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THE SELF-COMPASSIONATE SIDE OF AWE: THE RELATIONSHIP BETWEEN AWE
AND SELF-COMPASSION VIA SELF-DIMINISHMENT AND CONNECTEDNESS

A Thesis

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Master of Arts

Degree

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ABSTRACT

Given that having a self-compassionate attitude is linked to positive psychological functioning, it is important to identify factors that promote self-compassion. Several self-transcendent experiences and emotions, which perceptually blur the lines between the self and others, predict self-compassion. Awe, a mixed-valence emotion defined by vastness and need for accommodation, seemed a likely candidate to promote self-compassion, as it is also a self-transcendent emotion with intra and interpersonal functions (e.g., increased humility, openness, and connection) that theory and empirical research has linked to self-compassion. Thus, we hypothesized that awe would promote self-compassion both directly and indirectly via boosted feelings of self-diminishment and connectedness. The study consisted of 351 undergraduates and a between-subjects manipulation, where participants watched one of four videos that elicited different flavors of awe (positive-nature awe, negative-nature awe, non-nature awe, or control). Results found that there was no significant difference in self-compassion and connectedness between conditions. However, compared to the control, both positive and negative nature awe increased self-diminishment, which negatively related to self-compassion. Negative nature awe also had a significant positive direct effect on self-compassion when accounting for the indirect effect via self-diminishment. While results of the study were mixed, several methodological concerns such as the study's setting, type of self-diminishment scale, and awe manipulation are discussed, along with future directions and potential implications of this work.

KEYWORDS: Awe, Self-Transcendence, Self-Compassion, Connectedness, Self-Diminishment

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CHAPTER I.

THE SELF-COMPASSIONATE SIDE OF AWE: THE RELATIONSHIP BETWEEN AWE AND SELF-COMPASSION VIA SELF-DIMINISHMENT AND CONNECTEDNESS

People experience a multitude of daily stressors and concerns, whether it be running late because they could not find a parking spot, feeling embarrassed because they said the wrong thing to a friend, or becoming overwhelmed because they procrastinated on writing a paper. Though we all experience daily stressors to some degree, people can differ in how they perceive the situation and themselves after these negative experiences. For example, work on negativity bias suggests that many people respond to negative experiences by engaging in ruminative and excessive self-focus, a style of thinking in which one can suffer from cognitive distortions (i.e., automatic and negatively biased thoughts about the situations and oneself; Akin, 2010; Hanson, 2009; Rimesa & Watkins, 2005). Such a cognitive style has been shown to increase negative affect and is associated with higher levels of depression and global negative self-judgements (i.e., perceiving oneself as worthless and incompetent), along with lower levels of mindfulness and decentering (i.e., seeing negative events from an objective third-person point-of-view; Odou & Brinker, 2014; Mori & Tanno, 2015; Rimesa & Watkins, 2005; Svendsen et al., 2016).

Conversely, it is also possible for people to respond to negative experiences with self-compassion, a positive attitude that involves a more accurate, objective, and kind perception of the situations and themselves (Leary et al., 2007; Neff & Tirsch, 2013; Odou & Brinker, 2014). Self-compassion has been linked to a host of positive psychological health outcomes, such as subjective and psychological well-being (McKay & Walker, 2021; Neff 2003b; Zessin,

Dickhäuser & Garbade, 2015). Thus, it is important to identify experiences and emotions that increase self-compassion in response to negative events.

One category of emotions and experiences that has been shown to be related to, and in some cases promote, self-compassion is called self-transcendence. Specifically, having a self-transcendent attentional shift from oneself to one's surroundings relates to having more objective and accurate perceptions of negative situations and the self (Akin, 2010; Germer & Neff, 2013; Hanson, 2009; Nolen-Hoeksema, 1991; Neff & Tirsch, 2013; Rimesa & Watkins, 2005; Shiota et al., 2017; Yaden et al., 2017), perceptions which research suggests can promote self-compassion (Germer & Neff, 2013). Literature has also shown that self-transcendent emotions, traits, and experiences such as gratitude, humility, mystical experiences, and mindfulness predict and/or promote self-compassion (both points are discussed in more detail below; Elliot, 2010; Homan & Hosack, 2019; Neff & Dahm, 2015; Stansbury, 2019).

However, no investigations have been done to determine if awe, a mixed-valence emotion defined by vastness and need for accommodation (i.e., a need to reorganize or create new schemas due to a challenging of existing schemas; Shiota et al., 2007), promotes self-compassion. Awe seems a likely candidate to promote self-compassion as awe has been shown to increase openness to emotions and learning (Ejova et al., 2021; Rudd, Hildebrand, & Vohs, 2018). Further, awe may also promote self-compassion because it is a self-transcendent emotion, which promotes seemingly simultaneous perceptions of a diminished self along with enhanced connection to a greater whole (Bai et al., 2017; Piff et al., 2015; Stellar et al., 2018). Therefore, the purpose of this current research is to investigate if (1) awe promotes self-compassion, and (2) if the relationship between awe and self-compassion can be explained by awe's self-transcendent mechanisms of reduced self-focus and increased connection to greater whole.

The Case for Self-Compassion

As mentioned above, self-compassion is a positive attitude one can hold towards the self. Researchers argue self-compassion is particularly adaptive during (or after) negative experiences because of the potential threat of negative experiences to one's self-perceptions (Leary et al., 2007; Neff, 2003_a). In terms of what specifically constitutes self-compassion, theorists have argued it consists of three factors: self-kindness, mindfulness, and common humanity. Self-kindness refers to being kind towards oneself and one's weaknesses in negative situations. Mindfulness refers to accepting, not repressing, the emotional distress that is associated with suffering, but also not letting the emotions become overwhelming or exaggerated. Common humanity refers to acknowledging that all human beings go through similar struggles throughout their lives, such that no single person is alone in their suffering (Neff, 2003_a).

A self-compassionate attitude can be induced through direct training interventions geared at promoting self-kindness, mindfulness, and common humanity; along with an accurate and non-biased self-perception via combating negative self-views and accepting one's own strengths and weaknesses (Germer & Neff, 2013). While such interventions have been successful, it is important to identify further experiences and emotions that increase a self-compassionate attitude because such direct trainings may not always be available or feasible. Moreover, it is important to identify experiences and emotions that promote self-compassion given self-compassion's broad links to positive psychological functioning. For example, self-compassion seems to be a more positive way of relating to oneself compared to enacting a ruminative and excessive self-focused thinking style, since the former involves an accurate and unbiased self-perception (Leary et al., 2007) and the latter involves a distorted and negatively biased self-perception (Akin, 2010; Rimesa & Watkins, 2005). Reacting to negative events with a self-compassionate attitude has

been shown to decrease negative affect and is associated with greater mindfulness, and a lower lifetime history of suicide ideation and non-suicidal self-injury, compared to ruminative and excessively self-focused thinking styles (Hasking et al., 2019; Odou & Brinker, 2014; Svendsen et al., 2016).

Further, self-compassion has been linked to mental health via strong negative relationships with psychopathology, stress, rumination, self-criticism, thought suppression, body image concerns, depression, and anxiety (r 's ranging from $-.37$ to $-.65$; MacBeth & Gumley, 2012; Neff, 2003b; Raes, 2010; Rockcliff et al., 2008; Wasylkiw, MacKinnon & MacLellan, 2012). Self-compassion also moderately to strongly relates to various positive aspects of people's lives and mental well-being such as emotional coping, subjective happiness, life satisfaction, self-determination/basic psychological needs, and psychological well-being (r 's ranging from $.25$ to $.72$; McKay & Walker, 2021; Neff 2003b; Zessin, Dickhäuser & Garbade, 2015). People higher in self-compassion tend to have less anxiety when talking about their weaknesses (Neff, Kirkpatrick and Rude, 2007) and, while accepting those weakness, tend to have more motivation to improve on them (Breines & Chen, 2012). Self-compassion is also argued to be a more adaptive way to relate to oneself compared to other self-attitudes such as contingent self-esteem and contingent self-worth, as a self-compassionate self-attitude seems more dependent on one's evaluation of themselves rather than how they perceive others evaluate them (Neff & Vonk, 2009). These aforementioned positive effects of self-compassion are only a sampling of its known benefits; but the consensus in the literature appears to be that self-compassionate attitudes are linked to positive psychological functioning. Thus, identifying emotions and experiences that promote self-compassion has important practical implications for those interested in harnessing the benefits of self-compassion for positive psychological

functioning. In the next section, we introduce awe as a functional emotion which may be one avenue by which people can experience greater self-compassion.

Awe as a Functional Emotion

Awe is defined as a functional, mixed-valence, emotion often felt in response to experiences that elicit, at the bare minimum, a sense of vastness and need for accommodation. People can be said to experience a sense of vastness when they observe something that they perceive as overwhelmingly bigger than themselves, either physically (e.g., the Grand Canyon) or conceptually (e.g., a meaningful life event such as childbirth). This vast amount of new information is so prodigious that it defies people's current worldview, creating the need to accommodate. People accommodate through updating their worldview by organizing the new information into new schemas or revising their existing schemas (Keltner & Haidt, 2003; Shiota, Keltner & Mossman, 2007; Stellar et al., 2018). A more recent framework of awe has also included other characteristics of the construct such as slowed time perception, physical sensations (e.g., goosebumps, jaw dropping, etc.), connectedness, and self-diminishment (Yaden et al., 2019). Further, though it may seem counter-intuitive as awe is conceptualized as being prompted by experiences that defy our existing schemas about the world (Keltner & Haidt, 2003), awe is a relatively accessible emotional experience, as it has been shown to be responsive to laboratory manipulation (e.g., Bai, et al., 2017; Graziosi & Yaden, 2019; Piff et al., 2015; Stellar et al., 2018; Yaden et al., 2019), and individuals seem to vary in their proneness to feeling awe in response to everyday experiences (Shiota, Keltner & Mossman, 2007).

Awe is considered a mixed-valence emotion because awe can be 'flavored' positively (i.e., elicit more positive emotions compared to negative) or negatively, depending on the awe elicitor and context (Keltner & Haidt, 2003; Gordon et al., 2016). In fact, Keltner & Haidt (2003)

theorize that there are five different ‘flavors’ of awe, two of which being threat and beauty. Awe experiences that are perceived as dangerous or a threat, such as natural disasters (i.e., tornados), are predominately flavored by negative feelings of fear. Beauty is thought to be predominately flavored by positive feelings of aesthetic pleasure and is theorized to be elicited by biophilia, or the innate desire of humans to be connected to nature (Keltner & Haidt, 2003; Gordon et al., 2016). Awe, especially its ‘flavors’ of threat and beauty, is most commonly elicited by nature (e.g., natural disasters and perceptually vast landscapes), however, there are also non-nature elicitors of awe, such as witnessing someone with an advanced skill, being confronted with the vastness of time or space (i.e., time moving in slow motion and being drawn out), and beholding a powerful leader (Graziosi & Yaden, 2019; Yaden et al., 2019).

It is theorized that the original elicitor of awe - what has been termed as primordial awe - was powerful leadership. Accordingly, primordial awe’s mechanisms of self-diminishment and connectedness are posited to allow people to put the welfare and reverence of the society and their leader(s) above their own, while working together as a group to survive (and thus reproduce) and pursue goals set by the leader(s) to benefit the society. Thus, it is thought that the interpersonal evolutionary function of awe was to maintain social cohesion and social hierarchy (Keltner and Haidt, 2003).

As time went on, however, the overwhelming vastness and need for accommodation that was associated with powerful leaders may have been generalized to other events, such as spacious landscapes, natural disasters, advanced skills, supernatural/religious events, and more (Allen, 2018; Keltner & Haidt, 2003; Yaden et al., 2019). There are also individual differences with the susceptibility people have to experiencing vastness and need for accommodation in response to events, resulting in some people being more prone to experience awe than others (e.g., a trash

bag floating in the wind could be perceived as vast and require a need for accommodation by highly awe prone people; Shiota, Keltner & Mossman, 2007). In line with the perspective that awe experiences might promote the kinds of behaviors that maintain social cohesion, current empirical evidence suggests a wide array interpersonal benefits of awe. For example, awe has been shown to increase willingness to volunteer time (Rudd, Vohs & Aaker, 2012), participants' sense of oneness with friends and humanity at large (Van Cappellen & Saroglou, 2012), acknowledgement of others in one's accomplishments (a factor of humility; Stellar et al., 2018), community connectiveness (Bai, et al., 2017), generosity, and general prosocial behavior (Piff et al., 2015).

However, a relatively more recent discovery about awe is that in addition to interpersonal functions, awe seems to also have many intrapersonal benefits; and it is these intrapersonal benefits that suggest a link between awe and self-compassion. For example, awe has been found to increase people's openness to learning and openness to experiencing and understanding their emotions (Ejova et al., 2021; Rudd, Hildebrand, & Vohs, 2018). It is possible this increased openness is due to the need for accommodation that characterizes awe experiences. This could be because when a person engages in accommodation, their perception of the world expands due to having their old worldview challenged by the vast new amount of information they gain from the awe experience (Rudd, Hildebrand, & Vohs, 2018).

In regards to self-compassion, being more open to emotions involves an increased openness to experiencing and accepting negative emotions in negative situations (Nekljudova, 2019). The latter exemplifies the mindfulness facet of self-compassion, which has been shown to promote self-compassion. Moreover, much like awe prompts an openness to learning and emotions, awe may also prompt an openness to one's strengths and weaknesses (i.e., accurate self-perception),

resulting in a compassionate self-attitude (Germer & Neff, 2013). Indeed, such a possibility is supported by work that has shown awe increases an open, secure, and accurate self-view in the form of humility (Stellar et al., 2018), which has been shown to relate to self-compassion in the form of less self-judgement and overidentification in negative situations (Elliot, 2010).

Not only can awe's ability to promote openness help explain the potential relationship between awe and self-compassion, but so too can awe's self-transcendent nature. When defining self-transcendence, it is important to first note that we as humans tend to experience our everyday lives as entities that are physically separate from other people and our surroundings. However, when someone experiences feelings of self-transcendence they perceive that the physical lines that separate them from others, and their surroundings, is momentarily blurred. In other words, when we experience feelings of self-transcendence, we engage in this shift in attention and awareness from ourselves to others and the universe at large. In doing so, we become less self-salient and more connected to others, the cosmos, and overall, a greater whole (Shiota et al., 2017; Yaden et al., 2017). Self-transcendence can be defined in terms of experiences (e.g., mindfulness and mystical experiences), emotions (e.g., awe and gratitude), and traits (e.g., humility; Kesebir, 2014; Stellar et al., 2018; Yaden et al., 2017). Awe is considered a self-transcendent emotion because, like self-transcendent emotions in general, when one experiences the emotion of awe, the perceptual line between the self, others, and the universe blurs. In the next section, we outline work linking self-transcendence to self-compassion.

Self-Transcendence and Self-Compassion

Neff & Tirsch (2013) theorize that self-compassion involves a self-transcendent self, prompting the momentary dissolution of the separate self and increased interconnectedness with humanity. As such, the relationship between self-compassion and self-transcendence could be bi-

directional, in that self-compassion may promote greater feelings of self-transcendence, and self-transcendent experiences more broadly may set the stage for one to engage in greater self-compassion. In the current work, we test the possibility that the specific self-transcendent experience of awe will promote greater self-compassion.

To expand on the theoretical possibility that self-transcendent emotions, traits, and experiences (such as awe) promote self-compassion, it needs to be reiterated that many people respond to negative events by engaging in a ruminative and excessive self-focused cognitive style, where they perpetuate negative and inaccurate views of themselves and the negative situation (cognitive distortions; Akin, 2010; Hanson, 2009; Rimesa & Watkins, 2005). However, shifting people's focus from themselves to their surroundings has been suggested to break the cyclical nature of cognitive distortions (Nolen-Hoeksema, 1991; Neff & Tirsch, 2013). By nature, self-transcendent experiences, emotions, and traits do just that; they shift people's attention from themselves to their surroundings. In doing so, self-transcendence allows people to see negative situations and themselves from a broader, more accurate, and objective perspective (Shiota et al., 2017; Yaden et al., 2017). It is self-transcendence's ability to cultivate accurate and objective perceptions of oneself and negative events, which could, in theory, promote self-compassion. This is possible because interventions that encourage accurate and unbiased views of oneself and negative situations have been found to promote self-compassion (Germer & Neff, 2013). Therefore, self-transcendent experiences, such as awe, seem likely to promote self-compassion as these experiences may move us to challenge existing negative schemas about the self and situations, and shift ones attention away from the self towards a broader, more objective perspective of the world and oneself.

Shifting attention from oneself to one's surroundings, allowing a wider and more accurate perspective regarding oneself and negative situations via self-transcendence, may also have the potential to promote each facet of self-compassion (self-kindness, mindfulness, and common humanity; Neff, 2003_a). Firstly, seeing oneself and negative situations from a broader, more objective perspective could allow a person to be kinder towards themselves. If, as a result of a self-transcendent experience, a person sees the whole of their self, both positive and negative, in a more honest and accurate light (e.g, Stellar et al., 2018), they may be less prone towards harsh judgments about themselves. Second, self-transcendence may similarly promote the self-compassion facet of mindfulness via its promotion of greater objectivity, increasing the possibility that one becomes mindful of negative situations they may be experiencing by accepting and non-critically experiencing the corresponding negative emotions while mitigating the possibility of overidentifying with the situation. Lastly, self-transcendence could affect the self-compassion facet of common humanity because self-transcendence has the potential to shift someone's narrowed attention from the self to a wider perspective that encompasses others, which could open up one's perspectives enough to realize that others share problems similar to their own (Leary et al., 2007; Neff, 2003_a, Neff & Tirsch, 2013). Furthermore, the self-transcendence may also be linked to the facet of common humanity because self-transcendence increases feelings of connectedness to a larger whole (which may include others, the world, and the universe) and common humanity involves an identification with humanity through awareness of shared suffering (Ying & Hashim, 2016).

The relationship between self-transcendence and self-compassion has been further established through the several self-transcendent emotions, traits, and experiences that have been found to predict and/or promote self-compassion. Firstly, gratitude has been found to positively

predict self-compassion (Homan & Hosack, 2019). Gratitude is considered a self-transcendent emotion because it involves shifting one's awareness from ourselves to others in the form of appreciation (Stellar et al., 2017). Moreover, according to the amplification theory of gratitude, gratitude also shifts people's attention to positive aspects on their lives. Not only does feelings of gratitude highlight positive external aspects of people's lives, but positive internal aspects of their lives as well, such as their strengths. Gratitude's ability to highlight people's strengths has been theorized to motivated people to forgive themselves (i.e., self-compassion), which has been used to explain why gratitude predicts self-compassion (Homan & Hosack, 2019).

The self-transcendent trait of humility has also been shown to be associated with several factors of self-compassion. Stellar et al. (2018) defines humility by two factors: (1) having a secure, open, and accurate view of the self and (2) taking into considerations the contributions of others in one's accomplishments. Humility is thus a self-transcendent trait because when a person is humble, they take into account the broader context of their accomplishments by evaluating the impact others have on those accomplishments (i.e., connectedness), while not exaggerating or fixating on their own importance by having an accurate view of themselves (i.e., reduced self-saliency; Kesebir, 2014). In terms of the relationship between humility and self-compassion, the humility subscale of accurate self-knowledge tends to be negatively correlated with the self-compassion scale's subscales of self-judgement ($r = -.35$) and overidentification ($r = -.26$; the theoretical opposites of self-kindness and mindfulness, respectively; Neff, 2003_a). This suggests that when a person's sense of self becomes less salient when being humble, they may be less likely to be judgmental about their weaknesses and overidentify with negative life events, promoting self-compassion. Moreover, the connectedness humility subscale positively correlates with the self-compassion scale's subscales of common humanity ($r = .32$) and

mindfulness ($r = .25$; Elliot, 2010). This can be interpreted to suggest that people who feel more connected (when acknowledging the contributions of others in their accomplishments) also tend to be more mindful about negative life events and understand that their problems/suffering is shared with most of humanity.

Mystical self-transcendent experiences have also been linked to self-compassion. Mystical experiences can be defined as intense self-transcendent experiences that are spiritual or religious in nature, where (momentarily) one's sense of self is completely outside of their perceptual awareness, resulting in total unity with one's surroundings. Mystical experiences are commonly induced through psychedelics (Kitson et al., 2020; Yaden et al., 2017), meaning that psychedelic experiences that result in ego-dissolution (i.e., the momentarily loss of one's sense of self) constitute mystical self-transcendent experiences. Relating psychedelic experiences back to self-compassion, higher levels of ego-dissolution during a psychedelic experience has been shown to correlate to higher levels of self-compassion ($r = .285$; Stansbury, 2019). This evidence further strengthens the argument that self-transcendence relates to self-compassion.

The last self-transcendent experience we will be discussing in relation to self-compassion is mindful experiences. Mindfulness can be defined as the regulation of one's own thoughts and attention that culminates in experiencing events in a non-judgmental, non-reactive, and accepting fashion. Mindful experiences are considered self-transcendent because when a person is mindful, they become an outside, and thus more objective, observer to their own experiences (i.e., a type of reduced-self-saliency called decentering) and can experience non-duality (i.e., a sense of oneness with everything; Vago & Zeidan, 2016; Yaden et al., 2017). In terms of self-compassion in relation to mindfulness, it is important to note that, even though one of self-compassion's factors is mindfulness, the self-compassion factor of mindfulness is narrower in scope in that it

only encompasses being a non-reactive and accepting observer towards negative events, where the broad concept of mindfulness does not discriminate between the valence of the observed events (Neff & Dahm, 2015).

Mindfulness and self-compassion are thought to be related because they both involve mindfulness in the form of being open to experiencing the suffering that is associated with negative events objectively and without overidentifying with them (Neff & Dahm, 2015). The relationship between mindfulness and self-compassion has been corroborated in the literature, with studies showing that the concepts share a low/moderate to high correlation, depending on the measure of mindfulness used (Birnie, Speca, & Carlson, 2010; Hollis-Walker & Colosimo, 2011). Furthermore, mindfulness and self-compassion also share a causal relationship, where mindfulness therapy (Mindfulness-Based Stress Reduction Program (MBSR) and Mindfulness-Based Cognitive Therapy (MBCT)) has been shown to increase self-compassion (Birnie et al., 2010; Kuyken et al., 2010; Neff & Dahm, 2015; Rimes & Wingrove, 2011; Shapiro, Brown, & Biegel, 2007). The causal relationship between mindfulness and self-compassion supports the idea that self-transcendent experiences broadly can cause self-compassion¹.

In summary, theoretical perspectives on both self-transcendence and self-compassion converge to suggest that self-transcendence relates to an accurate and objective view of negative situations and the self, and thus relates to greater self-compassion. For example, a variety of self-transcendent emotions and experiences, including gratitude, humility, mystical experiences, and mindfulness, are associated with self-compassion, with evidence of a causal relationship between mindfulness and self-compassion. Importantly, in light of this evidence across several operationalizations of self-transcendence, we argue it is possible that the self-transcendent emotion of awe could also promote self-compassion.

1. Though the opposite causal direction is also possible, where being self-compassionate may cause one to be more mindful. Again, is quite possible that the relationships between self-transcendence and self-compassion are bi-directional.

As stated previously, awe is considered a self-transcendent emotion because it involves the perceptual blurring between oneself and one's surroundings. When this occurs, people often report a type of reduced self-saliency referred to as self-diminishment, where people perceive themselves and their daily concerns as small in comparison to the grand scheme of their vast surroundings (Piff et al., 2015; Shiota, Keltner & Mossman, 2007). At the same time, when people have an awe experience, they tend to report greater feelings of connection to, and oneness with, humanity, nature, and the universe. This is commonly described as connectedness or connectedness to a greater whole. Not only are self-diminishment and connectedness thought to be characteristics of awe (Yaden et al., 2019), but they are also considered to be common self-transcendent mechanisms of awe. In fact, it has been found that awe causes feelings of smallness (i.e., a measure that encompasses self-diminishment and connectedness; Piff et al., 2015; Yaden et al., 2019), along with self-diminishment and community connectiveness (Bai, et al., 2017). Though there is no definitive consensus in the awe literature, self-diminishment and connectedness are usually theoretically and empirically placed as concurrent mechanisms.

We further argue it is possible that awe could promote self-compassion due its self-transcendent nature, via specific self-transcendent mechanisms' of self-diminishment and connectedness. Therefore, to reiterate, the second purpose of this study is to investigate whether awe can cause self-compassion through self-diminishment and connectedness. The next two sections we will review the literature on the specific connections between these self-transcendent mechanisms and self-compassion.

Awe, Self-Diminishment and Self-Compassion

In making the prediction that self-diminishment is related to self-compassion, it is important to note that, according to theoretical perspectives on awe, self-diminishment is not only defined

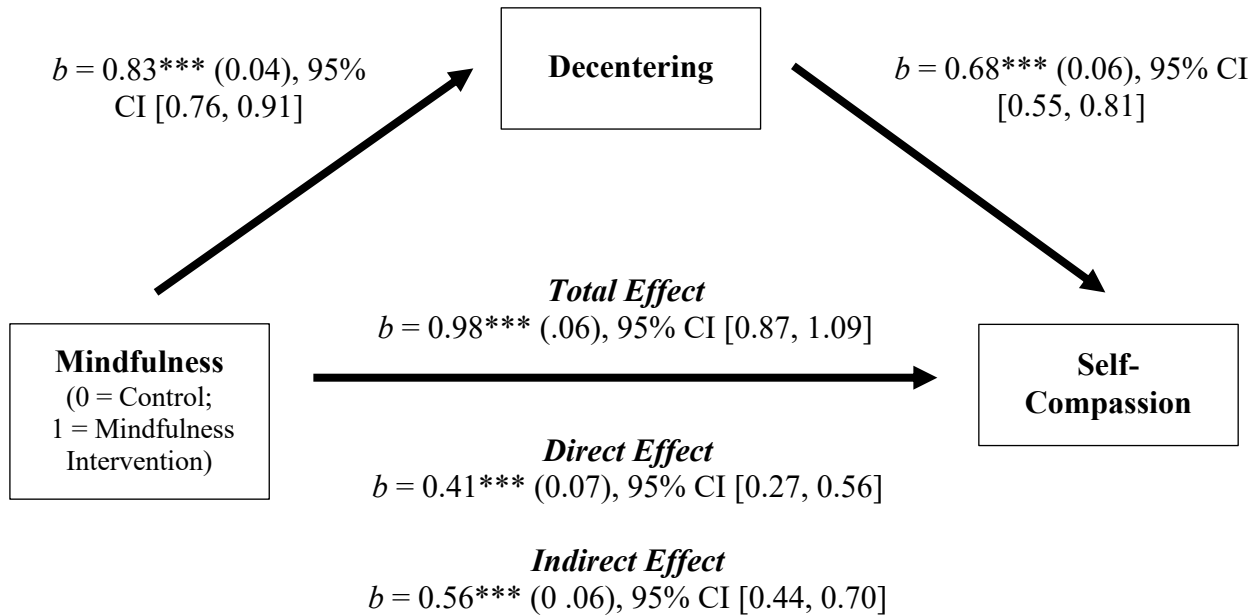
as people perceiving that they are smaller in response to awe, but also that their day-to-day concerns are smaller as well (Piff et al., 2015). We argue that seeing one's self and one's problems as small will allow people to look more objectively at their problems (i.e., mindfulness), be kinder towards their self and their problems (i.e., self-kindness), and realize others have similar problems (i.e., common humanity), resulting in them being broadly more self-compassionate towards their concerns and weaknesses, and ultimately towards themselves.

Indirect empirical evidence supports the proposed relationship between self-diminishment, specifically the diminishment of problems, and self-compassion, through the relationship between cognitive distortions and self-compassion. Cognitive distortions involve a person perceiving negative life events, weaknesses, and daily concerns as exaggerated while also feeling excessively responsible or fixated on the concerns (Akin, 2010). It turns out that self-compassion was strongly and negatively related to cognitive distortions. Thus, if *exaggerated* focus on one's own problems has a negative relationship with overall self-compassion, it is possible that *diminishment* of one's own problems could potentially have a positive relationship with overall self-compassion.

To further support the proposed relationship between awe, self-diminishment, and self-compassion, I ran a pilot analysis using data collected by Roca and colleagues (2021) on the self-transcendent experience of mindfulness and its link to decentering and self-compassion. To reiterate, decentering is a type of reduced self-saliency mechanism of mindfulness, akin to self-diminishment. Results revealed that decentering mediated the relationship between mindfulness and self-compassion (see Figure 1). The mediation model thus lends indirect support for the proposed mediation model where self-diminishment is hypothesized to mediate the relationship between a self-transcendent emotion and self-compassion. However, it is important to note that

the causal ordering of the Roca et al. (2021) mediation model can't be supported by the data due to the fact that the mediator and the dependent variable were measured simultaneously. Further, mindfulness and awe are distinct experiences of self-transcendence, and it is possible that the self-diminishment induced by awe is qualitatively and empirically distinct from the self-diminishment induced by mindfulness. Nevertheless, the possible parallels between the Roca et al. (2021) mediation model and the proposed mediation model may suggest that when someone experiences a self-transcendent event, they may look at their problems more objectively (due to either being an outside observer or perceiving them as smaller), which in turn could relate to having a more self-compassionate attitude.

**Figure 1: Mindfulness and Self-Compassion Mediated through Decentering
utilizing Data from Roca et al. (2021)**



* indicates significant at $p < .05$, ** at $p < .01$ and *** at $p < .001$.

Awe, Connectedness and Self-Compassion

Consistent with the literature suggesting that there is a relationship between self-transcendence's component of connectedness and self-compassion (Ying & Hashim, 2016), evidence suggests that the connectedness promoted by awe could relate to self-compassion, particularly when considering the self-compassion facet of common humanity. Specifically, when one is experiencing common humanity, they feel more connected to humanity as a whole because they realize that humanity shares similar negative events and problems that cause a common suffering. According to awe theories, when people experience awe, they feel connected to a greater whole, which we argue may also prompt feeling more connected to a common humanity. However, it is important to mention that connectedness (caused by awe) and common humanity are likely related, but distinct concepts. This is because common humanity only relates to feeling connected to humanity (Neff, 2003_a), where connectedness prompted by awe theoretically encompasses both feelings of connectedness towards others (e.g., a friend/family member/partner, a group of people, or humanity) and connectedness towards one's surroundings (e.g., nature and the universe at large; Yaden et al., 2019).

Support for the relationship between connectedness (specifically connectedness to others) and self-compassion may also be found when we consider attachment theory. According to attachment theory, functional early relationships with parents leads to the development of effective emotional regulation in the face of negative situations, such as developing a self-compassionate attitude in negative situations (Toplu-Demirtaş et al., 2018). Early feelings of connection with parents are also thought to develop the neurological self-soothing system, which self-compassion utilizes to cope with negative situations (Neff, Kirkpatrick & Rude, 2007). From

this perspective, it's possible that feelings of connection promote a positive psychological response in the face of negative situations that one's problems are not so bad, one belongs to a group and is loved, and one should be compassionate towards oneself.

It is also well-established empirically in the literature that connectedness towards others is related to self-compassion. For example, it has been shown that connection towards others moderately to highly correlate with self-compassion (r 's ranging from .29 to .57) and all its six factors (negative factors r 's ranging from (-.43) to (-.52) and positive factors r 's ranging from .30 to .47; Bloch, 2018; Neff, 2003_b; Neff, Kirkpatrick & Rude, 2007; Morley et al., 2016). Not only does feeling more connectedness towards others relate to self-compassion, but feeling more connectedness towards nature is also related to feeling more self-compassion (in women; Oh & Frederick, 2022). In sum, this evidence supports that components of connectedness to a greater whole (i.e., to others and nature) may predict self-compassion. Therefore, it seems possible that awe may indirectly promote greater self-compassion via its promotion of feelings of connectedness to a greater whole.

Current Study

Due to awe's tendency to prompt greater openness, along with awe's self-transcendent nature, we predict that awe will promote self-compassion. Moreover, we also predict that after experiencing awe, people will perceive a diminished sense of self and their problems, while also feeling more connectedness to a greater whole, which will ultimately predict feelings of self-compassion. Stated more simply, it is hypothesized that the effect of awe on self-compassion will be mediated by awe's self-transcendent mechanisms of self-diminishment and connectedness simultaneously.

In addition to the two hypotheses, we also seek to answer the research question, do variations in the "flavors" of awe impact the relationship between awe and self-compassion? Specifically, in this study we will be inducing three different flavors of awe: positively 'flavored' beauty nature awe (referred to as positive nature awe), negatively 'flavored' threat nature awe (referred to as negative nature awe), and non-nature awe. Investigating the impact of the 'flavors' of awe on self-compassion will be exploratory in nature because there is insufficient background literature to inform a specific hypothesis about how to different 'flavors' of awe will affect self-compassion. Nevertheless, including three different 'flavors' of awe in this study will allow us to explore whether the effect of awe on self-compassion is stimuli-dependent and whether the effect occurs across different 'flavored' manipulations. Overall, including the three 'flavors' of awe in this study will provide us with a more comprehensive understanding of the nature of the potential relationship between awe and self-compassion.

To test these two hypotheses, we conducted a study with a between-subjects design, in which participants were randomly assigned to one of three awe conditions (positive nature, negative nature or, non-nature) or a control condition. Awe was induced via video manipulations, followed by the measurement of self-diminishment and connectedness. Finally, self-compassion was measured in response to participants thinking about an unpleasant or difficult event. This was all done to determine if different flavors of awe promote (both directly and indirectly) subsequent self-compassion.

CHAPTER II.

METHODS

Sample Size Selection

Two a priori power analyses were conducted to determine how many participants would be required to conduct a study that utilized a parallel mediation model and a one-way ANOVA (the two primary analyses that were utilized in this study) with 95% power. In terms of the parallel mediation model, a Monte Carlo power analysis for indirect effects was conducted, through an online application (https://schoemanna.shinyapps.io/mc_power_med/; Schoemann, Boulton & Short, 2017). In accordance with Schoemann and colleague's (2017) recommendation, the simulation was set to 5000 replications, 20000 monte carlo draws per replication and 1234 random seeds with a 95% confidence interval. Consistent with another Schoemann and colleague's (2017) recommendation, the standard deviations for (x), (m₁), (m₂) and (y) were also set to 1.00, 1.50, 1.50 and 2.00 respectively. For the power analysis, correlation coefficients (and standardized coefficients, which are highly similar to correlation coefficients) were inputted for each mediation pathway based on previous studies (Elliot, 2010; Fabio & Saklofske, 2021; Kim, 2018; Metcalf, 2015; Morley et al., 2016; Neff, Kirkpatrick & Rude, 2007; Stellar et al., 2018; Van Cappellen & Saroglou, 2012). According to this power analysis for indirect effects, to detect an effect with 95% power for the parallel mediation model, we would need to collect 325 participants.

Next, an a priori power analysis was conducted to determine the necessary sample size to power the one-way ANOVA to 95%. It was found that in order to detect an effect size of Cohen's $f = .22$ (the average effect size in social psychology studies (Funder et al., 2014;

Richard, Bond, & Stokes-Zoota, 2003)) with four conditions and 95% power, 376 participants would need to be collected for the fixed effects, omnibus, one-way ANOVA analysis.

Due to the fact that the ANOVA would need more participants to be powered to 95% compared to the parallel mediation model, we decided to collect a sample size that would be big enough to power both statistical analyses. We also wanted to collect an extra 25 participants in anticipation for attrition. Due to this we sought to collect a sample of at least 401 participants.

Initially, 441 participants' responses to this survey were recorded². However, 27 participants dropped out of the survey before being assigned a condition. 11 additional participants missed more than one item on at least one of the three primary outcome measures (connectedness, self-diminishment, and self-compassion) and were thus removed from the final sample. An additional 44 participants either failed or did not answer both attention checks, leading to their exclusion from the final sample. Finally, an additional 9 participants indicated they did not take the survey seriously, or did not answer the seriousness check, which also led to their exclusion. After the exclusion criteria were applied, the total sample size consisted of 351 participants.

Participants

The participants in this study were undergraduate students at a large university in the Southern US, who completed this survey online in return for research credit for their psychology classes. The age of the final 351 participants ranged from 18 to 39 years old, with an average age of 18.81 years old ($SD = .08$). Participants' political affiliation ranged from very liberal to very conservative on a Likert scale from 1 to 11 respectively, averaging 7.32 ($SD = 2.89$). Participants also ranged from being not at all to highly religious on a Likert scale from 1 to 11, with an average of 7.52 ($SD = 2.86$). Refer to Table 1 for all other demographic information.

2. We planned to stop data collection after reaching 401 participants. However, we were monitoring the number of participants that completed the survey, rather than the number of responses that the survey received. This explains why we ended up collecting 441 initial responses, rather than 401 initial responses.

Sensitivity Power Analysis

Due to the fact that we aimed to collect a sample size of at least 401 participants, but only collected a final sample size of 351 participants, we ran a sensitivity power analysis. It was determined that with 95% power, four conditions, and a sample size of 351 participants we would be powered to detect an effect of $d = .44$ within a fixed effects, omnibus, one-way ANOVA.

Table 1.

Demographic Table

Gender	<i>N</i>	%
Cisgender Male	90	25.6
Transgender Male	2	0.6
Cisgender Female	238	67.8
Transgender Female	0	0
Gender Nonconforming /Gender Queer	3	0.9
Gender Fluid / Not Exclusively Male or Female	1	0.3
Other preferred identity	5	1.4
I am not sure about my gender identity	2	0.6
Prefer not to answer	10	2.8

Race	<i>N</i>	%
American Indian or Alaska Native	4	1.1
Asian	15	4.3
Black or African American	35	10.0
White	304	86.6

Arab or Middle Eastern	2	0.6
Other	5	1.4
Prefer not to answer	3	0.9
<hr/>		
Ethnicity	<i>N</i>	%
<hr/>		
Hispanic or Latino or Spanish Origin	18	5.1
Not Hispanic or Latino or Spanish Origin	314	89.5
Prefer not to answer	14	4.0
<hr/>		
Sexual Orientation	<i>N</i>	%
<hr/>		
Heterosexual Only	297	84.6
Heterosexual Mostly	19	5.4
Heterosexual Somewhat More	2	0.6
Heterosexual and Homosexual Equally	10	2.8
Homosexual Somewhat More	4	1.1
Homosexual Mostly	3	0.9
Homosexual Only	6	1.7
Prefer not to answer	10	2.8
<hr/>		
Year in College	<i>N</i>	%
<hr/>		
Freshman	263	74.9
Sophomore	58	16.5
Junior	17	4.8
Senior	13	3.7
<hr/>		
Religion	<i>N</i>	%
<hr/>		
African Traditional Religions	2	0.6

Buddhism	3	0.9
Christianity	295	84.0
Hinduism	4	1.1
Sikhism	1	0.3
Atheism	6	1.7
Agnostic	16	4.6
Other	18	5.1

Procedure

This study utilized a between-subjects design that consisted of four conditions (one factor: Awe). The study was given to participants in the form of a Qualtrics survey. The participants were randomly assigned to one of four conditions: (1) a positive nature awe video condition, which is a BBC Planet Earth video of sweeping landscapes and nature, set to uplifting music (2) a negative nature awe video, which is a compilation of tornados, set to ominous music (3) a non-nature awe condition, which is a SlowMo Guys YouTube video of food coloring falling into a glass of milk at slow motion, set to calming/inspiring music (the vastness in this condition is the vastness of time) or (4) a control condition, which is a video tutorial on how to construct a cabinet. The videos used in the present study were selected because they were either used in previous studies where they successfully manipulated the corresponding emotion (positive nature awe, non-nature awe, and control videos) or were similar to successful previously used videos (negative nature awe video; Piff et al., 2015; Rivera et al., 2020).

After watching one of the four videos, participants were asked to complete the manipulation check. Afterwards, the participants completed measures of self-diminishment, connectedness, and self-compassion.

Measures

Manipulation Check

In order to ensure that the awe video manipulation is successful, a six-item scale was included after both participants watch one of the four video conditions. The scale instructions state, “Please rate the extent to which you felt each emotion while watching the video.” The items list six different emotions including happiness, sadness, fear, awe, calm, and boredom. Participants reported how much they felt each emotion on a scale of 1 (Not at all) to 5 (A great deal).

The awe manipulation conditions would be deemed successful at manipulating feelings of awe if the awe videos elicited higher levels of awe compared to the control video. To ensure that the positive, negative, and non-nature awe videos were successful at manipulating their corresponding ‘flavors’ of awe, it was determined that positive and negative nature awe’s evoked levels of happiness and fear (respectively) would need to be higher compared to the other conditions (e.g., the positive nature awe video would need to elicit higher levels of happiness compared to the negative nature and non-nature awe videos). The other three emotions included in the manipulation check scale were included for exploratory purposes and to lower demand characteristics.

Self-Diminishment Subscale

The Self-Diminishment subscale of the Small Self Scale was developed by Piff et al. (2015). Participants were asked to rate their agreement with each item on a scale of 1 (Not at all true) to 7 (Very true). The Self-Diminishment subscale consisted of five items (e.g., “I feel small or insignificant”). To score the Self-Diminishment subscale the items were summed and

averaged. The mean score across conditions in this study was 3.20 (SD = .79) and the interitem reliability was $\alpha = .75$.

Connectedness Subscale

The connectedness subscale is a subscale from the Awe Experience Scale (Awe-S) developed by Yaden et al. (2019). The subscale measures the amount of connectedness that people have with others as a collective whole and the universe. The subscale has five items (e.g., “I had the sense of being connected to everything”). Participants were asked to indicate their agreement with each item on a Likert scale from 1 (Strongly disagree) to 7 (Strongly agree). To score the connectedness subscale, the items were summed and averaged. High scores indicated high levels of connectedness, and low scores indicated low levels of connectedness. The mean score across conditions in this study was 3.00 (SD = .79) and the interitem reliability was $\alpha = .85$.

State Self-Compassion Scale

Self-compassion was measured using the State Self-Compassion Scale – Long Form (SSCS-L; Neff et al., 2021). A state, rather than trait, measure of self-compassion was used to ensure that the measure would be amendable to manipulations, since self-compassion was the outcome variable in this study. The SSCS-L was shown to be amendable to manipulations during its validation through a difference in pre-test post-test scores after a self-compassion intervention. Additionally, the long 18-item version of the State Self-Compassion Scale, rather than the short six-item version, was used because the short-version does not have enough items per subscale (e.g., 1 item per subscale) to validly measure the subscales. For this study, we wanted the option to examine the individual subscales for potential exploratory purposes.

The SSCS-L instructions are as follows: “Think about a situation you are experiencing right now that is painful or difficult. It could be some challenge in your life, or perhaps you are feeling inadequate in some way. Please indicate how well each statement applies to how you are feeling toward yourself right now as you think about this situation.” The SSCS-L instructs people to think of a singular negative event when answering the scale’s items because self-compassion is most applicable in negative situations, since that is when someone needed to be the most compassionate towards themselves. In this study, the word ‘painful’ in the instructions, and questions, was replaced with the word ‘unpleasant’. This change was made because we did not want participants to think of extreme negative experiences, but instead day-to-day concerns. This was thought to be more in line with the parameters of the study, since one of this study’s aims is to investigate if self-compassion is predicted by the perception of minimized day-to-day concerns (i.e., self-diminishment).

The SSCS-L consists of six subscales, each subscale containing three items, summing to a total number of 18-items. Three of the subscales are the three factors of self-compassion: (1) Self-Kindness (e.g., “I’m giving myself the caring and tenderness I need”), (2) Mindfulness (e.g., “I’m keeping my emotions in balanced perspective”), and (3) Common Humanity (e.g., “I’m remembering that difficult feelings are shared by most people”). The three additional subscales are the theoretical opposites of aforementioned factors, respectively: (4) Self-Judgement (e.g., “I’m being pretty tough on myself”), (5) Overidentification (e.g., “I’m obsessing and fixating on everything that’s wrong”), and (6) Isolation (e.g., “I’m feeling all alone right now”). Response options range from 1 (not at all true for me) to 5 (very true for me). Furthermore, it has been determined that the SSCS-L has good factorial validity and construct validity in terms of the three self-compassion factors and their corresponding theoretically opposing facets.

To score the scale, a total self-compassion score will be calculated and/or scores for each of the subscales can be calculated. To calculate the score for a subscale, the items from a subscale will be averaged together. High scores on the self-kindness, mindfulness, and common humanity subscales will indicate high levels of self-compassion. High scores on the self-judgement, overidentification and isolation subscales (before reverse scoring) will indicate low levels of self-compassion. In order to calculate the total self-compassion scale, the self-judgement, overidentification and isolation subscales will first need to be reverse scored. Next, the average of all six subscales will need to be calculated before averaging all the averaged subscale scores together. A high score on the total self-compassion composite score will indicate a high level of self-compassion (Neff et al., 2021). The descriptive statistics and interitem reliabilities of the composite SSCS-L and its subscales, across the awe and control conditions, are reported in Table 2.

CHAPTER III.

RESULTS

Manipulation Check

Three one-way ANOVAs were used to conduct three manipulation checks, followed by planned non-orthogonal contrasts (see Table 2 for planned contrasts). The first manipulation check was successful, $F(3, 346) = 51.60, p < .001, \eta^2 = .31, 95\% \text{ CI } [0.23, 0.38]$. It was found that positive nature awe, non-nature awe, and negative nature awe significantly elicited more awe compared to the control (Table 2, Figure 2).

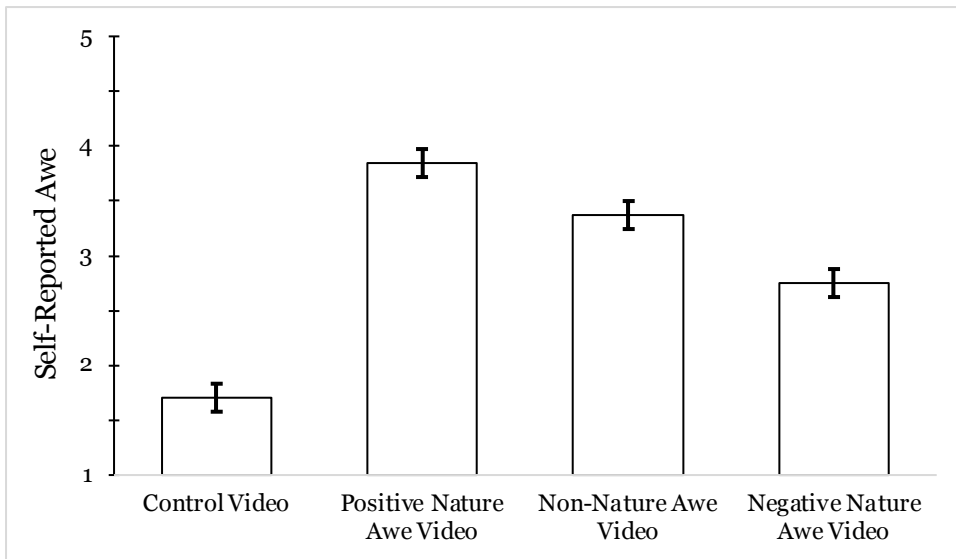
Table 2.

Non-Orthogonal Planned Contrasts for Manipulation Checks

Awe	<i>t</i>	<i>df</i>	SE	<i>p</i>	<i>d</i>
Control vs. Positive Nature Awe	-11.69	346	0.18	>.001	-1.90
Control vs. Non-Nature Awe	-9.24	346	0.18	>.001	-1.37
Control vs. Negative Nature Awe	-5.70	346	0.18	>.001	-0.94
Happiness					
Positive Nature Awe vs. Non-Nature Awe	2.49	347	0.16	.013	0.34
Positive Nature Awe vs. Negative Nature Awe	11.96	347	0.16	>.001	2.09
Fear					
Negative Nature Awe vs. Positive Nature Awe	10.27	347	0.13	>.001	1.26
Negative Nature Awe vs. Non-Nature Awe	10.77	347	0.13	>.001	1.34

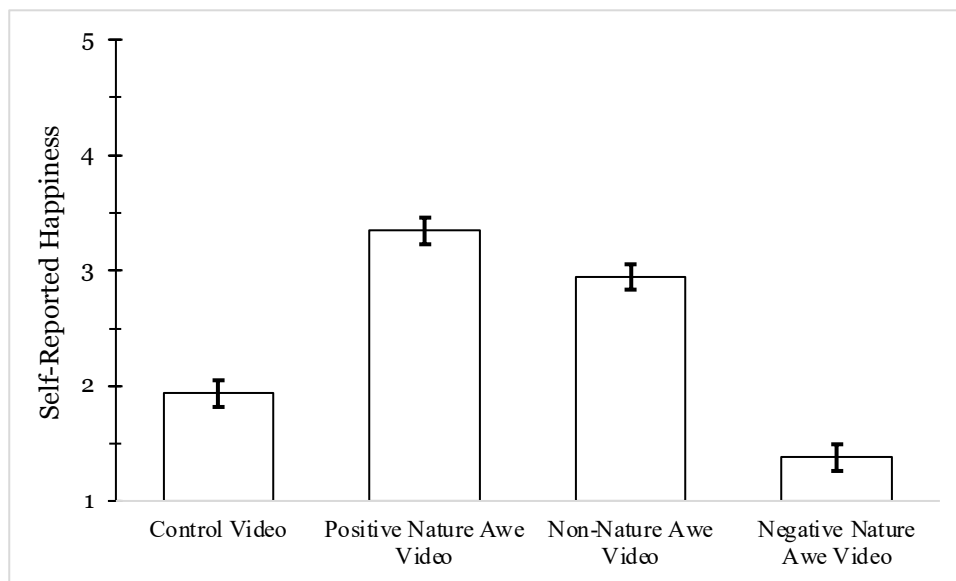
Note: Alpha level was set at .05

Figure 2: Awe Manipulation Check



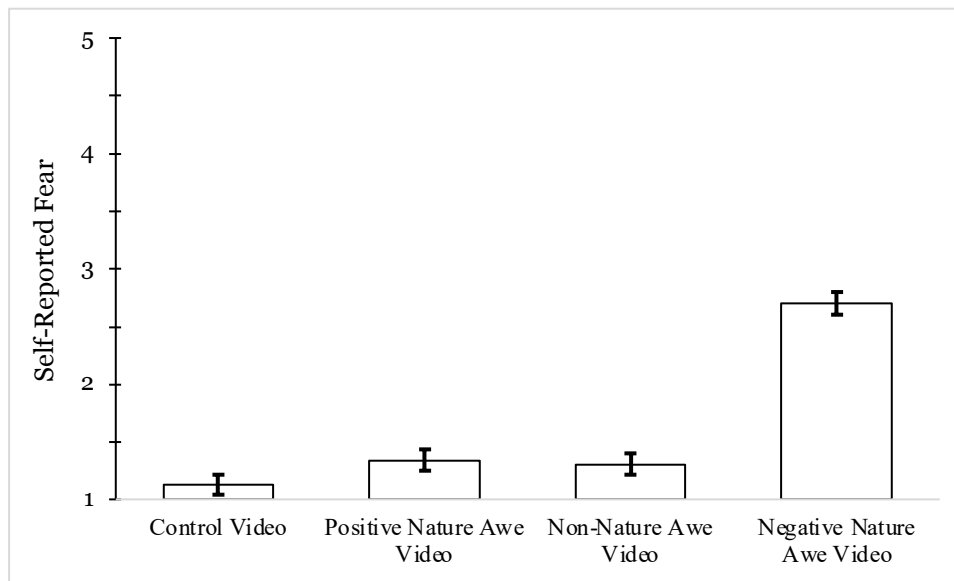
The second manipulation check was also successful, $F(3, 347) = 61.56, p < .001, \eta^2 = .35$, 95% CI [0.27, 0.41]; the positive nature awe condition elicited more happiness compared to the negative nature awe and non-nature awe conditions (Table 2, Figure 3).

Figure 3: Happiness Manipulation Check



Lastly, the third manipulation check was also successful, $F(3, 347) = 61.66, p < .001, \eta^2 = .35, 95\% \text{ CI } [0.27, 0.41]$; the negative nature awe condition elicited more fear compared to the positive nature awe and non-nature awe conditions (Table 2; Figure 4).

Figure 4: Fear Manipulation Check



ANOVAs

Three one-way ANOVAs were conducted to examine differences between conditions (positive nature awe, non-nature awe, negative nature awe, and control) on self-compassion, self-diminishment, and connectedness. It was found that there was no significant difference in self-compassion, $F(3, 347) = 0.62, p = .606, \eta^2 = .01, 95\% \text{ CI } [0, 0.02]$ (see Figure 5), nor connectedness across conditions, $F(3, 347) = 0.62, p = .606, \eta^2 = .01, 95\% \text{ CI } [0.00, 0.02]$ (see Figure 6).

Figure 5: Awe Conditions and Control's Effect on Self-Compassion

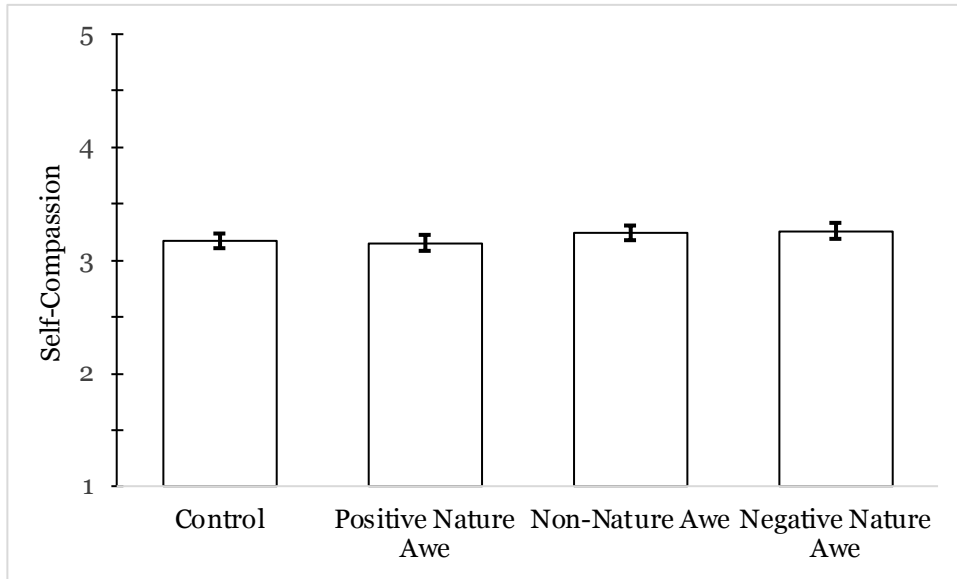
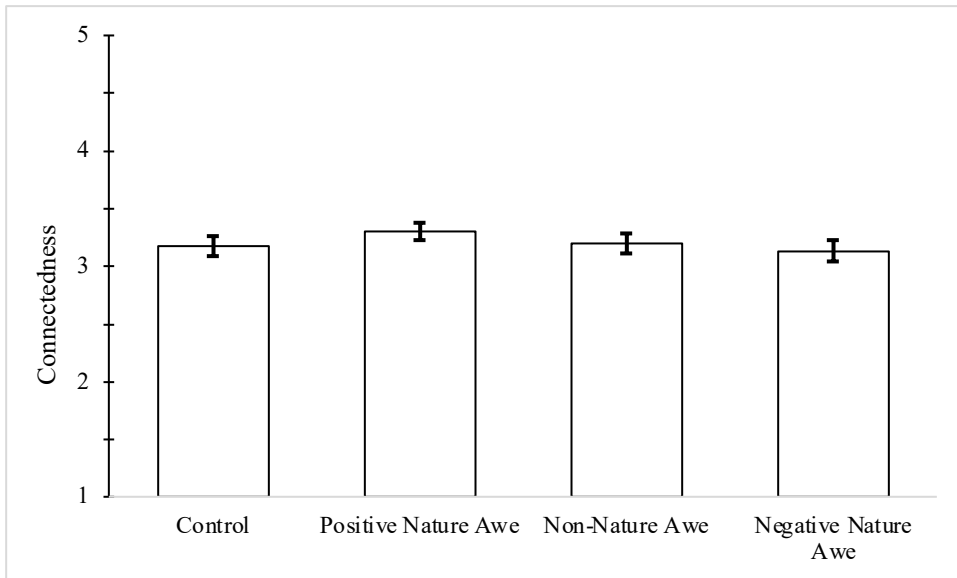


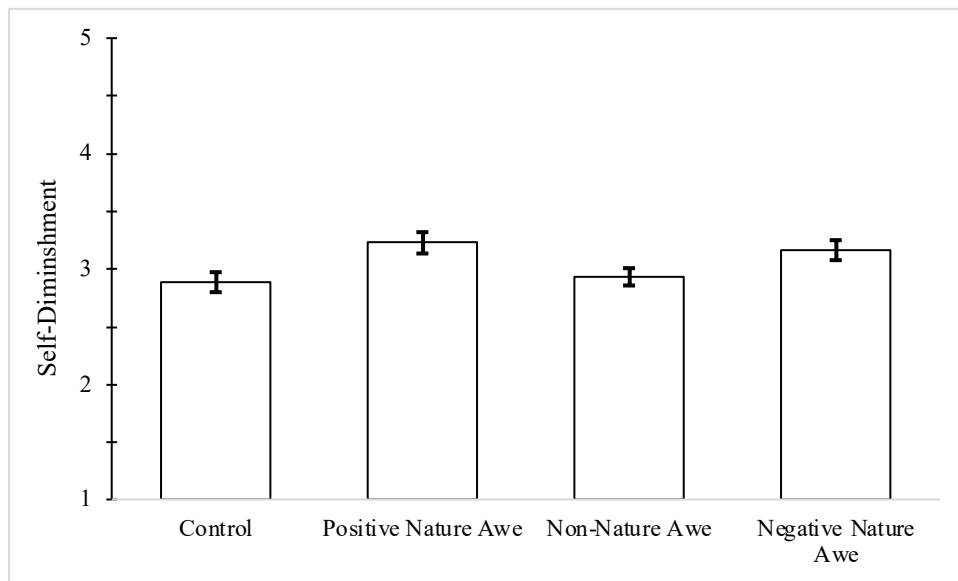
Figure 6: Awe Conditions and Control's Effect on Contentedness



However, there was found to be a significant difference in self-diminishment across conditions, $F(3,347) = 4.07, p = .007, \eta^2 = .03, 95\% \text{ CI } [.003, 0.07]$ (see Figure 7). Three follow-up planned non-orthogonal contrasts revealed that positive ($t(347) = 2.91, p = .004, d = 0.43, 95\% \text{ CI } [0.13, 0.72]$) and negative ($t(347) = 2.37, p = .018, d = 0.35, 95\% \text{ CI } [0.05, 0.65]$) nature awe elicited

more self-diminishment compared to control. There was not found to be a significant difference in connectedness between non-nature awe and control, $t(347) = 0.45, p = .654, d = 0.07, 95\% \text{ CI} [-0.22, 0.36]$.

Figure 7: Awe Conditions and Control's Effect on Self-Diminishment



Mediation Model

Analysis Strategy

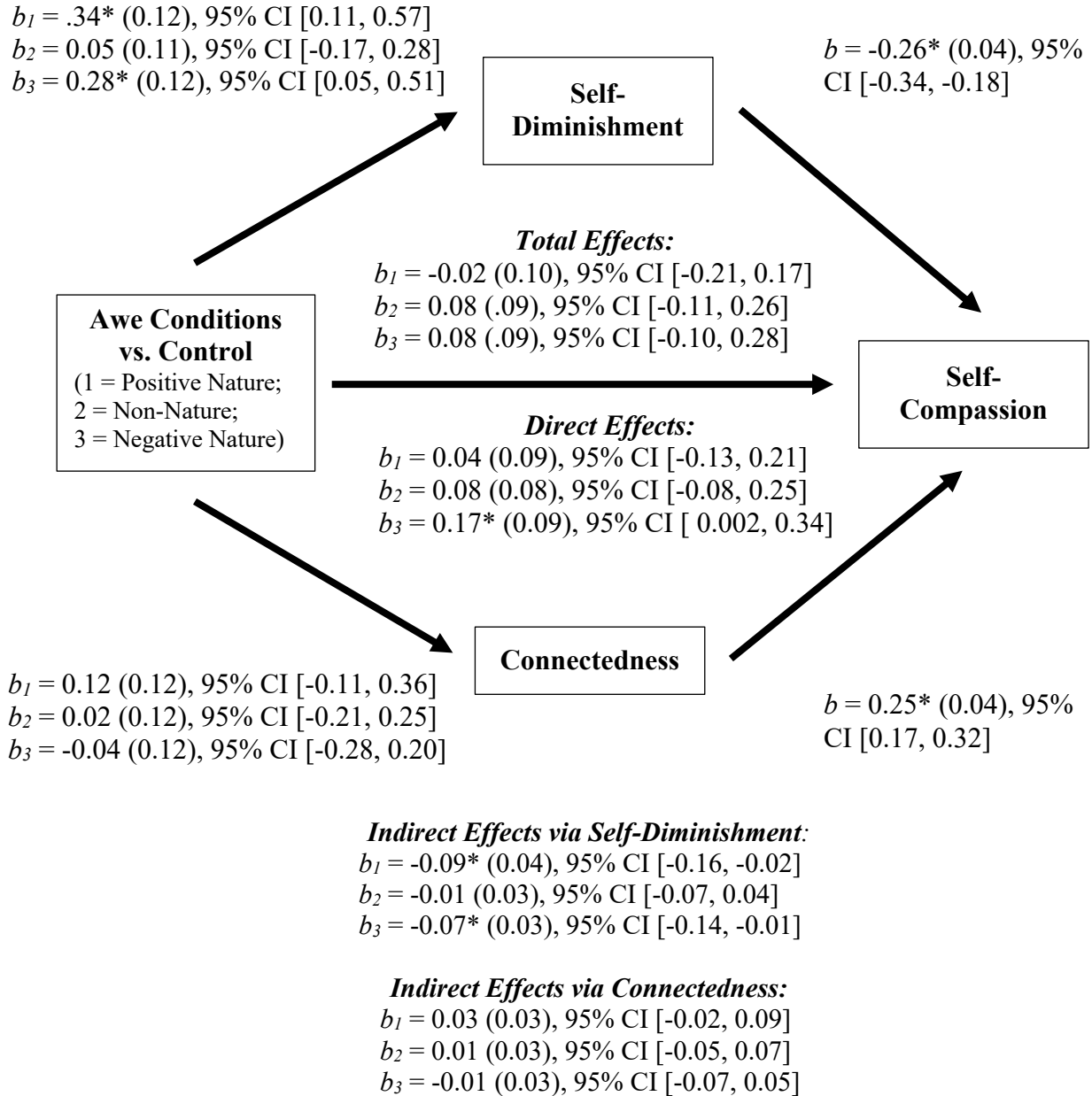
To examine the parallel mediational hypotheses that positive nature awe, negative nature awe, and non-nature awe's effect on self-compassion is mediated by connectedness and self-diminishment we used PROCESS (Model 4, Hayes 2018). We used a biased-corrected 95% confidence interval and examined total, direct, and indirect effects based on 5,000 bootstrapped samples. A significant effect is indicated by a confidence interval that does not include zero.

Since the independent variable of awe had four levels (positive nature awe, negative nature awe, non-nature awe, and control), it was inputted as a multicategorical predictor variable in PROCESS. We used the indicator function, meaning that each awe manipulation condition was compared against the control.

Self-Compassion

The parallel mediation model, where awe and self-compassion were mediated by self-diminishment and connectedness, was significant, Model: $F(5, 345) = 21.56, p < .001, \eta^2 = .24$, 95% CI [0.16, 0.30]. There was no significant total effect of awe on self-compassion across conditions. Referring to connectedness, none of the three awe conditions significantly increased connectedness compared to the control. Though there was a significant relationship between connectedness and self-compassion, the indirect effect via connectedness was not significant for any awe condition compared to control. In regard to self-diminishment, positive and negative nature awe, compared to control, did cause a significant increase in self-diminishment. However, non-nature awe, compared to the control, did not have a significant effect on self-diminishment. Self-Diminishment was found to be a significant negative predictor of self-compassion. Thus, there was a significant negative indirect effect via self-diminishment for both positive and negative nature awe, compared to the control, but not for non-nature awe compared to the control. In terms of direct effects, negative nature awe compared to control had a significant direct effect on self-compassion when accounting for the indirect effect via self-diminishment, however, the direct effect of positive and non-nature awe compared to the control on self-compassion were insignificant (refer to Figure 8 for mediation model statistical information).

Figure 8: Awe Conditions vs. Control and Self-Compassion Mediated through Self-Diminishment and Connectedness



* indicates significant at $p < .05$, ** at $p < .01$ and *** at $p < .001$.

CHAPTER IV.

DISCUSSION

This study sought to identify emotions and/or experiences that would increase self-compassion because of its ability to promote positive psychological functioning (McKay & Walker, 2021; Neff 2003_b; Zessin, Dickhäuser & Garbade, 2015). Due to awe's link to greater cognitive openness (Ejova et al., 2021; Rudd, Hildebrand, & Vohs, 2018) and its self-transcendent nature (Elliot, 2010; Homan & Hosack, 2019; Neff & Dahm, 2015; Stansbury, 2019) we hypothesized that the emotion of awe might promote greater self-compassion.

We also hypothesized that the relationship between awe and self-compassion would be mediated by awe's self-transcendent mechanisms of self-diminishment and connectedness. When people's sense of self is diminished, so too are their problems (Piff et al., 2015). Therefore, we predicted that the self-diminishment prompted by awe might be associated with seeing ones problems and negative experiences from a more kind, objective, and ubiquitous perspective (i.e., with greater self-compassion; Akin, 2010; Piff et al., 2015; Roca et al., 2021). We also predicted that the connectedness to a greater whole prompted by awe might relate to self-compassion given links between connection to others and perceived common humanity (Bloch, 2018; Neff, 2003_b; Neff, Kirkpatrick & Rude, 2007; Morley et al., 2016; Oh & Frederick, 2022). Lastly, due to awe's mixed-valance nature, we also sought to investigate the research question regarding whether the relationship between awe and self-compassion differs based on the 'flavor' of awe that is evoked (e.g., positive nature, negative nature and non-nature awe).

Hypothesis 1 was not supported by the results of this study. Specifically, there was no significant difference in self-compassion between the three awe conditions and the control condition. This is consistent with results that found there was no significant total effect across the awe conditions, compared to the control condition, on self-compassion. However, it should be noted that there was a direct effect between negative nature awe and self-compassion when controlling for the mediating effect of self-diminishment, which we discuss further below.

Hypothesis 2 was also not supported. Though feeling connectedness to a greater whole did relate to self-compassion, the awe conditions did not significantly increase feelings of connectedness compared to the control. It should be noted that the null result between awe and connectedness is contradictory to results that have found awe causes an increase in the same connectedness scale that was used in the current study (the Connectedness subscale of the Awe Experience Scale; Graziosi & Yaden, 2019; Yaden et al., 2019) and in a similar measure of connectedness ('A sense of vastness vis-à-vis the self' subscale of the Small-Self Scale; Piff et al., 2015). Moreover, though positive and negative nature awe, compared to the control, increased feelings of self-diminishment (which is consistent with past literature; Bai et al., 2017; Piff et al., 2015), it was found that self-diminishment related to having less self-compassion, counter to our predictions. It is possible that this unexpected negative relationship could be explained by the negatively valenced questions on the self-diminishment scale used in this study (Piff et al., 2015). That the measure we used to assess self-diminishment seemed to also involve perceived insignificance of self, rather than a more neutral version of reduced self-saliency that we were hoping to capture (more detailed discussion of the self-diminishment scale below).

In terms of addressing the current study's research question, the results of the study suggest that awe has different effects on self-attitudes depending on the 'flavor' of awe that is

evoked. For instance, there was no significant causal relationship between non-nature awe and self-diminishment, unlike positive and negative nature awe and self-diminishment. These results are consistent with Rivera's et al. (2020) results, however, are contradictory with Piff's et al. (2015) results, which found a significant effect of non-nature awe on self-diminishment. Furthermore, as opposed to negative nature awe, positive nature awe and non-nature awe did not have a significant direct effect on self-compassion when controlling for the negative indirect effect of self-diminishment. This could suggest that there is something specific about negative nature awe that makes it uniquely related to self-compassion. In fact, negative nature awe may exclusively evoke self-compassion because self-compassion is most applicable during negative situations, since that is when people's self-perceptions are most threatened (Neff, 2003_a).

The totality of this study's results suggest that awe is potentially capable of inciting positive change in people's attitudes about themselves in the form of self-compassion. However, this promotion of self-compassion only seems to be the case when awe experiences are filled with feelings of threat and fear. This relationship between awe and self-compassion also only seems to occur when controlling for feelings of self-diminishment that seemed to involve perceived insignificance of the self. It can thus be surmised that a number of conditions may need to be met for awe to promote self-compassion. Though this knowledge does contribute to scientific understanding, these conclusions also suggest that awe may not be suitable for practical purposes in the promotion of self-compassion, especially if clinicians would need to introduce clients to threatening and fearful situations.

However, it is imperative to acknowledge that the conclusions of this study are highly tentative due to the study's limitations. Thus, the study's implications should be interpreted with caution. For instance, one limitation of this study was that it was done online rather than in-

person. Suggested by the high amount of attrition and potential challenges due to the sampling period (during COVID-19), it is possible a large portion of this study's included participants were not fully engaging with the study, despite our attempts to address this using attention and seriousness checks.

It is possible that the null result regarding awe and connectedness could be due to poor participant attention/engagement. However, the null result could also be due to issues with our video manipulation. To explain, connectedness (caused by awe) is stimuli dependent, meaning that the level or presence of connectedness is dependent on the type of stimuli that is used to trigger awe. It has been found that nature awe evokes higher levels of connectedness than interpersonal awe (a type of non-nature awe) and general positivity (Graziosi & Yaden, 2019). This could help to explain why non-nature awe did not significantly increase connectedness in the current study. Moreover, the fact that connectedness (caused by awe) is stimuli dependent could also suggest that the type of stimuli, in the form of manipulation used, could also affect whether connectedness is evoked. In fact, the only manipulations that have been shown to move levels of connectedness (rather than just awe in general) in the particular connectedness subscale utilized in this study have been a writing task and a cognitive visualization task (Graziosi & Yaden, 2019; Yaden et al., 2019). In addition, it has also been found that video manipulations do not elicit as much awe as other types of manipulation, such as writing tasks (Li & Yu, 2022). Thus, the video manipulation may not have been the correct type of stimuli and/or strong enough to promote connectedness to a great whole, suggesting the choice to utilize a video manipulation could have been a limitation of this study.

Another limitation of this study, as previously alluded to, is our choice in self-diminishment scale. After further review, the self-diminishment scale developed by Piff et al.

(2015) is negatively valenced in that its items contain words with negative connotation such as ‘trivial’ and ‘insignificant’ (e.g., “I feel insignificant in the grand scheme of things”), rather than using more neutral words such as ‘smaller’ (e.g., “I felt my sense of self become somehow smaller”; Yaden et al., 2019). Thus, the self-diminishment scale used in this study could have made participants feel negatively about themselves in the form of feeling insignificant and trivialized, which could explain why self-diminishment predicted lower levels of self-compassion in this study. In this way, the self-diminishment scale used in this study seemed to capture the construct of perceived insignificance of self, rather than capturing the target construct, which was reduced self-saliency.

Though this seems to be a highly reasonable possibility, another possibility for why we did not see a positive relationship between self-diminishment and self-compassion, is that presence of a positive relationship may only occur for those with a secure sense of self. For example, previous research suggests that participants who have lower self-esteem are threatened by feelings of diminishment, while people with higher self-esteem embrace feelings of diminishment (Hornsey et al., 2018). It is possible that self-esteem may moderate the relationship between self-diminishment and self-compassion, such that there may be a positive indirect effect of awe on self-compassion via self-diminishment (in line with our predictions), but only for those high in self-esteem. Of course, it is also possible that regardless of measurement or potential moderators, the kind of self-diminishment evoked by awe is not conducive to feelings of self-compassion, despite links between reduced self-saliency and self-compassion seen in related research (Elliot, 2010; Roca et al., 2021).

Another limitation of our study design in terms of the relationship between self-diminishment and connectedness on self-compassion, is that there are limited causal inferences

that can be made due to the use of a cross-sectional mediation model. Specifically, with cross-sectional mediations, a causal relationship cannot be established between the mediators and outcome variable because the mediators and the dependent variable are measured at the same time, which is after the independent variable. To verify the causal order of self-diminishment and connectedness on self-compassion, typically one would need to utilize a double randomized design. In such a follow-up study, self-diminishment and connectedness would need to be manipulated, without the presence of awe, to determine if they cause self-compassion. However, due to the nature of this study's mediators being both characteristics of awe as well as its mechanisms, it would have been extremely difficult to design a task that would manipulate self-diminishment and connectedness without the presence of awe. Specifically, it is recommended to not conduct such a follow-up if the mediators are too difficult to manipulate independent from the independent variable (Pirlott & MacKinnon, 2016). Using a cross sectional mediation model has limitations, but does not make the results invalid, as long as interpretation is within the bounds of what can be empirically claimed. Thus, this study's design is positioned to claim that awe causes self-compassion, self-diminishment, and connectedness, but can only claim that self-diminishment and connectedness predict self-compassion. Future research seeking to establish evidence for temporal relationships between these mediators and self-compassion may benefit from using cross-lagged, longitudinal designs.

In all, there is theoretical potential in the results of this study that we think warrants recommendation for future research, conducted in person, rather than online, in order to better control for environmental distractions and ensure internal validity. Future research could also replace the awe video manipulations with a writing task, which has been shown in a meta-analysis to be a stronger awe manipulation and also move people on connectedness and self-

diminishment (Graziosi & Yaden, 2019; Li & Yu, 2022). Moreover, future studies could use a measure of self-diminishment that is not confounded with feelings of insignificance (the self-diminishment subscale of the Awe Experience Scale; Yaden et al., 2019). Lastly, future research could explore whether self-esteem is a moderator of the relationship between self-diminishment and self-compassion. Overall, further work is needed to provide clarity regarding the relationship between awe and self-compassion and whether that relationship is mediated by self-diminishment and connectedness to a greater whole. Research on awe as a potential elicitor of self-compassion is important given the numerous positive psychological benefits (e.g., McKay & Walker, 2021; Neff 2003b; Zessin, Dickhäuser & Garbade, 2015) of self-compassion, and the potential to broaden our understanding of the intrapersonal consequences of awe experiences.

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