SELF-TALK AND MINDFULNESS: A CORRELATIONAL ANALYSIS

by

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ABSTRACT

This research explores the relationships between mindfulness, self-talk frequency, self-compassion, and experience with mindful practice. Participants ($N = 147$) were recruited through Middle Tennessee State University's Psychology research pool, as well as via social media posting. The participants completed the 15-Item Five Facet Mindfulness Questionnaire (FFMQ-15), Trait Toronto Mindfulness Scale (TMS-T), Self-Talk Scale (STS), Self-Compassion Scale (SCS), and Automatic Thoughts Questionnaire – Revised (ATQ-R). The results showed moderate positive correlations between (1) positive self-talk and trait mindfulness and (2) positive self-talk and self-compassion. A significant negative correlation also emerged between negative self-talk and trait mindfulness. Moderation analyses indicated no moderating effects of mindfulness experience on self-talk or self-compassion in predicting trait mindfulness. Implications for the significance of the relationship between self-talk and mindfulness are discussed in relation to effective implementation in future treatment methodologies.

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CHAPTER I

INTRODUCTION

Cognitive behavioral treatment methodologies have been a consistently important style of intervention since the mid-twentieth century. Cognitive behavioral therapy (CBT) typically involves relatively short-term interventions which attempt to alter problematic cognitive and behavioral patterns to effect changes in negative affect and mood dysfunctions (Kolubinski et al., 2018). This type of therapy is most commonly employed with patients who struggle with mood and anxiety disturbances, though cognitive behavioral interventions have also been proven effective in a variety of circumstances and across nearly every kind of categorical disorder (Hofman et al., 2012). They have been frequently associated with improved self-esteem, well-being, and quality of life, as well as reductions in depressive symptoms, anxious symptoms, maladaptive self-focus, and damaging self-dialogue (Gallagher, et al., 2020; Kolubinski et al., 2018; Wilner et al., 2020; Woody et al., 1997). Despite the proven efficacy of this method of treatment, questions continue to arise regarding the influence of key processing variables which could inhibit or assure positive treatment outcomes when implementing various styles of CBT. Two such variables, self-talk and mindfulness, are the focus of the present research.

Though the methodologies employed by the cognitive behavioral approach are highly variable in both content and implementation, less "traditional" methods have begun to edge their way into the mainstream purview of modern psychology. Mindfulness-based cognitive behavioral interventions in particular have become increasingly popular in recent years. Contemporary cognitive behavioral psychology has

come to frequently adopt mindfulness as a tool to help patients combat affective

unbalance and maladaptive behaviors through insight and awareness (Bishop et al., 2004)

alongside management of self-critical self-talk and other ruminative thought behaviors

(Raes & Williams, 2010), which can be extremely damaging to an individual's general

psychological health and well-being.

Mindfulness-based interventions (MBIs) have been attributed to successful

treatment outcomes and symptom management across several physical disorders, mental

disorders, and crisis states including depression, anxiety, obsessive-compulsive disorder,

bipolar disorder, psychosis, substance abuse, chronic pain, and behavioral addictions

(Creswell, 2017; Creswell et al., 2019; Docteur et al., 2020; Garland et al., 2017;

Hofmann et al., 2017; Kaviani et al., 2011; Külz et al., 2019; Meadows et al, 2014;

Melero Ventola et al., 2020; Shulman et al., 2018). Mindfulness-based interventions have

been widely implemented as a product of this kind of evidentiary support for

improvements in both embodied and psychological welfare. Mindfulness has been shown

to improve physical health, psychological health, general well-being, self-regulation, and

executive functioning (Brown et al., 2007; Hölzel et al., 2011; Strait et al., 2020).

Mindful practice engages several cognitive mechanisms which result in the

reduction of negative symptomology associated with psychopathology (Hölzel et al.,

2011). This implies that there may exist a relationship between mindfulness and changes

in emotional and cognitive regulation, as well as attention and attachment (Bishop et al,

2004; Brown et al., 2007). It has been theorized that a fleshed-out model of mindfulness

may even involve a unilateral decrease in intrapersonal communication more generally

(Leary & Tate, 2007). Nevertheless, this has not been proven and self-talk and trait mindfulness have rarely been spoken about in close conjunction. There are striking overlaps and shared concepts across the existing research that imply that this could be an avenue worth pursuing. The research questions that the present study will attempt to answer are two-fold:

    1.) Identify if there exists a relationship between self-talk frequency and mindfulness

    2.) Determine the nature of that relationship if it does exist

To establish the foundational concepts underpinning this line of questioning, I will first review literature pertaining to mindfulness and its correlates. Next, I will explore self-talk and define that which falls in its purview. Finally, I will attempt to demonstrate existing connective factors between the two concepts.

CHAPTER 2

LITERATURE REVIEW

Mindfulness

Though mindfulness has become, over time, a staple of Western cognitive

behavioral psychology, the concept was developed from centuries-old Buddhist ideology

and Eastern tradition. Borne from the belief of the Noble Eightfold Path, mindfulness

describes a developed metacognitive awareness which assists us on our journey toward

the end of suffering (Maex, 2011). Within the field of psychology, the definition of

mindfulness has been expanded beyond a means to end suffering. Mindfulness

psychologists promote, with some substantial evidentiary support, an expansive catalogue

of benefits and broad health effects to mindful practice. Individuals regularly practicing

mindfulness have been shown to have fewer depressive symptoms (Bishop et al., 2004;

Brown & Ryan, 2003; Raes & Williams, 2010), lower levels of anxiety (Brown & Ryan,

2003), and less stress (Brown & Ryan, 2003; Hölzel et al., 2011; Kabat-Zinn, 2009; Strait

et al., 2020). They exhibit lower levels of emotional disturbance (Brown & Ryan, 2003),

where a heightened state of awareness allows them to better accept and understand their

emotions (Leary & Tate, 2007) while also demonstrating an ability to self-regulate

(Brown & Ryan, 2003; Strait et al., 2020) and "repair negative moods" as they are

experienced (Leary & Tate, 2007). Further, mindfulness has been proven to be connected

to both higher eudaimonic well-being (represented by increased vitality and more self-

actualized behavior) (Brown & Ryan, 2003) as well as higher *subjective* well-being (this

being defined by a greater satisfaction with life and a more balanced affect) (Brown &

Ryan, 2003; Leary & Tate, 2007). The implication of mindfulness as the wunderkind of

therapeutic invention lends itself to the fast-paced spread of the concept throughout the

field over the past 30 years.

      The modern, Western, conception of mindfulness is primarily based on the work

of Jon Kabat-Zinn and the method of psychological intervention he created and

popularized. Kabat-Zinn developed the therapeutic intervention style known today as

Mindfulness-Based Stress Reduction (MBSR) during his time at the University of

Massachusetts Medical Center in the early 1970's (Kabat-Zinn, 2009). The three primary

elements of mindfulness in the Buddhist tradition (understanding, virtue, and meditation

(Maex, 2011)) are reflected in the fundamental style of MBSR. Mindful practice here

involves a regulation of attention through meditation, an abandonment of judgment when

confronted with our life experience, and the related, often painstaking, practice of self-

inquiry (Kabat-Zinn, 2009). Traditional MBSR practice also promotes non-reactivity

toward and acceptance of the present which are also commonplace for typical definitions

of mindfulness (Kabat-Zinn, 2009). Modern MBSR practice is still reflective of these

original conceptions of theory and treatment. Kabat-Zinn's work has been widely

expanded upon by many dedicated theorists and practitioners. This has resulted in a

proliferation of intervention styles, methods, and theoretical perspectives which

incorporate mindful practice. Acceptance and Commitment Therapy (ACT; Hayes &

Wilson, 1994), Dialectical Behavioral Therapy (DBT; Linehan, 1993), Mindfulness-

Based Cognitive Therapy (MBCT; Segal et al., 2002), Mindful Self-Compassion

Training (MSC; Neff & Germer, 2013), and a variety of other MBIs look altogether

different in comparative practice but share a strong conceptual foundations in the early work of Kabat-Zinn. Some of these efforts employ meditation and more traditional mindful practice (Linehan, 1993; Segal et al.,2002). Others prioritize value systems to be enacted through mindful presence and experience (Hayes & Wilson, 1994). As previously stated, the scope of possible implementations for MBIs is considerable as the intervention style can be easily adapted to various populations.

With such a diverse catalogue of intervention styles comes an equally extensive dictionary of definitions to describe mindfulness. What can be agreed upon in most circles is this: mindfulness involves deliberate attention and awareness in the present moment (Bishop et al., 2004; Brown et al., 2007; Fuente et al., 2018; Kabat-Zinn, 2009). There is also some shared consensus that mindfulness has both state (or situational) and trait attributes. A state of mindfulness is widely considered to be universally achievable, but there is still evidence for differences in mindful disposition between individuals (Brown & Ryan, 2003; Giluk, 2009). An increasingly common approach which incorporates more determinate correlates and values considers mindfulness as a "multi-faceted" trait comprised of more than one construct or component bound together into a single entity (Baer et al., 2008; Bishop et al., 2004; Leary & Tate, 2007). Mindfulness will be observed, for the purposes of this study, as a multi-faceted construction. As no direct intervention will be performed and no control will be exerted over the study variables, dispositional mindfulness will remain the focus of approach, rather than any momentarily induced mindful state.

In using a trait mindfulness approach, several significant correlations have been determined across a variety of indicators of emotional balance and cognitive performance as they relate to overall psychological well-being (Brown et al., 2007). In a meta-analytical study of independent trait mindfulness studies, Mesmer-Magnus et al. (2017) found that positive affect, psychological wellbeing, psychological flexibility, confidence, and general life-satisfaction, as well as a number of other indicators of psychological health, were positively correlated with trait mindfulness. Trait mindfulness and other self-oriented mental health strategies, such as self-compassion, have even been shown to directly mediate psychological health outcomes in mindfulness-based intervention programs (Baer et al., 2012b). The meta-analysis by Mesmer-Magnus et al. also found that higher trait mindfulness may benefit job satisfaction, job performance, and interpersonal relationships. This indicates that the overall psychological and professional benefits of trait mindfulness are significant. Additionally, the same meta-analysis observed clear negative correlations between mindfulness and certain psychological experiences. Trait mindfulness was associated with lower levels of perceived life stress, less negative emotions, less depression, and less anxiety. This stands as some evidentiary support for a connection between mindfulness-based interventions and the mood and anxiety disorders with which such interventions have been proven effective.

To summarize, mindfulness is an Eastern contemplative practice which has seen multiple, distinct instances of incorporation into modern Western psychological tradition. Though adherence to one single objective definition of mindfulness is frequently contested, there is a generally agreed upon consensus that it involves awareness and

attentional regulation. Mindfulness is a complex construct, maintaining both state and trait attributes which are considered to have widespread benefits for various aspects of physical and psychiatric well-being.

Self-Talk

An operational definition of self-talk first requires some distinction. There is a common misconception that self-talk is simply self-dialogue. This is not the case, as there are elements which make the two distinct. Self-talk is comprised of statements, regardless of whether they are covert or overt, to the *self*, not to others (Hardy, 2006). Differences in self-talk styles are more often in degree than in kind. Internal dialogues, for example, are a type of intrapersonal communication where the implementation of different voices and juxtaposed mental positions account for communication with not only the self, but imagined communication with other figures (Oleś et al., 2020). Overt self-talk may be interpersonal speech but is more definitively described as speech that can be heard by others (Hardy, 2006; Shi et al., 2017). Covert self-talk, on the other hand, is intrapersonal communication that cannot be heard by others (Hardy, 2006; Shi et al., 2017). The phrase "self-talk" can frequently be used to refer to any one of these things (Brinthaupt et al., 2009), so the definition is not nearly so limited as to only include dialogical behavior.

The clear delineation of a definition of self-talk is as important as the way it has been implemented in various fields of psychology. Contemporary self-talk research has come to be commonly associated with general trends in sports psychology research. The outcomes of these studies in this somewhat isolated field have become foundational to the study of self-talk more broadly. Sports psychologists traditionally promote the

division of self-talk into two primary functional categories: motivational and instructional (Hardy 2006; Shi et al., 2017). Motivational self-talk functions as its name describes: to motivate or demotivate an individual through intrapersonal management and assessment of emotional lability and internalized perceptions of confidence (Shi et al., 2017). Hardy (2006) further refines this definition and promotes more specific functions of "arousal, mastery, and drive," though the three still fall under a motivational heading. Instructional self-talk, on the other hand, is comprised of strategy-related intrapersonal communication which develops attention through reinforcement and self-criticism (Hardy, 2006; Shi et al., 2017).

Other fields of psychology tend not to focus entirely on the functional drives of self-talk. Instead, the primary note of concern, particularly for clinical psychology, becomes the *content* of self-talk. These concepts are not entirely discrete, as there is evidence that the content of self-talk does appear to moderate its function (Hatzigeorgiadis et al., 2009). The purpose of content-based self-talk is largely to explore how and why people talk to themselves and to take a better look at the ways in which content differences in intrapersonal communication result in the manifestation of different effects on the speaker (Oleś et al., 2020). Most self-talk scales differentiate categorical subsets of self-talk as based on these cognitive content functions. The Self-Talk Scale (Brinthaupt et al., 2009), for instance, designates four types of self-talk based on such functional designations: self-critical, self-reinforcing, self-managing, and social-assessing. These described modes of intrapersonal communication refer to the assessment of negative events, the assessment of positive events, general self-regulation behavior,

and the assessment of social interactions, respectively. Regardless of how these sub-scales are derived, or what formal divisions are created for different measures, the concept of content differentiation is invariably integral to our understanding of intrapersonal communication.

As has been established, not only does self-talk contain interpretive elements related to the content of intrapersonal communication, but it is largely multi-dimensional itself (Hardy, 2006). Intrapersonal communication has a variety of deterministic factors and characteristics which account for differentiations amongst types of self-talk. Notably, some of these aspects have already been briefly addressed, but an account of them as delineated in conjunction with the other dimensional elements is integral to the development of a more complete picture of self-talk categorization. The dynamic model for self-talk, proposed by Hardy (2006), has four dimensions, or unique facets: valence, overtness, self-determination, and motivational interpretation. The valence of self-talk describes emotional associations with the self-talk, where it might be interpreted as positive or negative self-assessment (or reinforcing as opposed to highly critical, respectively) (Hardy, 2006; Sánchez et al., 2016). Overall, we use both positive and negative self-talk regularly in our daily lives, though in a study of university students, positive self-talk dominated (Sánchez et al., 2016). The overtness of self-talk, as it has already been addressed, accounts for whether speech is inside one's head or publicly expressed (Hardy, 2006; Shi et al., 2017). The self-determination of self-talk should not be confused with self-generativity. All self-talk is self-generated, but it is not always self-determined (Hardy, 2006). Self-determination seeks to clarify self-talk that is freely

chosen and consciously derived (Hardy, 2006). Hardy proposed an additional final dimension of frequency, which overlaps with each of the other variables and has a formidable effect on cognitive regulation abilities in the speaker.

These complex effects of self-talk on the speaker, as they have been addressed thus far, are highly variable and spread across many psychological domains. As was briefly addressed in reference to modern sports psychology, self-talk has profound effects on performance and motivation (Hatzigeorgiadis et al., 2009; Shi et al., 2017). But these effects go far beyond what might be seen on a court or field. Self-talk has been shown to affect academic performance (Sánchez et al., 2016), public speaking performance outcomes (Shi et al., 2017), and general task performance across other disciplines (Hatzigeorgiadis et al., 2009). Outside of performance reactivity, self-talk has also been shown to positively predict emotional intelligence (DePape et al., 2006). It has even been suggested by prior research that self-talk assists in the control and facilitation of a variety of cognitive processes such as attention, self-confidence, emotionality, and cognitive control (Hardy, 2006; Hatzigeorgiadis et al., 2009).

The cause of differentiation among frequency rates for self-talk between individuals has been theorized to be as variable as the effects just mentioned. Though some more menial correlational factors are often proposed as substantiative accounts for self-talk frequency variation, two primary theories are more encompassing and will be addressed here: the cognitive disruption and the social isolation hypotheses (Brinthaupt, 2019). The cognitive disruption hypothesis, which has strong evidentiary support, shows increased frequency of self-talk in conjunction with negative self-related events which

disrupt cognition (e.g., anxiety, obsessive-compulsive tendencies, and schizotypy) (Brinthaupt, 2019). This lends itself to poorer performance outcomes and a decreased ability to engage in self-regulation. Alternatively, the social isolation hypothesis describes increases in self-talk frequency for people who spend more time alone (Brinthaupt, 2019). We will focus primarily on the cognitive disruption hypothesis here as that aligns with the research goals of this study.

In summary, self-talk encompasses all overt and covert statements to the self. More significance may be given to the foundational drive or the content of the speech itself, but regardless of focus, there are profound cognitive and behavioral effects associated with all types of self-talk. Both intrapersonal and interpersonal communication alike are highly variable, multidimensional constructs which differ in frequency between individuals for reasons that have largely only been theorized upon thus far.

Relationship of Mindfulness to Self-Talk

Now we can address the ways in which mindfulness and self-talk are related, as the notion is going to be integral to the foundation of the hypotheses reported in this research. Self-talk and mindfulness have hardly been explored together, so some key shared components should be broken down between the concepts which implicate a possible relationship. This interconnectivity can be addressed in three parts: self-regulatory capabilities, attentional foundations, and awareness inhibition. We can then provide further evidentiary support for an existing connection between the two, as it has been tangentially proposed within existing literature.

Both self-talk and mindfulness play a significant role in psychological management and self-regulation. Self-talk involves both self-control and self-direction, as well as a host of other self-regulatory functions (Brinthaupt, 2019; Oleś et al., 2020). Further, as has already been addressed, self-regulatory disruptions are one of the proposed theoretical rationales for increases in self-talk frequency (Brinthaupt, 2019). This notion is further backed by evidence that non-first-person self-talk (which is inherently self-distant) (Kross et al., 2014) and adaptive self-reflection (Oleś et al., 2020), enhance the effects of self-regulation (Kross et al., 2014). Internal awareness, which is conceptually similar to self-reflective behavior, as well as emotional and cognitive self-regulation, are key components of most traditional mindful practice (Bishop et al., 2004; Hölzel et al., 2011). Mindfulness has even been directly proposed to be defined as "the self-regulation of attention" (Bishop et al., 2004, p. 233). The theoretical ties between the two do seem to exist. Mindfulness-based interventions even commonly include training in emotional regulation skills, regardless of whether self-regulation is the primary focus of the intervention (Fuente et al., 2018). There is still not a precise understanding of the way mindfulness affects people differently according to their different basal levels of self-regulation. The theory has been posited that self-regulation could be a conditional variable for the effectiveness of mindfulness-based treatment (Bishop et al., 2004). It is worth considering if differences in effects on mindfulness are tied to differences in self-talk frequency as a function of trait self-regulation.

Mindfulness and self-talk are further bound by attentional underpinnings. Some authors have proposed that effective self-talk seems to have correlations with the

regulatory focusing of an individual's attention, particularly when presented with novel information (Hardy, 2006; Hatzigeorgiadis et al., 2009). Bishop et al. (2004) also clearly defined self-regulatory attentional aspects as being integral to their definition of mindfulness. They noted three attentional skills that were necessary for this self-regulation: sustained attention, attention switching, and the inhibition of elaborative processing (Bishop et al., 2004). The elaborative processing aspect is unique among these in that it necessarily involves intrapersonal communication. The implication of this relationship further implies that increases in mindfulness should correspond to decreases in self-talk.

Beyond questions of conceptual relationality, we must come to ask if it is possible that self-talk, with due consideration to valence and function, can effectively inhibit mindfulness and its associated positive health outcomes. Brown et al. (2007) posit that it is quite plausible that cognitive and emotional factors can act alongside environmental, physical, and behavioral disruptions factors to either promote or interrupt mindful states. Similarly, stress and anxiety have been proposed as factors which could hinder self-regulation abilities (Strait et al., 2020). These are both concepts which share theoretical ties with increased self-talk frequency. There is strong and consistent evidence for cognitive and emotional reactivity (Gu et al., 2015) as mediating the psychological outcomes of mindfulness interventions. If we turn briefly once again to the self-regulatory functions we just addressed: with a limited capacity for self-regulation as a potential product of increased non-regulatory self-talk, there would follow increased cognitive and emotional reactivity and reduced positive psychological outcomes.

Ruminative thoughts and heightened emotional reactivity, which are commonly associated with mood, anxiety, and obsessive-compulsive disorders, have been linked to less mindful engagement (Bishop et al., 2004; Garland et al., 2017; Raes & Williams, 2010). A review by Gu et al. (2015) identified evidence that rumination and worry mediate the psychological outcomes of mindfulness-based interventions. Anxiously attached individuals, who are characterized by higher levels of trait anxiety (which has been indicated as one of the strongest predictors of mindfulness), ruminate "excessively" and are hypervigilant to threats (Walsh et al., 2019). Most of the features of attachment anxiety contrast with each of the primary concepts we have come to associate with mindfulness: attention and openness to experience, non-elaborative thought patterns, decentering from self-derogatory thoughts, and avoidance of rumination (Bishop et al., 2004; Garland et al., 2017). In direct juxtaposition to the experiences of anxious individuals, people with higher mindfulness scores on a trait mindfulness scale were less reactive to threats, as shown by evidence in their brain patterns (Brown et al., 2007). There are clearly ties between anxiety and other neurotic disorders which have been associated with a higher frequency of self-critical self-talk (Brinthaupt et al., 2009) and lower levels of mindfulness (Waszczuk et al., 2015).

In the discussion of literature which promotes the idea of an existing relationship between self-talk and mindfulness, Leary and Tate's (2007) earlier referenced claim is pertinent. The authors summary of the conceptual relationship sets the scene quite well: "In part, mindful attention is achieved by reducing one's inner self-talk. Only by quieting self-chatter—the running flow of mental commentary, thoughts about the past and future,

self-evaluations, judgments, and other extraneous reactions—can people remain highly

attuned to their present experience" (Leary & Tate, 2007, p. 252). The self-regulation

connection seems to come to fruition here. Tasked with non-judgment, the mind

theoretically engages in quieting self-regulation and control over the stream of

consciousness. Leary and Tate explain this proposal further, referencing the tendency for

mindfulness training to involve efforts to assist individuals in reducing the "frequency

and abstractness" of their self-related thoughts by bringing their attention back to their

breath, rather than to further evaluation. Non-expansiveness and non-elaboration are

borne from self-awareness and self-regulation. Rather than engaging in ruminative

pathological thought patterns, or overwrought descriptive accounts of implicit

associations, mindfulness simply involves momentary, non-elaborative experience in the

mind and body (Bishop et al., 2004; Walsh et al., 2019). It is not so much an account of

the suppression of thought behavior or intrapersonal communication as it is the building

of a mindful disposition which fosters control and self-regulation of self-talk.

Summary and Statement of Hypotheses

Adapted from Eastern contemplative practices (Maex, 2011), mindfulness is a

concept which has been introduced time and again into Western therapeutic approaches.

As mindfulness has been incorporated into the field of cognitive behavioral therapy in

particular, there is evidentiary support for the use of it in the treatment of a variety of

psychological health issues. It is exemplary in the treatment of anxiety and depressive

disorders (Hofman et al., 2017; Kaviani et al., 2011; Shulman et al., 2018), though there

have also been observed benefits from including mindful practice in treatments for other

mental health issues, such as obsessive-compulsive disorder (Külz et al., 2019), bipolar

disorders (Docteur et al., 2020), and experiences of psychosis (Jacobsen et al., 2020). It

has been theorized that treatment success amongst these populations is due to the

development of cognitive and emotional self-regulatory capacities (Bishop et al., 2004),

which promotes further growth in other psychological areas, including psychological

flexibility, confidence, emotional regulation, and stress management (Mesmer-Magnus et

al., 2017). Though it is a topic that has invariably been explored, the breadth of its

influence lends itself to further exploration of additional correlates, as are hoped to be

established in this study.

Regardless of if it can be heard by others, self-talk encompasses all forms and

styles of self-communication (Hardy, 2006). Self-talk content is highly variable in terms

of both what is being said and how it affects an individual in the broader sense.

Performance (Hatzigeorgiadis et al., 2009; Shi et al., 2017), emotional intelligence

(DePape et al., 2006), attention (Hardy, 2006), and cognitive control (Hardy, 2006;

Hatzigeorgiadis et al., 2009) all have been shown to be linked to developed self-speech.

That disordered self-communication also develops as a symptomology in many

psychiatric health disorders makes it an important concept in the psychological

community (Kendall et al., 1989; McLaughlin & Nolen-Hoeksema, 2011).

As evidenced by this review, there are existing foundations on which to establish

a relationship between self-talk and mindfulness. Self-regulation, attention, and

awareness, which have been addressed here, are but three pieces of the bigger picture

which draws mindfulness and self-talk together. To further investigate the possibility of

this relationship is once again the purpose of this study. As such, the following hypotheses are proposed to assess these potential relationships:

H1: Positive self-talk is expected to be significantly and positively correlated with trait mindfulness. Support for this hypothesis is drawn from the cognitive and emotional benefits of both positive self-talk and mindful practice. A positive affect has been shown to be predictive of mindfulness levels (Mesmer-Magnus et al., 2017) and trait mindfulness has further been tied to reductions in cognitive anxiety (Hölzel et al., 2011). In a similar vein, self-talk has been shown to have a positive effect on self-confidence and also to reduce cognitive anxiety (Hatzigeorgiadis et al., 2009).

H2: Positive self-talk is expected to be significantly and positively correlated with self-compassion. Self-compassion involves self-kindness in the place of self-judgment, as developed through introspection and the consideration of the "emotional tone" one adopts toward speaking with themselves (Neff, 2011). Motivational self-talk has been shown to be able to induce such particular affective states and more generally increase self-compassion (Georgakaki & Karakasidou, 2017). This hypothesis addresses the potential of this feature to extend more broadly to all positive self-talk.

H3: Negative self-talk is expected to be significantly negatively correlated with trait mindfulness. Higher mindfulness scores have been found to be negatively correlated with emotional disturbances (Brown, Ryan, & Creswell, 2007) and negative emotions Mesmer-Magnus et al. (2017). Negative, and largely self-critical, self-talk tends to result as a product of these more damaging affective symptoms. This hypothesis seeks to establish a more concrete relationship between these concepts.

H4: Mindfulness practice is expected to moderate the relationship between self-talk (H4a) and self-compassion (H4b) as they individually relate to trait mindfulness. As Leary and Tate's (2007) proposal addresses, there is the possibility that with mindful development there might follow a subsequent diminishing in self-communication as a cost for the adoption of a decentered, non-judgmental perspective. This hypothesis looks to assess the parameters of such a decrease.

CHAPTER III

METHOD

Participants

The sample for the current study was comprised of 147 individuals recruited from both the Middle Tennessee State University (MTSU) Psychology research pool ($n = 98$) and through social media posting via Facebook ($n = 49$). MTSU student participants received course credit for their participation in this study. The sample included 90 women, 51 men, and 3 participants who identified as non-binary. The remaining 2 participants preferred not to respond the question regarding gender identity. The ethnic representation of the sample was: Caucasian ($n = 107$; 72.3%), African American ($n = 14$; 9.5%), Hispanic ($n = 8$; 5.4%), Asian ($n = 2$; 1.4%), mixed ethnicity ($n = 6$; 4.2%), and *other* ($n = 10$; 6.8%). Most participants ($n = 104$) were between the ages of 18 and 24 years old. To be eligible to participate, individuals had to be at least 18 years of age. Experience with mindful practice was not required for participation.

Measures

15-Item Five Facet Mindfulness Questionnaire (FFMQ-15, Baer et al., 2012a). The FFMQ-15 is a 15-item scale that assesses five facets of general mindfulness: *Observing* (sample item: "I notice the smells and aromas of things"), *Describing* (sample item: "I am good at finding words to describe my feelings"), *Acting with awareness* (reverse-scored sample item: "I find myself doing things without paying attention"), *Nonjudging of inner experience* (reverse-scored sample item: "I think some of my emotions are bad or inappropriate and I should not feel them"), and *Nonreactivity to*

inner experience (sample item: "I perceive my feelings and emotions without having to react to them"). Three items are associated with each of the five subscales (where higher scores indicate more trait mindfulness). Each item is rated on a 5-point scale (1 = *never or very rarely true*, 5 = *very often or always true*). Prior research has established that both the long and short form of the FFMQ measure highly similar constructs and have a significant loading onto an overall mindfulness factor (Gu et al., 2016). Total and subscale internal consistencies have been reported as adequate for populations with therapeutic mindfulness-based intervention experience (i.e., .69 to .83) and without similar experience (i.e., .64 to .80) (Gu et al., 2016).

    Trait Toronto Mindfulness Scale (TMS-T, Davis et al., 2009). The TMS-T is a 13-item trait mindfulness scale adapted from the Toronto Mindfulness Scale (Lau et al., 2006), which measures state mindfulness. The TMS-T assesses two factors of mindfulness: *decentering* and *curiosity*. Decentering emphasizes a distanced awareness of everyday experience (sample item: "I experience myself as separate from my changing thoughts and feelings"). The curiosity factor specifically reflects an inquisitive quality relevant to awareness in the present moment (sample item: "I am curious about what I might learn about myself by taking notice of how I react to certain thoughts, feelings or sensations"). Six items are associated with the curiosity subscale and seven items are associated with the decentering subscale. Each item is rated on a 5-point scale (1 = *Not at all,* 5 = *Very much*), with high scores indicating a more mindful disposition. The Trait TMS uses the same format as the original measure and has been found to have good internal consistency reliability (i.e., .91 for *curiosity* and .85 for *decentering*), as reported

by Davis et al. The TMS-T also was reported to have convergent validity with six other

mindfulness measures, including the FFMQ (Davis et al., 2009).

Self-Talk Scale (STS, Brinthaupt et al., 2009). The STS is a 16-item scale

measuring self-talk frequency across four function subscales: *Social-Assessment* (refers

to an individual's social encounters; sample item: "I talk to myself when I'm imagining

how other people respond to things I've said"), *Self-Criticism* (assesses negative events;

sample item: "I talk to myself when I should have done something differently"), *Self-

Reinforcement* (assesses positive events; sample item: "I talk to myself when something

good has happened to me")*,* and *Self-Management* (refers to general self-regulation;

sample item: "I talk to myself when I need to figure out what I should do or say"). Four

items are associated with each of the subscales. Items are rated on a 5-point frequency

scale (1 = *never*, 5 = *very often*). Scores can be summed at both the subscale and overall

level, with higher scores indicating more frequent self-talk. Prior research has supported

the use of the STS as a unidimensional measure of self-talk frequency (Brinthaupt &

Kang, 2014). This measure also has been shown to have good test-retest reliability for

total scores (Brinthaupt et al., 2009) and good internal consistency for both total and

subscale scores (i.e., .85 to .94) (Brinthaupt, 2019).

Self-Compassion Scale – Short Form (SCS-SF, Raes et al., 2011). The SCS-SF is

a 12-item scale assessing six components of self-compassion: *Self-Kindness* (sample

item: "I'm kind to myself when I'm experiencing suffering"), *Self-Judgment* (sample

item: "When times are really difficult, I tend to be tough on myself"), *Common Humanity*

(sample item: "When I feel inadequate in some way, I try to remind myself that feelings

of inadequacy are shared by most people"), *Isolation* (sample item: "When I fail at something that's important to me I tend to feel alone in my failure")*, Mindfulness* (sample item: "When something upsets me I try to keep my emotions in balance"), and *Over-Identification* (sample item: "When I'm feeling down I tend to obsess and fixate on everything that's wrong"). Two items are associated with each of these components. Each item is rated on a 5-point frequency scale (1 = *Almost never*, 5= *Almost always*). Comparative research by the developers to validate this measure has shown a "near-perfect" correlation with the long form for overall self-compassion scores. This measure has demonstrated high overall internal consistency (i.e., coefficient alpha of .86) and variable subscale level internal consistency (i.e., .54 to .75). The authors suggest that subscale divisions only be made when using the short form of the SCS if the derived information is "crucial" to the study at hand (Raes et al., 2011).

Automatic Thoughts Questionnaire-Revised (ATQ-R, Kendall et al., 1989). The ATQ-R is a 40-item scale measuring positive and negative automatic self-statements related to depression (e.g., Negative sample items: "I feel like I'm up against the world," "I am a failure," and "Nothing feels good anymore;" Positive sample items: "I'm proud of myself," "I can accomplish anything," and "I feel good"). Thirty items measure the frequency of negative self-statements, and 10 items measure the frequency of positive self-statements. Items are rated on a 5-point frequency scale (1 = *not at all*, 5 = *all the time*), where higher scores indicate that the automatic thought occurred to the individual more frequently in the previous week. This measure has proven reliable in discriminating depressed and non-depressed individuals in clinical and subclinical populations and

retains a high internal consistency (i.e., coefficient alpha of .91) when dealing with non-clinical populations (Burgess & Haaga, 1994).

Demographic Questionnaire. A brief demographic survey was included at the end of survey. Information asked of the participants included their age, ethnicity, gender identity, and experience with mindfulness practice (See Appendix A).

Procedure

Participants completed an online survey comprised of the five previously described self-report measures which correspond with aspects related to the two primary concepts of interest in this study: *mindfulness* and *frequency of self-talk*. These measures were selected based on their established validity, reliability, and correspondence with the constructed research questions. An online survey format fit with the research goals of this study as this is a correlational analysis and no intervention was performed.

The survey was made available through the Qualtrics system (www.qualtrics.com). Order of presentation of the main measures was randomized across participants, with the brief demographic survey always appearing at the end of the survey. Active experience with mindful practice was measured via self-reported responses to the question "I engage in mindful thinking or mindfulness meditation." Answers were offered on a 4-point frequency scale (1 = *never*, 2 = *rarely*, 3 = *sometimes*, 4 = *often*). Informed consent and assurances of anonymity were integrated at the beginning of the survey. The project received approval from the university's IRB prior to starting (See Appendix B).

CHAPTER IV

RESULTS

Descriptive Statistics

The means and standard deviations for self-talk, mindfulness, and self-compassion scores are reported in Table 1. For each variable, scores were comparable to previously published norm ranges provided by the assessment tool developers. As multiple measures were selected to represent the single variables of trait mindfulness and self-talk, some convergence was expected between shared constructs. As seen in Table 2, there were some significant correlations between self-talk measures. Self-managing self-talk, though used as a positive self-talk measure in this research, was unexpectedly observed to be significantly positively correlated with *negative* ATQ scores, but not with positive ATQ scores. Subscale-level correlational analyses for the adapted mindfulness measures are reported in Table 3. As some authors chose to provide normative scores for groups with and without mindfulness experience, it is important to address the corresponding make up of our sample. Where 52.7% of participants reported having some experience with mindful practice, most indicated that they currently practice mindfulness only one day a week.

Test of Hypotheses

Hypothesis 1 sought to explore the nature of the relationship between positive self-talk and trait mindfulness, where positive self-talk was expected to be significantly, positively, correlated with trait mindfulness. Zero-order correlations were used to gauge the strength and direction of the relationship between these variables.

Table 1

Descriptive Statistics for Questionnaires

Questionnaire	Number of Items	*n*	Mean	Std. Deviation	Cronbach's Alpha
15-Item Five Facet Mindfulness Questionnaire (FFMQ-15, Baer et al., 2012a)	15	146	46.25	7.96	.755
Describing	3	147	9.31	2.68	.781
Observing	3	147	9.63	2.62	.601
Acting With Awareness	3	147	8.81	2.64	.786
Non-Judging	3	147	9.35	3.14	.866
Non-Reactivity	3	146	9.16	2.63	.679
Trait Toronto Mindfulness Scale (TMS-T, Davis et al., 2009)	13	143			.826
Curiosity	6	144	13.72	4.31	.879
Decentering	7	145	11.86	5.33	.647
Self-Talk Scale (STS, Brinthaupt et al., 2009)	16	147	57.26	10.48	.870
Self-Criticism	4	145	13.90	3.82	.857
Self-Reinforcement	4	145	12.84	3.73	.836
Self-Management	4	145	15.53	3.13	.767
Social Assessment	4	144	14.99	3.52	.827
Self-Compassion Scale – Short Form (SCS-SF, Raes et al., 2011)	12	147	34.94	8.71	.870
Automatic Thoughts Questionnaire-Revised (ATQ-R, Kendall et al., 1989)	40	139	94.25	23.15	.920
Positive	10	144	30.04	8.09	.891
Negative	30	140	64.21	26.41	.972

Note. Possible FFMQ-15 subscale scores range from 3-15. Possible TMS-T Curiosity subscale scores range from 0-24. Possible TMS-T Decentering subscale scores range from 0-28. Possible STS subscale scores range from 4-20. Possible SCS-SF scores range from 12 to 60. Possible ATQ-R positive scores range from 10 to 50. Possible ATQ-R negative scores range from 30 to 150.

Table 2

Pearson Correlations Between Self-Talk Measures

	ATQ Negative	ATQ Positive
STS Composite	.242**	-.063
STS Self-Criticism	.545**	-.440**
STS Self-Reinforcement	-.288**	.501**
STS Self-Management	.201*	-.089
STS Social Assessment	.254**	-.169*

Note. N = 140 to 145. STS, Self-Talk Scale; ATQ, Automatic Thoughts Questionnaire.

* *p* < .05, ** *p* < .01

Table 3

Pearson Correlations Between Mindfulness Measures

	TMS Curiosity	TMS Decentering
FFMQ Composite	.148	.215**
FFMQ Describing	.095	.044
FFMQ Observing	.480**	.378**
FFMQ Acting with Awareness	-.098	-.085
FFMQ Non-Judging	-.211*	-.018
FFMQ Non-Reactivity	.224**	.344**

Note. N = 144 to 147. FFMQ, Five Facet Mindfulness Questionnaire; TMS, Toronto Mindfulness Scale

* *p* < .05, ** *p* < .01

Some positive correlations were observed between trait mindfulness and self-reinforcement, as well as between trait mindfulness and automatic positive self-statements. Specifically, self-reinforcing self-talk was significantly positively correlated with the describing, observing, acting with awareness, and non-judging subscales of the FFMQ, in addition to the curiosity subscale of the TMS-T. Automatic positive self-statements (ATQ-R) were also found to be positively correlated with the describing, acting with awareness, and non-judging subscales of the FFMQ, in addition to both the curiosity and decentering subscales of the TMS-T. The same trends were not evident when considering the relationship between self-managing self-talk and trait mindfulness. Self-managing self-talk was instead negatively correlated with the non-judging subscale of the FFMQ and positively correlated with the curiosity subscale of the TMS-T. This correlation was in the opposite direction of those observed for STS self-reinforcement and ATQ-R positive self-statements. Still, there was moderate support for this hypothesis. The full results of these correlation analyses are reported in Table 4.

Hypothesis 2 proposed a significant, positive correlation between positive self-talk and self-compassion. Zero-order correlations again were used to determine the nature of the relationship between these variables. The results of the analyses are reported in Table 5. STS self-reinforcement and automatic positive self-statements were significantly positively correlated with overall self-compassion scores. STS self-management was negatively correlated with composite self-compassion scores. Given these data, there was good support for this hypothesis.

Table 4

Pearson Correlations Between Positive Self-Talk and Trait Mindfulness

	STS Self-Reinforcement	STS Self-Management	ATQ Positive
FFMQ Composite	.281**	-.043	.482**
FFMQ Describing	.181*	-.030	.305**
FFMQ Observing	.198*	.110	.149
FFMQ Acting with Awareness	.171*	-.094	.324**
FFMQ Non-Judging	.195*	-.206*	.468**
FFMQ Non-Reactivity	.033	.125	.107
TMS Curiosity	.253**	.382**	.170*
TMS Decentering	.136	.022	.230**

Note. N = 144 to 247; STS, Self-Talk Scale; ATQ, Automatic Thoughts Questionnaire;

FFMQ, Five Facet Mindfulness Questionnaire; TMS, Toronto Mindfulness Scale.

* *p* < .05, ** *p* < .01

Table 5

Pearson Correlations Between Positive Self-Talk and Self-Compassion

	SCS Composite Score
STS Self-Reinforcement	.297**
STS Self-Management	-.222**
ATQ Positive	.621**

Note. N = 144 to 145; STS, Self-Talk Scale; ATQ, Automatic Thoughts Questionnaire;

SCS, Self-Compassion Scale.

** *p* < .01

Hypothesis 3, alternatively, investigated the relationship between *negative* self-talk and trait mindfulness, where negative self-talk was expected to be negatively correlated with trait mindfulness. Zero-order correlations were used once more to investigate this relationship. Self-Critical self-talk was negatively correlated with the describing, acting with awareness, and non-judging subscales of the FFMQ and the decentering subscale of the TMS-T. Self-critical self-talk was also significantly positively correlated with the curiosity subscale of the TMS-T. Social assessing self-talk was correlated negatively with the acting with awareness and non-judging subscale of the FFMQ, in addition to being positively correlated with the curiosity subscale of the TMS-T. Automatic negative self-statements were correlated negatively with the describing, acting with awareness, and non-judging subscales of the FFMQ and positively correlated with the curiosity subscale of the TMS-T. Altogether, these results show moderate support for hypothesis 3. The full results of these analyses are reported in Table 6.

According to Hypothesis 4, experience with mindfulness practice was predicted as a moderating variable between self-talk and trait mindfulness (H4a), as well as between self-compassion and trait mindfulness (H4b). These relationships were analyzed using linear regression models which contained moderator variables created as interaction terms between the independent variables (self-compassion and self-talk) and the moderator (mindfulness practice). These analyses did not show any mindfulness experience moderating effects on self-compassion or self-talk frequency for trait mindfulness. Results for these moderation analyses are reported in Table 7.

Table 6

Pearson Correlations Between Negative Self-Talk and Trait Mindfulness

	STS Self-Criticism	STS Social Assessment	ATQ Negative
FFMQ Composite	-.368**	-.173*	-.503**
FFMQ Describing	-.187*	-.052	-.282**
FFMQ Observing	.033	.025	.109
FFMQ Acting with Awareness	-.318**	-.186*	-.493**
FFMQ Non-Judging	-.486**	-.286**	-.645**
FFMQ Non-Reactivity	-.044	.036	-.056
TMS Curiosity	.199*	.364**	.209*
TMS Decentering	-.169*	-.066	.048

Note. N = 139 to 147; STS, Self-Talk Scale; ATQ, Automatic Thoughts Questionnaire;

FFMQ, Five Facet Mindfulness Questionnaire; TMS, Toronto Mindfulness Scale.

* $p < .05$, ** $p < .01$

Table 7

*Moderation Effects of Experience with Mindfulness Practice Predicting Trait
Mindfulness for Self-Talk and Self-Compassion*

	Coefficients[a]				
	Unstandardized Coefficients		Standardized Coefficients		
Model	B	Std. Error	Beta	t	Sig.
(Constant)	59.8	7.60		7.87	.000
Practice	-3.07	3.11	-0.72	-0.99	.327
STS Composite	-0.28	0.13	-0.31	-2.18	.032
STS Composite*Practice	0.08	0.05	1.11	1.50	.138
(Constant)	20.1	4.29		4.69	.000
Practice	3.65	1.67	0.86	2.18	.032
SCS Composite	8.69	1.50	0.75	5.80	.000
SCS Composite*Practice	-0.89	0.50	-0.77	-1.76	.083

Note. Practice = Participant responses to the question "How many days each week do you

practice mindfulness or mindfulness-based meditation?"; STS, Self-Talk Scale; SCS,

Self-Compassion Scale.

[a]Dependent Variable: Five Facet Mindfulness Questionnaire (FFMQ) Composite Score

CHAPTER V

DISCUSSION

The purpose of this research was to draw upon the existing literature and attempt to more closely investigate the nature of the relationship between self-talk and mindfulness. Changes in emotional regulation behaviors (including intrapersonal communication) have been frequently proposed to occur in conjunction with increases in mindfulness. To evaluate this relationship, hypotheses were generated with attention to content differences in self-talk. Hypotheses were derived based on these affective designations (positive and negative) ascribed to self-oriented communication before analyzing correlations with trait mindfulness as well as the associated variable of self-compassion. All the hypotheses were partially, though not fully, supported by the data.

Partial support for the first hypothesis was observed in that, of the seven mindfulness subscales (corresponding with the TMS-T and FFMQ), self-reinforcing self-talk was positively correlated with five subscales. Automatic positive self-statements were similarly found to correlate with five of the seven mindfulness subscales. The hypotheses and existing literature alike support this connection, where positive emotional states have historically been associated with positive mental imagery and internal communication (Neck & Manz, 1992) and trait mindfulness has been shown to predict positive emotional states (Brown & Ryan, 2003).

Self-managing self-talk, on the other hand, was not so straightforward in its support of the first hypothesis. It was found to be negatively correlated with non-judging of inner experiences and positively correlated with curiosity. A possible explanation is

that self-management involves some measure of self-judgment and internalization which was not previously considered. This is further supported by the reported correlation of self-managing self-talk with the TMS curiosity trait, which is meant to measure attention to one's own personal experience with a desire to learn more (Davis et al., 2009). This attentiveness seems wholly necessary to the process of self-management.

Self-management has been described as self-speech wherein an individual needs to figure out what they need to do or say and therefore gives themself instructions about what they should do (Brinthaupt et al., 2009). Nonjudging of inner experience refers to taking a nonevaluative stance toward thoughts and feelings. It seems that a likely explanation for this inconsistency is that these variables sensibly confound each other. The issue at hand is rather with the inclusion of self-management as a necessarily "positive" self-talk variable. Though previous research has shown that positive thoughts have been associated with self-managing self-talk (Brinthaupt et al., 2009), the STS does not traditionally make affective thought-content discrepancies as were established for the purpose of this study. Baer et al. (2008) even have posited that self-talk, and self-focused attention more generally, can be maladaptive, and have been found to be associated with negative emotional responding, which may explain the negative correlation. As was briefly addressed earlier, the fostering of mindfulness is meant to develop emotional intelligence and decision making into naturalized, unconscious, self-regulation rather than a more intentional self-management. These results further implicate the possibility that self-talk content and self-talk use play an important role in mindful regulation.

Self-managing self-talk also complicated the results of the second hypothesis.

Self-reinforcement and positive self-statements were positively correlated with self-compassion. This was, once again, expected given the existing literature (Georgakaki & Karakasidou, 2017). Where the research by Georgakaki and Karakasidou established that motivational self-talk can correspond to increases in self-compassion, the current results suggest that this phenomenon extends to other positive intrapersonal communication styles. In direct opposition to this trend, however, self-managing self-talk was found to be negatively correlated with self-compassion. This provides further justification for the idea that self-managing self-talk should not have been categorized as "positive" self-talk as it does not appear to reflect naturally positive emotionality in the way that self-reinforcing self-talk and automatic positive self-statements do. Evidence of this more negative attribution is reported in Table 1, where self-managing self-talk actually was found to be significantly positively correlated with negative automatic self-statements. It is possible that for the present sample, self-managing self-talk served more as corrective and strict than reaffirming and constructive.

Regarding the third hypothesis, each of the three negative self-talk variables were found to partially support the hypothesis, where they indicated negative correlations with trait mindfulness, as was posited. In the case of these correlations observed with negative self-talk tendencies, inconsistencies arose given associations derived with the TMS factor of curiosity. As can be observed if comparing Tables 4 and 6, curiosity was positively correlated with both positive and negative self-talk. A possible explanation in understanding the apparently antithetical results of the curiosity factor was proposed by Davis (2009) when developing the TMS-T. In an analysis comparing the TMS-T to other

mindfulness measures, Davis found that both the FFMQ observing facet and the TMS curiosity facet "showed unexpected relationships" to a host of other variables including an inability to recognize emotion for the FFMQ observing facet and stress reactivity and psychopathological traits for the TMS curiosity. Davis further posited, "one possibility is that TMS curiosity and FFMQ observe are tapping important additional aspects of the mindfulness construct" (2009, p. 192). It seems possible that these "additional aspects," though yet unidentified, could include, or be influenced by, self-communicative behavior.

Given the results of the third hypothesis, delineations of *positive* and *negative* as the ways in which self-talk relates to mindfulness again come into question. It is quite possible, given the literature, that these constructs are measuring something even outside of the established factorial purview of the measures from which they were derived. The observing facet of the FFMQ, which has gone largely unaddressed in this analysis thus far save for one significant correlation, remained largely unaffiliated with other variables in the present research. Baer et al. (2008) provide further evidence for why it may not be associated with the self-talk and self-compassion variables established in this research, noting that the observing facet in the original FFMQ was found to be positively correlated with several maladaptive constructs, including thought suppression, dissociation, absentmindedness, and other associated psychological symptoms. The results reported here also support previous research by Baer et al. (2006, 2008) which suggests removing the observing facet and instead using a four-factor hierarchical model of overall mindfulness when attempting research with non-meditating populations.

As was previously reported, only roughly half of participants had experience with mindfulness and of that half, very few engage in consistent mindfulness practice. There were not strong differences in scores between those with and without mindfulness practice, further indicating that sample experience with mindfulness may lack depth. This may have been a complicating factor for the moderation analysis (i.e., restriction of range), where mindfulness practice was not found to mediate the relationships between self-talk frequency or self-compassion as they related to trait mindfulness. Future research in this vein could benefit from the inclusion of a population with more regular mindfulness practice.

Limitations of the Research

There were a variety of limitations to this study, the first and foremost of which is the sample used for research. The sample size was rather small and lacking in diversity. Most of the individuals who participated were undergraduate students from the same southeastern U.S. university, where 70% of participants were between the ages of 18 and 24 years old. Additionally, participants were predominantly white (72%), which indicates a group not entirely representative of the general population. This may impact the generalizability of these results to other ethnic groups and age demographics.

The present sample group and respondent data may have been further affected by complications due to the coronavirus pandemic. In regard to population sampling, due to pandemic restrictions, on-campus student participants not enrolled in the university Psychology research pool were unable to participate, greatly limiting recruitment efforts for the study. This may have played a significant role in the aforementioned lack of

sample diversity. The stress and emotionality associated with navigating a global pandemic may have also affected the mental states of participants, lending to response styles which may not be entirely representative of the sample under more ordinary circumstances.

Using short forms of several of the assessment tools in this study also limited the present research. Results derived from the Self-Compassion Scale were most predominantly affected. Where the creator of the measure advises against examination of subscales when using the short form (Raes et al., 2011), there was potential additional information which was lost. This information could have proven useful to drawing further conclusions about the specifics of the relationship between self-compassion and other variables of interest.

Implications for Future Research

Future research should continue to explore associations between self-talk frequency and other cognitive variables, as were examined in this study with self-compassion and trait mindfulness. Although experience with mindfulness practice did not help to predict correlations between intrapersonal communicative variables and trait mindfulness, there is still evidentiary support for a connection between self-oriented cognition and other cognitive variables which have been historically observed to affect treatment outcomes. Cognitive disruptions, such as anxiety and obsessive-compulsive tendencies, which were previously noted to be associated with increased self-talk and decreased self-regulation (Brinthaupt, 2019) are commonly treated with interventions which target the negative thought patterns produced by the cognitive disruptions (this

often accomplished by incorporating mindfulness-based training). It would be worthwhile to further investigate this relationship in such a way where changes in self-talk frequency and other self-oriented variables might be observed to directly correspond with changes in individual mindfulness.

Exploration in this area should include longitudinal treatment research wherein self-talk patterns are observed before and after a mindfulness-based intervention or education program. Changes in self-talk patterns or frequency after participation in a mindfulness program would grant further insight into the particulars of the relationship between self-communicative behaviors and mindfulness. An intervention-type design would also provide for the opportunity to observe possible interactions between *state* mindfulness and self-talk.

Additionally, future studies could explore the possibility of using mindfulness interventions to better target certain established categories of self-talk and self-talk content to contribute to the treatment of mental health disorders and ruminative coping styles. Exploring the notion of self-talk as a transdiagnostic component could be extremely helpful in the case of treatment planning. By observing self-talk patterns in cases of co-occurring disorders, comorbidity risk might be better accounted and prepared for. In taking steps to identify what types of negative self-communication a client is engaging in, service providers would be able to better serve the client by adapting the therapeutic intervention to the relevant self-communication areas where work is needed to see long term psychological improvement. This could be an effective way to combat

the self-communicative maintenance component of many recurrent psychological disorders, such as depression and anxiety.

Expanding upon that idea, there is a possibility that the exploration of self-talk style recognition could be more generally employed in the selection of a mindfulness intervention style most appropriate to a client's patterns of self-communication. Where different styles of MBI are variably effective for different clientele (as well as different disorders), exploring influential correlates (such as self-talk frequency) could be helpful in selecting intervention styles which best match the individual case of each client. Again, this could be especially effective in assisting clients struggling with cognitive disruptions characterized by internalization, heightened self-focus, and maladaptive self-communication.

The present research sought to establish a working relationship between self-talk and trait mindfulness. The evidentiary support for the existence of this relationship provides an encouraging new avenue for mindfulness intervention research. By adding the influence of self-communication to the pool of mindfulness research, we are hopefully one step closer to the understanding of some aspect of the maladaptive intrapersonal communication that serves as the backbone to a large subset of mental health disorders for which the population numbers are ever increasing.

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APPENDICES

APPENDIX A

Demographic Questionnaire

1. How old are you?

     18-24 years old

     25-34 years old

     35-44 years old

     45-54 years old

     55-64 years old

     65+ years old

2. Choose one or more races that you consider yourself to be:

     Caucasian

     Hispanic

     African American

     American Indian or Alaska Native

     Asian

     Native Hawaiian or Other Pacific Islander

     Other

3. How do you describe yourself?

     Male

     Female

     Non-binary

     Other

     Prefer not to say

4. Have you ever heard of the term "mindfulness"?

     Yes
     No

5. Have you ever tried to practice mindfulness?

Yes
No

6. How many days each week do you practice mindfulness or mindfulness-based

meditation?

0
1
2
3
4
5
6
7

APPENDIX B

Middle Tennessee State University Institutional Review Board Exemption

Determination Notice

IRB
INSTITUTIONAL REVIEW BOARD
Office of Research Compliance,
010A Sam Ingram Building,
2269 Middle Tennessee Blvd
Murfreesboro, TN 37129
FWA: 00005331/IRB Regn.. 0003571

MIDDLE TENNESSEE STATE UNIVERSITY

IRBN007 – EXEMPTION DETERMINATION NOTICE

Wednesday, February 24, 2021

Protocol Title	***Self-Talk and Mindfulness: A Correlational Analysis***
Protocol ID	**21-1111 2q**

Principal Investigator	**Jocelyn Grzybowski** (Student)
Faculty Advisor	Tom Brinthaupt
Co-Investigators	NONE
Investigator Email(s)	*jg4r@mtmail.mtsu.edu; tom.brinthaupt@mtsu.edu*
Department/Affiliation	Psychology

Dear Investigator(s),

The above identified research proposal has been reviewed by the MTSU Institutional Review Board (IRB) through the **EXEMPT** review mechanism under 45 CFR 46.101(b)(2) within the research category **(2) Educational Tests, surveys, interviews or observations of public behavior** (Qualtrics Survey). A summary of the IRB action and other particulars of this protocol are shown below:

IRB Action	**EXEMPT from furhter IRB review***		
Date of Expiration	2/28/2022	*Date of Approval:* **2/23/21**	*Recent Amendment:* NONE
Sample Size	FOUR HUNDRED (400)		
Participant Pool	**Healthy adults (18 or older) - MTSU SONA Students and others**		
Exceptions	Online consent followed by internet-based survey using Qualtrics is permitted (Qualtrics links on file).		
Type of Interaction	☒ Virtual/Remote/Online Interview/survey ☐ In person or physical– Mandatory COVID-19 Management (refer next page)		
Mandatory Restrictions	**1. All restrictions for exemption apply.** **2. The participants must be 18 years or older.** **3. Mandatory ACTIVE informed consent. Identifiable information including, names, addresses, voice/video data, must not be obtained.** **4. NOT approved for in-person data collection.**		
Approved IRB Templates	*IRB Templates:* Online Informed Consent and SONA Recruitment Script *Non-MTSU Templates:* Recruitment Email		
Research Inducement	Course Credit SONA volunteers		
Comments	NONE		

***Although this exemption determination allows above defined protocol from further IRB review, such as continuing review, MTSU IRB will continue to give regulatory oversight to ensure compliance.

Summary of the Post-approval Requirements: The PI and FA must read and abide by the post-approval conditions (Refer "*Quick Links*" in the bottom):

- *Final Report:* The Faculty Advisor (FA) is responsible for submitting a final report to close-out this protocol before <mark>2/28/2022</mark>; if more time is needed to complete the data collection, the FA must request an extension by email. <u>REMINDERS WILL NOT BE SENT</u>. **Failure to close-out (or request extension) may result in penalties** including cancellation of the data collected using this protocol or withholding student diploma.
- *Protocol Amendments*: IRB approval must be obtained for all types of amendments, such as:
  - o   Addition/removal of subject population and sample size.
  - o   Change in investigators.
  - o   Changes to the research sites – appropriate permission letter(s) from may be needed.
  - o   Alternation to funding.
  - o   Amendments must be clearly described in an addendum request form submitted by the FA.
  - o   The proposed change must be consistent with the approved protocol and they must comply with exemption requirements.
- *Reporting Adverse Events:* Research-related injuries to the participants and other events , such as, deviations & misconduct, must be reported within 48 hours of such events to compliance@mtsu.edu.
- *Research Participant Compensation:* Compensation for research participation must be awarded as proposed in Chapter 6 of the Exempt protocol. The documentation of the monetary compensation must Appendix J and MUST NOT include protocol details when reporting to the MTSU Business Office.
- *COVID-19:* Regardless whether this study poses a threat to the participants or not, refer to the COVID-19 Management section for important information for the FA.

COVID-19 Management:

The FA must enforce social distancing guidelines and other practices to avoid viral exposure to the participants and other workers when physical contact with the subjects is made during the study.

- The study must be stopped if a participant or an investigator should test positive for COVID-19 within 14 days of the research interaction. This must be reported to the IRB as an "adverse event."
- The FA must enforce the MTSU's "Return-to-work" questionnaire found in Pipeline must be filled and signed by the investigators on the day of the research interaction prior to physical contact.
- PPE must be worn if the participant would be within 6 feet from the each other or with an investigator.
- Physical surfaces that will come in contact with the participants must be sanitized between use
- **FA's Responsibility:** The FA is given the administrative authority to make emergency changes to protect the wellbeing of the participants and student researchers during the COVID-19 pandemic. However, the FA must notify the IRB after such changes have been made. The IRB will audit the changes at a later date and the PI will be instructed to carryout remedial measures if needed.

Post-approval Protocol Amendments:

The current MTSU IRB policies allow the investigators to implement minor and significant amendments that would not result in the cancellation of the protocol's eligibility for exemption. <mark>*Only THREE procedural amendments will be entertained per year*</mark> *(changes like addition/removal of research personnel are not restricted by this rule).*

Date	Amendment(s)	IRB Comments
NONE	NONE.	NONE

Post-approval IRB Actions:

The following actions are done subsequent to the approval of this protocol on request by the PI or on recommendation by the IRB or by both.

Date	IRB Action(s)	IRB Comments
NONE	NONE.	NONE

Mandatory Data Storage Requirement:

All research-related records (signed consent forms, investigator training and etc.) must be retained by the PI or the faculty advisor (if the PI is a student) at the secure location mentioned in the protocol application. The data must be stored for at least three (3) years after the study is closed. Additionally, the Tennessee

State data retention requirement may apply (*refer "Quick Links" below for policy 129*).   Subsequently, the data may be destroyed in a manner that maintains confidentiality and anonymity of the research subjects. **The IRB reserves the right to modify/update the approval criteria or change/cancel the terms listed in this notice**. Be advised that IRB also reserves the right to inspect or audit your records if needed.

Sincerely,

Institutional Review Board
Middle Tennessee State University

Quick Links:
- Post-approval Responsibilities: http://www.mtsu.edu/irb/FAQ/PostApprovalResponsibilities.php
- Exemption Procedures: https://mtsu.edu/irb/ExemptPaperWork.php
- MTSU Policy 129: Records retention & Disposal: https://www.mtsu.edu/policies/general/129.php