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Relationships Among Specific Types of Trait Mindfulness, Need for Cognitive Closure, and Affect

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Abstract

Mindfulness has a multitude of benefits including, but not limited to, increasing one's positive affect, decreasing stress, lowering blood pressure, protecting against depression and reducing chronic pain. The pre-existing literature on mindfulness unanimously suggests that mindfulness relies on self-regulating functions to improve overall well-being but lacks information regarding which specific emotion-regulating characteristics may play a role in determining mindfulness tendencies. The present research investigated whether or not an individual's trait mindfulness is correlated with one's need for cognitive closure (NFC) and how these measures relate to positive and negative affect. A total of 328 participants, recruited from the University of Arkansas SONA study pool, completed an online survey questionnaire in which they were evaluated on three measures: trait mindfulness, NFC, and positive and negative affect. Participants presented lower negative affect (NA) when utilizing high levels of mindfulness acceptance, suggesting a negative correlation between NA and mindfulness acceptance. Additionally, those low in NFC utilize higher levels of mindfulness acceptance while those high in NFC were found to use higher levels of attentional mindfulness. These results suggest that certain individuals, based on fixed cognitive traits, may be more or less likely to utilize certain components of mindfulness.

Correlates of Trait Mindfulness and Need for Cognitive Closure

History of Mindfulness

Mindfulness is an ancient practice, originating from religious and spiritual institutions from the Eastern world. It has been largely westernized over the past century and has adopted a more secular nature. Jon Kabat- Zinn is partly responsible for polarizing this attention-focused method by incorporating it into his eight-week mindfulness-based stress reduction (MBSR; Kabat- Zinn, 1990) program. The original definition of mindfulness stems from Buddhist psychology where it enables individuals to liberate oneself from detrimental mental states (Coffey, Hartman, & Fredrickson, 2010). Kabat- Zinn incorporates Buddhist teachings of mindfulness into the context of psychological science and sets the foundation for mindfulness research and its effects on well-being. His first MBSR program was held in 1979 and since then schools, prisons, hospitals, and health clinics have continued to implement similar stress reduction methods (Cullen, 2011).

Mindfulness practices have been integrated into activities such as yoga and meditation in recent years and aim to strengthen one's mind-body relationship. Some specifics include breathing techniques, posture reminders, metaphors regarding body and earth, interconnectedness, positive energy incorporation, wakefulness, ways to thwart anger, groundedness, and conscious thinking (Kabat- Zinn, 1994). These practices have become a pillar for those wanting to establish mindfulness in everyday life. The idea is that by implementing mindfulness, one increases attention, positive affect, and helps to eliminate ruminative thoughts (Rahl, Lindsay, Pacilio, Brown, & Creswell, 2017). By directing your attention to your body sensations, one may experience a happier and more fulfilling life. MBSR programs may allow

one to experience temporary changes in happiness, but in order to gain permanent changes one must practice these techniques over the course of many years.

Definition of Mindfulness

With mindfulness quickly growing in popularity, Western psychology and culture has produced an impressive array of definitions over the past thirty years. Mindfulness began as a systematic practice to investigate one's subjective experience (Brown & Ryan, 2003). Kabat-Zinn defines mindfulness as "paying attention in a particular way; on purpose, in the present moment, and non-judgmentally" (1994). The traditional Buddhist definition does not refer to mindfulness as a mental function or characteristic, but rather a practice of bodily sensations or awareness of the mental processes (Grossman & Van Dam, 2011; Cullen, 2011). There are two main branches of Buddhism, Theravada and Mahayana, both with different, yet similar, views of mindfulness. Theravada, which most Western mindfulness centers are based, practice vipassana or "seeing clearly" (Cullen, 2011). Vipassana is known as the practice of insight and has the potential to liberate one from feelings of greed, hatred, and delusion. Mahayana, on the other hand, uses mindfulness during mediation as a way restore and heal one's mind and to break free of past memories. In both cases, Buddhist mindfulness has the power to provide clear comprehension by allowing one to "perceive phenomena unclouded by distorting mental states (such as moods and emotions) and the metacognitive capacity to monitor the quality of attention" (Cullen, 2011). Although the general definition varies, the empirical scientific community also agrees that sustained attention is a fundamental part of mindfulness (Mrazek, Smallwood, & Schooler, 2012; Brown & Ryan, 2003; Blanke, Riediger, & Brose, 2018). However, an exact definition of mindfulness as a construct has proved to be interpretive with no one single conceptualization.

Although there are some fundamental elements of mindfulness, traditional Buddhist definitions and empirical research definitions in the psychological domain of mindfulness have significant differences. One major reason for this is that psychological research aims to understand the effects of mindfulness training, rather than mindfulness training itself. Current literature has stretched these definitions in order to examine how mindfulness meditation training might play a role in enhancing overall well-being. Relevant research operationalizes mindfulness in a variety of ways which has contributed to the ongoing debate of what is the most optimal and complete definition for this construct (Grossman & Van Dam, 2011). Mindfulness is a difficult concept to define, which makes it an even more difficult concept to measure. Most researchers turn to self-reported measures of mindfulness, which reveals one's own interpretation of their mindfulness rather than a true quantification of their objective mindfulness. For the sake of this research, the current study uses a definition that falls somewhere in between a true definition of Buddhist mindfulness and a psychological definition of mindfulness used to quantify a personality trait. Trait mindfulness is described as an individual's natural disposition to deliberately pay attention to the present sensory and perceptual experience in a non-judgmental way, but also accept any thoughts that arise without being distracted by thoughts of the past or future.

Facets of Mindfulness

There are many conceptualizations of trait mindfulness, however, researchers who study mindfulness will focus on two or three specific facets of mindfulness. The complete collection is included in the Five Facet Mindfulness Questionnaire (FFMQ; Baer, Smith, Hopkins, Krietemeyer, & Toney 2006) and are as follows: observing, describing, acting with awareness, non-judging of inner experiences, and non-reactivity to inner experiences. Some of these

components have overlapping qualities which has led researchers in the field of mindfulness to simplify these into just two conditions of attention and acceptance (Rahl, et al., 2016; Coffey et al., 2010). The attentional component refers to people intentionally regulating their attention by observing their thoughts, physical sensations, and other stimuli that occur in the present moment or any wandering thoughts that arise. This attention component can also be referred to as present-moment awareness (Cardaciotto, Herbert, Forman, Moitra, & Farrow 2008). The acceptance component focuses on maintaining a mindset of openness to their present experiences rather than judging or ignoring them, resulting in non-judgmental acceptance (Coffey et al., 2010). Blanke, Riediger, & Brose (2018) suggest that when taken together, present moment attention may foster positive affect (PA), whereas non-judgmental acceptance may dampen negative affect (NA). Furthermore, recent studies show benefits when these two mindfulness training techniques are implemented together including improvement in overall attention, distress, and positive mood states (Rahl et al., 2016). Mindfulness attention is expected to have a positive correlation with PA, whereas mindfulness acceptance will have a negative correlation with NA.

Attention is an integral part of one's interpretation of their experience. The act of manipulating one's attentional capacities to either broaden or narrow concentration is an intrinsic component of mindfulness- based interventions. MSBR specifically focuses on training individuals how to focus their conscious attention towards their present moment experiences (Kabat- Zinn, 1994). Teper, Segal, & Inzlicht (2013) explain attention as a control technique that promotes conflict-monitoring by being aware of surrounding sensory clues. This in turn, allows individuals to better execute control over their own thoughts and emotions. One's natural attentional capacity is determined by the ability to intentionally regulate attentiveness by deliberate and sustained observations of thoughts, feelings, and physical sensations in the face of

irrelevant or distracting stimuli. For example, while eating a meal, an individual may be consciously aware of the moment-to-moment taste experience while also noting the increasing feeling of fullness in one's stomach. Research shows that the ability to direct attention to positive experiences while blocking out the negative stimuli results in an increase of positive affect and neural functioning (Brown & Ryan, 2003). However, there are things that commonly disrupt one's attentional capacities. These include rumination of the past, anxiety about the future, and preoccupation with multiple tasks (Brown & Ryan, 2003).

Nonjudgmental acceptance as a component of mindfulness tends to mean accepting unwanted or distracting thoughts. When one is utilizing a form of mindfulness-based intervention, people can experience a wandering of attention. Many programs will train individuals to foster an attitude of acceptance or nonjudgmental openness when participants find their mind wandering and then bring their mind back to the present moment (Rahl et al., 2016). This activity helps individuals learn how to harness their attentional abilities as well as reduce mind wandering (Rahl et al., 2016). The ability to implement nonjudgmental acceptance or openness is instrumental in re-establishing control of one's mental state. When people accept their emotions fully, they are in a better position to do something about them (Teper et al., 2013). Nonjudgmental acceptance is shown to reduce negative affectivity and psychological symptoms and is negatively associated with depression, anxiety, and stress levels in adolescences (Blanke et al., 2018).

There are two assumptions that have been presented by Brown and Ryan (2003) about examining these two components as naturally occurring characteristics. The first assumption is that individuals differ in propensity or willingness to be nonjudgmentally aware to what is occurring in the present. The second assumption is that one's mindfulness capacity varies among

individuals due to a variety of present factors. It is also worth noting that both facets of mindfulness are interdependent and crucial for promoting enhanced executive control of one's neural status (Teper et al., 2013). In the present research, the two components of mindfulness will be examined separately by means of a median split. The results of this study are predicted to show a positive correlation between attention and PA and a negative correlation between acceptance and NA.

Trait Versus State Mindfulness

Empirical research has defined mindfulness in two specific types. *Trait mindfulness,* which is a baseline level of dispositional mindfulness that is unique to the individual, and *state mindfulness* which is an outcome or awareness resulting from mindfulness training. Trait mindfulness is a pre-existing, semi-permanent character trait usually assessed by self-report questionnaires, such as the Philadelphia Mindfulness Scale (PHLMS; Cardaciotto et al., 2008). Those with high levels of trait mindfulness are able to attend to present moment experiences and be aware of their automatic reactions, which allows them to remain nonreactive when faced with distressing thoughts, emotions, or somatic sensations (Brown, Ryan, & Creswell, 2007). It has also been shown that high levels of trait mindfulness optimize psychological functioning and as well as alleviate neural distress (Coffey et al., 2010).

Since trait mindfulness is self-assessed, it is important to remember that the measure is not necessarily assessing for trait mindfulness as much as the interpretation of one's own trait mindfulness. State mindfulness, on the other hand, is a temporary condition in which mindfulness practice can increase temporarily. It is thought that by implementing mindfulness practices, such as Kabat-Zinn's eight-week MBSR program (1990), one increases state mindfulness which over time contributes to increases in trait mindfulness (Kiken, Garland,

Bluth, Palsson, & Gaylord, 2015; Tang, Holzel, & Posner 2016). So, although trait mindfulness is an integral part of a person's identity, it can be permanently altered by long periods of practicing temporary state mindfulness. Nevertheless, the research presented here did not manipulate one's unique and dispositional state mindfulness, but rather measure one's pre-existing trait mindfulness.

Need for Cognitive Closure

Need for cognitive closure (NFC) is an individual characteristic, similar to trait mindfulness, that may also play a role in understanding individual differences. An individual's need for cognitive closure proves to be situational but determining an overall baseline level for each participant is necessary for this research. Webster and Kruglanski (1994) define Need for Cognitive Closure (NFC) as the "desire for predictability, preference for order and structure, discomfort with ambiguity, decisiveness, and close mindedness." The term 'need' in this case means to have more tendency or proclivity rather than biological characteristics. NFC represents a dimension of a person in which the individual thrives in either a scenario of knowing or not knowing. The Psychometric Properties of the Need for Closure Scale (NFCS; Webster et al., 1994) uses five key factors to determine whether an individual is high or low in NFC. The five factors include order and structure, discomfort/ambiguity, decisiveness, predictability, and close-mindedness. Those high in NFC should desire order and structure in their lives and reject chaos and disorder while those low in NFC should experience less stress when faced with ambiguity and uncertainty (Webster et al., 1994). For example, individuals with high NFC are more likely to make rapid decisions relying on stereotypes while rejecting information inconsistent with their judgments due to the adversity with uncertain situations (Kruglanski, 2004). Individuals with low NFC are motivated to make decisions systematically and come to a thorough conclusion because

they are comfortable operating with inconsistency (Kruglanski, 2004). For the study presented here, it is predicted that psychological NFC will have a negative correlation with mindfulness attention and no negative association with mindfulness acceptance.

Benefits of Mindfulness

Although, the present study does not directly implement mindfulness training, it is still important to understand the benefits of this particular state of mind. Mindfulness is theorized to have widespread effects on mental health, well-being, physical health, self-regulation, and interpersonal behavior and is described as a type of consciousness characterized by clarity and vividness of a present moment (Brown et al., 2007). Implementing mindfulness plays a key role in self-endorsed behavioral regulation by eliminating automatic thoughts, habits, and unhealthy behavior patterns and therefore the practice enhances overall well-being by eliminating toxic behaviors (Brown & Ryan, 2003). Mindfulness has been shown not only to help with negative mental states, but also patients with chronic pain. A 2011 study showed that those with a higher level of mindfulness after MBI practices led to a decreased pain perception and overall better functioning (Chiesa & Serretti, 2011). Although the MBIs did not directly improve pain levels, the mindfulness practice proved beneficial in modifying how the patients perceived their symptoms by enhancing their natural acceptance levels (Chiesa et al., 2011). Trait mindfulness as a mediator of well-being has not yet being clearly identified. The current study aims to add to the literature regarding the benefits of self-established mindfulness.

Proposed Research

Recently, a Master's thesis study conducted at the University of Arkansas placed participants in a multi-day training consisting of mindful attention, acceptance, or a control condition (Fey, 2019). Inspiration for this study came from Rahl, Lindsay, Pacilio, Brown, and

Creswell's (2016) investigation on utilizing mindfulness training to reduce mind wandering. The study was one of the first to deconstruct the components of mind training to obtain attention-oriented results. This principle inspired the Master's research in which a similar concept of incorporating mind training was included to test the effects of multi-day training on its ability to increase or decrease personal affect. The training consisted of voice audio that intended to guide participants through a ten to fifteen-minute training session on state induced mindfulness. The attention condition encouraged individuals to focus on their breathing and practice paying attention to their moment to moment experience. The acceptance condition included the same as the attention condition, but also encouraged individuals to focus on accepting their moment to moment experience and any distractions that may arise in non-judgmental and accepting manner. The control condition included participants listening to a non-related story about a fisherman. Those both low in NFC, the human desire to eliminate ambiguity and find definite conclusions, and in the acceptance condition experienced significantly more NA. These individuals would benefit most from the mindfulness attention training. These findings were rationalized in that the people low in NFC are comfortable with ambiguity and thus may be habituated to having less concreteness in their thoughts in general. This means that these individuals might be desensitized to their negative or unwanted thoughts, meaning that they do not bother them as much. When the individuals are told to accept their wandering thoughts, this might create an adverse reaction and agitate the individual.

The current study presented here aims to further investigate this principle, however, it does not focus on mindfulness induction training but instead focuses on an individual's trait mindfulness. The question remains: is the current mindfulness literature also applicable to one's preexisting mindfulness level or trait mindfulness? As the previous literature suggests,

mindfulness is a complex practice and in order to gain a deeper understanding of how mindfulness improves our lives and which people are more likely impacted, additional research is necessary. Most research in this field is done on state mindfulness or induction. Any research done on trait mindfulness usually compares groups of experienced or novice users of mindfulness. This study assesses the impacts of trait mindfulness, rather than a transient state mindfulness which is based on mindfulness induction. The greatest effects of these techniques come from experienced mindfulness meditators who have been practicing mindfulness for years and does not represent the majority of people. The current study is interested in determining how individuals utilize their own trait mindfulness, how it impacts their positive and negative affect, and whether there is any merit to these concepts apart from a brief mindfulness induction.

The purpose of the present study was to test whether a pattern similar to that found by Fey (2019) could be seen in trait levels of the three variables: trait mindfulness, NFC, and PA/NA. By conducting an online questionnaire, it will confirm whether or not these variables are associated in the ways that the experimental literature suggests. The data are self-reported which has its limitations but is the most practical way to investigate one's perception of these traits. The study is a correlational study incorporating three quasi-independent variables (NFC, mindfulness acceptance, and mindfulness attention) and one outcome variable (affect). The following hypotheses are evaluated:

1. Trait mindfulness will predict higher PA and lower NA
    a. There will be a positive correlation between mindfulness attention and PA
    b. There will be a negative correlation between mindfulness acceptance and NA

This trend is expected because attentional-type mindfulness has been previously associated with higher PA whereas acceptance-type mindfulness has been previously associated with lower NA.

2. Those low in NFC are more likely to use attentional mindfulness than acceptance mindfulness
    a. There will be a negative correlation between NFC and the tendency to use attentional mindfulness
    b. There will not be a negative correlation between NFC and the tendency to use acceptance mindfulness

These hypotheses are expected because individuals low in NFC tend to be more comfortable attending to all thoughts, even unwanted and wandering thoughts. Because of this, these participants are more likely to implement attentional mindfulness rather than acceptance mindfulness.

3. Those low in NFC and who also use acceptance mindfulness will have higher NA

Based on previous literature, those low in NFC have greater NA when implementing acceptance mindfulness training rather than attentional mindfulness. Individuals low in NFC are comfortable with ambiguity and uncertainty, so when practicing acceptance mindfulness in their everyday life, it creates an adverse reaction and thus a higher level of NA.

Method

Participants

Participants were recruited from the University of Arkansas SONA experiment pool. The sample was made up of college students (n = 328) enrolled in general psychology. Their compensation included research credit towards a course requirement.

Procedures

The participants were first sent an informed consent in which they read and signed either on their mobile device or computer. Once the participants had entered their full name indicating

that they had read it, the link to the questionnaire was made available. The online Qualtrics questionnaire took approximately ten minutes to complete and assessed for NFC, trait mindfulness, and positive and negative affect. Everyone who started the study completed it, meaning there was no attrition. In the interest of time, demographics were not collected.

Measures

Philadelphia Mindfulness Scale (PHLMS; Cardaciotto et al., 2008)

This 20-item scale measured individual trait mindfulness levels on a 5-point Likert-type scale ranging from never to very often. This is a bidimensional measure of mindfulness to assess its two main components: present- moment awareness and acceptance. Present-moment awareness is also defined as mindfulness attention. An example statement measuring one's present-moment awareness includes "I am aware of what thoughts are passing through my mind." An example measure of acceptance would include "I wish I could control my emotions more easily" (reverse scored). To obtain the awareness subscale score, all odd items are totaled; higher scores reflect higher levels of awareness (in this study, Cronbach's $\alpha = .76$). To obtain the acceptance subscale score, all even items are reverse scored and totaled; higher scores reflect higher levels of acceptance (Cronbach's $\alpha = .84$).

The Psychometric Properties of the Need for Closure Scale (NFCS; Webster et al., 1994.)

This scale consists of 47 measures rated either true or false. Although participants were asked to answer all 47-items, only the items from the "Discomfort with ambiguity" subscale were used in the final analyses. An example statement of this assessment includes "I don't like situations that are uncertain" and "I feel uncomfortable when I don't understand the reason why an event occurred in my life." This measure was included in order to determine how comfortable

or uncomfortable an individual is with ambiguity or an absence of cognitive closure (Cronbach's $\alpha = .54$).

Scale of Positive and Negative Experience (SPANE; Diener, Wirtz, Tov, Kim-Prieto, Choi, Oishi, & Biawas-Diener, 2010)

To measure PA and NA, participants were given a set of twelve different states which they rated on a 5-point Likert-type scale based on how they are feeling in the present moment. Higher values mean more intense affect. Some items on the scale are positive, negative, joyful, and afraid. The scale was broken down into two 6-item subscales, PA (Cronbach's $\alpha = .84$) and NA (Cronbach's $\alpha = .69$).

Results

Hypothesis 1: Trait Mindfulness Predicts Positive and Negative Affect. To test whether each facet of mindfulness predicted PA and NA, Pearson's correlations were calculated. The results are in Table 1. Hypothesis 1A was not supported, because mindfulness attention (as measured by PHLMS) and PA (as measured by SPANE) were not significantly correlated, $r = .10$, $p < .063$. Hypothesis 1B was supported, because mindfulness acceptance (as measured by PHLMS) and NA (as measured by SPANE) had a significant negative correlation, $r = -.29$, $p < .001$.

Hypothesis 2: Need for Cognitive Closure Predicts Trait Mindfulness. To test whether individuals low in NFC were more likely to use attentional mindfulness, Pearson's correlations were calculated. Results are in Table 1. Hypothesis 2A was not supported because NFC (as measured by the NFCS, ambiguity subscale) and attentional mindfulness (as measured by PHLMS) were positively correlated, $r = .12$, $p < .037$. Hypothesis 2B was not supported

because NFC (as measured by the NFCS, ambiguity subscale) and acceptance mindfulness (as measured by the PHLMS) were negatively correlated, $r = -.26$, $p < .001$.

Hypothesis 3: Low Need for Cognitive Closure and High Acceptance-Based Mindfulness Predicts High Negative Affect. To test whether NA was especially high for people low in need for cognitive closure who often used acceptance-based mindfulness, a median split was performed on participants' scores on Need for Cognitive Closure and acceptance-based mindfulness. The means for Negative Affect by group are presented in Table 2. A 2 (Need for Cognitive Closure group) X 2 (Acceptance Mindfulness group) ANOVA was conducted with Negative Affect as the dependent variable. As contrary to predictions, there was not a main effect of NFC group on NA, F (1,322) = 0.27, $p > .60$, partial eta squared = .05. Consistent with the first hypothesis, there was a main effect of acceptance group and NA, F (1,322) = 15.53, $p < .001$, partial eta squared = .05, but no interaction of acceptance and NFC on NA was found, F (1,322) = 1.87, $p > .17$, partial eta squared = .01.

Discussion

Hypothesis 1 stated that trait mindfulness will predict higher PA and lower NA. This was only partially supported. There was no significant relationship between mindfulness attention and PA, thus Hypothesis 1A was not supported, however there was a negative correlation between mindfulness acceptance and NA, thus Hypothesis 1B was supported. Hypothesis 2 stated that those low in NFC were more likely to use attention than acceptance mindfulness. Both parts of Hypothesis 2 were not supported. The findings show instead that there is a positive correlation between low NFC and attentional mindfulness as well as a negative correlation between low NFC and acceptance mindfulness. Hypothesis 3 stated that those low in NFC and also use acceptance mindfulness will have higher NA. This was not supported as there was a

main effect of acceptance mindfulness on NA but not an interaction of NFC and acceptance on NA.

The purpose of this study was to contribute to the existing research by further investigating the relationship between trait mindfulness, NFC, and PA/NA. The PHLMS used to measure mindfulness was split into present- moment awareness/attention and nonjudgmental acceptance (Cardaciotto et al., 2008). These components measured one's interpretation of their own mindfulness qualities. The attention component has been purported to hone or focus people in on their present moment awareness and foster PA, whereas nonjudgmental acceptance has been shown to dampen NA (Blanke et al., 2018; Brown & Ryan, 2003). Those who are consciously aware of their present surroundings and circumstances may in fact disentangle ruminating thoughts or future focused anxiety. The previous research suggests that by honing in on the present moment, an individual can increase PA (Blanke et al., 2018; Brown & Ryan, 2003). This theory is inconsistent with the findings in Hypothesis 1A. A potential explanation for this inconsistency may be that since the study was conducted completely online without manipulation, there was no way to account for how participants interpreted the study. The participant pool consisted of college students that may have found the online survey to be tedious and mundane, thus not inducing enough PA to replicate past findings. The previous studies implemented an experimental aspect, which may explain the variation in the current findings.

Mindfulness acceptance can be a powerful tool when used correctly. This component of mindfulness has been thought to decrease NA by getting people to accept and move forward from unwanted or intrusive thoughts (Blanke et al., 2018; Brown & Ryan, 2003). The results were consistent with Hypothesis 1B in that individuals who implement high levels of acceptance experienced lower levels of NA and those who implement lower levels of acceptance

experienced high levels of NA. This negative correlation suggests that when an individual implements nonjudgmental acceptance by pushing unwanted thoughts to the wayside, they are no longer bothered by the stress and anxiety of the thought, thus dampening NA. When an individual is low in mindfulness acceptance, these unwanted and distracting thoughts are staying in the forefront of their minds which in turn seems to heighten NA.

Although, NFC may vary situationally, it also represents fixed individual differences (Webster et al., 1994). The data collected from the current study suggests an interesting interaction between NFC and the specific components of mindfulness, attention and acceptance. The results showed a positive correlation between NFC and attention. When thinking about the two components of mindfulness, attention is the one that may come more naturally to individuals. Paying attention to the present moment is a skill that children learn from a young age. This means that attentional mindfulness may in fact be used more by everyone. However, considering the previous finding that attentional mindfulness boosts PA, those high in NFC might be even more likely to utilize this strategy to ground them in the present. Those who are high in NFC find comfort when life has high amounts of order and structure with little ambiguity (Webster et al., 1994). Utilizing present-moment awareness helps to eliminate ambiguity by paying attention to one's surroundings, a technique that helps individuals high in NFC cope with uncertainty. While those high in NFC had higher levels of attentional mindfulness, they also presented lower levels of mindful acceptance. This is possibly due to the fact these individuals find it difficult to accept thoughts without proper consideration. An individual high in NFC prefers to gather all the evidence before making the decision to dismiss their wandering thoughts. This sort of information seeking is common in those with high NFC (Fortier & Burkell, 2014).

On the other hand, individuals low in NFC, or those comfortable with ambiguity, seem to operate at a low level of attention and a high level of acceptance. When low NFC individuals have unwanted or intrusive thoughts, they do not invoke stress because they are used to experiencing all thoughts at once. Therefore, these individuals already accept unwanted thoughts because perhaps these thoughts were not unwanted at all. In other words, there may be a negative correlation between NFC and the use of acceptance mindfulness because low NFC implement high amounts of acceptance naturally.

A previous study showed that people low in NFC experienced higher NA after implementing acceptance mindfulness training than attention mindfulness training (Fey, 2019). The rationale is that low NFC individuals are not bothered by having negative and unwanted thoughts, thus when told to accept them, NA spikes. The third hypothesis suggested that individuals low in NFC and high in acceptance mindfulness should have higher levels of NA due to the unnecessary nature of the specific mindfulness component, acceptance. This theory was not supported by the current study. A main effect of acceptance on NA was found which further supports the claim that accepting unwanted thoughts can reduce NA, but no interaction of the three constructs was discovered. Perhaps, low NFC operate normally with high levels of acceptance so when told to accept their thoughts, they become agitated as they are already implementing high levels of acceptance. The study presented here did not implement mindfulness training of any kind and did not find a spike in NA associated with low NFC. This suggests that trait mindfulness and state-induced mindfulness may impact negative affect in different ways depending on one's level of NFC.

Although this study has gained insights into the various ways in which mindfulness operates within different individuals, there is likely more to discover. Mindfulness is a particular

type of regulation technique that focuses on changing a person's relationship to his or her emotions rather than the nature of the emotions themselves (Teper et al., 2013). Much of the preexisting literature on mindfulness focuses on individual state mindfulness, which is a measure of how mindfulness intervention or training works on emotional regulation (Blanke et al., 2018; Brown et al., 2003, Teper et al., 2013; Cullen, 2011; Coffey et al., 2010), however the research focusing on trait mindfulness is sparse. In conclusion, the findings indicate that individuals may benefit from identifying themselves on the NFC scale and making a conscious effort to implement both component of mindfulness equally. Results from this study contribute to the growing body of research on mindfulness and the intricate ways it interacts with emotion-regulation techniques.

Limitations

Limitations and strengths of the current study must be acknowledged. The study presented in this paper is purely correlational. This is a limitation because there was no random assignment of participations or any kind of researcher manipulation. Considering that the study was correlational and conducted completely online, there was no true independent variable. Including a manipulation aspect, perhaps implementing a mindfulness experience or specific stressor, may contribute to a better understanding of the intricate relationship of NFC and trait mindfulness.

The study sample included 328 participants, all of which were undergraduate students enrolled at the University of Arkansas. Although this was large enough to fulfill the study, there is always room for a larger and representative sample. This could mean utilizing a crowd-sourcing service, such as Mechanical Turk (MTurk), in order to further diversify the study. Additionally, the research focuses on only three main measures, collecting participant

demographics might have supplied pertinent information (i.e., gender, age, culture). Collecting such information may have allowed for a further inspection on which kinds of individuals may have a pre-existing disposition for any or all of the measures.

Future Direction

Future research could benefit from more deeply studying trait mindfulness and which specific characteristics may be related. There is plenty of preexisting research regarding state mindfulness, but trait mindfulness needs to be further investigated. Trait mindfulness is one's individual base mindfulness level. This specific characteristic is a fixed trait in individuals and may only be significantly manipulated by lifelong mindfulness strategies. A longitudinal study might allow for a better understanding of how mindfulness and NFC change over time. Various conditions could be included to directly analyze the effects of the training and discover whether time is an important factor when looking at affect, NFC, and mindfulness. Whether the traits remain constant or deviate over time, this will allow for a more complete understanding of the topic.

To account for the unexpected findings, further research will need to be done. This may include another correlational study in order to see if the findings are replicated. A more complex study could be done in which NFC could be manipulated by means of a stimulus. Since NFC proves to also be situational, manipulating one's environment to be either highly ambiguous or definitive could provide further insight into the effects on affect. Furthermore, this manipulated NFC measure could be compared to the individuals preexisting NFC measure. This may mean that one's environment plays a role and could potentially discover that one's NFC is everchanging.

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Table 1

Pearson Correlations

		Need for Cognitive Closure	Trait Mindfulness Attention	Trait Mindfulness Acceptance	Positive Affect	Negative Affect
Need for Cognitive Closure	Pearson's r	—				
	p-value	—				
Trait Mindfulness Attention	Pearson's r	0.116	—			
	p-value	0.036	—			
Trait Mindfulness Acceptance	Pearson's r	-0.264	0.174	—		
	p-value	< .001	0.002	—		
Positive Affect	Pearson's r	-0.122	0.104	-0.130	—	
	p-value	0.028	0.062	0.019	—	
Negative Affect	Pearson's r	-0.019	-0.018	0.291	-0.201	—
	p-value	0.736	0.744	< .001	< .001	—

Table 2

Marginal Means – Need for Cognitive Closure and Mindful Acceptance

Level of Need for Cognitive Closure	Level of Trait Mindfulness Acceptance	Marginal Mean	SE	95% CI	
				Lower	Upper
Low NFC (likes ambiguity)	Low acceptance	2.263	0.089	2.089	2.438
	High acceptance	1.805	0.072	1.663	1.947
High NFC (dislikes ambiguity)	Low acceptance	2.100	0.081	1.941	2.260
	High acceptance	1.878	0.101	1.679	2.077