adj. } R^2 = 0.06$ ; Table 6). Given the broad distribution of scores, and the

good representation of high scores, these results do not seem to be specifically about age and might relate to how the construct is conceptualized.

## **Summary**

The purposes of study 1 were to further identify the nomological net of the NADA-T, to connect NDA to state level ST, and to begin exploring the relatedness of different forms of STE to NDA. Of our nomological predictions, only three correlations were of the magnitude predicted. As expected, trait self-transcendence (QUEST; H5), satisfaction with life (SWLS; H7) and transpersonal gratitude (TGS; H8) were moderately correlated to NDA (NADA-T). It is important to note that there was some doubt about the validity of the satisfaction with life finding, given poor internal reliability of the scale in this sample.

Contrary to expectations, trait mindfulness (MAAS) did not have a significant relationship with NDA (H3). Aside from these, correlations were generally one order of magnitude weaker than what was predicted (H1-2; H4; H6). Flow state (AFSS), developmental ST (ASTI), and self-transcendent value orientation (SVSS) were all weakly correlated with NDA. Dispositional awe (DPES) was moderately correlated with NDA.

In a regression analysis with dispositional awe, flow, and trait mindfulness as predictors, only awe emerged as a significant predictor of NDA (H9-13). As predicted, we found a relationship between NDA and levels of trait ST and developmental ST (H15-16). However, trait self-transcendence was found to be a much stronger predictor of NDA than developmental self-transcendence.

## **Limitations**

Study 1 was limited in its generalizability given the relatively homogeneous nature and young age of the undergraduate convenience sample. Some conceptions of ST (e.g., Levenson

et al, 2005) see ST as a developmental process, which is related to, but not necessarily caused by age. While a valid place to begin this inquiry, a more representative sample could likely provide more reliable insights about the relationships of these constructs. An additional issue may exist in the relatively low level of reported religiosity and spirituality in the sample. Though not all self-transcendent constructs are directly related to spirituality or religiosity, NDA is conceptualized as somewhat of a spiritual experience. Both studies were also subject to limitations related to the use of self-report-based measures. Although each of these measures has been validated using empirical methods, measurement error is always a concern.

## CHAPTER 3: STUDY 2 METHODS & RESULTS

Study 1 began the work of exploring relationships between ST constructs and people's proclivity towards certain kinds of STEs. The study functioned under the proposition that NDA was a feature present in all forms of STEs, and would be predictive of higher scores on measures of trait ST. To meet these aims, we needed to demonstrate connections between NDA and both our STE and ST constructs. We found initial evidence for a connection between trait ST and NDA, and a weaker relationship with developmental ST, suggesting that NDA experiences have impact on at least some trait level ST constructs. We found significant connections between NDA and disposition towards awe, providing initial support for the relatedness of these constructs. We did not find the expected level of relationship with flow experience, and no meaningful relationship was found between NDA and mindfulness.

While this first analysis was useful as an initial exploration of the relation of STE constructs to NDA, it is important to note that none of the STE instruments were measuring their construct in exactly the same way. NDA was measured in terms of frequency, awe in one's disposition to awe emotions, mindfulness in terms of one's tendency to engage in mindful behaviors, and flow in terms of participant's flow experience during the week of measurement. To more effectively assess the relatedness of these constructs it was necessary to measure each of them in relation to a discrete experience where NDA would be likely to occur. Since the NADA-T was built with a number of items from meditation scales and has demonstrated sensitivity to meditation practice, it was assumed that NDA would occur in the context of meditation. In the original validation study, the meditation practice of participants was assessed with a generic face-valid question that did not differentiate between traditions, formality, or intensity of practice

(Hanley et al., 2018). For this reason, it would seem that NDA would be especially present in a community of experienced meditators, such as Zen center members.

We developed a study with Zen meditators in relation to their experience with an intensive and prolonged meditation experience. By utilizing a common meditative experience as the basis of measurement, we could investigate whether awe, flow and NDA co-occur. We utilized this opportunity to also test if specific aspects of participants' meditation practice (e.g., average hours of meditation and length of involvement with Zen) or of their retreat experience (e.g., subjective retreat depth and hours spent meditating) would have an impact on NDA attainment.

While there is a state version of the NADA-T (used in study 1) available, it was only a 3-item scale (NADA-S; Hanley et al., 2018) that was validated with very short meditation interventions. We were concerned that with this experienced sample and more intensive practice, that measure would suffer from ceiling effects. To combat this, we slightly altered all NADA-T items in the same manner as the NADA-S, so that all items would address recent experiences over a discrete period of time. We call this measure the NADA-SX (state expanded; see measures section). To support use of this measure in this study we assessed criterion and convergent validity before utilizing it in analysis.

## **Participants**

An a priori power analysis was completed for each intended analysis, and sample size was set at near the highest value computed. For a model with 3 covariates and an effect size of  $r = .3$  ( $\alpha = .05$ ), a sample size of at least 34 participants was needed to detect the hypothesized effect.

Participants were Zen practitioners of varying levels of meditation experience, who were planning on attending the majority of an intensive 3-9 day retreat (known as a “sesshin”), either in person or virtually. Sesshin is a historic feature of Zen, and most centers still follow a variation of monastic schedules that originated in medieval times. The retreats typically feature 6-12 hours of silent meditation a day, in addition to work-practice (e.g., taking care of the center/temple), community meals, dharma talks by teachers, and private meetings with teachers. Mindfulness of all activities is encouraged, and noble silence (only speaking when essential) is usually observed over the course of retreat. There is slight variation in application of these principles depending on the center/teachers, but these are typical sesshin conditions. As a result, sesshin offers an environment that encourages deep and prolonged meditation practice.

Zen center leadership throughout the United States were contacted and asked if they would be willing to forward recruitment emails to sesshin participants. A form email was sent to potential participants describing the study as an inquiry into individual differences in meditative experience, and an effort to extend development of contemplative science. Initial recruitment efforts told participants that they would be randomly selected to receive one of 3 \$50 Amazon gift cards or a donation to their Zen center in the same amount as an incentive. Due to low response rates and high attrition, the compensation structure was reconsidered. In the second wave of data collection all participants could opt to receive a \$15 Amazon gift card or a donation to their Zen center in the same amount. This compensation strategy increased participation and decreased attrition significantly.

It was still significantly challenging to collect enough participants, even after clearing permission to recruit at 10 different centers scattered across the United States. At the end of data collection 35 complete responses were collected. Retreats ranged from 3-9 days in length, though



some participants did not engage in the entirety of their retreat (they were asked to be present for the majority of it to participate).

Sampled centers (total  $n = 10$ ) represented the Soto ( $n = 1$ ) and Rinzai ( $n = 1$ ) sects, but the majority of centers belonged to the White Plum Asanga ( $n = 8$ ), which has connections to both sects. Rinzai tends to emphasize the use of koans as the focus of meditation. Koans are typically historical accounts between Zen teachers and students, and often contain paradoxes, or information that challenges conceptual thought. Soto practice tends to emphasize shikantaza which is a practice of focus-less awareness or “just sitting.” White Plum tradition integrates use of both of these practices (Schuhmacher, 2009).

Due to concerns about the profound impact of psychedelic substances on self-transcendent experiences, use of psychedelic drugs in the week before retreat was considered an exclusion criterion for the study. Only one participant endorsed psychedelic drug use, and their responses were consequently removed from analysis. This left 34 participants’ data for analysis, which just met the minimum requirement recommended by power analysis. Since questions were asked about drug use, we made great efforts to ensure the privacy of participants. All responses were connected using an anonymous username generated at the beginning of the study. For this reason, we are unable to provide exact figures of how many participants were represented from each center/tradition.

Of those participants, the mean reported age was  $50.1$  ( $SD = 14.6$ ), though 7 participants chose not to disclose their age.  $44.1\%$  of participants identified as female ( $n = 15$ ),  $64.7\%$  as male ( $n = 22$ ), and one participant as non-binary.  $97\%$  of participants identified as White/European ( $n = 33$ ), with a small number identifying as Central/South American ( $n = 2$ )

and “other” ( $n = 2$ ). 94.1% of participants considered themselves spiritual ( $n = 32$ ), and 47% considered themselves “religious” ( $n = 16$ ).

The mean number of years of meditation experience was 22.4 ( $SD = 14.34$ ), and the mean number of years practicing Zen was 16.29 ( $SD = 13.39$ ). The mean number of hours participants reported meditating weekly was 6.4 hours ( $SD = 3.77$ ). 55.9% of participants had attended 20 or more sesshins ( $n = 19$ ); 23.5% had attended 5-19 sesshins ( $n = 8$ ), and the remainder less than 5 ( $n = 7$ ). 79.4% of participants lived outside the Zen center in their own home ( $n = 27$ ), while the remainder lived at their center ( $n = 7$ ). 47.1% of participants identified as a “[Zen] student” ( $n = 16$ ), 26.5% as an “advanced student” ( $n = 9$ ), 23.5% as a “very advanced student/teacher” ( $n = 8$ ), and one participant as “just starting out.” 17.7% identified themselves as being ordained as a monastic or priest ( $n = 6$ ), with the remainder identifying as lay practitioners ( $n = 28$ ). In summary, this sample contained significant variation in practice status, but did tend towards experienced and committed meditators.

## **Procedures**

All data collection was completed using the Qualtrics survey platform. Potential participants first completed a brief screening questionnaire, checking if they were going to a sesshin, if they were fluent in English and if they had access to the technology needed to complete the study. Participants that passed the screen were provided a consent form. After agreeing to the study, participants were guided through a process where they generated a unique username that would connect their responses between surveys while preserving their privacy. They then completed a basic demographics questionnaire, as well as a questionnaire asking them for details about their experience with Zen, meditation, and their levels of current practice.

The time 1 survey was sent a week before the retreat, and participants were given 3 days to complete it to ensure that a pre-retreat baseline could be established. Participants completed the Activity Flow State Scale (AFSS), Awe Experience Scale (AWE-S), Nondual Awareness Dimensional Assessment-State Expanded (NADA-SX), and Spatial Frame of Reference Continuum (SFoRC, see below descriptions).

The second survey was sent out on the final day of the retreat and included the same measures as the time 1 survey. Participants were asked to complete it as soon as possible and were given up to 3 days to submit. This survey also asked participants to answer questions in relation to their experiences during the retreat.

## **Measures**

### **Activity Flow State Scale (AFSS)**

See Study 1 for full description of the Activity Flow State Scale (AFSS; Payne et al., 2011; Appendix A). The AFSS was administered at both time 1 and time 2. At time 1, participants were asked to answer the questions relative to the “main activity” they engaged in the week previous to the time 1 survey. At time 2 participants were asked to answer the questions relative to their meditation practice over the time of the retreat.

### **Awe Experience Scale (AWE-S)**

The Awe Experience Scale (AWE-S; Yaden et al., 2019) is a 30-item self-report scale designed to measure six facets endemic to awe experiences (see Appendix C). Internal consistency was excellent for the total scale ( $\alpha = .93$ ) and each subscale: time (.91), self-diminishment (.89), connectedness (.87), vastness (.85), physical sensations (.81), and accommodation (.81). The authors found that the scale related positively to the awe subscale of the Dispositional Positive Emotion Scales ( $r = .38$ ) and demonstrated a range of positive

relationships to each positive emotion of the Modified Differential Emotion Scale ( $r = .12$  to  $.28$ ). Additionally, the scale related positively to agreeableness ( $r = .20$ ) and openness ( $r = .24$ ; Yaden et al., 2019).

The AWE-S was validated in a sample where participants were asked to recall and write about an awe evoking experience, and then answer the measures with that experience in mind (Yaden et al., 2019). As such, the measure is well suited to this study design, where participants will be asked to reflect on their recent experiences. The AWE-S was delivered at time 1 with the prompt: “Please answer the following questions in relation to your experiences in the past week.” The AWE-S was readministered at time 2 with the prompt: “Please answer the following questions in relation to your experiences during the retreat.”

### **Spatial Frame of Reference Continuum (SFoRC)**

The Spatial Frame of Reference Continuum (SFoRC; Hanley & Garland, 2019) is a single item picture-based self-report scale designed to measure changes in perceived body boundaries characteristic of STEs and NDA. The scale uses the body as one anchor point in the scale, with each following point represented as a successively larger circle outside of the body (see Figure 5). The SFoRC demonstrated sensitivity to meditation practice and was validated using the NADA-T. It was shown to be positively correlated to the self-transcendence ( $r = .39$ ) and bliss ( $r = .30$ ) subscales of the NADA-T, as well as the Five Facet Mindfulness Questionnaire ( $r = .22$ ; Hanley & Garland, 2019).

### **Nondual Awareness Dimensional Assessment-State Expanded (NADA-SX)**

Please see Study 1 for a full description of the NADA-T upon which the NADA-SX is based. While Hanley et. al (2018) have developed a state version of the NADA, it is comprised of only three items, and intended only to measure rapid changes (see Appendix J). Since this

study covered a longer period of time (up to a week), and involved intensive periods of meditation practice, there was concern about range restriction in using this shorter measure. As such, we slightly reworded the NADA-T in the same manner as the items of the NADA-S to make the items relate specifically to recent experiences (Appendix K); the essence of the items remains identical, and only tenses were altered. For example, “I have experienced the insight that ‘all is one’” was modified to “I experienced the insight that ‘all is one.’” The response anchors of the NADA-SX are identical to the NADA-S, using intensity of agreement rather than frequency as used in the NADA-T. Instructions for the NADA-SX were based off the NADA-S and were amended to reflect only experiences over the previous week. This measure was assessed for criterion and convergent validity to ensure it was a valid extension of the NADA-T (see results).

### **Pre-Study Questionnaire**

Participants completed a short questionnaire asking for details of their experience in Zen and meditation (see Appendix L).

### **Retreat Experience Questionnaire**

Participants completed a brief questionnaire asking for details of their experience of the sesshin they just attended (see Appendix Q).

## **Results**

All data analysis was conducted using the R statistical computing software and associated packages (R Core Team, 2018).

### **Scale Building and Basic Analysis**

Each scale was scored according to the authors’ instructions, yielding scores for each dimension and total scale (as applicable). Cronbach’s Alpha was calculated for each of these,

and each measure demonstrated excellent internal consistency ( $\alpha = .98-.99$ ). Distributions for key STE constructs were plotted (Figure 11), and it was observed that NADA-SX scores on time 1 and 2 did not look normal in distribution. Time 1 scores passed the Shapiro-Wilk test ( $p = .07$ ), while time 2 did not ( $p = .05$ ). For this reason, we checked assumptions in analyses using this variable, and utilized nonparametric tests where indicated.

### **Correlations**

A correlation matrix using combined time 1/time 2 data was calculated to examine the relationship of the NADA-SX with the SFoRC (H17) and to observe relationships between other scales (see Table 7). As predicted, NADA-SX scores were strongly positively correlated with the SFoRC ( $r = .65, p < .001$ ). This suggests that the NADA-SX is still a valid measure of NDA despite the small changes made to the response scale. The NADA-SX was strongly positively correlated with the AWE-S ( $r = .69, p < .001$ ) and moderately positively correlated with AFSS scores ( $r = .35, p < .001$ ).

### **Analyses**

To assess for criterion validity of the NADA-SX, differences between time 1 and 2 NDA scores were evaluated (H18). Distributions of time 1 and 2 scores in NDA were plotted together with means overlaid to visualize the change, and though there was considerable overlap between the distributions, a clear pattern of growth appeared (Figure 12). A paired samples t-test was calculated and indicated a significant increase in time 2 NDA scores, and the effect of meditation was medium in scale ( $\text{difference} = 1.34, t(33) = 3.02, p = 0.005; \text{Cohen's } d = 0.52$ ). Due to concerns about normality in time 2 NDA scores, a Wilcoxon exact signed rank test (which is robust against non-normality) was calculated to verify this result. This came to the same conclusion that the difference between means was positive ( $W = 456.50, p = 0.006; r (\text{rank biserial}) = 0.53$ ),

suggesting that participants tended to score higher on NDA after session. While this was the trend anticipated, interestingly, some participants' NDA scores decreased after session (Figure 13). This suggests that the quality of participants' meditative or retreat experience may influence NDA scores, which was further explored in a later analysis.

A one-way ANOVA was calculated to test for the impact of self-reported experience of emptiness on NDA scores. As predicted, the main effect of emptiness experience was statistically significant and strong ( $F(1, 32) = 7.97, p = 0.008$ ; Table 8). This suggests that the NADA-SX is measuring nondual awareness as personally experienced by meditation practitioners, further supporting its validity. While the vast majority of participants did report experiencing emptiness during their retreat (70.6%), intensive meditation did not guarantee experiences with emptiness or increases in NDA for all participants.

Next, changes in awe scores (AWE-S) were visualized (Figure 14), and again growth was observed between times. A paired samples t-test demonstrated significant increases in awe scores ( $\text{difference} = 0.63, t(33) = 2.96, p = 0.006$ ) and the effect was medium in size ( $\text{Cohen's } d = 0.51$ ). When visualizing participant level changes (Figure 15), it became evident that while the trend of changes is positive, some people's awe scores decreased after retreat. Given the similar patterns between awe and NDA, we thought that awe may also be increased in experiences of emptiness. To test this a one-way ANOVA was calculated to evaluate the impact of self-reported emptiness on AWE-S scores. As predicted, emptiness experience had a significant positive impact on AWE-S scores ( $F(1, 32) = 6.08, p = 0.019$ , Table 9).

Differences in flow scores (AFSS) were visualized by overlapping distributions and their means (Figure 16), and a small decrease seemed to occur between time points. A paired sample t-test supported this observation ( $\text{difference} = -0.19, t(33) = -2.29, p = 0.028$ ) and the effect was

small (*Cohen's d* = -0.39). Looking at changes on a participant level (Figure 17), it is clear most participants experienced a decrease in flow states. Since flow relies on inherently interesting (autotelic) experiences the effortful nature of extended meditation practice might not consistently align with flow conditions.

To test the relationship between awe and flow scores on NDA (H22-23) a multilinear regression was planned, but due to the surprising results for flow it was determined that a hierarchical linear regression could better account for potential differential impact of these two predictors. First a scatterplot of each relationship was generated, and the linear fit line was added (Figure 18). NDA's relationship with awe scores seemed roughly linear in fashion, with generally even distribution of variances, and most points clustered around the line. Flow had a slightly positive relationship with NDA, but with much more significant variation in that relationship. In the first step of the regression model, awe scores were a significant positive predictor ( $\beta = .69, p < .001$ ) and the model explained 48% of the variance in NDA ( $R^2 = 0.48, F(1, 71) = 65.17, p < .001, \text{adj. } R^2 = 0.47$ ; Table 10). In the two-predictor model, awe ( $\beta = .65, p < .001$ ) and flow ( $\beta = .22, p < .05$ ) scores were significant positive predictors of NDA. The model accounted for 53% of the variance in NDA ( $R^2 = 0.53, F(2, 70) = 38.87, p < .001, \text{adj. } R^2 = 0.51$ ; Table 10). The increase in adjusted  $R^2$  does suggest that flow is a significant predictor of NDA, but the small increase suggests that it is much less important than awe. The residuals of this model were deemed to pass normality assumptions upon inspection of a Shapiro-Wilk test ( $p = .84$ ).

The next model examined the role of meditation experience (H24) and average meditation hours (H25) on baseline NDA scores. It was thought that those who had practiced longer and/or more intensively would likely come into sesshin with a higher NDA score. Both years of meditation experience ( $\beta = .29, p = .09$ ) and average meditation hours ( $\beta = .27, p = .11$ )



were non-significant predictors of baseline NDA scores ( $R^2 = 0.21$ ,  $F(2, 31) = 4.14$ ,  $p = 0.025$ ; Table 11). Scatter plots with the linear model overlaid do suggest an upward trend (Figure 19), so this may be explained possibly by a lack of statistical power. When investigating correlations between these variables (Table 13), we noted a moderate correlation between NDA and years of experience ( $r = .38$ ,  $p < .05$ ), and similarly with average hours of meditation ( $r = .36$ ,  $p < .05$ ). This is suggestive of some association between these variables and NDA attainment, but they may need testing in a larger sample to account for shared variance.

Another possible explanation is that quantities of years or hours spent meditating may not best describe the quality of that practice. NDA distributions of participants separated by stage of Zen training were plotted (Figure 20), and a pattern seemed to emerge where lower level students tended to have lower baseline NDA compared to “advanced students,” and “very advanced students or teachers.” Interestingly, at time 2 those differences seemed to become minimal, suggesting that higher-level students may maintain higher levels of NDA consistently, while lower-level students caught up following intensive practice. Unfortunately, this sample did not have enough participants to test for the statistical significance of these observations.

The last model examined the impact of self-reported retreat depth and hours meditated during retreat on NDA scores at time 2 (H26-27). Plots of these variables (Figure 21) suggest a weak relationship for hours meditated, and a clearer positive linear relationship with retreat depth. The model was significant and explained 34% of the variance in the NADA-SX scores at time 2 ( $R^2 = 0.34$ ,  $F(2, 29) = 7.47$ ,  $p = 0.002$ ; Table 12). Hours spent meditating during one’s retreat was a poor and non-significant predictor of NADA-SX scores ( $\beta = -.011$ ,  $p = .95$ ). Self-reported “depth” of retreat experience was a significant positive predictor ( $\beta = .59$ ,  $p < .01$ ), again suggesting that quality of practice is an important factor for the cultivation of NDA states.

Interestingly, when investigating correlations between these variables we found a strong association between retreat depth and meditation hours ( $r = .51, p < .01$ ; Table 14). This suggests that while sitting a large number of hours is not itself sufficient to develop NDA, it likely increases the odds of having a deep meditation experience.

## **Summary**

In this study we were able to provide additional support for how the Nondual Awareness Dimensional Assessment family of measures conceptualize NDA, as well as extend it in a new longer state format (NADA-SX). The NADA-SX demonstrated convergent validity (H17) in relationship to another measure of self-transcendence. Criterion validity was met in its ability to distinguish between periods before and after intensive meditative practice (H18), and to detect individuals who had experiences of emptiness (H19). We were able to observe increases in awe during the retreat (H20), and awe was observed to be strongly correlated with NDA. Awe was a strong predictor of and explained nearly half the variance in NDA (H22). Flow was found to have a much weaker relationship with NDA. Flow was only moderately correlated with NDA and only explained an additional 6% of variance when added to a model with awe (H23). Though flow is still slightly related to NDA, its relationship is much less strong.

The last portion of this study observed that years of meditation experience (H24) and average hours of meditation (H25) were not significant predictors of NDA, though this may be primarily an issue of statistical power. Exploratory visualization suggested that level of training may be a more significant predictor, but this sample lacked statistical power to test this observation. Retreat depth was found to be a significant predictor of NDA (H27), but hours spent meditating was not (H26).

## **Limitations**

Study 2 was limited in its generalizability to the general population given the relatively specialized nature of its sample. Additionally, only one tradition of meditation practice (Zen) was sampled, and though results between different samples of experienced meditators are likely to be similar, meditation approaches may have an unknown impact on the variables of interest. Although all participants practiced Zen, it is also important to note that there is variation in the exact nature of practice between sects of Zen (e.g., Soto versus Rinzai) and specific lineages (who the founding teacher of a center was). These differences are thought to matter significantly less than intensity of practice, and Zen practitioners were sampled primarily due to the relative homogeneity of practice characteristics relative to other meditation communities.

The lack of a control group means that participants' scores at time 2 were compared to a less intensive period of meditation practice (before the retreat), and hence we do not know what would happen if these participants stopped meditating.

There were questions raised by participants about the applicability of certain questions to their situation. For example, one participant shared that the question from the AWE-S "I felt chills" was problematic in their situation because their center was unheated, in the mountains, and it was winter, so they did feel "chills" but not necessarily due to experiencing awe. Such issues speak to the challenge of studying the ineffable and latent constructs, which will always be subject to such measurement error.

## CHAPTER 4: DISCUSSION

The self-transcendence (ST) and self-transcendent experience (STE) literatures contain many different conceptualizations of these constructs. This research sought to answer a call to identify a construct that could connect these disparate conceptualizations (Yaden et al., 2017). At the time of writing, all efforts to bridge these different constructs were conceptual in nature, and there was a clear need for the use of empirical methods to further understanding of ST and STE. It was hypothesized that nondual awareness (NDA) was the common ingredient in all forms of STE as measured by the Nondual Awareness Dimensional Assessment (NADA-T; Hanley et al., 2018). It was also hypothesized that STEs lead to increases in trait level ST. Two studies sought to expand the nomological net of the NADA-T, investigate its relationship to other ST/STE variables, and to explore the relationship between STEs and ST.

### **Study 1**

The first study utilized an undergraduate student convenience sample to explore the nomological net of the NADA-T and to examine its relationship to other ST and STE constructs. The first question (RQ1:H1-H3) inquired whether the NADA-T would significantly positively correlate with measures of flow, dispositional awe, and trait mindfulness. Overall, the relationships between these constructs were weaker than expected; only a moderate relationship was observed with dispositional awe, and a weak relationship with flow. The biggest surprise was the lack of a significant relationship with trait mindfulness. These relationships were further investigated using hierarchical linear regression (RQ4: H9-13). The only meaningful ingredient in these models was dispositional awe, which positively predicted and explained 13% of the variance in NDA. These results suggest that NDA was most related to dispositional awe in this sample.

The lack of an observed relationship with mindfulness adds to questions about why there is not a positive relationship with NDA, when NDA has demonstrated relationship with meditation practice. In Hanley et al.'s (2018) study they found that NDA had a negative relationship to the subscales of "non-judging" and "acting with awareness" from the Five Facet Mindfulness Questionnaire. The mindfulness measure we used primarily seems to overlap with the subscale of "acting with awareness," and so the present study's findings appear consistent with theirs. Hanley et al. suggest that in nondual states, changes in self-perception may eradicate all notions of judging and of self-as-actor due to the reliance of these constructs on a sense of self. It must also be noted that in traditional seated meditation there is not much "action" since much of the activity is internal by nature. Hanley et al. (2018) found positive relationships to the more metacognitive aspects of mindfulness including "observing," "describing," and "non-reacting," so some aspects of mindfulness do seem to relate to NDA, but not the variables tested in our study.

However, there is still surprise as the Mindful Awareness Attention Scale (MAAS) has been demonstrated to be sensitive to meditation practice (Brown & Ryan, 2003). One possibility lies in the distinction between everyday mindfulness and the deep states of meditation that are more likely to induce NDA. While mindfulness, as measured by the MAAS, may be increased with meditation practice, there is likely wide natural variation in MAAS scores in meditation naïve populations which may be explained partly by attentional capacity. While meditation may lead to increases in mindfulness, mindfulness is not inherently nondual or self-transcendent. Going further, some scholarship has suggested that meditation itself is not inherently nondual, with contemporary applications (e.g., as seen in Mindfulness Based Stress Reduction) focusing

more on present centered attention and cultivation of non-judgement, rather than cultivation of nonduality (Dunne, 2015).

Regarding flow, the lack of a statistically relevant relationship may be primarily due to the state nature of the flow measure used (AFSS). It would have been much better to use a trait level measure of flow, such as the Flow State Scale (Jackson & Marsh, 1996), but unfortunately this scale related only to physical activity and was not freely accessible. It was hoped that individuals' attainment of flow over the past week would be indicative of their "propensity" toward flow states, and hence approximate trait flow. This idea has been supported through notions of "autotelic personality," indicating that certain persons may have higher likelihood of achieving flow at any given moment (Jackson et al., 1998). However, this association is imperfect and fails to control for confounding factors. For example, flow requires a balance between the challenge of a task and one's skill level (Csikszentmihalyi, 1991). Participants having a particularly challenging week may have had lower flow levels than would otherwise be typical for them.

The next research question (R2: H4-6) investigated the relationship between NDA and trait measures of ST. If STEs lead to the development of trait ST and NDA was a feature endemic to all STEs we would expect a connection between trait ST and NDA. It was predicted that NDA would be moderately positively correlated with developmental ST (ASTI), trait ST (QUEST), and ST values (SSVS). The strongest relationship was observed with trait ST, which was on the higher end of moderate. Only a weak nonsignificant correlation was noted with ST value orientation and developmental ST. In a regression analysis to assess predictive relationships with NDA (RQ5; H14-16), trait ST accounted for 16% of the variance in NDA, and the ASTI

accounted for 6%. Overall, these results suggest that NDA has a much more significant relationship with trait ST than developmental ST.

It is thought that the poor ST values orientation results likely relate to issues with the SSVS and hence may not be a meaningful finding. Internal reliability was questionable, and each domain is simply a list of descriptors relating to the domain (Appendix N). Though the ST dimension of the SSVS correlated highly with that of the original Schwartz Value Survey (SVS;  $r = .78$ ), it still may be a poorer measure of values than the SVS, and its primary utility is in its brevity (Lindeman & Verkasalo, 2005). ST values may better be evaluated in their relationship to NDA with a more psychometrically sound instrument such as the original SVS (Schwartz, 2012) or the Aspirations Index (Kasser, 2019). A problem inherent to all these measures is that they do not directly measure self-transcendence, but rather infer it through scores on subscales that are thought to exist on a continuum between self-transcendence and an opposing construct (e.g., physical-self values, in the case of the Aspirations Index). On the SSVS, ST scores are computed using an algorithm generated using multidimensional scaling (Lindeman & Verkasalo, 2005). This is an unfortunately diffuse manner to measure ST, and more precise measures would likely be highly beneficial, though they are currently unavailable.

The lower than anticipated relationship with developmental ST may be partially accounted for by how the ASTI is conceptualized. The measure asks respondents to assess the statements in comparison to themselves five years ago. As such this instrument is more a measure of growth over a discrete period, than how far one has developed across the spectrum of ST. Given the young mean age of this sample (19), it might be expected that many participants have grown significantly in ST since they were 14, but this may be more driven by natural maturation factors than by whether they have had experiences with nondual awareness. It may be

that in later stages of life, ST growth is more connected to experiences with NDA, though the literature also suggests that factors like loss, awareness of mortality, and aging are affiliated with ST (Coward, 1996; Erikson, 1982; Tornstam, 1996). This relationship may better be evaluated in an older sample, and expanded with other measures of developmental ST including Reed's scale (Reed, 2009). The ASTI also appears to have items that do not seem central to ST as defined by this study (e.g., "My peace of mind is not so easily upset as it used to be," "I do not become angry as easily"). Though it makes sense that those higher in ST would score highly on these items, high scores could be driven by many other factors unrelated to ST.

In contrast to the ASTI, the measure of trait ST (QUEST) measures the frequency with which one embodies various aspects of ST, which measures one's current state in more of an absolute sense. The items in this scale have a clearer basis in nonduality (e.g., "I feel connected even to people I don't know"; "It seems like all living beings on Earth are related"). The mixed results between the ASTI and the QUEST may relate largely to lack of consensus on how to operationalize ST, which is a topic in need of further research.

ST and STE's have been linked in research to wellbeing outcomes, so it was thought that NDA would continue this pattern (RQ3: H7-8). When controlling for distress and SES levels, NDA had a moderately positive relationship with satisfaction with life and transpersonal gratitude. This further supports the beneficial nature of ST and STEs, but as wellbeing has many predictors, it may only make a small contribution. Unfortunately, due to poor reliability estimates for the Satisfaction with Life Scale (SWLS), it is unclear how valid findings with that scale are. Some researchers have suggested that this scale may be sensitive to its placement among other instruments (Pavot & Diener, 2008), and though the impacts of this are thought to be minimal it is worth bearing consideration. In our survey, the SWLS came directly after the NADA-T, which



describes powerful experiences of self-transcendence and bliss. It is possible that the pattern of individuals' responses to SWLS items was non-typical as a result. For example, while individuals may have responded positively to general satisfaction judgements (e.g., "The conditions of my life are excellent"), a perceived absence of NDA may have lowered responses on the item "So far I have gotten the important things I want from life."

Overall, in this sample awe and trait ST emerged as the constructs with the strongest relationships to NDA. NDA appeared to be positively related to satisfaction with life and transpersonal gratitude. Flow and developmental ST appeared to have a lower but significant relationship to NDA. Trait mindfulness appeared to not be significantly related to NDA.

## **Study 2**

Study 2 sought an older sample that would more reliably have attainments in NDA, utilizing a small selection of Zen practitioners. The hope was that we would be able to observe changes in awe, flow, and NDA states between pre/post-sesshin (meditation retreat) measurements. To do this we utilized a slightly modified version of the NADA-T that we call the NADA-SX (state-expanded) to more accurately target discrete NDA states.

The initial research questions of this study sought to establish convergent (R6: H17) and criterion validity (RQ7: H18-19) of the NADA-SX. We observed convergent validity in its strong relationship with the SFoRC. Increases in NDA following intensive meditation, and the observation that emptiness experience predicted NDA supported criterion validity. This provided further evidence for the general NADA measure, and that its extended state form (NADA-SX) maintains the relationships of its parent measures (NADA-T and NADA-S). Results suggest that the NADA-SX might be used in future state-based research on NDA where the much shorter NADA-S might face range restriction issues. However, further research may be needed to

validate this measure, including confirmatory factor analysis which can determine if the original factor structure persists with the modifications.

The next research question (R8: H20-21) inquired whether awe and flow state scores would increase during retreat. We observed a significant increase in awe scores, and a slight decrease in flow between time 1 and 2. For those that reported experiencing emptiness, awe levels were increased. In each of these pre/post comparisons, interesting patterns in participant level changes emerged. Some people experienced a lowering of awe and NDA scores during retreat (Figure 15). One Zen teacher from a sampled center predicted this before data collection, sharing that she sees many sesshin participants struggle with boredom and other barriers to practice. For flow the proportion of participants who experienced decreases in scores was much higher (Figure 17). Intensive prolonged meditation tends to be an effortful process, and at times one's skill to maintain focus may be at odds with the challenge of doing so. Flow requires a balance of challenge and skill, and that experiences are inherently enjoyable (Csikszentmihalyi, 1991). While there may be many times during a retreat where participants do enter flow states, it makes sense that considerable portions of the time would not meet the criteria for flow given the effortful nature.

We investigated the differential impact of awe and flow scores on NDA (RQ9: H22-23). Awe accounted for a large portion of the variance in NDA (48%) while the addition of flow to the model only added an additional 6%. This follows the theme so far in this research, suggesting that awe is a closely related construct to NDA, and that flow's relationship is much more limited. The question does arise whether the same pattern would emerge if we compared NDA scores with flow in a setting where flow increases were more likely to occur (e.g., sports).

We thought that average meditation hours and years of meditation experience would be predictive of higher baseline NDA scores (RQ10: H24-25), but our findings were not statistically significant in regression analysis. Previous research had demonstrated that meditation practitioners generally scored higher in NDA, and that years of meditation experience and average hours of practice were associated with higher NDA (Hanley et al., 2018). Importantly, that analysis was correlational and did not partial out shared variance as we did in regression analysis. We found a similar pattern to Hanley et al. in our bivariate correlations, but when we partialled out shared variance, the relationships became weaker. Though these variables likely influence NDA increases, many unaccounted-for factors could also lessen NDA states (e.g., distress during the week that was measured before session), and there are likely many more factors that increase NDA.

Interestingly, when we looked at distributions of NDA at time 1 stratified by stage of training, those with higher attainment appeared to have generally higher NDA levels (Figure 20), though we were unable to statistically test this observation. Hours of practice and years of experience may influence NDA less than the quality of that practice. Quality of practice is a difficult thing to operationalize and here is imperfectly inferred through stage of training. This may be an interesting line of inquiry for future research.

The last research question sought to test the relationship between characteristics of participants' retreat experience and their NDA scores (RQ11: H26-27). Surprisingly, hours spent meditating during one's retreat was not a significant predictor of NDA. Self-reported "depth" of retreat, however, was a significant predictor. We found a strong relationship between the number of hours meditated and retreat depth. This again points to the conclusion that meditation alone is not enough to cultivate NDA and stresses the importance of the quality of that practice. It also

suggests that long periods of meditation, such as those practiced in sesshins, may provide conditions helpful to developing greater depth in meditation.

### **Implications and Future Directions**

The results of these studies seem to suggest a generally strong relationship between NDA and awe indicating that these two constructs co-occur in the context of meditation. Though slight relationships were noted with flow, they were much lower. We had conceptualized flow as being one of the weaker forms of STEs since it represents temporary “self-forgetful” experiences, and because an increased sense of connection is not a primary feature of the construct. Building off the work of Yaden et al. (2017), we suggested that a hierarchy of STE intensity might possibly be established using NDA (Figure 3), primarily since the NADA-T was built using items from scales covering intense sources of STE, including mystical experiences and meditation. The findings of this research are consistent with that proposition, though this research was not designed to effectively evaluate this as a functioning theory, and the support it offers is very limited in scope.

It is important to note that the overall relationship with flow was lower than anticipated and is worthy of further study in different samples, and with different activities, especially those where flow is more likely to occur (e.g., sports). While it seems possible that strong flow experiences can meet the basic criteria for STEs set out by Yaden et al. (2017), it also must be observed that a large portion of the construct contains a sense of “mastery” not evident in other forms of STEs (e.g., in the AFSS: “It was no effort to keep my mind on what was happening”; “I had a strong sense of what I wanted to accomplish”; Payne et al., 2011). Further research is needed to determine if flow fits in to the low end of a hierarchy of STEs, or if it would be better considered to operate in a separate space from other STEs.

If a hierarchy of STEs were to be constructed, we would need to test the NADA in the context of MEs, such as psychedelic experiences. Though the NADA contains items from mystical experience scales, at the time of writing it had not been utilized in psychedelic research. It is unclear at the current juncture if there is any clear ranking between different types of STEs, and due to the fragmented nature of the STE literature, there is little basis to hypothesize possible ranking beyond flow and MEs being on either extreme of the continuum. This research suggests that NADA measures may provide a valuable means to study this possibility further.

This research found some initial evidence for a connection between NDA experiences and the development of trait level ST. One problem in establishing this connection seems to be differing conceptualizations of trait level ST, which may be driven by different processes. For example, developmental self-transcendence may relate more to natural maturation factors, as well as changes related to aging and loss. This relates somewhat to Erikson's concept of generativity (Erikson, 1982), which proposed a refocusing on others as the ideal developmental attainment as one ages. Other conceptualizations of trait ST (e.g., QUEST) appear to be more related to experiences and practices that may occur at any age (such as meditation practice). It is unclear at this point how overlapping these constructs are, though they both function under the conceptual definition of ST in relating to increasing connectivity. The QUEST and ASTI were on the higher end of moderately correlated ( $r = .47$ ), which speaks to some overlap, but also indicates that these measures depart from one another in some significant ways. Though both feature a lessening of self-focus, the QUEST more emphasizes intense feelings of connection with that which is outside of the self. This could be an instance where using the same construct name causes unnecessary confusion. One solution may be to relabel the ASTI as a measure of generativity and consider it a construct related to but not synonymous with ST. Alternatively

these two conceptualizations may represent different dimensions that both function under a higher order ST construct. Consensus among ST scholars is needed to establish a more uniform definition of trait level ST and how the constellation of related constructs fit together.

The hope of this research was to begin the work of simplifying existing theory on ST and STEs by creating conceptual links between existing constructs. We suggest that this effort will be best focused initially on the STE literature, with hope that NDA may help provide some of those linkages to simplify this diverse literature conceptually. There appears to be more disagreement on the characteristics of trait ST, and some of that is informed by differing notions of how people develop ST in the first place. Focus on STEs could provide a systematic way to study one pathway to ST. With a better understanding of the links between STEs, researchers may be better able to operationalize ST, or at least one significant facet of this important construct.

### **Implications For Clinical Practice**

STEs and ST are related to many wellbeing outcomes such as satisfaction with life, emotional wellbeing (Oriol et al., 2020), subjective wellbeing, etc. (Zappala, 2007). This suggests that these constructs may have a significant role in improving quality of life and may be worthy of clinical attention. As previously noted, many currently popular treatments such as Dialectical Behavior Therapy, Acceptance and Commitment Therapy, and Mindfulness Based Cognitive Therapy utilize meditation and mindfulness as a treatment ingredient. It has been demonstrated in the present research, as well as elsewhere in the literature (e.g., Hanley et al., 2018, 2020; Josipovic, 2010), that meditation can lead to profound STEs and states of NDA. What is unclear is the role that STE may have in the impacts of these treatment approaches, especially given the observation that mindfulness and meditation may not be inherently nondual practices.

In the literature on psychedelic assisted psychotherapy, the cultivation of STEs (in the form of mystical experiences) have been demonstrated to have a significant impact on treatment effectiveness (e.g., Garcia-Romeu et al., 2014). This provides some initial support for the notion that the cultivation of STEs may be an important treatment tool. However, it is unclear how generalizable these findings are to treatments that leverage mindfulness and meditation. A generalized measure of STEs can help in investigating these possibilities. With so many promising treatments leveraging tools known to invoke STEs, it seems of primary importance to investigate the role STEs have in the efficacy of these therapeutic tools. In identifying active ingredients of these treatments, practitioners will be better informed of what is necessary for effectiveness and will be better equipped to adapt treatments to specific populations and individuals. The NADA family of measures may be an important tool in this endeavor.

Lastly, if STEs are a significant active ingredient in extant treatments, it opens the door to explore other sources of STE as potentially clinically useful. For example, some limited scholarly work has suggested that peak experiences (another form of STE) may have a role in the effectiveness of wilderness therapy (e.g, Conlon et al., 2018). Other forms of STE may similarly bear clinical promise, such as awe. Understanding the connections between discrete forms of STEs can provide a conceptual basis for developing new treatments that leverage the relevant effects of such experiences.

### **Closing Remarks**

ST and STE are important constructs with implications for both clinical work and general human flourishing. More research is needed to determine if NDA is fit to the task of describing the overlap between different forms of STE, but this initial work suggests promise in that endeavor. Even if future research discovers limitations in NDA's ability to fulfill these ends, it

likely can provide a solid foundation upon which to build a scale explicitly designed for this purpose. Given the already crowded field of measures in the STE literature, it seems most efficient and prudent to focus on pre-existing constructs that demonstrate promise, such as NDA. This project represents one small step in the long endeavor of consolidating two fragmented literatures.



## TABLES

Table 1

*Reliability coefficients for scales of interest (Study 1)*

Scale/Subscale	Cronbach's Alpha ( $\alpha$ )
AFSS	0.90
ASTI (Self-Transcendence subscale)	0.74
DASS-21	0.94
MAAS	0.88
NADA-T	0.89
TGS	0.87
SSVS (Self-Transcendence subscale)	0.61
SWLS	0.55

*Note:* Unless otherwise noted, above are based on total scale scores

Table 2

*Means, standard deviations, and correlations with confidence intervals*

Variable	<i>M</i>	<i>SD</i>	1	2	3	4	5	6
1. NADA-T	2.47	0.69						
2. ASTI (self. tran.)	2.94	0.38	.25** [.17, .34]					
3. QUEST	90.29	16.05	.43** [.35, .50]	.47** [.39, .54]				
4. SSVS (self. tran.)	-1.11	0.53	.09 [-.00, .18]	.06 [-.03, .15]	.08 [-.01, .17]			
5. DPES (awe)	5.17	0.84	.36** [.28, .43]	.47** [.39, .54]	.51** [.44, .57]	.09* [.00, .18]		
6. AFSS	3.94	0.53	.16** [.07, .24]	.35** [.27, .42]	.32** [.24, .40]	-.07 [-.16, .02]	.32** [.24, .40]	
7. MAAS	3.38	0.82	-.03 [-.12, .05]	.14** [.05, .23]	.04 [-.05, .13]	.09* [.00, .18]	.07 [-.02, .15]	.08 [-.01, .17]

*Note.* *M* and *SD* are used to represent mean and standard deviation, respectively. Values in square brackets indicate the 95% confidence interval for each correlation. The confidence interval is a plausible range of population correlations that could have caused the sample correlation (Cumming, 2014). \* indicates  $p < .05$ . \*\* indicates  $p < .01$ .

Table 3

*Hierarchical regression with NADA-T as criterion*

Predictor	<i>b</i>	<i>b</i> 95% CI [LL, UL]	<i>beta</i>	<i>beta</i> 95% CI [LL, UL]	<i>sr</i> <sup>2</sup>	<i>sr</i> <sup>2</sup> 95% CI [LL, UL]	<i>r</i>	Fit
Step 1:								
(Intercept)	0.95**	[0.59, 1.31]						
DPES (awe)	0.30**	[0.23, 0.36]	0.36	[0.27, 0.44]	.13	[.08, .18]	.36**	
								<i>R</i> <sup>2</sup> = .127** 95% CI[.08,.18]
Step 2:								
(Intercept)	0.73**	[0.24, 1.23]						
DPES (awe)	0.28**	[0.21, 0.36]	0.34	[0.25, 0.43]	.10	[.05, .16]	.36**	
AFSS	0.07	[-0.04, 0.19]	0.06	[-0.03, 0.14]	.00	[-.01, .01]	.16**	
								<i>R</i> <sup>2</sup> = .131** 95% CI[.08,.19]
Step 3:								
(Intercept)	0.89**	[0.36, 1.42]						
DPES (awe)	0.28**	[0.21, 0.36]	0.34	[0.25, 0.43]	.11	[.05, .16]	.36**	
AFSS	0.07	[-0.04, 0.19]	0.05	[-0.03, 0.14]	.00	[-.01, .01]	.16**	
MAAS	-0.05	[-0.12, 0.03]	-0.05	[-0.14, 0.03]	.00	[-.01, .01]	-.03	
								<i>R</i> <sup>2</sup> = .133** 95% CI[.08,.19]

*Note.* A significant *b*-weight indicates the beta-weight and semi-partial correlation are also significant. *b* represents unstandardized regression weights. *beta* indicates the standardized regression weights. *sr*<sup>2</sup> represents the semi-partial correlation squared. *r* represents the zero-order correlation. *LL* and *UL* indicate the lower and upper limits of a confidence interval, respectively. \* indicates *p* < .05. \*\* indicates *p* < .01.

Table 4

*Regression with NADA-T as criterion*

Predictor	<i>b</i>	<i>b</i> 95% CI [LL, UL]	<i>beta</i>	<i>beta</i> 95% CI [LL, UL]	<i>sr</i> <sup>2</sup>	<i>sr</i> <sup>2</sup> 95% CI [LL, UL]	<i>r</i>	Fit
(Intercept)	2.59**	[2.45, 2.74]						
SSVS	0.11	[-0.00, 0.23]	0.09	[-0.00, 0.18]	.01	[.00, .03]	.09	
								<i>R</i> <sup>2</sup> = .008 95% CI[.00,.03]

*Note.* A significant *b*-weight indicates the beta-weight and semi-partial correlation are also significant. *b* represents unstandardized regression weights. *beta* indicates the standardized regression weights. *sr*<sup>2</sup> represents the semi-partial correlation squared. *r* represents the zero-order correlation. *LL* and *UL* indicate the lower and upper limits of a confidence interval, respectively.

\* indicates *p* < .05. \*\* indicates *p* < .01.

Table 5

Regression with NADA-T as criterion

Predictor	<i>b</i>	<i>b</i> 95% CI [LL, UL]	<i>beta</i>	<i>beta</i> 95% CI [LL, UL]	<i>sr</i> <sup>2</sup>	<i>sr</i> <sup>2</sup> 95% CI [LL, UL]	<i>r</i>	Fit
(Intercept)	0.81**	[0.49, 1.13]						
QUEST	0.02**	[0.01, 0.02]	0.43	[0.35, 0.51]	.18	[.12, .24]	.43**	
								<i>R</i> <sup>2</sup> = .182**
								95% CI[.12,.24]

Note. A significant *b*-weight indicates the beta-weight and semi-partial correlation are also significant. *b* represents unstandardized regression weights. *beta* indicates the standardized regression weights. *sr*<sup>2</sup> represents the semi-partial correlation squared. *r* represents the zero-order correlation. *LL* and *UL* indicate the lower and upper limits of a confidence interval, respectively.

\* indicates *p* < .05. \*\* indicates *p* < .01.

Table 6

Regression with NADA-T as criterion

Predictor	<i>b</i>	<i>b</i> 95% CI [LL, UL]	<i>beta</i>	<i>beta</i> 95% CI [LL, UL]	<i>sr</i> <sup>2</sup>	<i>sr</i> <sup>2</sup> 95% CI [LL, UL]	<i>r</i>	Fit
(Intercept)	1.11**	[0.64, 1.58]						
ASTI	0.46**	[0.30, 0.62]	0.25	[0.17, 0.34]	.06	[.03, .11]	.25**	
								<i>R</i> <sup>2</sup> = .064** 95% CI[.03,.11]

Note. A significant *b*-weight indicates the beta-weight and semi-partial correlation are also significant. *b* represents unstandardized regression weights. *beta* indicates the standardized regression weights. *sr*<sup>2</sup> represents the semi-partial correlation squared. *r* represents the zero-order correlation. *LL* and *UL* indicate the lower and upper limits of a confidence interval, respectively.

\* indicates *p* < .05. \*\* indicates *p* < .01.

Table 7

*Means, standard deviations, and correlations with confidence intervals for study 2 measures (time 1 and 2 combined)*

Variable	<i>M</i>	<i>SD</i>	1	2	3
1. NADA-SX	5.45	2.54			
2. AFSS	3.67	0.45	.35** [.13, .53]		
3. AWE-S	4.19	1.11	.69** [.55, .80]	.19 [-.04, .40]	
4. SFoRC	6.88	1.64	.65** [.39, .81]	.52** [.21, .73]	.44* [.11, .69]

*Note.* *M* and *SD* are used to represent mean and standard deviation, respectively. Values in square brackets indicate the 95% confidence interval for each correlation. The confidence interval is a plausible range of population correlations that could have caused the sample correlation (Cumming, 2014). \* indicates  $p < .05$ . \*\* indicates  $p < .01$ .

Table 8

*Fixed-Effects ANOVA results using NADA-SX scores (time 2) as the criterion*

Predictor	Sum of Squares	<i>df</i>	Mean Square	<i>F</i>	<i>p</i>	partial $\eta^2$	partial $\eta^2$ 90% CI [LL, UL]
(Intercept)	188.22	1	188.22	36.62	.000		
Emptiness	40.94	1	40.94	7.97	.008	.20	[.03, .38]
Error	164.46	32	5.14				

*Note.* LL and UL represent the lower-limit and upper-limit of the partial  $\eta^2$  confidence interval, respectively.



Table 9

*Fixed-Effects ANOVA results using AWE-S (time 2) as the criterion*

Predictor	Sum of Squares	<i>df</i>	Mean Square	<i>F</i>	<i>p</i>	partial $\eta^2$	partial $\eta^2$ 90% CI [LL, UL]
(Intercept)	148.74	1	148.74	146.08	.000		
Emptiness	6.19	1	6.19	6.08	.019	.16	[.01, .34]
Error	32.58	32	1.02				

*Note.* LL and UL represent the lower-limit and upper-limit of the partial  $\eta^2$  confidence interval, respectively.

Table 10

*Hierarchical regression using NADA-SX (time 1 & time 2) as criterion*

Predictor	<i>b</i>	<i>b</i> 95% CI [LL, UL]	<i>beta</i>	<i>beta</i> 95% CI [LL, UL]	<i>sr</i> <sup>2</sup>	<i>sr</i> <sup>2</sup> 95% CI [LL, UL]	<i>r</i>	Fit
Step 1:								
(Intercept)	-1.17	[-2.86, 0.52]						
AWE-S	1.58**	[1.19, 1.97]	0.69	[0.52, 0.86]	.48	[.31, .60]	.69**	$R^2 = .479^{**}$ 95% CI[.31,.60]
Step 2:								
(Intercept)	-5.35**	[-8.89, -1.81]						
AWE-S	1.48**	[1.10, 1.86]	0.65	[0.48, 0.82]	.41	[.24, .57]	.69**	
AFSS	1.25**	[0.31, 2.19]	0.22	[0.06, 0.39]	.05	[-.02, .12]	.35**	$R^2 = .526^{**}$ 95% CI[.35,.63]

*Note.* A significant *b*-weight indicates the beta-weight and semi-partial correlation are also significant. *b* represents unstandardized regression weights. *beta* indicates the standardized regression weights. *sr*<sup>2</sup> represents the semi-partial correlation squared. *r* represents the zero-order correlation. *LL* and *UL* indicate the lower and upper limits of a confidence interval, respectively.

\* indicates  $p < .05$ . \*\* indicates  $p < .01$ .

Table 11

Regression results using NADA-SX (Time 1) scores as the criterion

Predictor	<i>b</i>	<i>b</i> 95% CI [LL, UL]	<i>beta</i>	<i>beta</i> 95% CI [LL, UL]	<i>sr</i> <sup>2</sup>	<i>sr</i> <sup>2</sup> 95% CI [LL, UL]	<i>r</i>	Fit
(Intercept)	2.44**	[0.65, 4.23]						
Yrs. Med. Ex.	0.05	[-0.01, 0.11]	0.29	[-0.05, 0.64]	.08	[-.08, .24]	.38*	
Av. Med. Hrs.	0.18	[-0.04, 0.40]	0.27	[-0.07, 0.62]	.07	[-.08, .22]	.36*	
								<i>R</i> <sup>2</sup> = .211* 95% CI[.00,.41]

Note. A significant *b*-weight indicates the beta-weight and semi-partial correlation are also significant. *b* represents unstandardized regression weights. *beta* indicates the standardized regression weights. *sr*<sup>2</sup> represents the semi-partial correlation squared. *r* represents the zero-order correlation. *LL* and *UL* indicate the lower and upper limits of a confidence interval, respectively.

\* indicates  $p < .05$ . \*\* indicates  $p < .01$ .

Table 12

Regression results using NADA-SX (time 2) scores as the criterion

Predictor	<i>b</i>	<i>b</i> 95% CI [LL, UL]	<i>beta</i>	<i>beta</i> 95% CI [LL, UL]	<i>sr</i> <sup>2</sup>	<i>sr</i> <sup>2</sup> 95% CI [LL, UL]	<i>r</i>	Fit
(Intercept)	-3.38	[-7.84, 1.07]						
Emptiness	1.71	[-0.08, 3.50]	0.30	[-0.01, 0.61]	.08	[-.07, .23]	.44*	
R. Depth	0.84*	[0.21, 1.47]	0.48	[0.12, 0.84]	.16	[-.04, .36]	.58**	
R. Med. Hrs.	0.00	[-0.03, 0.03]	0.03	[-0.32, 0.37]	.00	[-.01, .01]	.29	
								<i>R</i> <sup>2</sup> = .420** 95% CI[.09,.58]

*Note.* A significant *b*-weight indicates the beta-weight and semi-partial correlation are also significant. *b* represents unstandardized regression weights. *beta* indicates the standardized regression weights. *sr*<sup>2</sup> represents the semi-partial correlation squared. *r* represents the zero-order correlation. *LL* and *UL* indicate the lower and upper limits of a confidence interval, respectively.

\* indicates  $p < .05$ . \*\* indicates  $p < .01$ .

Table 13

*Means, standard deviations, and correlations with confidence intervals*

Variable	<i>M</i>	<i>SD</i>	1	2	3	4
1. NADA-SX (Time 1)	4.70	2.44				
2. AWE-S (Time 1)	3.88	1.01	.57** [.29, .76]			
3. AFSS (Time 1)	3.77	0.42	.34 [.00, .61]	.06 [-.29, .39]		
4. Yrs. med experience	22.37	14.34	.38* [.05, .63]	.10 [-.25, .42]	.29 [-.05, .57]	
5. Av. med. hours	6.42	3.77	.36* [.03, .62]	.26 [-.09, .55]	.36* [.03, .62]	.30 [-.04, .58]

*Note.* *M* and *SD* are used to represent mean and standard deviation, respectively. Values in square brackets indicate the 95% confidence interval for each correlation. The confidence interval is a plausible range of population correlations that could have caused the sample correlation (Cumming, 2014). \* indicates  $p < .05$ . \*\* indicates  $p < .01$ .

Table 14

*Means, standard deviations, and correlations with confidence intervals*

Variable	<i>M</i>	<i>SD</i>	1	2	3	4
1. NADA-SX (Time 2)	6.04	2.49				
2. AWE-S (Time 2)	4.52	1.08	.75** [.56, .87]			
3. AFSS (Time 2)	3.58	0.46	.45** [.13, .68]	.29 [-.05, .57]		
4. Retreat depth	7.50	1.54	.59** [.32, .78]	.53** [.23, .74]	.10 [-.24, .43]	
5. Med. hours	47.12	27.63	.29 [-.06, .58]	.34 [-.01, .62]	.20 [-.16, .52]	.51** [.20, .73]

*Note.* *M* and *SD* are used to represent mean and standard deviation, respectively. Values in square brackets indicate the 95% confidence interval for each correlation. The confidence interval is a plausible range of population correlations that could have caused the sample correlation (Cumming, 2014). \* indicates  $p < .05$ . \*\* indicates  $p < .01$ .

FIGURES

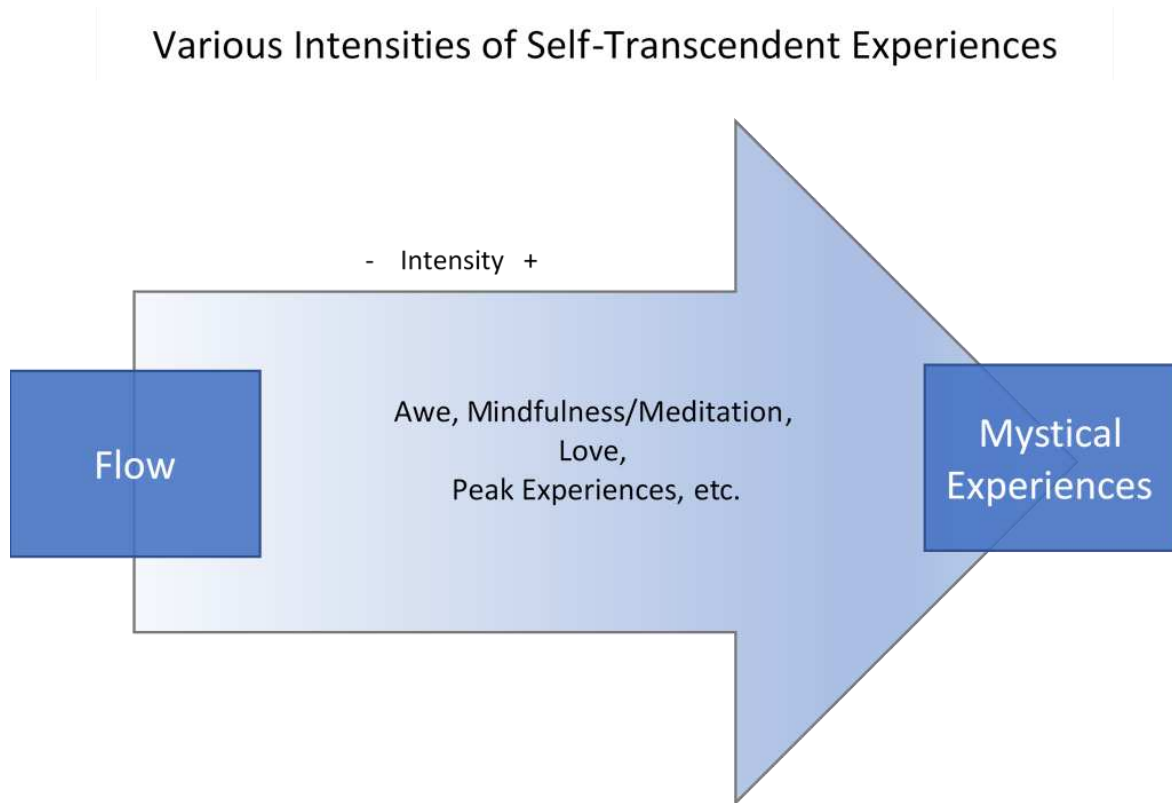


Figure 1

## Dualism vs. Nondualism

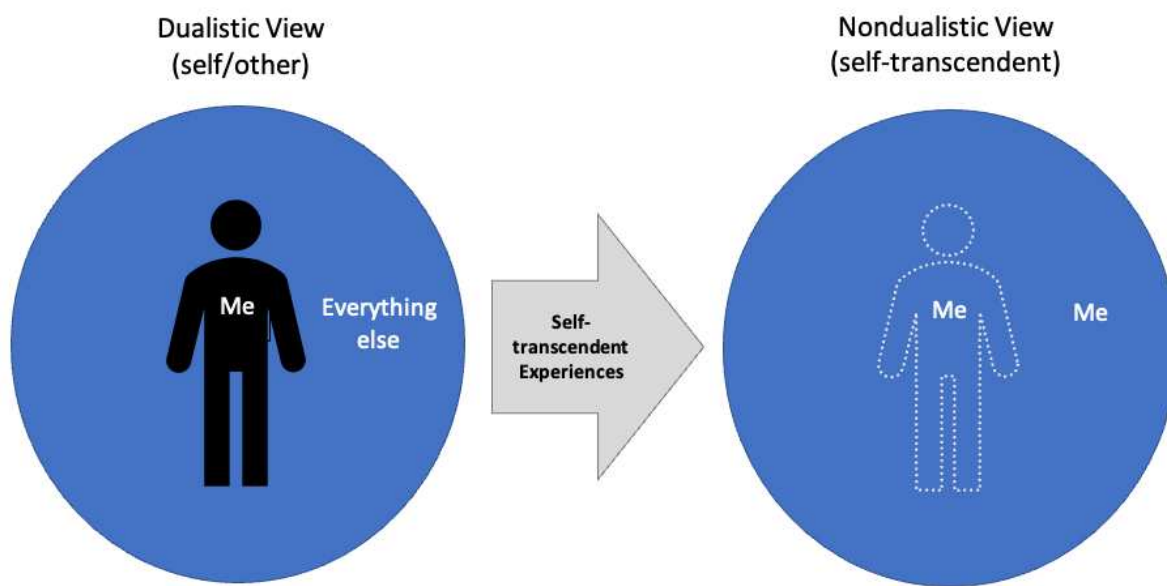


Figure 2



### Various Intensities of Self-Transcendent Experiences

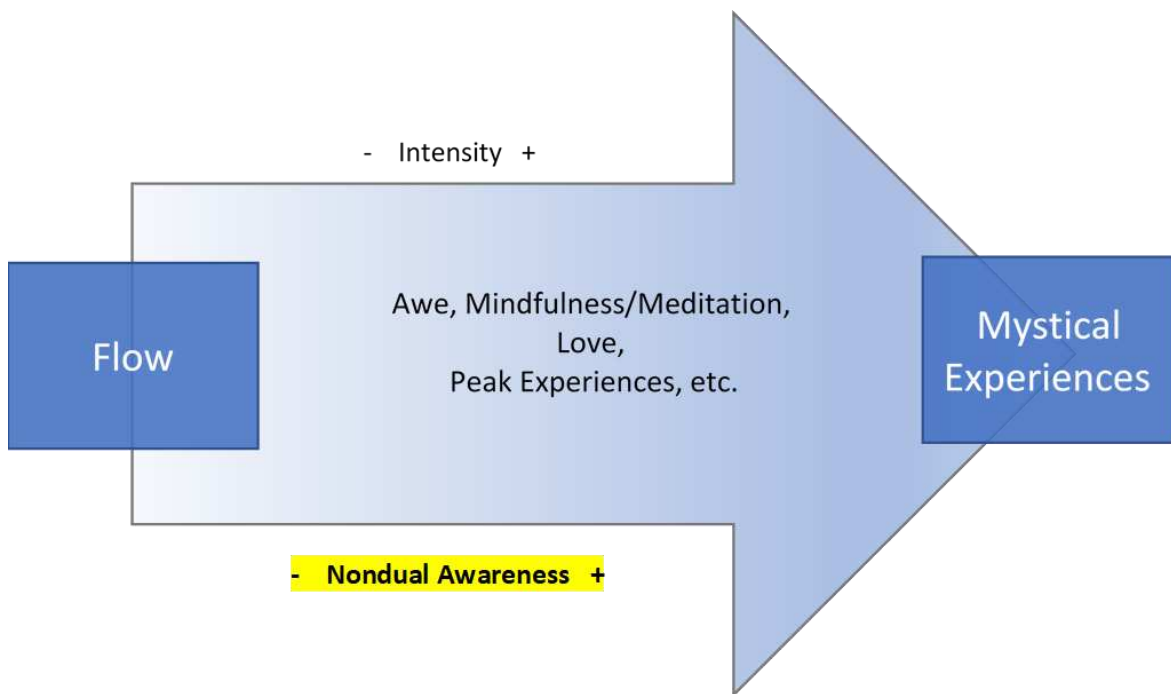


Figure 3

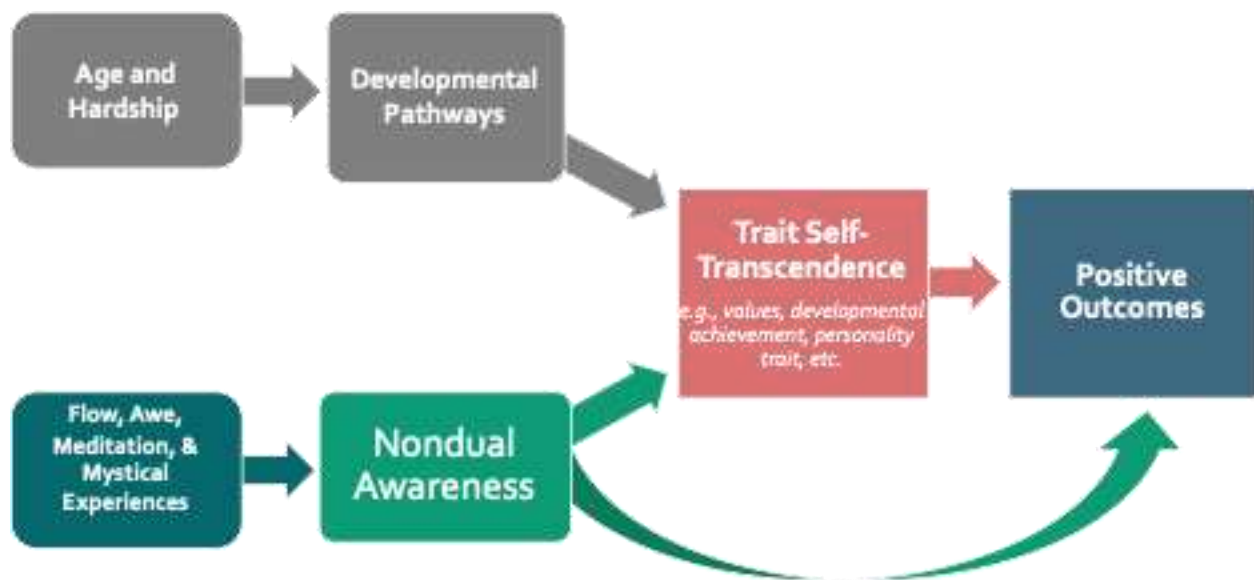


Figure 4

The Spatial Frame of Reference Continuum (SFoRC; Hanley & Garland, 2019)

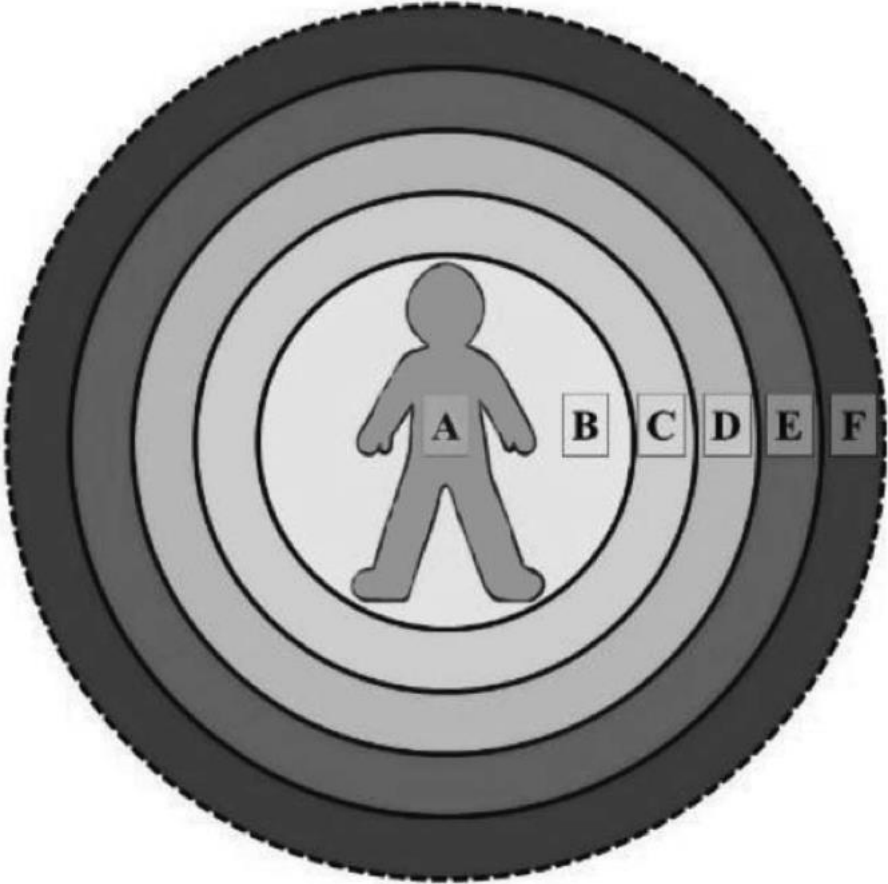


Figure 5

Distribution of Key STE and ST Constructs

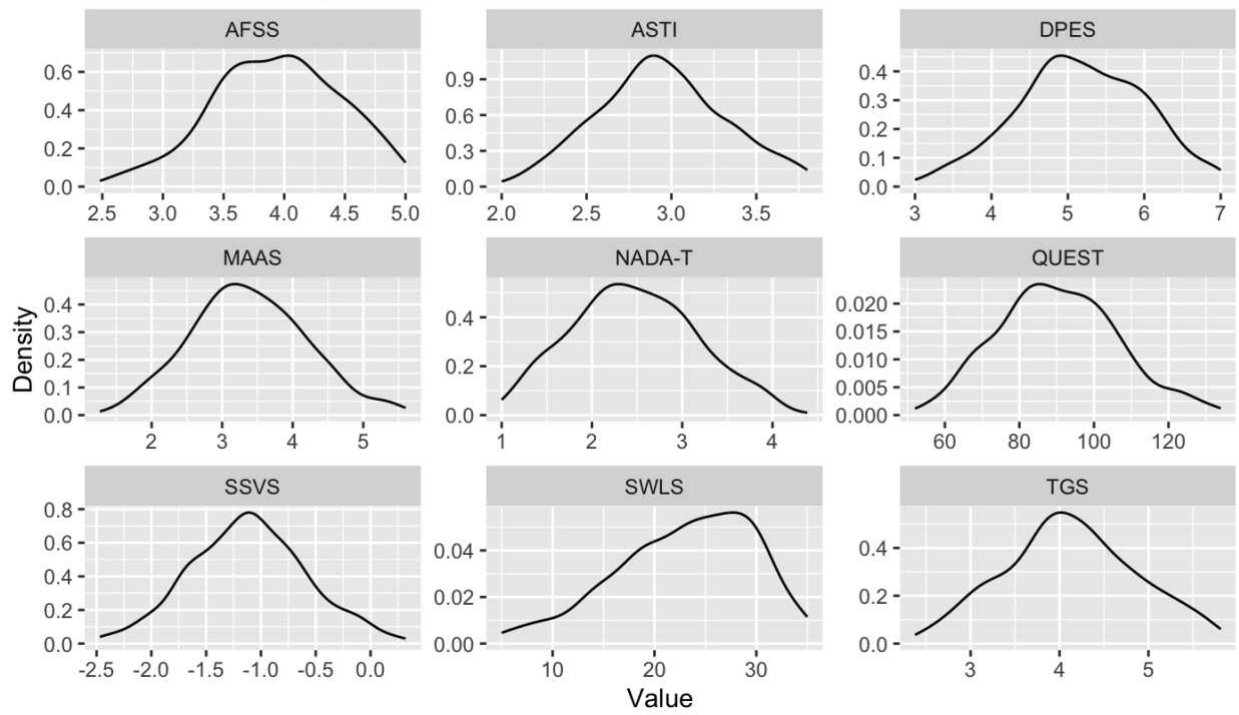
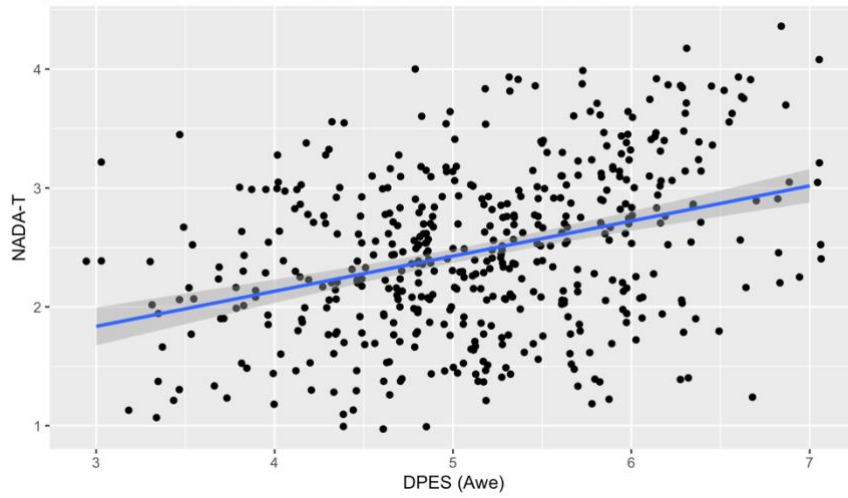
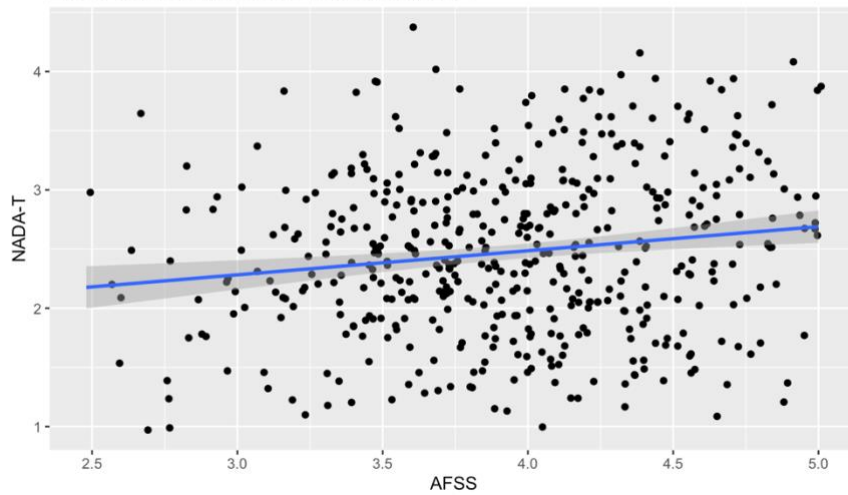


Figure 6

Linear Relationship Between Dispositional Awe and NDA



Linear Relationship Between Flow and NDA



Linear Relationship Between Trait Mindfulness and NDA

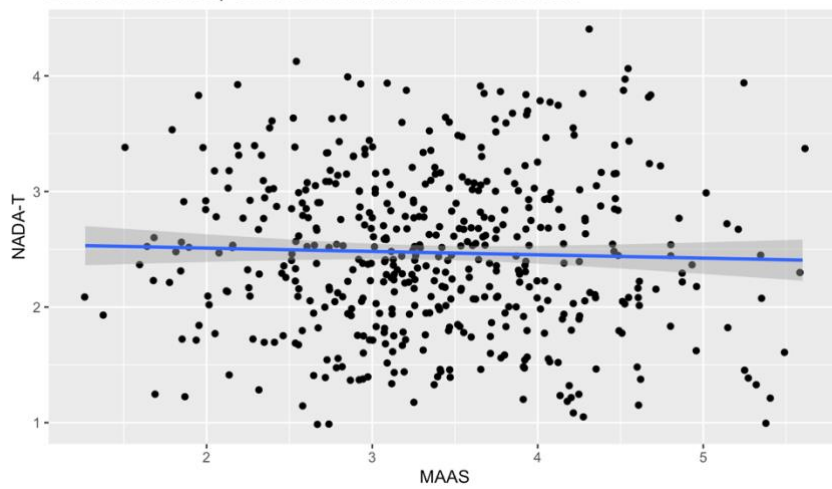


Figure 7

Linear Relationship Between Self Transcendent Values and NDA

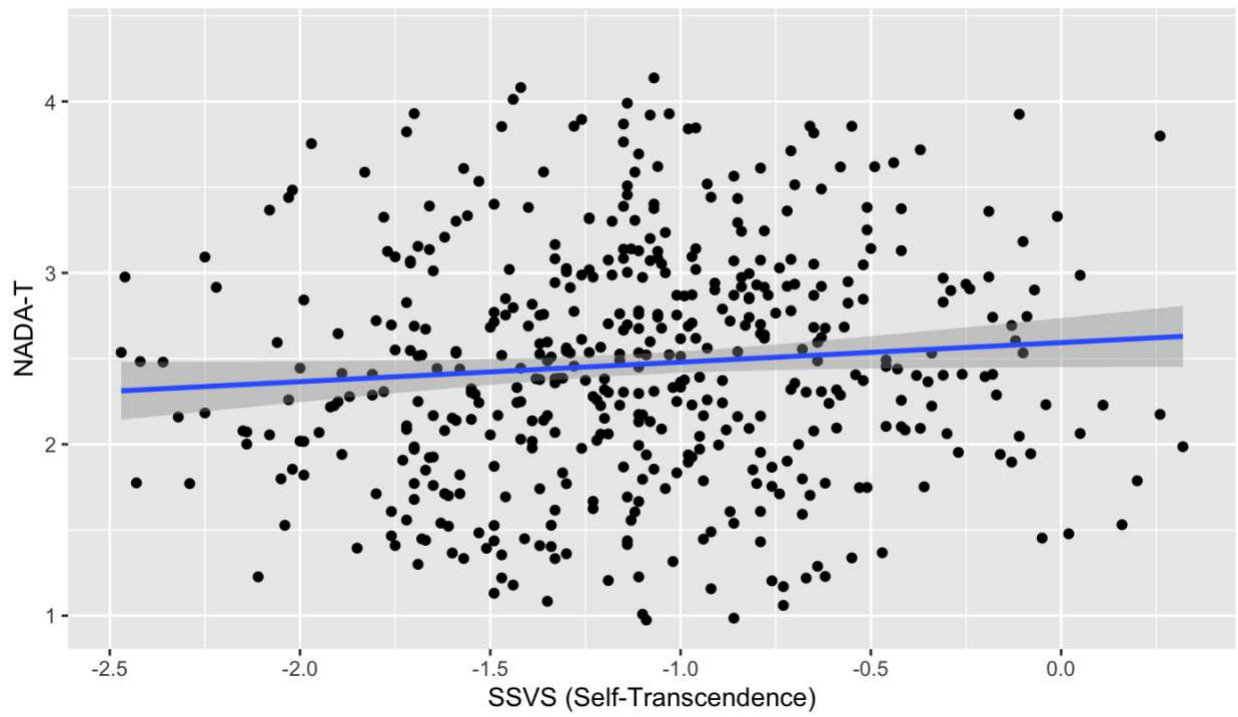


Figure 8

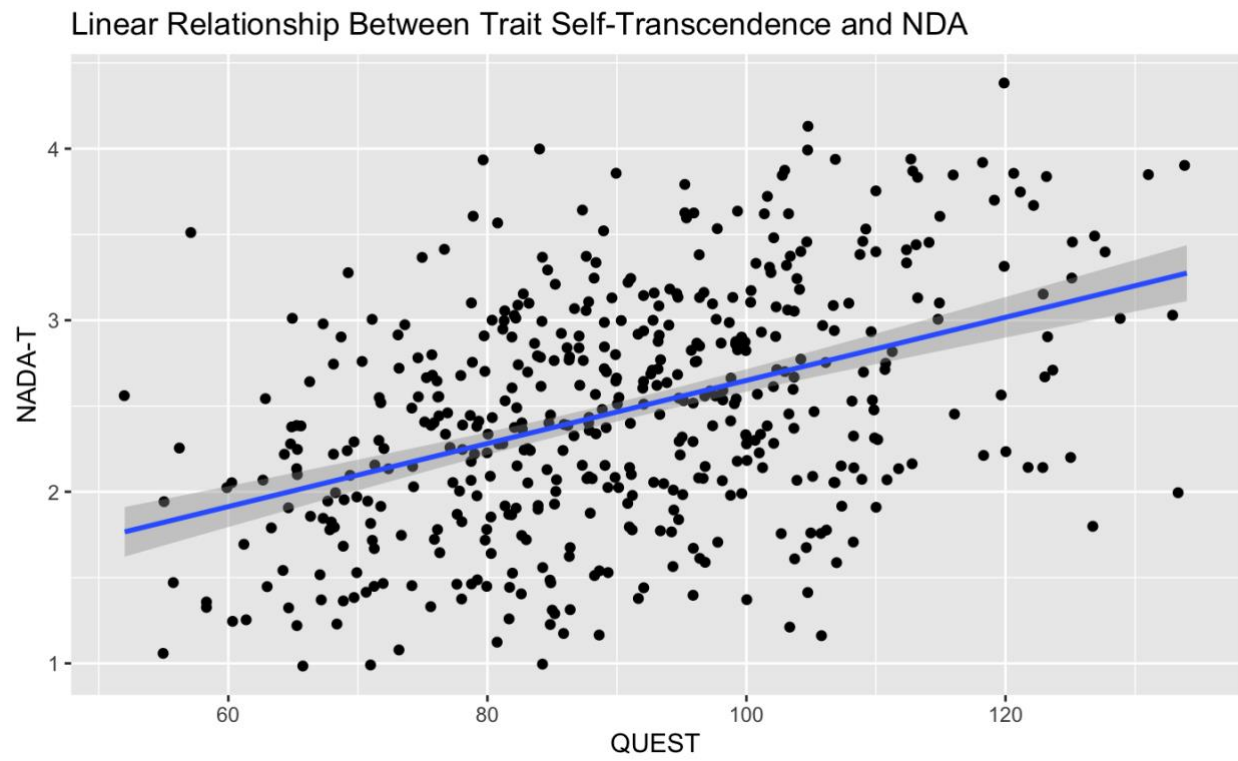


Figure 9

Linear Relationship Between Developmental ST and NDA

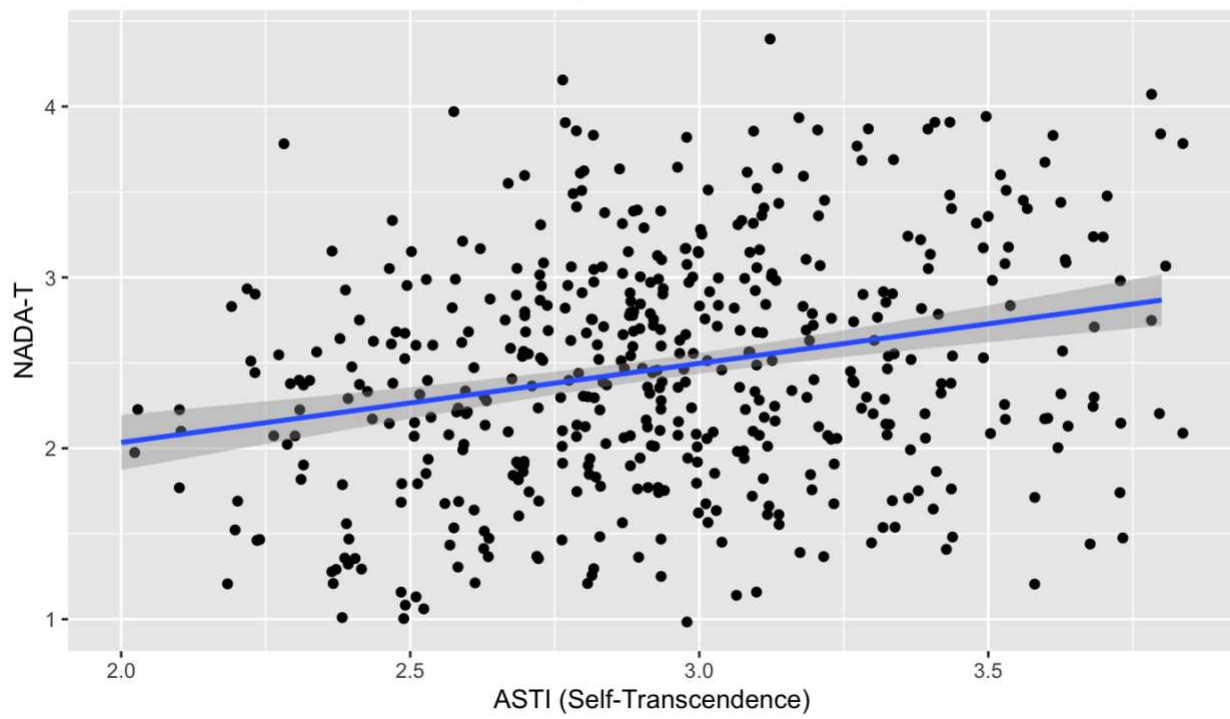


Figure 10



Distribution of Key STE Constructs

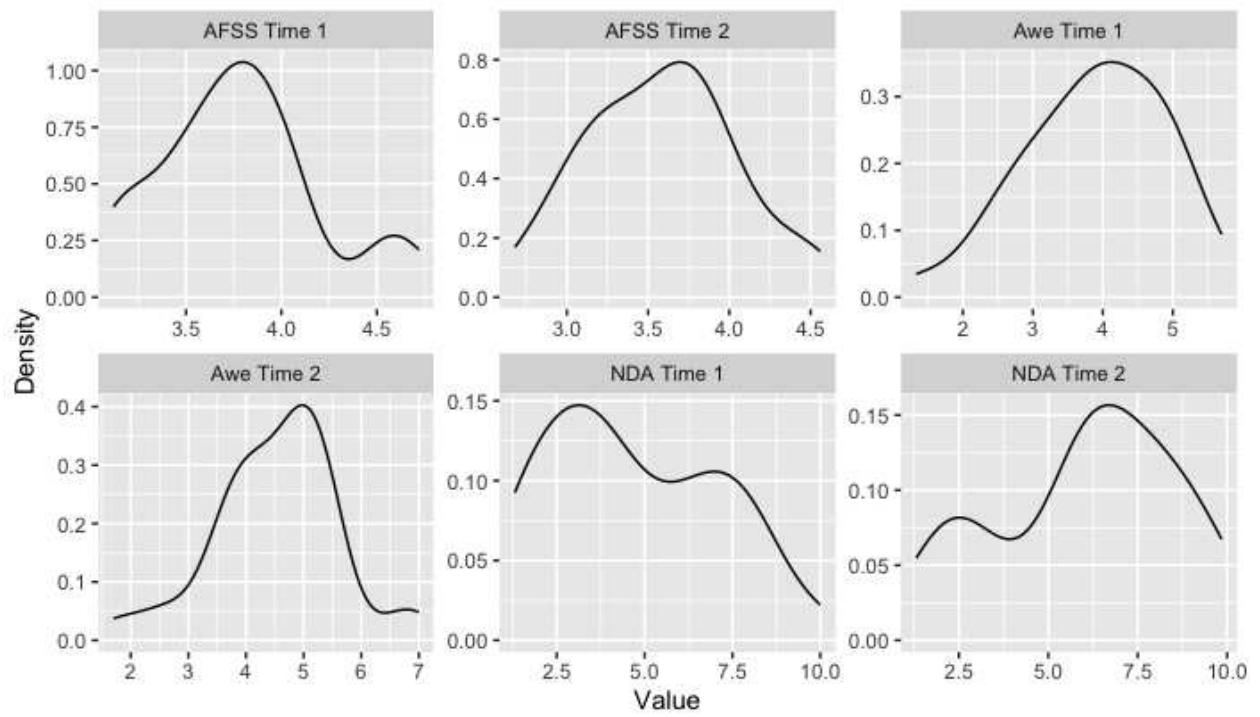


Figure 11

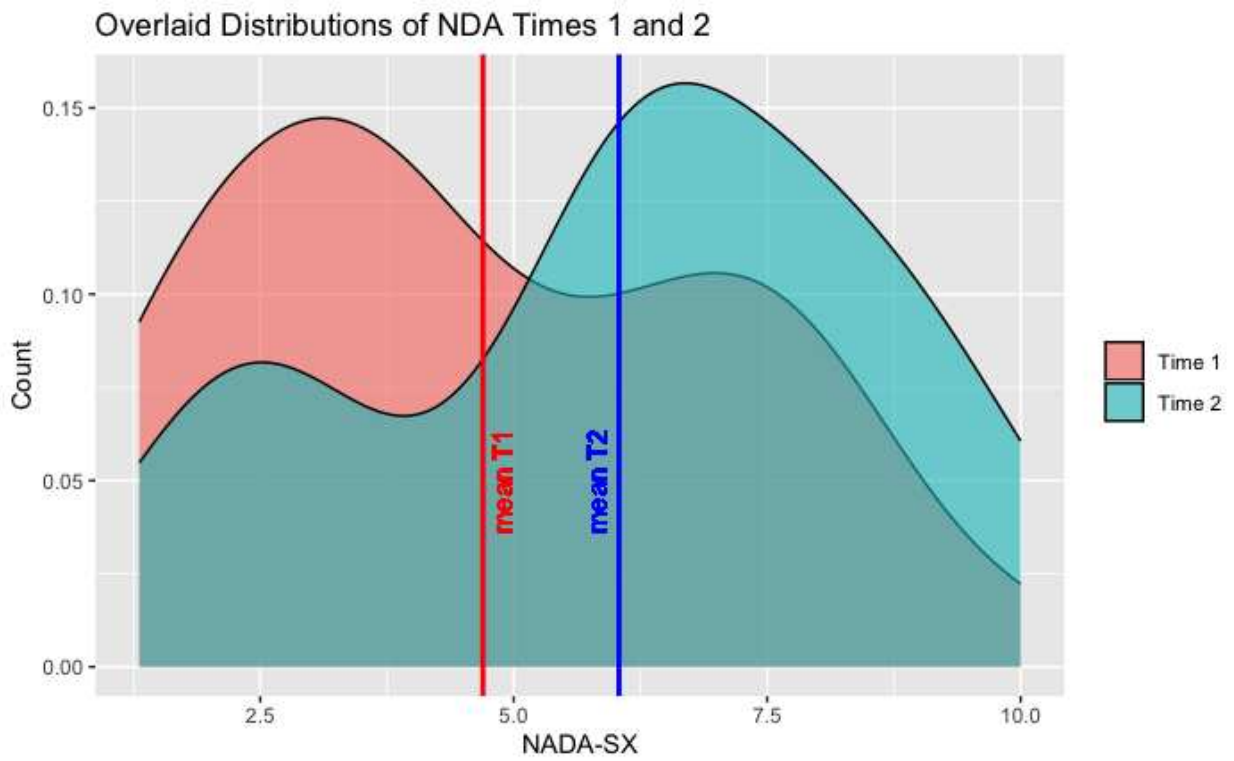


Figure 12

Visualizing NDA Change

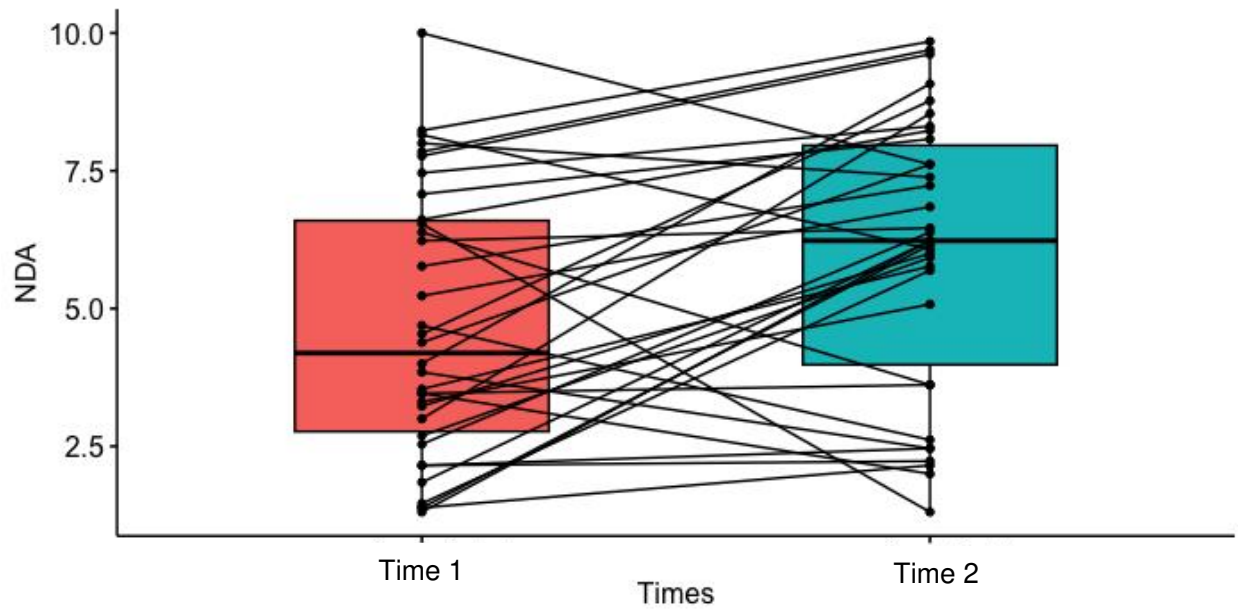


Figure 13

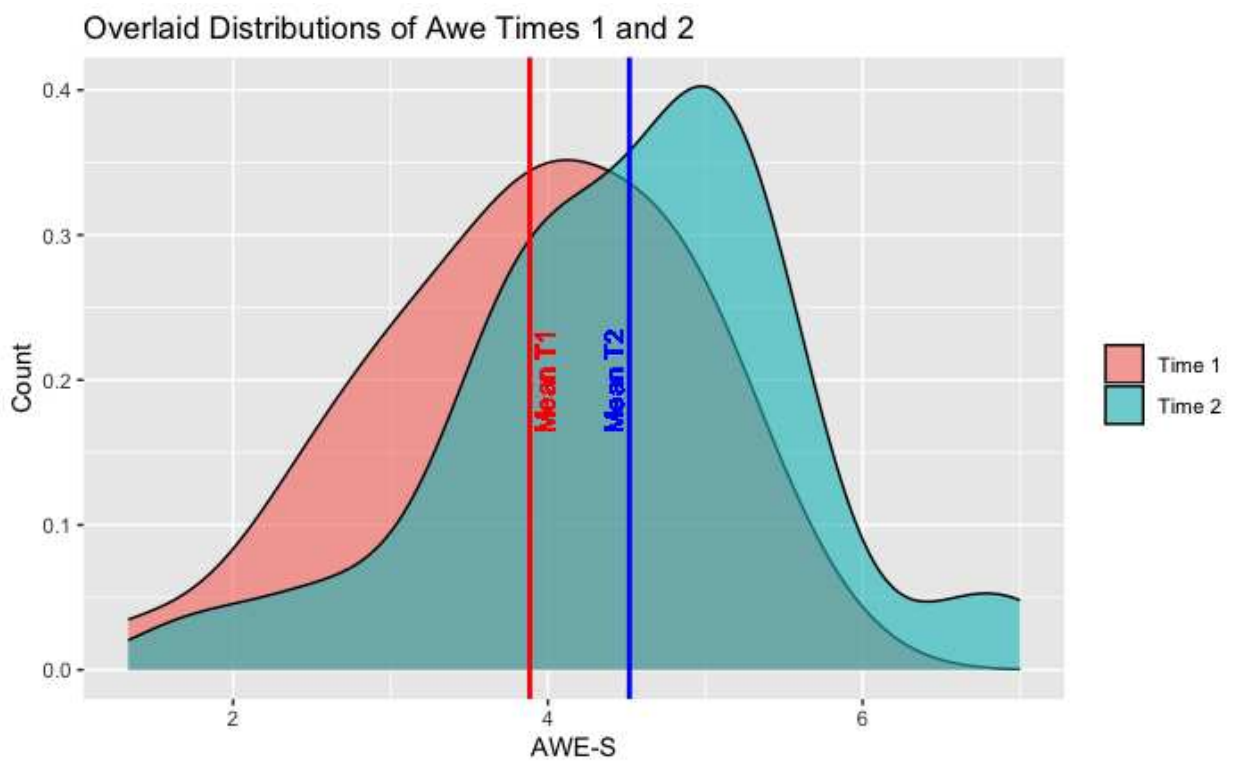


Figure 14

### Visualizing Awe Change

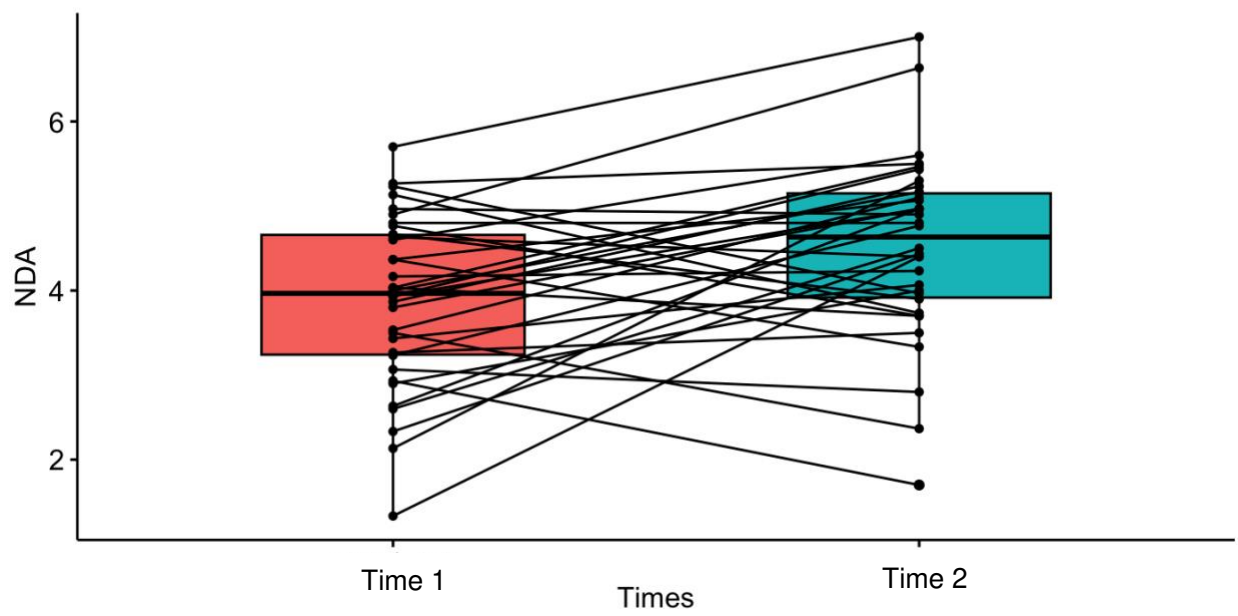


Figure 15

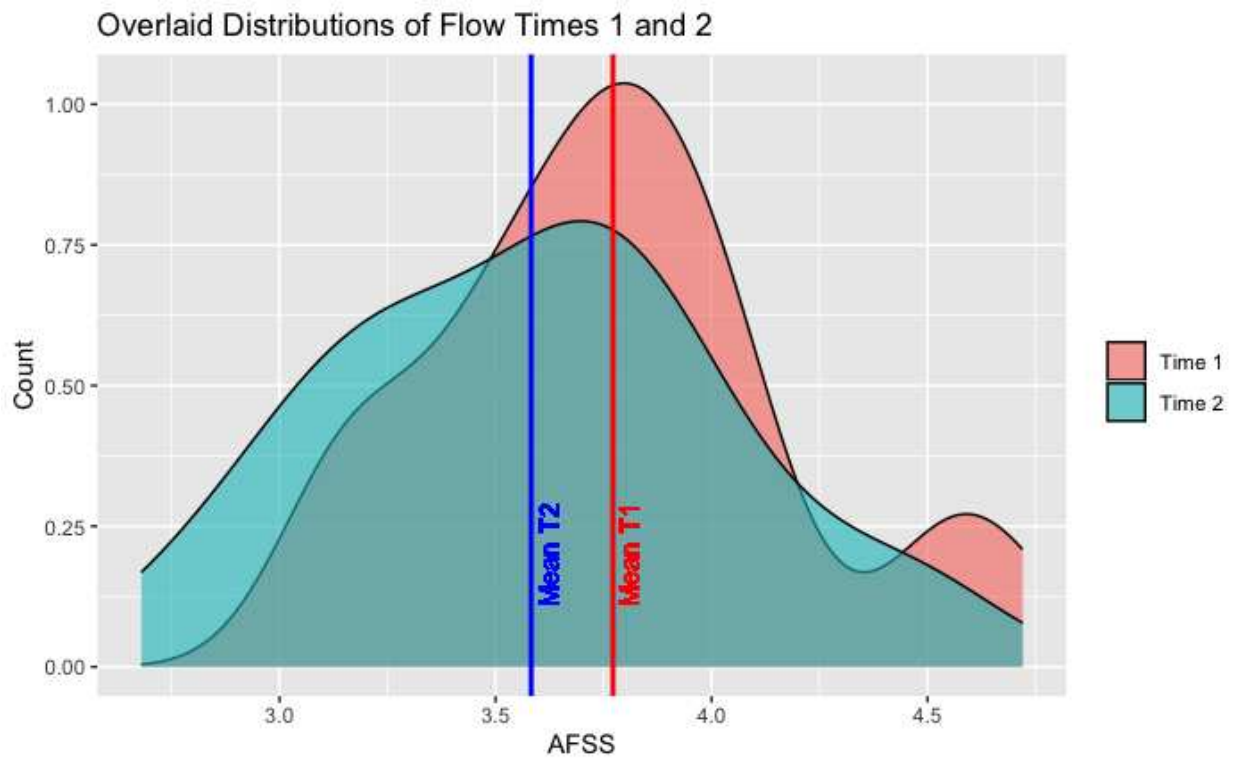


Figure 16

### Visualizing AFSS Change

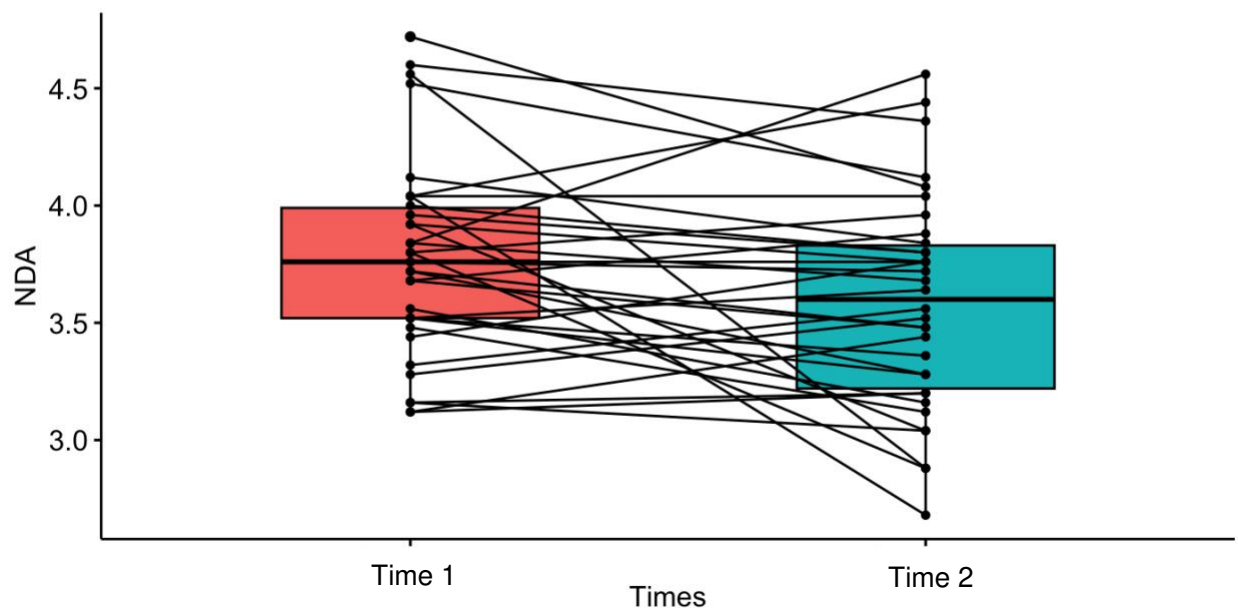


Figure 17

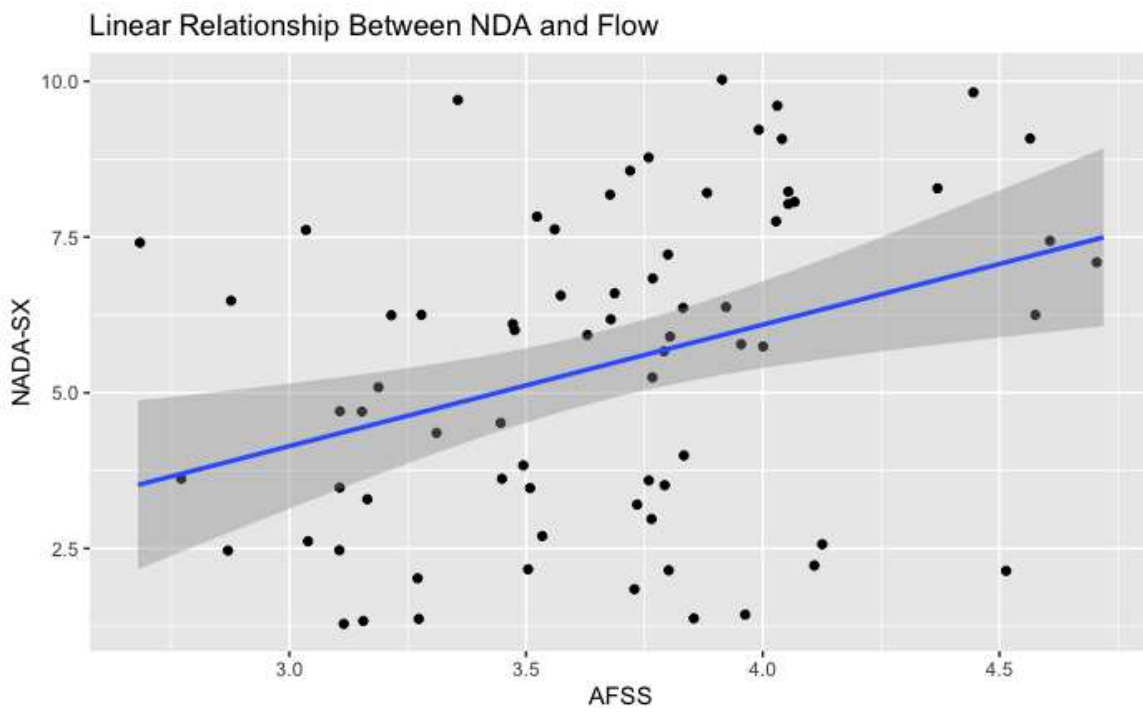
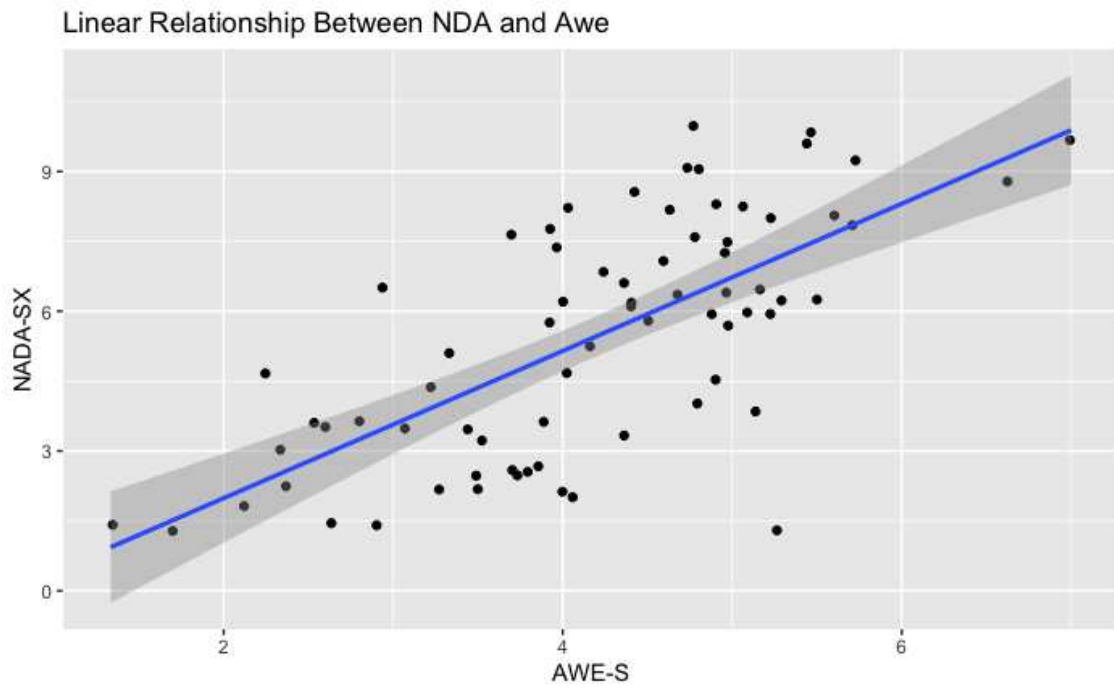


Figure 18



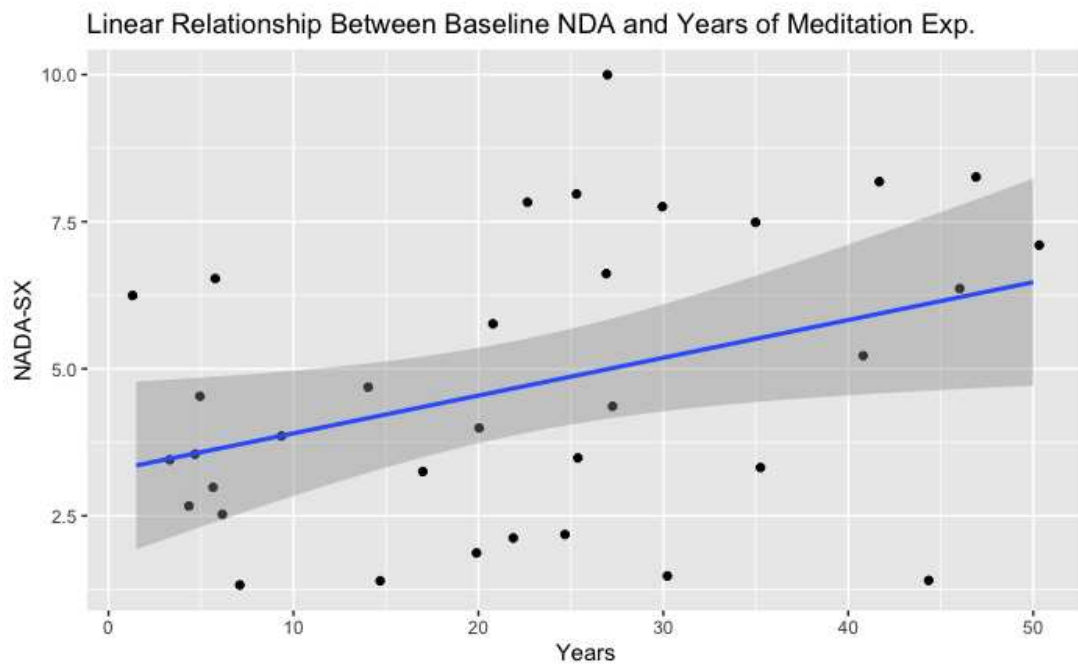
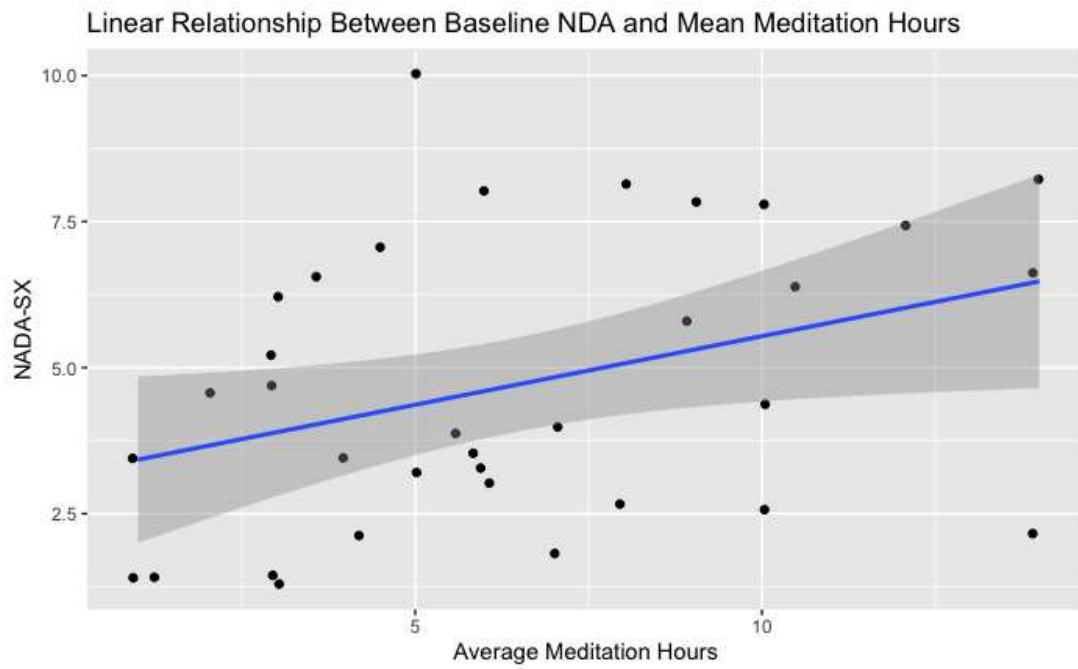


Figure 19

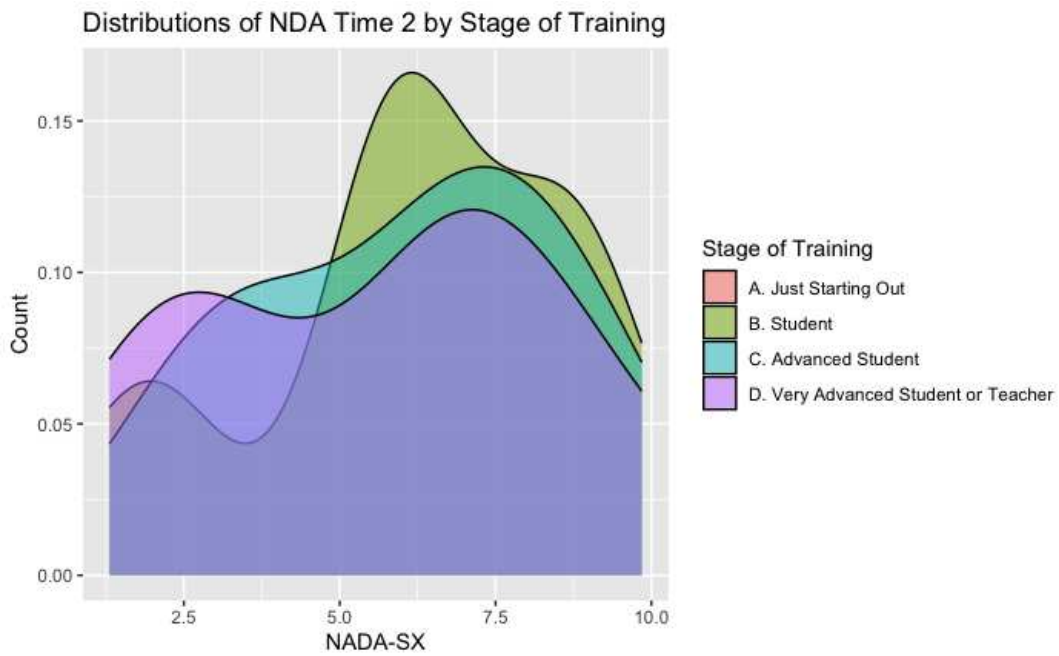
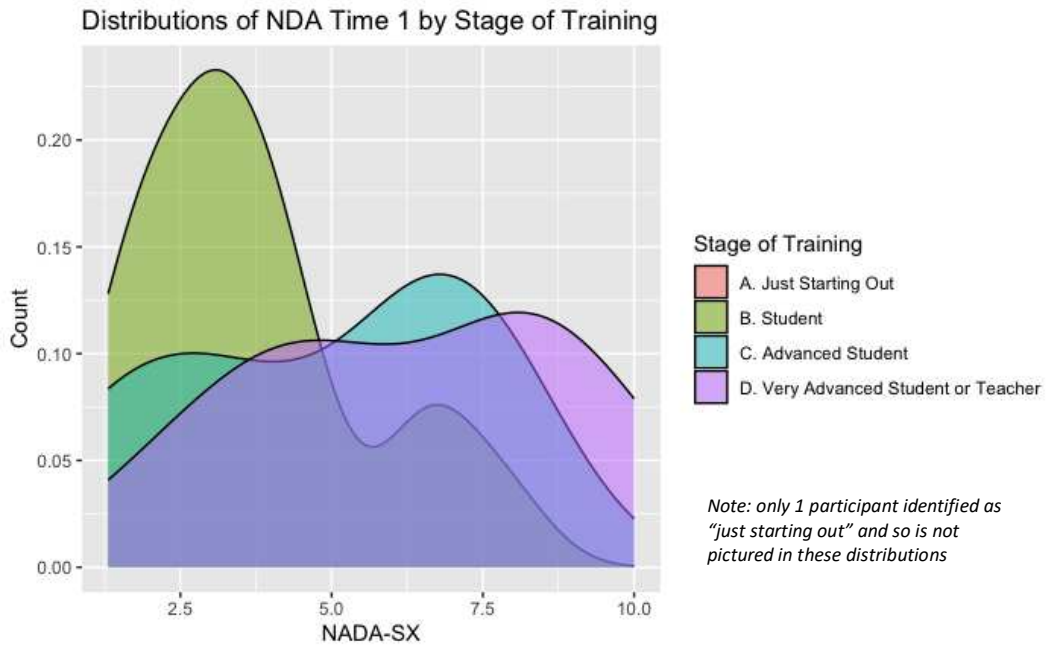


Figure 20

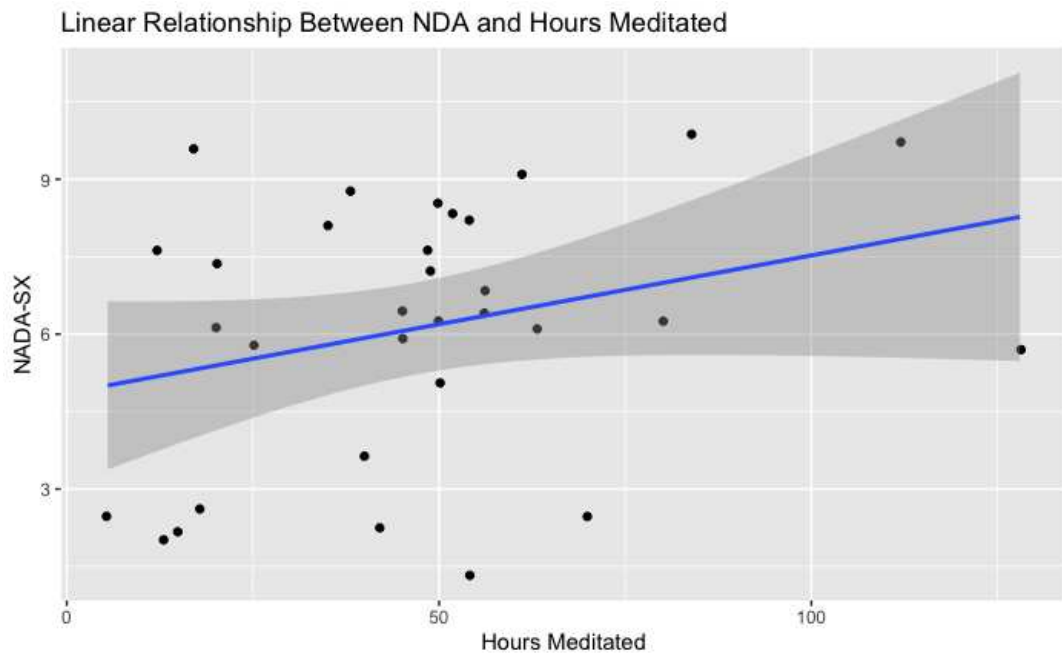
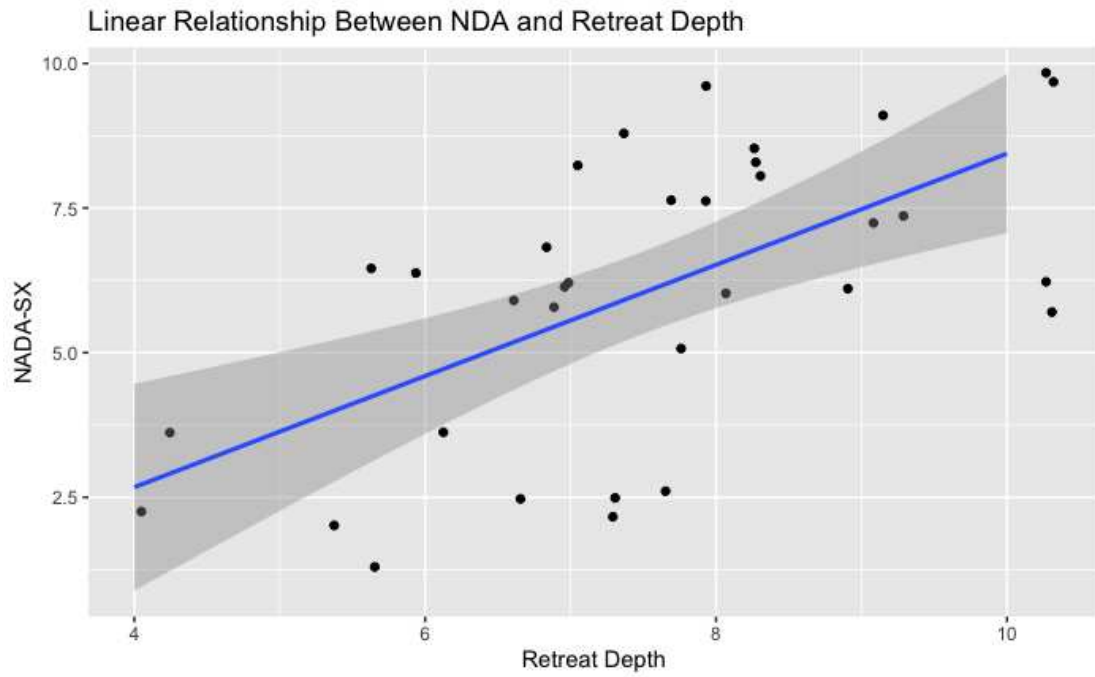


Figure 21

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APPENDICES

**Appendix A**

**Activity Flow State Scale** (Payne et al., 2011)

Below you will read a number of statements that describe how people sometimes experience certain activities or events in their daily lives. Think about one activity that you performed or experience that you had during the last week, particularly one that you enjoyed and/or found satisfying. Try to remember how you experienced that activity as you read each statement below. Provide a rating for each statement to indicate how well it describes your experience by circling the appropriate number.

---

Strongly Disagree					Strongly Agree
1	2	3	4	5	

---

Merging Actions and Awareness (MAA)

1. I performed automatically, without having to think about it.
2. Things just seemed to happen automatically.
3. I did things spontaneously without having to think.

Clear Goals (CG)

4. I had a strong sense of what I wanted to accomplish.
5. I knew what I want to achieve.
6. My goals were clearly defined.

Concentration on Task at Hand (CO)

7. My attention was focused entirely on what I was doing.
8. It was no effort to keep my mind on what was happening.

9. I had total concentration.

10. I had no difficulty concentrating.

#### Unambiguous Feedback (UF)

11. It was really clear to me how my performance was going.

12. I had a good idea while I was performing about how well I was doing.

#### Challenge Skill Balance (CS)

13. I was challenged, but I believe my skills will allow me to meet that challenge.

14. The challenge and my skills were at an equally high level.

15. I felt just the right amount of challenge.

#### Transformation of Time (TT)

16. Time seemed to alter (either slows down or speeds up).

17. The way time passed seemed to be different from normal.

18. I lost my normal awareness of time.

#### Sense of Control (CN)

19. I felt as though I had everything under control.

20. I felt that I had everything under control.

#### Loss of Self-Consciousness (SC)

21. I was not concerned with how others might be evaluating me.

22. I was not concerned with how I was presenting myself.

23. I was not worried about what others might be thinking of me.

#### Autotelic Experience (AE)

24. I really enjoyed the experience.

25. The experience left me feeling great.

26. The experience was extremely rewarding.

## Appendix B

### Adult Self-Transcendence Inventory

Please indicate how well each statement describes your sense of yourself now in comparison to 5 years ago.

---

Strongly Disagree	Disagree	Agree	Strongly Agree
1	2	3	4

---

1. I am more likely to engage in quiet contemplation.
2. I feel that my individual life is a part of a greater whole.
3. I have become less concerned about other people's opinions of me.
4. I feel that my life has less meaning.
5. I feel a greater sense of belonging with both earlier and future generations.
6. My peace of mind is not so easily upset as it used to be.
7. I feel more isolated and lonely.
8. I am less interested in seeking out social contacts.
9. My sense of self has decreased as I have gotten older.
10. My sense of self is less dependent on other people and things.
11. I do not become angry as easily.
12. I find more joy in life.
13. Material things mean less to me.
14. I am less optimistic about the future of humanity.
15. I feel much more compassionate, even toward my enemies.

Self-transcendence: 1, 2, 3, 5, 6, 11, 12, 13, and 15.

Alienation: 4, 7, 8, 10, and 14.

## Appendix C

### Awe Experience Scale (Yaden et al., 2019)

Time 1 Instructions: Please indicate how much you agree with the following statements when reflecting on your experiences of the past week.

Time 2 Instructions: Please indicate how much you agree with the following statements when reflecting on your experience at this last session.

Strongly Disagree	Moderately Disagree	Somewhat Disagree	Neutral	Somewhat Agree	Moderately Agree	Strongly Agree
1	2	3	4	5	6	7

#### Time

1. I sensed things momentarily slow down.
2. I noticed time slowing.
3. I felt my sense of time change.
4. I experienced the passage of time differently.
5. I had the sense that a moment lasted longer than usual.

#### Self-Loss

6. I felt that my sense of self was diminished.
7. I felt my sense of self shrink.
8. I experienced a reduced sense of self.
9. I felt my sense of self become somehow smaller.
10. I felt small compared to everything else.

#### Connectedness

11. I had the sense of being connected to everything.

12. I felt a sense of communion with all living things.

13. I experienced a sense of oneness with all things.

14. I felt closely connected to humanity.

15. I had a sense of complete connectedness.

#### Vastness

16. I felt that I was in the presence of something grand.

17. I experienced something greater than myself.

18. I felt in the presence of greatness.

19. I perceived something that was much larger than me.

20. I perceived vastness.

#### Physical Symptoms

21. I felt my jaw drop.

22. I had goosebumps.

23. I gasped.

24. I had chills.

25. I felt my eyes widen.

#### Accommodation

26. I felt challenged to mentally process what I was experiencing.

27. I found it hard to comprehend the experience in full.

28. I felt challenged to understand the experience.

29. I struggled to take in all that I was experiencing at once.

30. I tried to understand the magnitude of what I was experiencing.



## Appendix D

### Demographics Questionnaire

- 1.) Please indicate your gender identity
  - a. Male
  - b. Female
  - c. Other (Please Specify)
- 2.) Please enter your age. (Text entry)
- 3.) What was the approximate annual household income, in US dollars, in the home where you grew up?
  - a. 19,999 or less
  - b. 20,000-34,999
  - c. 35,000-49,999
  - d. 50,000-64,999
  - e. 65,000-79,999
  - f. 80,00-99,999
  - g. 100,000 or above
  - h. Don't know
- 4.) Please indicate your ethnic identity (check all that apply)
  - a. African American of African
  - b. American Indian or Alaskan Native
  - c. Asian or Pacific Islander
  - d. White or European
  - e. Hispanic or Central/South American
  - f. Other (Please specify)

## Appendix E

### Depression and Anxiety Stress Scales (Lovibond & Lovibond, 1995)

Please read each statement and indicate how much the statement applied to you over the past week. There are no right or wrong answers. Do not spend too much time on any statement.

The rating scale is as follows:

1	2	3	4
Never	Sometimes	Often	Almost Always

1. I found it hard to wind down
2. I was aware of dryness of my mouth
3. I couldn't seem to experience any positive feeling at all
4. I experienced breathing difficulty (for example, excessively rapid breathing, breathlessness in the absence of physical exertion)
5. I found it difficult to work up the initiative to do things
6. I tended to over-react to situations
7. I experienced trembling (for example, in the hands)
8. I felt that I was using a lot of nervous energy
9. I was worried about situations in which I might panic and make a fool of myself
10. I felt that I had nothing to look forward to
11. I found myself getting agitated
12. I found it difficult to relax
13. I felt down-hearted and blue
14. I was intolerant of anything that kept me from getting on with what I was doing
15. I felt I was close to panic

16. I was unable to become enthusiastic about anything
17. I felt I wasn't worth much as a person
18. I felt that I was rather touchy
19. I was aware of the action of my heart in the absence of physical exertion (for example, sense of heart rate increase, heart missing a beat)
20. I felt scared without any good reason
21. I felt that life was meaningless

## Appendix F

### Dispositional Positive Emotions Scale (Shiota et al., 2006)

Please indicate your level of agreement with the following statements on a scale of 1 to 7, where 1 indicates “strongly disagree” and 7 indicates “strongly agree.”

Strongly Disagree							Strongly Agree
1	2	3	4	5	6	7	

#### Joy

1. I often feel bursts of joy.
2. I am an intensely cheerful person.
3. I am often completely overjoyed when something good happens.
4. On a typical day, many events make me happy.
5. Good things happen to me all the time.
6. My life is always improving.

#### Contentment

1. I am generally a contented person.
2. I am at peace with my life.
3. When I think about my life I experience a deep feeling of contentment.
4. I feel satisfied more often than most people.
5. My life is very fulfilling.

#### Compassion

1. It's important to take care of people who are vulnerable.
2. When I see someone hurt or in need, I feel a powerful urge to take care of them.

3. Taking care of others gives me a warm feeling inside.
4. I often notice people who need help.
5. I am a very compassionate person.

#### Pride

1. I feel good about myself.
2. I am proud of myself and my accomplishments.
3. Many people respect me.
4. I always stand up for what I believe.
5. People usually recognize my authority.

#### Amusement

1. I find humor in almost everything.
2. I really enjoy teasing people I care about.
3. I am very easily amused.
4. The people around me make a lot of jokes.
5. I make jokes about everything.

#### Love

1. Other people are generally trustworthy.
2. I develop strong feelings of closeness to people easily.
3. I find it easy to trust others.
4. I can depend on people when I need help.
5. People are usually considerate of my needs and feelings.
6. I love many people.

## Awe

1. I often feel awe.
2. I see beauty all around me.
3. I feel wonder almost every day.
4. I often look for patterns in the objects around me.
5. I have many opportunities to see the beauty of nature.
6. I seek out experiences that challenge my understanding of the world.

## **Appendix G**

### **Insufficient Effort Responding Items (Huang et al., 2015)**

1. I can run 2 miles in 2 min.
2. I eat cement occasionally.
3. I can teleport across time and space.
4. I am interested in pursuing a degree in parabanjology.
5. I have never used a computer.
6. I work fourteen months in a year.
7. I will be punished for meeting the requirements of my job.
8. I work twenty-eight hours in a typical work day.

## Appendix H

### Mindful Awareness Attention Scale (Brown & Ryan, 2003)

Below is a collection of statements about your everyday experience. Using the 1-6 scale below, please indicate how frequently or infrequently you currently have each experience.

Please answer according to what really reflects your experience rather than what you think your experience should be. Please treat each item separately from every other item.

---

Almost Always	Very Frequently	Somewhat Frequently	Somewhat Infrequently	Very Infrequently	Almost Never
1	2	3	4	5	6

---

1. I could be experiencing some emotion and not be conscious of it until sometime later.
2. I break or spill things because of carelessness, not paying attention, or thinking of something else.
3. I find it difficult to stay focused on what's happening in the present.
4. I tend to walk quickly to get where I'm going without paying attention to what I experience along the way.
5. I tend not to notice feelings of physical tension or discomfort until they really grab my attention.
6. I forget a person's name almost as soon as I've been told it for the first time.
7. It seems I am "running on automatic," without much awareness of what I'm doing.
8. I rush through activities without being really attentive to them.
9. I get so focused on the goal I want to achieve that I lose touch with what I'm doing right now to get there.
10. I do jobs or tasks automatically, without being aware of what I'm doing.



11. I find myself listening to someone with one ear, doing something else at the same time.
12. I drive places on 'automatic pilot' and then wonder why I went there.
13. I find myself preoccupied with the future or the past.
14. I find myself doing things without paying attention.
15. I snack without being aware that I'm eating.

## Appendix I

### **Nondual Awareness Dimensional Assessment-Trait** (Hanley et al., 2018)

*Looking back over your life, please rate how often you had the following experiences. Use the following scale to make your ratings:*

Never or Very Rarely	Rarely	Sometimes	Often	Very Often or Always
1	2	3	4	5

1. I have had an experience in which I felt myself to be absorbed as one with all things.
2. I have had an experience in which all things seemed to be unified into a single whole.
3. I have had an experience in which the boundaries of my self dissolved.
4. I have experienced all notion of self and identity dissolve away.
5. I have experienced a feeling of oneness in which the boundaries between what is me and what is not me has dissolved.
6. I have experienced the insight that “all is One.”
7. I have had an experience in which my mind expanded into space.
8. I have experienced a melting or merging with the others; I became others and they became me.
9. It has seemed to me that my environment and I were one.
10. I have experienced an all-embracing love.
11. I have felt a sense of awe and wonder.
12. I have experienced a perfectly peaceful state.
13. I have been surrounded and filled with a blissful warmth or energy.

Full Scale Score: Average all items.

Self-Transcendence Dimension: (add items 1 through 9)/9.

Bliss Dimension: (add items 10 through 13)/4.

## Appendix J

### Nondual Awareness Dimensional Assessment-State Version (Hanley et al., 2018)

Please read each statement and indicate the extent to which you agree with each statement. In other words, how well does the statement describe what you just experienced, just now?

0	1	2	3	4	5	6	7	8	9	10
Not at All										Very Much

- 1) I experienced all things seeming to unify into a single whole.
- 2) I experienced all sense of self and identity dissolve away.
- 3) I felt surrounded and filled with a blissful warmth or energy.

To score, average all items.

## Appendix K

### Nondual Awareness Dimensional Assessment-State Expanded

This includes proposed wording for the full state version of the NADA.

*Please read each statement and indicate the extent to which you agree with each statement. In other words, how well does the statement describe what you experienced over the past week?*

0	1	2	3	4	5	6	7	8	9	10
Not at All										Very Much

1. I felt myself to be absorbed as one with all things.
2. I experienced all things seeming to be unify into a single whole.
3. I experienced the boundaries of myself dissolve.
4. I experienced all sense of self and identity dissolve away.
5. I experienced a feeling of oneness in which the boundaries between what is me and what is not me has dissolved.
6. I experienced the insight that “all is One.”
7. I had an experience in which my mind expanded into space.
8. I experienced a melting or merging with the others; I became others and they became me.
9. It seemed to me that my environment and I were one.
10. I experienced an all-embracing love.
11. I felt a sense of awe and wonder.
12. I experienced a perfectly peaceful state.
13. I was surrounded and filled with a blissful warmth or energy.

Full Scale Score: Average all items.

Self-Transcendence Dimension: (add items 1 through 9)/9.

Bliss Dimension: (add items 10 through 13)/4.

## Appendix L

### Pre-Study Questionnaire

1. How many years have you been meditating? (If less than a year, please use a decimal to approximate the portion of a year that you have been meditating).
2. How many years have you been studying Zen? (If less than a year, please use a decimal to approximate the portion of a year that you have been studying Zen).
3. On average, approximately how many hours a week do you meditate? Please round to the nearest quarter hour.
4. Approximately how many sesshins have you attended in your life?
5. Which of the following do you regularly practice?
  - a. Koan introspection
  - b. Just sitting (Shikantaza)
  - c. Mindfulness of breath
  - d. Compassion meditation
  - e. Body practice
  - f. Other (please specify)
6. Have you taken the precepts (taken jukai)? Yes/No
7. Which of the following best describes your stage of training?
  - a. Just starting out
  - b. Student (choose this if unsure)
  - c. Senior Student
  - d. Dharma Holder
  - e. Sensei (Zen Teacher)

- f. Roshi (Zen Master)
8. Which of the following designations best describes your ordination status?
- a. Lay Practitioner (choose this if unsure)
  - b. Monk/Nun
  - c. Priest/Osho
9. During the **past seven days** only, approximately how many hours did you meditate total?

The following questions relate to your experiences with drugs. Please note that all responses are collected anonymously.

10. Have you had experiences with “psychedelic drugs” in the past? Psychedelic drugs are defined as substances that incur changes in Examples include lysergic acid diethylamide (LSD), dimethyltryptamine (DMT), Psilocybin (Magic Mushrooms), mescaline (Peyote), etc. Please note that cannabis is not considered a psychedelic drug for the purpose of this research.
- a. Yes
  - b. No
11. Have you used any of these substances in the last 7 days?
- a. Yes
  - b. No

## Appendix M

### Satisfaction With Life Scale (Diener & Emmons, 1985)

Please read the following questions and respond with your level of agreement with the statements regarding your life as a whole.

Absolutely Untrue	Mostly Untrue	Somewhat Untrue	Neither True nor Untrue	Somewhat True	Mostly True	Absolutely True
1	2	3	4	5	6	7

1. I am satisfied with my life.
2. The conditions of my life are excellent.
3. In most ways my life is close to the ideal.
4. So far I have gotten the important things I want from life.
5. If I could live my life over, I would change almost nothing.



## Appendix N

### Short Schwartz's Value Survey (Lindeman & Verkasalo, 2005)

Please, rate the importance of the following values as a life-guiding principle for you. Use the 8-point scale in which 0 indicates that the value is opposed to your principles, 1 indicates that the values is not important for you, 4 indicates that the values is important, and 8 indicates that the value is of supreme importance for you.

Opposed to My Principles	Not Important	Important				Supreme Importance		
0	1	2	3	4	5	6	7	8

1. POWER (social power, authority, wealth)
2. ACHIEVEMENT (success, capability, ambition, influence on people and events)
3. HEDONISM (gratification of desires, enjoyment in life, self-indulgence)
4. STIMULATION (daring, a varied and challenging life, an exciting life)
5. SELF-DIRECTION (creativity, freedom, curiosity, independence, choosing one's own goals)
6. UNIVERSALISM (broad- mindedness, beauty of nature and arts, social justice, a world at peace, equality, wisdom, unity with nature, environmental protection)
7. BENEVOLENCE (helpfulness, honesty, forgiveness, loyalty, responsibility)
8. TRADITION (respect for tradition, humbleness, accepting one's portion in life, devotion, modesty)
9. CONFORMITY (obedience, honoring parents and elders, self-discipline, politeness)
10. SECURITY (national security, family security, social order, cleanliness, reciprocation of favors)

## Appendix O

### Transpersonal Gratitude Scale

Please indicate the degree to which the following statements are true of you.

Strongly Disagree	Disagree	Moderately Disagree	Moderately Agree	Agree	Strongly Agree
1	2	3	4	5	6

#### Expression of Gratitude

1. I show appreciation to others when they have positively influenced my life.
2. It is difficult for me to express my gratitude. \*
3. I go out of my way to acknowledge favors.
4. I tell my friends that I am grateful for them.

#### Value of Gratitude

5. Gratitude helps me to address obstacles in my relationships.
6. Gratitude helps me to feel open with others.
7. I have patience when I feel gratitude.
8. Gratitude helps me to feel loving toward others.

#### Transcendent Gratitude

9. I feel grateful for just being alive.
10. I become overwhelmed with feelings of gratitude.
11. Thinking of the blessings that I've received helps me to appreciate life.
12. I am grateful for the opportunities I have had in my life.

#### Spiritual Connection

13. I say prayers of thanks for everything I have.

14. I thank God for the good things I have in my life.

15. I know there is a divine presence that is blessing me.

16. I am grateful to a divine being for everything in my life.

## Appendix P

### Questionnaire of Self-Transcendence (Fishbein et al., 2020)

Thinking about your general everyday experience, please rate how TRUE each statement below is for you.

Never True	Very Rarely True	Seldom True	Sometimes True	Often True	Almost Always True	Always True
1	2	3	4	5	6	7

1. I see a connection between who I was in the past and who I am today.
2. Even though there have been many changes in my life, I'm aware of a part of me that has witnessed it all.
3. I feel compassion for people who have harmed me.
4. I allow my emotions to come and go without struggling with them.
5. I am able to separate myself from my thoughts and feelings.
6. I feel connected even to people I don't know.
7. Though I have had many roles in my life, I have a sense of self that is stable and enduring.
8. I have a basic sense of myself that doesn't change even though my thoughts and feelings do.
9. It seems like all living beings on Earth are related.
10. When I feel distressed I can notice what is happening without being overwhelmed.
11. It seems like part of me is always the same, no matter where I am.
12. I experience myself as more than my thoughts and feelings.
13. I feel connected to all living beings, including plants and animals.

14. It seems like part of me holds all the experiences I have.
15. I can observe experiences in my body and mind as events that come and go.
16. I empathize with people who I haven't met.
17. I am able to step back from my emotions and observe them from a separate point of view.
18. As I look back on my life, I am aware of a basic part of me that remains unchanged.
19. I feel connected to people who speak a different language than me.
20. I see a connection between who I am at all places and times.
21. I am able to notice my changing thoughts without getting caught up in them.

Distancing sub score: sum of items 4, 5, 10, 12, 15, 17, and 21

Observing Self sub score: sum of items 1, 2, 7, 8, 11, 14, 18, and 20

Inter-transcendence sub score: sum of items 3, 6, 9, 13, 16, and 19

## Appendix Q

### Retreat Experience Questionnaire

Below are questions related to your experience during this most recent sesshin. Please answer the following questions only in relation to that retreat.

1. On a scale of 1-10, how would you rate the depth of your practice at this retreat?
2. Did you experience emptiness?
3. How intense was your experience with emptiness on a scale of 1-10, where 1 represents “mild intensity”, and 10 represents “extremely intense”? If you answered “no” to question 4, please select 0.
4. How would you rate the difficulty of your experiences during this retreat? Answer on a scale of 1-10 where one represents “slightly difficult,” and ten represents “extremely difficult.” If it was not at all difficult, please enter 0.

## **Appendix R**

### **Weekly Check-In Questionnaire**

The following question relates to psychedelic drug use. Psychedelic drugs are defined as substances that incur changes in Examples include lysergic acid diethylamide (LSD), dimethyltryptamine (DMT), Psilocybin (Magic Mushrooms), mescaline (Peyote), etc. Please note that cannabis is not considered a psychedelic drug for the purpose of this research.

1. Have you used any of these substances in the last 7 days?
  - a. Yes
  - b. No
  
2. During the past seven days only, approximately how many hours did you meditate total?