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A Further Validation of the Mindful Self-Care Scale in Emerging Adults

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A FURTHER VALIDATION OF THE MINDFUL SELF-CARE SCALE
IN EMERGING ADULTS

by

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Abstract

With a growing interest in understanding ways to increase optimal functioning in humans, a relatively novel concept – "mindful self-care" – gained research attention in the past few years. Mindful self-care is a combination of the active evaluation of internal needs and external demands and intentional engagement in self-care practices. Although initial evidence was reported in the development and validation study of the Mindful Self-Care Scale (MSCS, Cook-Cottone & Guyker, 2018), there were some notable limitations, including the wide age range of the sample (i.e., ages 18-71 years) and a lack of evidence to confirm criterion validity and invariance across men and women. To further validate the MSCS, the current study focused on examining gender invariance and criterion validity in emerging adults using a sample of college students (N = 912; ages 18 to 23). Based on the CFAs, four items were deemed questionable and removed from the MSCS. Using the remaining items, the original six factor structure was supported in the final CFA model. Multigroup CFA results supported full metric invariance, suggesting that the factor structures and the loadings of each item on the MSCS was equivalent across gender groups. Partial scalar invariance was also achieved across gender groups, suggesting that the meaning of mindful self-care is equivalent across these two groups, and that most factor loadings and item intercepts are equal across groups. A latent mean analysis showed the mean levels of men and women reports significantly differed across two subscales on the MSCS, Physical Care and Mindful Awareness. Men demonstrated higher latent means than woman. The internal consistency (α) of the revised MSCS was .91. Criterion validity of the MSCS was supported by the weak to moderate positive relations with satisfaction with life, and the weak inverse relations with the measures of depression, anxiety, and stress, respectively. Taken together, the findings suggested a modified MSCS is a reliable and valid tool to measure

mindful self-care across emerging adult men and women. Implications and future directions, including further investigation of non-variant items and additional demographic characteristics, are discussed.

Keywords: self-care, mindfulness, emerging adults, adults, mindful self-care, self-care behaviors, measurement invariance, confirmatory factor analysis, gender comparison

Table of Contents

List of Tables

A Further Validation of the Mindful Self-Care Scale in Emerging Adults

For many decades, psychological research has been primarily focused on

psychopathology and remediation of deficits, but the interest in understanding optimal

functioning in humans continues to grow (e.g., Cowen 1994; Seligman, 2002; Sheldon & King,

2001). Notably, increasing research efforts have been put forth to take a more preventative

approach to optimizing mental health. One way in which individuals can better manage life

stressors and reach their greatest potential is to increase awareness of and engagement in self-

care (e.g., Coster & Schwebel, 1997; Richards, Campenni, & Muse-Burke, 2010; Tomlinson,

Yousaf, Vitterso, & Jones, 2017). However, literature on self-care outside of patient populations

and healthcare professionals is very limited (for a review, see Jiang, Topps, & Suzuki, 2020).

One measure, the Mindful Self-Care Scale (MSCS), breached out this limitation by examining

the frequency of engagement in self-care behaviors that promote positive embodiment and well-

being (Cook-Cottone & Guyker, 2018). The MSCS can be used to assist individuals with

recognizing personal strengths and weaknesses related to self-care, and alternate ways to

improve their engagement in self-care. Although the authors of this scale provided initial

evidence of its psychometric properties, it is unknown if the measured mindful self-care

components are equivalent across gender groups. Additionally, support for the criterion validity

of the MSCS is inadequate. To bridge these gaps, the current study aims to test the gender

equivalence and criterion validity of the MSCS within the specific developmental period of

emerging adulthood.

Literature Review of the Self-Care Measurement Research

The topic of self-care has been studied over an extensive period of time in the healthcare

literature. In 1983, the World Health Organization (WHO) defined self-care as "a means

whereby people take much greater responsibility for their own health based on an understanding, in their own language, of what health is all about, how to promote it, what damages it, how to protect it, and what to do when it goes wrong" (WHO, 1983, p.1). Reflected in its early definition, such as the one proposed by WHO, the majority of self-care research is limited to individuals experiencing chronic health issues, with many studies examining patient samples and responses to particular physical symptoms of illness. In the subsequent decades, the conceptualization of self-care has been continuously evolving. Into the 21st century, for instance, Ziguras (2004) explains that self-care represents the active engagement in healing, preserving, and enhancing wellness, which is conceptualized as a more comprehensive view of health (i.e., physical and mental wellness) and emphasizes self-care from a proactive standpoint (i.e., prior to illness or chronic diseases). This view suggests that self-care is not only applicable to individuals suffering from serious health conditions, but also to the population in general.

However, despite the progress made at the conceptual level, the empirical research on self-care based on an advanced understanding is lagging behind. Still, a vast majority of the self-care measurement research focuses on individuals suffering from chronic medical illnesses, followed by a small percentage of studies focused on medical professionals and clinicians working in the mental health field (for a review, see Jiang, et al., 2020). Below a review of self-care measures, including a brief summary of research on patients and professionals, as the latter measures are more closely related to the target measure in the present study.

Self-Care Measures for Individuals with Chronic Illnesses. According to the Middle-Range Theory of Self-Care of Chronic Illness (Riegel, Jaarsma, & Stromberg, 2012), which focuses on prevention and management, self-care is recognized as a process in which health maintenance occurs through supporting practices with the body in both healthy and ill states.

Reviews of self-care measures for patient populations can be found in several review articles (e.g., Caro-Bautista, Martin-Santos, Morales-Asencio, 2014; Han, Song, Nguyen, & Kim, 2014; Sidani, 2011). These measures typically focus on behaviors that ensures patients' maintenance of physical stability. The act of engaging in self-care allows for consistent monitoring of the self for changes in signs and symptoms, also known as, "body listening," in order to respond to these changes when needed (Riegel et al. 2017). For example, the Hypertension Self-Care Profile (HBP SCP; Han, Lee, Commodore-Mensah, & Kim, 2014) examines self-care of individuals with hypertension, which includes medication adherence and a variety of lifestyle factors including non-smoking, weight management, dietary restrictions, regular doctor visits, and stress reduction. Another example is the Summary of Diabetes Self-Care Activities (SDSCA; Toobert, Hampson, & Glasgow, 2000), which measures diabetes self-management across general diet, specific diet, exercise, medication adherence, and blood glucose testing. The Chronic Illness Assessment Interview for Sickle Cell Disease (CIAI-SCD; Lenoci, Telfair, Cecil, & Edwards, 2002) is another example, which was developed for individuals with sickle cell disease. The CIAI-SCD measures the "willingness and ability to engage in effective self-behavior" (Lenoci et al., 2002, p. 232) and includes items related to self-concept, health motivation, psychological status, and social support. However, it is worth noting that many of the measures focus on taking care of the physical body, with very little acknowledgement to engagement in specific behaviors related to other aspects of self-care that promote emotional wellness. This suggests a gap in self-care research as it relates to individuals with chronic illnesses, specifically with regard to caring for the emotional well-being.

Self-care Measures for Healthcare Providers. In the medical field, many clinicians experience distress related to clients' suffering and various work factors including overwhelming

workloads, unstable work environment, engaging in tasks that are not congruent with career goals, and inability to manage work-life balance because of increasing demands (Adimando, 2018). Given such negative outcomes associated with work stress, it is important for professionals to develop coping strategies, such as self-care, to lessen these high stress effects and sustain intrapersonal well-being (Sanchez-Reilly et al., 2017). For medical professionals, self-care has been recognized as both an independent resource and a training domain, which focuses more on understanding the knowledge, skills, awareness, and reflection needed to engage in adequate self-care (Mills, Wand, & Fraser, 2015). However, although the literature discussed activities that are considered acts of self-care, there is no conceptualized definition of the term itself in reference to medical professionals.

Another field in which self-care has become more prominent is in the field of mental health. For those in the mental health profession, self-care is viewed as a preventative approach to avoid negative outcomes associated with stress, such as burnout and compassion fatigue, to support professional functioning (Dorociak, Rupert, Bryant, & Zahniser, 2017). Although there is typically a general understanding of what is meant by the term, "self-care," there have been very few attempts to operationally define the term in this sector (Richards, Campenni, & Muse-Burke, 2010). Some researchers have focused mostly on the outcomes resulting from engaging in self-care (e.g., sense of self, positive affect, subjective well-being; Pincus, 2006 as cited in Richards, Campenni, and Muse-Burke, 2010), while other definitions focus on a combination of aspects thought to influence self-care. Richards, Campenni, and Muse-Burke (2010) found some general themes regarding the components of self-care throughout the literature, including physical (Mahoney, 1997), psychological (Norcross, 2000), spiritual (Valente & Marotta, 2005), and support (Guy, 2000). Although there is no empirical evidence supporting specific predictors

of self-care, the conclusions based on a survey of mental health professionals suggest

mindfulness is positively correlated with self-care and is a significant mediator between self-care

and well-being (Richards, Campenni, & Muse-Burk, 2010).

Currently, there are several scales available to measure healthcare providers' engagement

in self-care. First, the Professional Self-Care Scale (PSCS; Dorociak, Rupert, Bryant, &

Zahniser, 2017), which is a 21-item scale composed of five factors: Professional Support,

Professional Development, Life Balance, Cognitive Awareness, and Daily Balance. Dorociak

and colleagues (2017) found these five factors to be associated with multiple personal and

professional well-being outcomes, suggesting the application of assessment of engagement in

meaningful self-care behaviors in predicting important professional outcomes. Second, in a study

examining graduate trainees in clinical psychology, Goncher, Sherman, Barnett, & Haskins

(2013) indicated self-care emphasis and self-care utilization were positive predictors of quality of

life. For self-care emphasis, a principal component analysis (PCA) indicated it is composed of

two meaningful components: 1) balancing professional and personal lives and 2) seeking

guidance and supervision. Regarding self-care utilization, the PCA results showed two

meaningful components within this construct: 1) positive coping and 2) personal fulfillment.

Third, in another study examining the effects of self-care practices and perceptions on

professional quality of life, Bloomquist, Wood, Friedmeyer-Trainor, and Kim (2015) found three

domains of self-care (i.e., professional, emotional, and spiritual) significantly predicted

professional quality of life. Also, increased self-care practices in these domains were predictive

of less burn out and greater compassion satisfaction. Lastly, the Trauma-Informed Self-Care

Measure-Revised (TISC-R; Salloum, Choi, & Stover, 2018) was intended to measure resources

and supports at the organizational level, along with personal self-care practices engaged by the

individual. The TISC-R was found to be positively associated with compassion satisfaction, psychological well-being, and organizational resources. The TISC-R was also found to be negatively associated with burn out and secondary traumatic stress. Based on these studies, self-care appears to be a salient aspect of well-being for those individuals working in healthcare professions. However, research examining the use of self-care measures in general, healthy populations is scarce, indicating a gap in research related to the generalizability of self-care measures.

Additionally, compared to the traditional self-care measures, which primarily target the "behaviors" in people with health issues, one distinct feature in most of professional self-care is the incorporation of cognitions associated with self-care, such as mindfulness. Although mindfulness has been recognized as an important trend, there is a limitation in the integration of mindfulness in the self-care literature. As such, key mindfulness literature is reviewed below and the link between mindfulness and self-care measures is discussed further in the following sections.

Literature Review of Mindfulness Research

Mindfulness is a construct composed of multiple elements which further develop individual's awareness and attention in present time (Brown & Ryan, 2003). Shapiro, Carlson, Astin, and Freedman (2006) identified the primary elements of the mindfulness process as attitude, attention, and intention. The foundation of mindfulness includes numerous attitudinal approaches, such as curiosity, acceptance, patience, non-judgment, and kindliness (Bishop et al., 2004; Shapiro et al., 2006). The attention aspect of mindfulness includes centralized, general, and continuous attention to different stimuli with the ability to switch focus between multiple sources of stimuli. Intention in mindfulness is viewed as a conscious effort to practice

controlling, continuing, and attending to multiple stimuli at once. This component of mindfulness can be viewed as one's ability to self-regulate their own attention (Bishop et al., 2004).

Previous research has suggested that each of these components (i.e., attitude, attention, intention) represent interrelated parts of the process of mindfulness (Shapiro et al., 2006). During this process, individuals' perspectives evolve to become less centered on personal experiences from an objective standpoint and less judgmental, attending to cognitions, emotions, and sensory stimulation as temporary. Over time, a shift occurs in the relation between one's self and their transient view of experiences, which enables individuals to examine, identify, and disconnect from typical thinking patterns and engage in internal responses that are more reflective, instead of reactive, to promote acceptance (Segal, Teasdale, Williams, Germar, 2002; Baer, 2003; Germer, 2005; Shapiro et al., 2006). The act of being mindful not only increases the awareness of present experiences, but also enables individuals to further recognize bodily sensations and attend to new thoughts and emotions associated with the mindful experience (Baer, Smith, Hopkins, Krietemeyer, & Toney, 2006). Because of the heightened attention and awareness involved, mindfulness is thought to improve cognitive flexibility as individuals attend to present moment experiences in a more insightful manner (Shapiro, 2009). Previous research indicates mindfulness produces serenity and acts as a source of patience toward the inner self, which in turn strengthens the relation between thoughts, emotions, and bodily sensations to support increased executive functioning and positive affect (Teper, Segal, & Inzlicht, 2013). Mindfulness has also been shown to significantly predict well-being and is thought to enhance psychological health and serve as a protective factor against symptoms of psychopathology (Bowlin & Baer, 2012; Mandal, Arya, & Pandey, 2012). Therefore, mindfulness should be considered one of the

fundamental components of self-care, enabling individuals to actively attend to their personal experiences in a non-judgmental manner and respond in a way that supports healthy change and positive outcomes (Shapiro, Carlson, Astin, & Freedman, 2006).

The role of mindfulness in psychological well-being has been supported in some measurement studies. For instance, in a validation study of the Mindful Attention Awareness Scale (MAAS), Brown and Ryan (2003) found that mindfulness positively correlated with emotional intelligence, life satisfaction, self-esteem, autonomy, competence, and was inversely related to measures of depression, anxiety, and physical symptoms. In another mindfulness measure study (Cognitive and Affective Mindfulness Scale-Revised [CAMS]; Feldman et al., 2007), increased levels of mindfulness were also shown to be significantly correlated with higher well-being scores, attention to feelings, and lower levels of maladaptive coping, including worry, thought suppression, and overgeneralization.

Previous research has shown mindfulness-based interventions to be associated with well-being, including pleasant affect, interpersonal functioning, decreased psychological symptoms and perceived stress, increased empathy, spirituality, self-compassion, relaxation, and improved self-regulation (e.g., Baer, 2003; Brown & Ryan, 2003; Beddoe & Murphy, 2004; Burke, 2010; Christopher, Christopher, Dunnagan, & Schure, 2006; Grepmair, Mitterlehner, & Nickel, 2007; Jain et al., 2007; Shapiro, Astin, Bishop, & Cordova, 2005). There have also been studies examining the effects of mindfulness-based stress reduction in various populations, such as family caregivers, individuals living in inner cities, and college students, each of which has illustrated the potential of mindfulness to contribute to improvements in quality of life (Felver, Morton, & Clawson, 2018; Li, Yuan, & Zhang, 2016; Smith, Metzkar, Waite, & Gerrity, 2015).

For emerging adults, a term referring to individuals ranging from ages 18 to 25 (Arnett, 2000), there has also been a growing interest in the role of mindfulness in relation to typical experiences occurring during this developmental period. For example, Bogusch, Fekete, & Skinta (2016) found increased levels of mindfulness was related to better sleep quality for emerging adults, by way of lower depression and anxiety symptoms. Peer and McAuslan (2016) found mindfulness mediated multiple aspects of development in emerging adults and self-doubt. In another study, a mindfulness-based stress reduction (MBSR) intervention was associated with improved first-year adjustment and reduced physiological symptoms in college students (Ramler, Tennison, Lynch, & Murphy, 2015). Greeson et al. (2014) also found significant improvement in perceived stress, sleep problems, mindfulness, and self-compassion in emerging adults after completing a mindfulness training program. Although empirical evidence continues to support the commonality and potential interrelation between mindfulness and self-care, there is limited research investigating the two constructs together. Research gaps are discussed further below.

Gaps in Self-Care and Mindfulness Research

Although both self-care and mindfulness have received increased attention separately over the years, researchers have also begun to incorporate both constructs in their most recent investigations. For instance, Shapiro, Brown, and Biegel (2007) examined the effects of mindfulness-based self-care as a self-care strategy for therapists in training, and found trainees in the mindfulness-based self-care intervention reported significant growth in positive affect and self-compassion and decreased stress, negative affect, rumination, and anxiety. But, even for this particular population, such mindfulness-based or mindfulness-integrated interventions are conceptualized as being a strategy separated from self-care, not within self-care itself (e.g., Halm, 2017). It is possible, however, that the broad definition of self-care (or lack thereof) and

few measures available to examine engagement in mindful self-care makes it challenging to pinpoint specific acts of self-care that may accompany mindfulness in the general population. With the heightened awareness of the benefits of both mindfulness and self-care, there has been research investigating the two concepts together. The integration of these two concepts, which is referred to as "mindful self-care" (Cook-Cottone & Guyker, 2018), are discussed further below.

Understanding Mindful Self-Care

Mindful self-care is a newly developed concept, which combines the constructs of mindfulness and self-care to promote optimal functioning. According to Cook-Cottone and Guyker (2018), mindful self-care is the awareness of and responsiveness to various aspects of physiological and emotional needs, including the formation of routines, relationships, and altering environmental settings in order to fit one's individual needs (Cook-Cottone & Guyker, 2018). Thus, mindful self-care combines the conscious efforts that enable individuals to be present during current real-life experiences (Brown & Ryan, 2003) with being actively aware and attending to basic requirements. Cook-Cottone (2015) also defines mindful self-care as a constant two-part process. First, mindful self-care involves active recognition and evaluation of internal needs and external demands. The second part of mindful self-care focuses on intentionally engaging in self-care practices, relevant to one's individual needs and demands, to support well-being and personal efficacy. As such, mindful self-care requires attention to and engagement with one's individual needs in a non-judgmental way to facilitate intrapersonal loving-kindness (Cook-Cottone, 2015).

Similar to both mindfulness and self-care, mindful self-care is viewed as a potential protective factor against negative outcomes, such has maladaptive functioning and burnout. As such, mindful self-care has recently been considered a fundamental component for physical,

mental, and emotional well-being (Cook-Cottone & Guyker, 2018). Engagement in mindful self-care involves a personal interconnection of the internal self, surrounding ecological systems, and intentional engagement in self-care practices (Cook-Cottone, 2015). However, mindful self-care behaviors are not the typical practices related to reaching an objective goal (e.g., improved physical health). Instead, mindful self-care encompasses positive embodiment, which has been described as inhabiting the body (Cook-Cottone & Guyker, 2018) and, in doing so, experiencing an increase in gratitude for the body itself and recognizing its purpose in the environment (Cook-Cottone, 2015). This theory, also named as the Attuned Representation Model of Self (ARMS; Cook-Cottone, 2006), emphasizes the interactive nature of the systems mentioned above, which is supported by the representational self. In the ARMS model, the representational self is essentially the constructed version of the individual that is presented to the external system and interacts with the environment. The representational self facilitates engagement with individuals within the ecological systems, including dialogue, actions, and even attire. According to Cook-Cottone (2006), the mindful component of mindful self-care is heavily rooted in the attunement to the bidirectional influence and simultaneous regulation of the internal and external systems.

The Development and Initial Validation of the Mindful Self-Care Scale

With the increasing interest of mindful self-care, there was a need to measure this construct. Hence, the Mindful Self-Care Scale (MSCS; Cook-Cottone & Guyker, 2018) was developed to assess self-care behaviors and practices in individuals 18 years of age or older. During the literature review, Cook-Cottone and Guyker (2018) primarily focused on creating items that were representative of direct action, to serve as a practical resource and enable individuals to become more aware of their own self-care practices, and possibly engage in other behaviors provided in the measure. Items were generated after extensively reviewing the

literature based on the following key terms: self-care, mindful self-care, assessment of self-care, and measurement of self-care. Each of these terms were entered into several search engines and databases, in order to develop practical items that could be useful following the completion of the assessment. The initial version of the scale was composed of 120 items and then reviewed by graduate students in mental health counseling, counseling psychology, and school psychology. Following the student review, 22 items were dropped and the remaining 95 items were reviewed by experts in the fields of mental health counseling, counseling psychology, and school psychology. After the expert review, an additional 14 items were removed and three items focused on self-care, active planning of self-care, and new ways to engage in self-care, leaving a total of 84 items. Participants across both samples used in the initial validation study were recruited from graduate and undergraduate classes, social networking sites of researchers in the program, departmental listservs, and the online community (i.e., Amazon Mechanical Turk). The first sample ranged from age 18 to 71 and included participants who identified as European American, Native American, African American, Asian American, Alaskan Native, multiracial, or other. 79.7% of the participants in sample 1 identified as female and 20.3% identified as male. In the second sample, participants ranged 18 to 78 and identified as European American, Asian American, Native American, African American, multiracial, Alaskan Native, Native Hawaiian, or other. 69.7% of participants in sample 2 identified as female, 30.1% of participants identified as male, and 0.2% of participants identified as transgender.

The 84-item MSCS were further examined using an exploratory factory analysis (EFA), which resulted in 44 items being deleted for low item-factor loadings, redundant content, and cross-loadings and 33 remaining items. The MSCS assesses six broad dimensions of mindful self-care: Physical Care, Self-Compassion and Purpose, Mindful Awareness, Mindful

Relaxation, Supportive Relationships, and Supportive Structure (Figure 1). The physical experience of the self is supported by nutrition, hydration, and exercise. Self-compassion is recognized as engaging in behaviors that nurtures the emotional self, creates a sense of purpose to support a positive cognitive experience, and foster creativity. Supportive Relationships and Supportive Structure represent practices that offer a framework for establishing and maintaining positive relationships, creating an environment to support well-being, and managing external demands. Mindful Awareness and Mindful Relaxation focus on actively assessing internal and external experiences to promote attunement and self-regulation.

Physical Care is composed of eight items, including content asking about exercise, engaging in mind/body practice, staying adequately hydrated, eating healthy foods, and meal planning. Five items were included in *Supportive Relationships*, which focused on time spent with individuals from meaningful relationships, having someone to listen to, scheduling time with individuals who support them, and having individuals who respect their choices. *Mindful Awareness* includes four items based on core aspects of mindfulness, such as having a calm awareness of thoughts, feelings, and the physical body. In addition, the Mindful Awareness domain also assesses intent in selecting thoughts and feelings to guide later actions. *Self-Compassion and Purpose* were comprised of six items, which were initially conceptualized as two separate constructs. It is thought that these items function as a softer, mindful form of grit, or the ability to work hard. The items in this domain discuss normalizing failure and challenges as part of the, "human experience," the ability to engage in positive and comforting self-talk, and granting one's self the opportunity to, "feel feelings" and persevere in the midst of failure and frustration. The *Mindful Relaxation* domain was made up of six items, which asked questions related to relaxation practices and skills to engage the senses. Within the *Supportive Structure*

domain, four items were included related to environmental factors. Specifically, items were related to organization skills, creating a comfortable living environment, balancing one's needs and external demands, and managing work appropriately.

In the initial validation of the MSCS, internal consistency was examined using Cronbach's alpha for the total MSCS and each domain across two gender groups. The total MSCS coefficient alpha was .89 (males: .87; females: .89); Physical Care was .69 (males: .68; females: .70); Supportive Relationships was .86 (males: .77; females: .87); Mindful Awareness was .92 (males: .94; females: .92); Self Compassion and Purpose was .83 (males: .81; females .83); Mindful Relaxation was .77 (males: .80; females: .76); and Supportive Structure was .77 (males: .72; females .78).

Criterion validity was examined by comparing MSCS to scales measuring body esteem and eating disorder symptomatology. MSCS was expected to positively correlate with body esteem and negatively with eating disorder symptoms. For males, there were positive correlations between mindful self-care and perceived physical attractiveness, perceived upper body strength, and perceived physical condition, which ranged from weak to moderate. However, the statistical significance of the correlations was not fully reported. For females, there were positive correlations between mindful self-care and perceived sexual attractiveness, weight concern, and perceived physical condition, ranging from weak to strong, though the significance of the correlations was not fully reported. Overall, mindful self-care correlated negatively with eating disorder symptoms, ranging from slightly to moderately, which was consistent with the authors' predictors. However, against the hypothesis, the Physical Care domain of mindful self-care showed a small positive correlation with eating disorder symptoms.

Since the first publication of the MSCS, the research examining its validity is emerging, with two studies being found to date. One study was conducted in a Turkish emerging adult sample in a university setting (M_{age} = 20.22). In this study, Sünbül and colleagues (2018) examined convergent validity using a correlation analysis of MSCS and the Mindful Attention Awareness Scale – Adolescent Version (MAAS-A). Results of the analysis indicated both scales are significantly and positively correlated with each other, though the correlation was small (r = .27, p < .001). Cronbach's Alpha was used to yield internal consistency for the reliability of MSCS. For the total MSCS, the coefficient alpha was .89. The coefficient alphas were .72 for Physical Care, .81 for Supportive Relationships, .81 for Mindful Awareness, .83 for Self-Compassion and Purpose, .66 for Mindful Relaxation, and .80 for Supportive Structure. The results of the study suggested the MSCS is has the potential to be a valid and reliable assessment tool for use with individuals from a Turkish background (Sünbül et al., 2018). In another study, Hotchkiss and Cook-Cottone (2019) examined MSCS in a sample of hospice and healthcare professionals. In this study, nine items from the MSCS were excluded due to low factor loadings and overlap with other items resulting in the Brief-MSCS (B-MSCS). The 24-item B-MSCS demonstrated a closer fit to the data (X^2 = 1.85, root mean square error of approximation [RMSEA] = .041, comparative fit index [CFI] = .961, Tucker and Lewis' index of fit [TLI] = .955). Cronbach's alpha supported internal reliability for the B-MSCS (Physical Care = .77; Supportive Relationships = .77; Mindful Awareness = .86; Self-Compassion and Purpose = .78; Mindful Relaxation = .74; Supportive Structure = .79). Construct and concurrent validity were supported using correlations of the B-MSCS subscales to the total MSCS and other positive and negative well-being measures. This study suggested practicing mindful self-care was associated

with increased wellness and reduced burnout when compared to formal mind-body practices among healthcare professionals.

Based on the initial evidence from mindful self-care validation research, the MSCS appears to be a promising measure to examine how mindful self-care relates to physical and emotional well-being (Cook-Cottone, 2015). However, some limitations from the initial study are noted. Although Cook-Cottone and Guyker (2018) had a relatively large sample size, their sample had a wide age range of adults (18-71), which did not acknowledge the differences across developmental stages within adulthood. In addition, their study neglected to include adequate measures to confirm criterion validity and test measurement invariance across males and females.

Importance of Studying Mindful Self-Care in Emerging Adults

The term emerging adulthood refers to the developmental stage roughly ranging from age 18 to 25 (Arnett, 2000). This developmental stage is singled out because in modern, industrialized societies, transitioning to adulthood has become longer, with emerging adults engaging in premarital sex and cohabitation, frequent job changes, and pursuing postsecondary education or training, and thus has its unique developmental characteristics compared to older adults (Arnett, 2007). Arnett (2004) proposed five key features that distinguish emerging adulthood from other developmental periods, which include: the age of identity, explorations, the age of instability, the self-focused age, the age of feeling in-between, and the age of possibilities. Each of these features are experienced gradually, hence the term, "emerging adulthood," which also allows for a wider range of areas from other developmental periods to be included, such as cognitive development, relationships, and media usage (Arnett, 2007).

According to Robbins and Wilner (2001), American pop culture considers the emerging adulthood experience to be primarily negative, coining the phrase, "quarter-life crisis" to represent the challenges experienced by individuals within this developmental period (p. 2). During this time, emerging adults also tend to experience identity issues while also navigating novel environments, which can generate anxiety. Additionally, entry into the job market has become increasingly stressful and frustrating, with even college graduates struggling to find employment that is both enjoyable and provides financial stability (Arnett, 2004). Other issues experienced during this time period include the decrease in social roles and commitments, which can result in feelings of uncertainty regarding one's life trajectory and lead to the development of mental health problems (Arnett, 2007).

Because emerging adulthood is the least structured developmental period and typically involves drastic life changes, such as attending a college or university, living independently, and entering the job market (Arnett, 2007; Sabbah et al., 2013), the engagement in mindful self-care for this population could be especially beneficial, considering the many stressors experienced at this time. Researchers have shown that mindful self-care was negatively associated with perceived stress and mediated the relation between perceived stress and psychological well-being (Feng et al., 2019). In another study, Sünbül and colleagues (2018) found well-being was significantly predicted by mindful self-care, with the supportive structure dimension contributing the greatest to well-being, suggesting potential benefits of engagement in mindful self-care.

Moreover, research has suggested that the subjective sense of attaining adulthood is only minimally related to demographic transitions, and more directly influenced by individualized "qualities of character" (Arnett 1998, p. 296). More specifically, previous evidence has shown the top two criteria for the successful transition to adulthood include accepting responsibility for

one's actions and making decisions autonomously (Arnett, 1997, 1998; Greene et al., 1992; Scheer et al., 1996). Research has shown the potential benefits of both mindfulness and self-care in emerging adults, such as buffering individuals' experiences of self-doubt (e.g., Peer & McAuslan, 2016), increasing focus and engagement in positive stress management strategies (e.g., Myers et al., 2012; Christopher, Christopher, Dunnagan, & Schure, 2006), and increased self-compassion and well-being (e.g., Neff & Germer, 2012; Ramler, Tennison, Lynch, & Murphy; 2016). Further, in a study using mindful self-care in university students, Feng et al. (2019) found mindful self-care was inversely associated with perceived stress and mediated the relation between perceived stress and psychological well-being. Such emerging evidence supported extended research efforts on studying mindful self-care in this particular population.

The Present Study

Though rare, there are a few studies that have examined measurement invariance of scales related to the domains measured in the MSCS (e.g., mindfulness, self-kindness, isolation, physical care) across gender groups (e.g., Cunha, Xavier, & Castilho, 2016; Kueh et al., 2019). However, when parsing apart mindfulness and self-care, there have been scarce findings regarding invariance across men and women. For example, MacKillop and Anderson (2007) examined mindfulness in a university sample and found that the single factor structure was not confirmed in men, though authors suspected this was a function of smaller subsample size in men (N_{Total} = 711; N_{Men} = 233). Another study investigating health-related quality of life in an adult sample found partial factor invariance across gender, indicating factor means may have been influenced by group differences in interpreting certain items (Cherepanov et al., 2013). Currently, the literature investigating gender invariance for measures explicitly designed for and/or related to self-care is lacking. Taken together, it is unclear if the domains of mindful self-

18

care are equivalent across men and women groups. Therefore, the primary aim of the current study is to further test the measurement equivalence of the MSCS across men and women emerging adults, to suggest the appropriate use of the scale for these populations. The secondary aims include confirming the factorial structure of the scale and gathering more criterion validity of the scale.

Method

Participants

Participants in this study consisted of undergraduate students from two public universities in north central and south-central regions of the United States (Table 1). Students enrolled in each university were invited to complete the MSCS as a part of a larger study examining self-care in emerging adults. Across both universities, there were a total of 912 participants (69.4% women, 29.6% men, and .7% gender variant/non-conforming) and the ages ranged from 18 to 23 ($M_{age} = 19.55$, $SD = 1.87$). Though there were no demographic data of undergraduate students available, the gender demographics of the current sample are comparable to the graduate demographics reported from the American Psychological Association (APA), with a three-to-one women to men ratio across psychology graduate programs (American Psychological Association, 2016). The racial/ethnic identities of participants included European American (67.1%), African American (20.8%), biracial/multiracial (3.9%), Hispanic/Latino (3.8%), Asian (3.1%), American Indian/Alaskan Native (1%), and Native Hawaiian/Pacific Islander (.2%).

The students from the university in the north central region consisted of 534 undergraduate students. The ages of the participants ranged from 18 to 23 ($M_{age} = 19.28$, $SD = 1.54$). Women and men students comprised 66.5% (N = 355) and 33% (N = 176) of the sample, respectively. Students who identified as gender variant/non-conforming made up .6% (N

= 3) of the sample. The racial/ethnic demographics of these participants included European

American (78.5%), African American (10.7%), multiracial/biracial participants (4.9%),

Hispanic/Latino (3%), American Indian/Alaskan Native (1.3%), Asian (1.3%), Native

Hawaiian/Pacific Islander (.4%).

The students from the university in the mid-southern region consisted of 378

undergraduate students. The age of students ranged from 18 to 23 years of age (M_{age} = 19.93,

SD = 2.19). Women and men students comprised 73.5% (N = 278) and 24.9% (N = 94) of the

sample, respectively. The remaining sample included students identified as gender variant/ non-

conforming (.8%, N = 3) and not listed (.5%, N = 2). Over half of the sample consisted of

European American students (51.1%), followed by African American students (35.2%). Other

racial groups included students who identified as Asian (5.6%), Hispanic or Latino (5%),

Multiracial or Biracial (2.6%), and American Indian or Alaskan Native (.5%). Demographics of

the total sample and two subsamples are shown in Table 1.

Procedures

This study uses an archival dataset that was previously collected during a multi-site

investigation of self-care among emerging adults. This project has obtained approval from

Institutional Review Board at both universities. Using the SONA system, a cloud-based

participant pool management software, undergraduate students were recruited to complete the

study online for course credit or a gift card. The participants completed an online survey made

up of a variety of self-report scales. Prior to participation, students were informed about the

voluntary nature of participation and incentives would be provided (i.e. course credit or gift

card). Each university provided two waves of data over the course of one academic year. Only

the first wave of data from both universities are used and combined in the current study.

Measures

   The Mindful Self-Care Scale (MSCS; Standard Version; Cook-Cottone & Guyker, 2018) is a 33-item scale that measures the self-reported frequency of engagement in self-care behavior. Items are rated on a 5-point scale ranging from 1 (*never*) to 5 (*regularly*). The scale is composed of six domains of self-care, including Physical Care, Supportive Relationships, Mindful Awareness, Self-Compassion and Purpose, Mindful Relaxation, and Supportive Structure. Sample items from each domain include, "I listened to relax (e.g., to music, a podcast, radio show, rainforest sounds)," "I planned my meals and snacks," "I kindly acknowledged my own challenges and difficulties," "I felt supported by people in my life," "I maintained a manageable schedule," "I had a calm awareness of my body," and "I planned my self-care," respectively. Initial evidence of the scale psychometric properties can be found in Cook-Cottone and Guyker (2018), which is reviewed in the introduction of current proposal.

   The Satisfaction with Life Scale (SWLS; Diener, Emmons, Larsen, & Griffin, 1985) is a five-item scale, developed from undergraduate samples, that measures an individual's overall assessment of his or her life satisfaction. Items are rated on a 7-point scale ranging from 1 (*strongly disagree*) to 7 (*strongly agree*). Each item is scored in a positive direction and the total score is determined from adding each response. Total scores can range from 5 to 35, with a score of 20 indicating a point of neutrality on the scale. Scores ranging from 5-9 indicate extreme dissatisfaction with life, scores ranging from 15-19 suggest slight dissatisfaction with life, scores ranging from 21-25 suggest slight satisfaction with life, and scores ranging from 31-35 indicate extreme satisfaction with life. The total SWLS coefficient alpha in the initial validation study was .87 (Diener, Rober, Emmons, Larsen, & Griffin, 1985). Additional studies have been conducted following the initial validation of the SWLS, providing support for high internal

consistency, with Cronbach's alphas ranging from .79 to .89 (Pavot & Diener, 1993; Adler & Fagley, 2005; Steger, Frazier, Oishi, & Kaler, 2006). In the current study, the coefficient alpha is .89. Support for the construct validity of the SWLS has also been found in several studies (e.g., Larsen, Diener, and Emmons (1985); Blais et al., 1989; Arrindell et al., 1991; Pavot et al., 1991).

The Depression Anxiety and Stress Scales-21 (DASS-21; Sinclair et al., 2012) is a 21-item self-report scale. The DASS-21 was developed from a more extensive measure (DASS-42; Lovibond & Lovibond, 1995) to examine depression, anxiety, and stress in adults. Items are rated on a 4-point scale ranging from 0 (*did not apply to me at all*) to 3 (*applied to me very much or most of the time*). Total scores are determined by summing the items and doubling them. Internal consistency was examined using Cronbach's alpha. The coefficient alpha for the depression, anxiety, and stress domains were .91, .80, and .84, respectively (Sinclair et al., 2012). In the current study, the coefficient alpha for the total score was .97, the stress and anxiety domains were .90, and the depression domain was .94. All of the subscales demonstrated substantial convergent validity with the Mental Component Summary of the Short Form 8 (SF-8 MCS) Health Survey (correlations between $r = -.58$ to -.69). The scale also demonstrated divergent validity with the SF-8 Physical Component Summary of the Health Survey (PCS; Ware, Kosinki, Dewey, Gandek, 2001; correlations between $r = -.49$ to -.64).

Data Analyses

Preliminary analyses. Descriptive statistics, inter-item correlations, and reliability were analyzed using SPSS 24 (IBM Corp. 2016). The reliability of the MSCS in the current study was examined using Cronbach's coefficient alpha (Cronbach, 1951). An alpha of .7 is considered to have acceptable internal consistency, .8 is considered to be good internal consistency, and .9 and higher is indicative of excellent internal consistency (Tavakol & Dennick, 2011). Missing data in

the MSCS measure in the sample was minimal and there were no systematic patterns found in the missing data. Thus, listwise deletion was used to handle missing data in SPSS.

Inter-item and inter-subscale correlation coefficients (i.e., Pearson's *r*) were examined to determine the relation between items, according to the guidelines provided by Cohen (1988). Correlation coefficients between MSCS subscales and the concurrent measures discussed above (i.e., the Satisfaction with Life Scale, three subscales from the Depression Anxiety and Stress Scales – 21 item version) were used to examine the criterion validity. Pearson's *r* is interpreted using both magnitude and direction, with values ranging between -1 and +1. The strength of the correlation is indicated by the value's closeness to ±1. More specifically, a correlation of 0 indicates no linear relation. A correlation of 1 indicates a perfect positive linear relation, suggesting that as one variable increases the other variable also increases, in a linear fashion. A correlation of -1 indicates a perfect negative relation, suggesting that as one variable increases, the other variable decreases, in a linear fashion. Values between 0 and ±.3 indicate a weak positive/negative correlation in an inconsistent linear fashion. Values between ±.3 and ±.7 is indicative of a moderate positive/negative relation between variables, demonstrated by semi-consistent linearity. Values between ±.7 and ±1 indicate a strong positive/negative relation between variables, demonstrated by a consistent, linearity. (Ratner, 2009). The direction of the correlation is determined by the sign of the *r* value (i.e., +, –; Taylor, 1990).

Main Analyses. The statistical procedure followed a multistep approach. First, a confirmatory factor analysis (CFA) was conducted among the full sample to examine the model fit of the initial 6-factor MSCS model. After the factor structure of MSCS was confirmed in the full sample, a CFA was conducted across the men and women students to provide a gender

specific baseline model for each group. All confirmatory factor analyses were conducted using

Mplus, version 7 software (Muthén & Muthén, 2006).

As recommended by Kline (2012), the following fit indices will be reported and

interpreted when reporting the results of the analysis: the chi-square degree of freedom ratio,

Steiger-Lind root mean square error of approximation (RMSEA; Steiger, 1990) with its 90%

confidence interval, Bentler comparative fit index (CFI; Bentler, 1990), and standardized root

mean square residual (SRMR; Bentler, 1990). The model chi-square tests the null hypothesis

which is sensitive to sample size and assumes a perfect model fit based on expected values and

compares the model to the observed values. An RMSEA between 0 and .05 indicates a good fit,

values between .05 and .08 indicates an acceptable fit, and greater than or equal to .10 suggest a

poor fit (Browne & Cudeck, 1993). The Comparative Fit Index (CFI) typically ranges from 0 to

1, with higher values indicating better fit. CFI values of greater than roughly .90 indicate an

adequate fit (Hu & Bentler, 1999) and values of greater than or equal to .95 suggest an excellent

fit. The SRMR is a measure of the mean of absolute correlation residual and the overall

difference between observed and predicted correlations. Values of the SRMR of less than .10 are

generally considered favorable, while values of less than .08 are generally considered to be a

good fit (Hu & Bentler, 1999). In addition to examining fit indices of each model, the content of

the items was also analyzed to determine modifications for improving the model fit.

For the second step, measurement invariance across men and women was tested using a

hierarchical approach, testing configural invariance, metric invariance, and scalar invariance in

each gender group. The model was determined to have configural invariance if the fit indices

across the men and women students were considered acceptable. Subsequently, specified

invariance models were compared to configural invariance models, which served as the baseline

24

model for each gender group (Byrne, 2006 cited in Yang et al. 2013, Students' Perceptions of School Climate). Following the measurement of configural invariance, factor loadings were equally constrained and metric invariance was tested (Chen, Sousa, & West, 2005 cited in Yang et al. 2013). According to Chen (2007, cited in Yang et al. 2013), a change in the CFI of ≤ -.010, a change in RMSEA of ≤ .015, or a change in SRMR of ≥ .030 indicate a significant change between all three levels of invariance tests. Using Chen's (2007) recommendation, the intercepts of the measured variables were constrained to be equal across both men and women to examine the difference between the metric and scalar models. Partial scalar invariance across both gender groups was achieved, suggesting that the factor loadings and intercepts are equal across both groups and, thus, scores on the latent variable could be compared (Shoot, Lugtig, and Hox, 2012).

After the establishment of a sufficient level of measurement invariance, the latent mean differences between the men and women groups were tested. Latent mean differences were examined by setting latent mean values to zero in the women group and freely estimating the values in the men group. These differences were tested using partial scalar invariance models, with constraints lifted from identified variant items.

<center>**Results**</center>

Descriptive Statistics

Item-level screening in the full sample revealed that the kurtosis of the 33 items was between -2 and +2, suggesting that the data demonstrated a normal distribution. The descriptive statistics for each item for the full sample (mean, standard deviation, skewness, and kurtosis) are shown in Table 2. For the descriptive statistics at the subscale level (also see Table 2), the means for the each of the subscale totals were above "2," indicating the students engaged in each of the

<center>25</center>

behaviors described in the MSCS at least occasionally, though the average frequency varied

across subscales. Specifically, the mean for Physical Care was between "2" and "3," which was

the lowest across all the subscales, suggesting that participants engaged in various forms of

physical care occasionally. For Supportive Relationships, the mean was slightly above "4,"

which was the highest frequency rating when compared to all other subscales, indicating

participants often used supportive relationships as a form of self-care. The average frequency for

the rest subscales were all slightly above or above "3," suggesting on average participants

"sometimes" engage in mindful practices (Mindful Awareness), show compassion toward

themselves and recognize their purpose in life (Self-Compassion and Purpose), engage in

different forms of mindful relaxation (Mindful Relaxation), and structure the environments

around them to foster engagement in self-care (Supportive Structure).

The observed means for each gender group are presented in Table 3. Both men and

women in the sample reported an above "2" average of engagement in Physical Care, though

men (M = 2.94, SD = .80) reported a significantly higher engagement ($t(879) = -5.39$, $p < .001$)

than women (M = 2.63, SD = .79). Similar to the full sample, the mean level of Supportive

Relationships for men and women was slightly above "4" and the average level of Self-

Compassion and Purpose and Supportive Structure was above "3." Although men and women

both reported an average of level of Mindful Awareness above "3," men (M = 3.88, SD = .87)

reported significantly higher mindful awareness ($t(860) = -3.18$, $p < .01$) than women (M = 3.67,

SD = .88). Similarly, men and women both reported an average level of Mindful Relaxation

slightly above "3," however, women (M = 3.23, SD = .82) reported significantly higher

engagement ($t(860) = 2.24$, $p < .05$) in mindful relaxation than men (M = 3.09, SD = 0.78).

Correlations

Inter-item correlations are presented in Table 4. Most the item correlations were positive and statistically significant. The strength of the item correlations varied from weak to strong. Items on the Physical Care subscale had the weakest correlations with items from other subscales. More specifically, item 6 (i.e., I did sedentary activities instead of exercising) showed the weakest correlation with all other items. Most of the correlations with items in the Physical Care subscale were positive and statistically significant, though there were inverse relations with many of the items from the Supportive Relationship and Mindful Awareness subscales. Items on the Mindful Awareness subscale demonstrated the strongest relation with all other times. However, the item that was most strongly correlated with all other items on the MSCS was item 23 from the Self-Compassion and Purpose subscale, which stated, "I experienced meaning and/or larger purpose in my *private/personal* life (e.g., for a cause)." These results suggest a positive and moderate relation between participants mindful cognitions and their engagement in self-care.

Inter-item correlations were also examined within each subscale (Tables 7-12). Within the Physical Care subscale, the correlations between items 1-8 were positive but the ranges varied greatly. Item 4 (i.e., "I exercised at least 30 to 60 minutes) and item 7 (i.e., "I planned/scheduled my exercise for the day") demonstrated the only strong correlation within the Physical Care subscale. The correlation between Item 1 (i.e., "I drank at least 6 to 8 cups of water) and item 6 (i.e., "I did sedentary activities instead of exercising) was negligible. Item 6, along with item 8, also showed correlations with the remaining items that were closer to 0 ($r = $ .02-.29), suggesting some problems with the relation between these two items and the other items in the subscale. Within the Supportive Relationships subscale, all of the items were statistically significant and positively correlated, ranging from moderate to strong ($r = $ .48-.72).

Within the Mindful Awareness subscale, all of the items were positively correlated, with a moderate to strong magnitude. The correlations between item 14 (i.e., "I had a calm awareness of my thoughts"), item 15 (i.e., "I had a calm awareness of my feelings"), and item 16, which read "I had a calm awareness of my body" were strong ($r = .81-.87$). The correlation between item 17, which read "I carefully selected which of my thoughts and feelings I used to guide my actions" and other items within this subscale were moderate ($r = .58-.59$). Within the Self-Compassion and Purpose subscale, all of the items were positively correlated and ranged from moderate to strong ($r = .42-.75$). More specifically, item 22 (i.e., "I experienced meaning and/or larger purpose in my work/school life") and item 23 (i.e., "I experienced meaning and/or larger purpose in my private/personal life") showed a strong correlation ($r = .75$). Within the Mindful Relaxation subscale, all of the items demonstrated a positive and statistically significant correlation with one another. The relation between items ranged from weak to moderate ($r = .17-.45$). Majority of the item correlations with items 24 (i.e., "I did something intellectual to help me relax") and 29 (i.e., "I sought out smells to relax") were weak, suggesting these two items might be concerning. Within the Supportive Structure subscale, the items demonstrated a statistically significant moderate positive correlation ($r = .51-.66$).

Correlations across subscales were also examined for the MSCS. Subscale correlations are presented in Table 13. Overall, the subscales demonstrated correlations that were statistically significant, ranging from weak to moderate ($r = .19-.60$). More specifically, the Physical Care subscale demonstrated a weak correlation to the other subscales. The correlations between the Self-Compassion and Purpose and the Mindful Awareness subscales ($r = .60$) and Self-Compassion and Purpose and Mindful Relaxation subscales ($r = .54$) were moderate, and the highest among all the subscale correlations.

28

Next, the inter-item and inter-subscale correlations were examined for men and women participants separately. Inter-item correlations for men (Table 5) and women (Table 6) in the sample were similar to inter-item correlations from the full sample. The correlations were mostly positive, with the exception of some items from the Physical Care subscale, and varied from weak to strong. Many of the correlations with item 6 (i.e., "I did sedentary activities instead of exercising") from the Physical Care subscale were closer to zero and were not statistically significant. There were also more inverse correlations in the Physical Care subscale in comparison to the other subscales. Although majority of the item correlations were statistically significant for both men and women in the sample, the inter-item correlations in the men sample showed more correlations that were not statistically significant throughout various subscales. Inter-subscale correlations for men and women are shown in Table 14 and Table 15. Overall, the subscale correlations for both men and women were comparable to the subscale correlations from the full sample. Both subsamples showed statistically significant subscale correlations that ranged from weak to strong. There were also weak subscale correlations between the Physical Care subscale and the remaining subscales in both subsamples. However, women showed a moderate relation between Physical Care and Supportive Structure ($r = .37$), suggesting a stronger relation between engagement in physical activity and healthy behaviors and environmental structure for women than men.

Reliability

Internal consistency of the full scale and each subscale was examined using Cronbach's coefficient alpha (Cronbach, 1951). The coefficient alpha for the MSCS was .91 in the full sample, .91 in the women subsample, and .91 in the men subsample, indicating excellent internal consistency. Internal consistency for each of the subscales were also similar across the full

sample, the women subsample, and the men subsample. The Mindful Awareness subscale showed the highest internal consistency amongst all of the subscales, with a coefficient alpha of .91 for the full sample and men subsample and .90 for the women subsample. The Mindful Relaxation subscale showed the lowest internal consistency amongst the subscales, with a coefficient alpha of .73 for the full sample, .71 for the men subsample, and .75 for the women subsample. All of the coefficient alphas for each of the subscales across the full sample, men subsample, and women subsample were above .70, indicating acceptable internal consistency. Coefficient alphas are reported in Table 16.

Criterion Validity

Scale-level coefficients are presented in Table 17. Overall, the MSCS subscales demonstrated expected correlations with the Depression, Anxiety, and Stress subscales from the DASS-21 and the SWLS. Most of the MSCS subscales showed a weak negative correlation with the subscales from the DASS-21 and weak to moderate positive correlations with the SWLS. However, correlations with the Mindful Relaxation subscale were concerning. More specifically, the correlations between this subscale and the three DASS-21 subscales were all trivial and not significant, and the correlation between this subscale and the SWLS was the smallest ($r = 0.19$, $p > .05$) compared to other subscales.

Confirmatory Factor Analysis: Full Sample Results

A confirmatory factor analysis (CFA) was conducted to examine the model fit of the initial 6-factor MSCS model using the full sample ($N = 912$). $X^2 = 2312.14$ ($df = 480$), $p < .001$, CFI $= 0.88$, SRMR $= 0.07$, and RMSEA $= 0.07$. The results of the original CFA model are shown in Table 18. The original model showed weak factor loadings (0.30, 0.36) for items 6 and 8 on Factor 1, suggesting these items should load on a different factor or there are weak relations

between these items and MSCS. Item 6 (i.e., "I did sedentary activities instead of exercising"), which was reverse scored, appears to relate much more to disengagement in physical activity. Item 8, which stated, "I practiced yoga or other mind/body practice," appears to be more closely related to mindful engagement when compared to physical activity, considering the latter typically uses much more energy. As such, items 6 and 8 were removed in the original Model. The revised model (Model 1) maintained the good fit and $X^2 = 2053.10$ ($df = 419$), $p = < 0.00$, CFI $=0.89$, SRMR $= 0.07$, and RMSEA $= 0.07$; and improved slightly, based on ΔCFI (.01).

The modification indices of Model 1, however, showed extremely large factor loadings for items 18 and 25 (160.03, 190.66), suggesting that these items should load on different factors. Although item 18, (i.e., "I kindly acknowledged my own challenges and difficulties") was originally included in the Self-Compassion and Purpose subscale, it had a larger loading on the Mindful Awareness subscale. Because accurately acknowledging one's challenges and difficulties requires metacognitive thinking, item 18 seemed to have been a better fit for the Mindful Awareness construct. Item 25 (i.e., "I did something interpersonal to relax") was originally included in the Mindful Relaxation subscale. The CFA showed that this item had a large loading onto Supportive Relationships. Since interpersonal activities typically involve engaging with others who are likely meaningful to the person, this item seemed to have a better fit with the construct of Supportive Relationships. However, after switching the factors that items 18 and 25 were loaded onto, as suggested by the modification indices (Model 2), the new modification indices indicated very large cross-loadings for both items. Specifically, item 18 loaded on both the Mindful Awareness and the Self-Compassion and Purpose factors, and item 25 loaded on both the Mindful Relaxation and Supportive Relationships factors. Thus, the two items were removed from Model 2 and formed Model 3. Model 3 had acceptable model fit, $X^2 =$

1908.03 ($df = 419$), $p = < 0.00$, CFI =0.90, SRMR = 0.07, and RMSEA = 0.06; and the change

was not significant from Model 2 (ΔCFI = -.007). In Model 3, all factor loadings for each of the

6 factors were above .40 (Gregorich, 2006), all of the items within each subscale loaded on to a

single factor, and the overall model demonstrated acceptable fit. Thus, this was the final model

for the full sample, and was then used as the baseline model in the multigroup analysis.

Confirmatory Factor Analysis: Gender-Specific Group Baseline Model Results

Gender-specific analysis started with the baseline model mentioned above. In the women

baseline model, the overall model fit was considered to be acceptable based on CFI, SRMR, and

RMSEA values, $X^2 = 1093.54$ ($df = 362$), $p = < 0.00$, CFI =0.92, SRMR = 0.07, and RMSEA =

0.06. The fit for the men baseline model was also considered to be acceptable, $X^2 = 760.59$ ($df =

362$), $p = < 0.00$, CFI =0.90, SRMR = 0.07, and RMSEA = 0.06. After model fit was achieved

across both gender groups, reliability of each model was examined using internal consistency

coefficients among the subscale scores for men and women. The reliability of scale in the women

and men subsamples were both .91.

Multi-Group CFA Results

Configural Invariance. After establishing good fit for baseline models for the men and

women samples, the configural invariance model was examined. Results demonstrated a good fit

to the data. Each of the fit indices for the models are displayed in Table 19.

Metric Invariance. The metric invariance model was examined across men and women

and the fit was determined to be good. The changes from the configural invariance to the metric

invariance models were not significant, suggesting that factor loadings are equivalent across the

two gender groups.

Scalar Invariance. Although the full scalar invariance model demonstrated an acceptable fit, the CFI decreased more than the threshold set for significant changes. The modification indices were examined, which showed extremely large values for the intercepts of item 21 and item 29 within each group. It was determined that these intercepts were not the same in each group and should be relaxed. After removing equality constraint on the parameter for item 21, the model fit improved slightly but was still significantly worse than the metric invariant model. Next, the parameters were freed for both item 21 and item 29; the model fit was acceptable and there were no significant differences from the metric invariant model, as indicated by ΔCFI ($< .01$). As such, partial scalar invariance was achieved across the two gender groups.

Latent Mean Analysis

Previous studies suggest that, even if all items are not invariant across groups, examining partial invariance offers additional insight into the comparability of scores. According to Byrne et al. (1989), at least half of the indicators should be invariant to ensure the latent mean comparisons are substantial. Thus, following the invariance test results, which established partial scalar invariance with only two freed intercepts, a latent mean analysis was conducted to estimate the differences regarding the construct of mindful self-care between men and women. The latent means of the women group was constrained to 0 and used as the reference group for comparing the latent means between men and women. The re-specified model with a fixed mean for the women subsample and a freely estimated mean in the men group was successful in yielding an acceptable model fit: RMSEA = .058 (CI [.055, .061]), SRMR = .066, CFI = .914.

All the latent mean estimates are displayed in Table 20. The latent means indicated that significant differences exist between gender groups in Physical Care and Mindful Awareness.

The latent means for the men in the sample were higher than those for women participants for Physical Care by .49 (Estimate = .079, SE = 6.19, $p < .01$) and for Mindful Awareness by .25 (Estimate = .075, SE = 3.36, $p < .01$). These findings convey a significant difference between the men and women groups on these two factors of mindful self-care. Similarly, when the observed means were compared directly using an independent t-test, the results indicated men and women groups in the sample significantly differed across three subscales on the MSCS. Men in the sample (M = 2.94, SD = 0.79) reported higher engagement in physical care than women in the sample (M = 2.63, SD = 0.79), $t(860) = -5.17$, $p < .001$. Men (M = 3.88, SD = 0.87) also reported higher engagement in mindful awareness than women (M = 3.67, SD = 0.88); $t(860) = -3.18$, $p < .01$. Contrary to the latent mean analysis, the *observed* mean analysis indicated women (M = 3.23, SD = 0.82) reported higher engagement in mindful relaxation than men (M = 3.09, SD = .78), $t(860) = 2.24$, $p < .05$. According to Steinmetz (2010), observed means are a result of the indicator intercept, factor loading, and the latent mean. Differences across groups on an observed variable can only be attributed to a latent mean difference when the intercepts and factor loadings are invariant across groups. Therefore, the discrepancy between the observed and the latent mean comparison above was likely due to measurement error in the observed model.

Additional Criterion Validity Analysis for the Revised Scale

Based on the final CFA results, the MSCS was revised slightly with three factors having fewer items (i.e., Physical Care, Self-Compassion and Purpose, and Mindful Relaxation). To confirm the validity of the revised MSCS, preliminary analyses, including reliability and subscale level correlations, were run again. The coefficient alpha for the revised version of the MSCS remained at .91, indicating excellent reliability for the full sample. The reliability of each of the subscales were similar to the original scale, ranging from acceptable to excellent. The

correlations between the subscale totals of the MSCS, the DASS-21, and the SWLS were also similar to those of the original model. This suggests that the revised scale demonstrates adequate validity. Subscale-level correlations for the modified MSCS can be found in Table 21.

Discussion

The MSCS (Cook-Cotton & Guyker, 2018) was developed to further understand adult engagement in self-care, increase awareness of self-care behaviors, and serve as a practical resource for self-care practices. The major aim of this study was to further test the factorial and criterion validity of MSCS in emerging adults, including evaluating the equivalency of the scale across gender. CFAs were conducted using the full sample to examine the best fitting model of the six-factor structure of the scale. Four items were removed due to low factor loadings or high cross-loadings on multiple factors. Thus, a revised MSCS with 29 items was used in the multigroup CFAs to assess the measurement invariance across gender groups. The full metric invariance model was supported, suggesting the factor structure and the items loading onto each factor were equivalent across the two gender groups. Further, partial scalar invariance, with two intercepts relaxed (i.e., items 21 and 29), was established as the highest level of invariance.

Prior to making further inferences from the data, the variant items and conceptualizations of each item construct were examined, as recommended by Chen (2007). Specifically, items 21 (i.e., "I gave myself permission to feel my feelings") and 29 (i.e., "I sought out smells to relax") were invariant at the intercept level. Based on traditional American gender roles and expectations, these two items seemed to provide example behaviors that were more skewed toward behaviors that women were more likely to actively engage in when compared to men (e.g., allowed myself to cry, sought out smells of lotions, nature, candles/incense, baking). In many U.S. subcultures, it has not been as socially acceptable for men to demonstrate sensitivity

35

and vulnerability as it has for other characteristics like leadership and ambition. Similarly, it is possible that societal expectations for men limit the likelihood that they would be exposed to or seek out certain smells, such as those from lotions, candles, and cooking. However, with the continuous shift in societal standards for both men and women, it is possible that future research may discover a shift in behaviors associated with these two items.

Nonetheless, the establishment of partial scalar measurement invariance in the current study supports defensible cross-gender quantitative comparisons of the MSCS latent means. The latent means for men in the sample were higher than those for women across two factors on the MSCS: Physical Care and Mindful Awareness. These findings were similar to those found in the observed means comparison, with both latent and observed mean comparisons indicating a significant difference between men and women on two dimensions of self-care. Specifically, these results suggested that, in general, men engage in more physical care behaviors, such as exercise, and display a higher level of mindful awareness. The latter result was an interesting finding, considering women typically are more sensitive to emotion and intuition when compared to men, who are more prone to logical thinking and reason. It is possible that the act of "mindful awareness" is comprised of not only recognition, but also intentional engagement with one's own thoughts, feelings, and body. Thus, women's more prevalent emotional expression may not directly influence their ability to be "mindfully aware." It is also possible that the increased Mindful Awareness means reported in men was influenced by the use of the word "calm" included in three of the four items from the subscale (e.g., "I had a calm awareness of my feelings"). According to Deng, Chang, Yang, Huo, and Zhou (2016), women demonstrate higher emotional expressivity when compared to men. This suggests that women have an awareness of their feelings, although it may not necessarily be in a "calm" way. No statistically significant

differences were found on the remaining subscales, suggesting comparable levels of supportive relationships, self-compassion and purpose, mindful relaxation, and supportive structure between men and women.

One interesting finding to note is based on the observed means comparison, there was a significant difference between men and women subgroups on the Mindful Relaxation factor, indicating women reported higher engagement in mindful relaxation than men. However, this difference disappeared in the latent mean comparison, which suggests that the observed difference in Mindful Relaxation was largely due to measurement error. The Mindful Relaxation subscale had the lowest reliability ($r = .73$) in the sample when compared to other subscales, which is similar to the reliability findings in a previous validation study using a Turkish sample ($r = .66$; Sünbül et al., 2018). Additionally, item 25 of the Mindful Relaxation subscale was removed in the revised MSCS, due to high cross-loadings across Mindful Relaxation and the Supportive Relationship subscales. These findings suggest that the Mindful Relaxation subscale is questionable, which may be due to the items overlapping with other items from different subscales, and the lack of specificity in the statement (e.g., "I listened to relax"). Therefore, this subscale may require further revision or replacement. For example, mindful meditation may be a clearer construct to capture the key meaning of the current Mindful Relaxation factor, because meditation is much more of a conscious effort in being "mindful" in comparison to relaxation. Further, indicators of meditation could be reflective of various types of mindful relaxation strategies, to avoid the wide array of forms of relaxation used in the current scale.

  Overall, the mean comparison findings highlight the importance of testing and establishing measurement invariance, especially considering how examining just observed mean differences can inform misleading conclusions. As stated in Jiang et al. (2019), it has become

common practice to compare observed means without the establishment of measurement invariance. However, this practice assumes that each of the items in a particular measure are invariant or items that are non-invariant have minimal bias within in-group comparisons (Chen, 2007). Therefore, future studies should avoid comparing means across groups prior to analyzing the equivalence of the measure.

In previous validation studies examining the MSCS, acceptable reliability was confirmed. Criterion validity was also established using correlational analyses with scales measuring body esteem, eating disorder symptoms, and mindful attention. The results of the current study support the validity of most MSCS subscales using criterion measures of mental health. Specifically, there is an inverse relation between each of the Depression, Stress, and Anxiety subscales of the DASS-21 and the following MSCS subscales: Physical Care, Supportive Relationships, Mindful Awareness, Self-Compassion and Purpose, and Supportive Structure. For the life satisfaction measure, positive correlations were found between SWLS and Supportive Relationships, Mindful Awareness, Supportive Structure, Physical Care, and Self-Compassion and Purpose. However, the criterion validity evidence was not found for the Mindful Relaxation subscale, as its correlations with three subscales on the DASS-21 were all trivial and not significant. Further, the relation between Mindful Relaxation and the SWLS was the smallest when compared to the remaining subscales. This may have been due to the widely dispersed forms of relaxation included in the subscale, which resulted in various interpretations of the items (e.g., "I did something creative to relax," "I listened to relax") and, overall, the activities listed failed to elicit the construct the developers intended to measure. However, considering the low reliability of the Mindful Relaxation subscale and the high cross-loadings of some the items shown in the current

study and a previous study (i.e., Sünbül et al., 2018, Hotchkiss & Cook-Cottone, 2019), this subscale likely has problems and will need to be revised or removed.

Study Limitations and Future Directions

Although there were several strengths in the study, including the focus on an emerging adult population, a large sample size, and the use of advanced factor analyses (e.g., multigroup CFA, latent mean comparison), there were also some limitations. First, the sample was a convenience sample from two colleges, which is not representative of the emerging adult population in the United States. Future studies should employ more representative samples of emerging adults, especially including individuals outside college settings, and expand the samples to people at different developmental stages (e.g., adolescents, middle aged adults, elderly). It is also needed to test the mindful self-care measure in minority groups such as those with diverse gender identity, race, and cultural backgrounds. Second, both the factor analysis results and the content analysis revealed the necessity of removing or changing a few items (i.e., removing items 6 and 8, 18, and 25). Items 6 and 8 from the Physical Care subscale were removed because they demonstrated extremely weak factor loadings. Items 18 and 25 showed cross-loadings on two subscales, with item 18 loaded on to Mindful Awareness and Self-Compassion and Purpose, and item 25 loaded on to Mindful Relaxation and Supportive Relationships. A further review of factors and indicators to measure mindful self-care is needed to capture a comprehensive understanding of this novel construct and if any additional gender differences exist. Lastly, although non-invariant items were detected and possible explanations were provided, the study did not investigate direct causes and analyze additional variables that could contribute to non-invariant items. It is unclear what factors contributed to the gender differences in the latent mean differences on two subscales (Physical Care and Mindful

Relaxation). Therefore, future research is needed to formulate the theory that can explain the composition of mindful self-care at the conceptual level and discover the reasons behind the mean differences across groups (e.g., gender, developmental stages, or others). For example, researchers could examine how intrapersonal factors (e.g., personality, emotional sensitivity, values and beliefs, hope, motivation) and contextual factors (e.g., stress, trauma, education, occupation, and culture) associate or predict different components of mindful self-care. These findings could be valuable in gaining a deeper understanding of the group differences in mindful self-care and the factors that may promote it.

Conclusions and Implications

The initial validation study of the MSCS included a wide range of adults from different developmental stages and neglected to analyze criterion validity. Because full metric invariance was established, it can be assumed that gender differences seen with the use of the scale are not attributable to the scale itself, but instead to actual differences among men and women. Additionally, partial scalar invariance was achieved, indicating the meaning of mindful self-care is equivalent across groups and mean differences across men and women can be reasonably compared. Overall, reliability and validity of the modified 6-factor model of MSCS was established. The modified MSCS scale with 29 items is recommended to assess mindful self-care among in emerging adults. The current study expanded on the aforementioned studies by focusing on a particular developmental period (i.e., emerging adulthood), examining scale-level coefficients with scales measuring both constructs similar to mindful self-care and constructs different from mindful self-care, conducting a factor analysis, and examining measurement invariance across gender groups. Based on the major results of the current study, three major implications are warranted. First, a briefer, modified version of the MSCS (29-item) is a reliable

and valid measure of individuals engagement in mindful self-care for research purposes in emerging adult populations. Second, the scale achieved full gender metric invariance and thus could be readily used in studies that test engagement in mindful self-care in gender combined samples. Third, since partial scalar invariance was also established, which means a majority of the items had equal intercepts, mean differences across gender groups on the MSCS can be compared. It should be noted that the Mindful Relaxation subscale should be used with caution, as it needs further validation and revision. Also, it is recommended that researchers entail rigid multi-group CFA procedures to examine the measurement invariance of items, prior to comparing observed means across groups.

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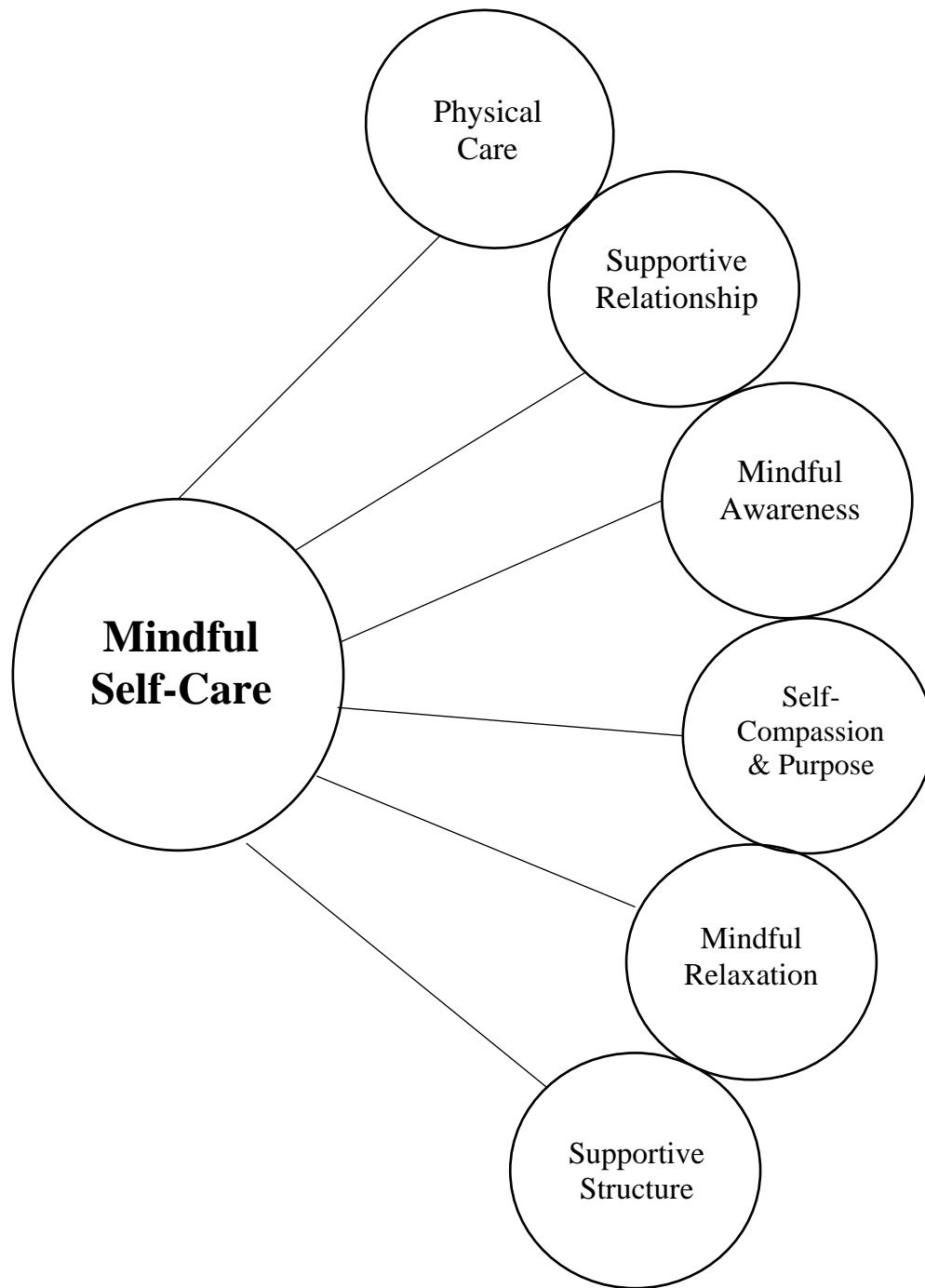
Figure 1. Original Mindful Self-Care 6-Factor Model

Table 1. Demographic Characteristics of Subsample 1, Subsample 2, and Total Sample

Characteristic	Subsample 1 (n = 534)	Subsample 2 (n = 378)	Total Sample (N = 912)
Mean Age (SD)	19.28 (1.54)	19.93 (2.19)	19.55 (1.87)
Gender (n)			
Women	66.5% (355)	73.5% (278)	69.4% (633)
Men	33% (176)	24.9% (94)	29.6% (270)
Gender Variant/Non-Conforming	.6% (3)	.8% (3)	.7% (6)
Not Listed	--	.5% (2)	.2% (2)
Race			
European American	78.5%	51.1%	67.1%
African American	10.7%	35.2%	20.8%
Asian	1.3%	5.6%	3.1%
Hispanic/Latino	3%	5%	3.8%
Biracial/Multiracial	4.9%	2.6%	3.9%
American Indian/Alaskan Native	1.3%	.5%	.1%

Table 2. Descriptive Statistics of Each Item (Separated by Subscale)

Item	Mean	SD	Skewness	Kurtosis
Physical Care				
1. I drank at least 8 cups of water	3.59	1.20	-0.43	-0.75
2. I ate a variety of nutritious foods	3.42	1.07	-0.09	-0.79
3. I planned my meals and snacks	2.58	1.22	0.43	-0.74
4. I exercised at least 30 to 60 minutes	2.95	1.34	0.10	-1.15
5. I took part in scheduled physical activities	2.42	1.42	0.55	-1.04
6. I did sedentary activities instead of exercising (*r*)	2.45	1.11	0.42	-0.54
7. I planned my exercise for the day	2.60	1.41	0.37	-1.18
8. I practiced yoga or another mind/body practice	1.74	1.10	1.44	1.15
Subscale Average	2.72	0.81	0.34	-0.65
Supportive Relationships				
9. I spent time with people who are good to me	4.13	0.99	-1.00	0.33
10. I felt supported by people in my life	4.13	0.98	-0.92	0.07
11. I felt I had someone to listen to me if I became upset	4.21	1.00	-1.11	0.40
12. I felt confident that people in my life would respect my choice if I said "no"	4.09	1.00	-0.93	0.20
13. I planned time to be with people who are special to me	3.96	1.11	-0.90	0.03
Subscale Average	4.10	0.83	-0.90	0.38
Mindful Awareness				
14. I had a calm awareness of my thoughts	3.75	1.01	-0.49	-0.33
15. I had a calm awareness of my feelings	3.73	1.02	-0.45	-0.38
16. I had a calm awareness of my body	3.79	1.02	-0.62	-0.09
17. I carefully selected which of my thoughts and feelings I used to guide my actions	3.67	0.99	-0.41	-0.26
Subscale Average	3.74	0.89	-0.44	-0.15

Table 2 Continued

Self-Compassion and Purpose				
18. I kindly acknowledge my own challenges	3.75	0.98	-0.49	-0.18
19. I engage in supportive and comforting self-talk	3.19	1.22	-0.09	-0.94
20. I reminded myself that failure and challenge are part of the human experience	3.37	1.22	-0.28	-0.85
21. I gave myself permission to feel my feelings	3.40	1.28	-0.30	-1.00
22. I experienced meaning and/or larger purpose in my work/school life	3.33	1.21	-0.23	-0.86
23. I experienced meaning and/or larger purpose in my private/personal life	3.41	1.16	-0.29	-0.76
Subscale Average	3.41	0.92	-0.14	-0.41
Mindful Relaxation				
24. I did something intellectual to help me relax	3.10	1.24	-0.04	-0.96
25. I did something interpersonal to relax	3.74	1.01	-0.60	-0.04
26. I did something creative to relax	2.96	1.30	0.05	-1.08
27. I listened to relax (e.g., to music, a podcast)	3.92	1.12	-0.86	-0.04
28. I sought out images to relax (e.g., art, film, window shopping, nature)	2.80	1.32	0.14	-1.10
29. I sought out smells to relax (e.g., lotions, nature, candles)	2.64	1.37	0.32	-1.14
Subscale Average	3.19	0.81	0.16	-0.16
Supportive Structure				
30. I kept my work/school area organized to support my work/school tasks	3.57	1.15	-0.38	-0.73
31. I maintained a manageable schedule	3.63	1.07	-0.48	-0.36
32. I maintained a balance between the demands of others and what is important to me	3.57	1.03	-0.35	-0.42
33. I maintained a comforting and pleasing environment	3.77	1.04	-0.68	0.00
Subscale Average	3.64	0.89	-0.36	-0.24

Note. *r* denotes reversal scoring items.

Table 3. Subscale Means for Men and Women

	Men		Women	
	M	**SD**	**M**	**SD**
Physical Care	2.95	0.80	2.63	0.79
Supportive Relationships	4.03	0.88	4.13	0.81
Mindful Awareness	3.89	0.87	3.68	0.89
Self-Compassion and Purpose	3.38	0.90	3.43	0.92
Mindful Relaxation	3.10	0.78	3.23	0.82
Supportive Structure	3.60	0.83	3.66	0.91

Table 4. Inter-Item Correlations for MSCS

Item	Physical Care								Supportive Relationships					Mindful Awareness				Self-Compassion & Purpose						Mindful Relaxation						Supportive Structure			
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33
1	--																																
2	.478**	--																															
3	.302**	.501**	--																														
4	.348**	.442**	.422**	--																													
5	.218**	.310**	.277**	.628**	--																												
6†	.024	.080*	.098**	.337**	.252**	--																											
7	.314**	.430**	.490**	.759**	.569**	.257**	--																										
8†	.131**	.180**	.285**	.242**	.287**	.069*	.335**	--																									
9	.127**	.227**	.065	.152**	.074*	.072*	.140**	-.012	--																								
10	.139**	.251**	.120**	.151**	.104**	-.061	.162**	-.009	.661**	--																							
11	.132**	.241**	.096**	.144**	.094**	.074*	.135**	.005	.601**	.714**	--																						
12	.194**	.225**	.061	.154**	.104**	-.079*	.130**	-.032	.496**	.637**	.607**	--																					
13	.141**	.221**	.073*	.144**	.121**	-.076*	.169**	.019	.564**	.554**	.542**	.471**	--																				
14	.195**	.278**	.182**	.181**	.131**	-.059	.176**	-.008	.297**	.407**	.335**	.404**	.365**	--																			
15	.185**	.280**	.179**	.183**	.149**	-.060	.181**	.033	.297**	.407**	.319**	.396**	.341**	.872**	--																		
16	.219**	.303**	.199**	.194**	.160**	-.022	.192**	.005	.310**	.398**	.288**	.374**	.349**	.801**	.808**	--																	
17	.154**	.256**	.167**	.135**	.145**	-.012	.124**	.027	.254**	.294**	.228**	.262**	.307**	.588**	.581**	.572**	--																
18†	.190**	.276**	.148**	.178**	.138**	.031	.175**	.016	.259**	.327**	.285**	.365**	.351**	.573**	.573**	.574**	.633**	--															
19	.194**	.249**	.144**	.183**	.186**	.025	.228**	.148**	.274**	.299**	.257**	.266**	.375**	.453**	.450**	.441**	.457**	.547**	--														
20	.174**	.211**	.143**	.205**	.158**	.057	.201**	.108**	.186**	.238**	.220**	.218**	.285**	.412**	.397**	.394**	.407**	.528**	.653**	--													
21	.049	.091**	.069*	.023	.039*	-.051	.065	.156**	.169**	.186**	.164**	.148**	.263**	.284**	.294**	.263**	.274**	.350**	.467**	.461**	--												
22	.134**	.207**	.144**	.181**	.159**	.041	.166**	.120**	.270**	.282**	.214**	.203**	.352**	.366**	.374**	.365**	.328**	.417**	.544**	.528**	.592**	--											
23	.174**	.266**	.154**	.187**	.177**	.033	.171**	.120**	.343**	.392**	.335**	.295**	.404**	.438**	.451**	.432**	.387**	.480**	.560**	.525**	.505**	.751**	--										
24	.112**	.146**	.099**	.109**	.074*	.010	.115**	.234**	.129**	.180**	.142**	.165**	.177**	.238**	.245**	.235**	.204**	.246**	.278**	.287**	.310**	.315**	.349**	--									
25†	.167**	.176**	.034	.151**	.137**	-.049	.135**	.046	.453**	.442**	.401**	.365**	.524**	.340**	.349**	.336**	.278**	.339**	.317**	.314**	.277**	.336**	.430**	.295**	--								
26	.016	.078*	.095**	.087*	.145**	-.024	.130**	.191**	.151**	.148**	.108**	.123**	.206**	.220**	.238**	.234**	.191**	.224**	.329**	.303**	.335**	.346**	.354**	.454**	.332**	--							
27	.074*	.147**	.075*	.077*	.071*	-.126**	.049	.065	.165**	.155**	.167**	.171**	.218**	.231**	.233**	.220**	.218**	.210**	.194**	.200**	.193**	.246**	.260**	.278**	.332**	.343**	--						
28	.039	.113**	.123**	.072*	.085*	-.060	.147**	.169**	.116**	.095**	.059	.095**	.181**	.178**	.199**	.159**	.182**	.186**	.286**	.260**	.297**	.277**	.305**	.307**	.244**	.449**	.356**	--					
29	.087*	.138**	.131**	.054	.049	-.029	.125**	.268**	.107**	.107**	.059	.040	.136**	.091**	.112**	.082*	.146**	.131**	.241**	.214**	.270**	.220**	.244**	.251**	.171**	.309**	.169**	.451**	--				
30	.204**	.259**	.222**	.221**	.144**	.031	.258**	.142**	.217**	.271**	.195**	.244**	.243**	.262**	.291**	.267**	.263**	.299**	.261**	.261**	.205**	.291**	.339**	.259**	.250**	.193**	.194**	.158**	.216**	--			
31	.164**	.288**	.221**	.236**	.155**	.025	.224**	.105**	.252**	.347**	.282**	.330**	.261**	.373**	.380**	.317**	.280**	.311**	.245**	.263**	.199**	.261**	.300**	.234**	.301**	.191**	.157**	.168**	.174**	.610**	--		
32	.207**	.272**	.202**	.248**	.178**	.052	.234**	.091**	.283**	.358**	.274**	.342**	.296**	.413**	.420**	.372**	.350**	.365**	.345**	.335**	.261**	.340**	.404**	.249**	.347**	.245**	.198**	.203**	.190**	.514**	.675**	--	

Note: **p <.01, *p <.05

† indicate item was removed in the revised MSCS

Table 5. Inter-Item Correlations for MSCS (Men Sample)

Item	Physical Care								Supportive Relationships					Mindful Awareness				Self-Compassion & Purpose						Mindful Relaxation						Supportive Structure			
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33
1																																	
2	.529**																																
3	.278**	.506**																															
4	.346**	.518**	.413**																														
5	.137*	.305**	.201*	.602**																													
6	-.003	.105	.085	.357**	.258**																												
7	.298**	.467**	.515**	.760**	.587**	.225**																											
8	.065	.131*	.211**	.197**	.283**	-.007	.306**																										
9	.239**	.260**	.067	.161*	.099	-.023	.146*	-.094																									
10	.184**	.249**	.068	.131*	.128*	-.023	.117	-.130*	.720**																								
11	.188**	.290**	.069	.147*	.110	-.044	.133*	-.097	.636**	.738**																							
12	.264**	.296**	.083	.225**	.159*	.001	.129*	-.129*	.537**	.651**	.592**																						
13	.182**	.262**	.068	.162**	.130*	-.022	.217**	-.005	.615**	.561**	.538**	.450**																					
14	.152*	.213**	.116	.130*	.074	-.091	.145*	-.012	.347**	.418**	.435**	.461**	.366**																				
15	.139*	.185**	.097	.090	.089	-.098	.092	-.014	.313**	.400**	.390**	.456**	.344**	.899**																			
16	.193**	.222**	.112	.162**	.104	-.020	.159*	-.031	.363**	.391**	.372**	.444**	.387**	.842**	.854**																		
17	.132*	.205**	.145*	.046	.062	-.006	.068	.024	.214**	.315**	.296**	.352**	.253**	.623**	.597**	.563**																	
18	.207**	.324**	.124*	.134*	.068	.116	.121	-.021	.294**	.325**	.350**	.463**	.328**	.614**	.576**	.577**	.631**																
19	.171**	.203**	.075	.132*	.143*	.063	.230**	.167**	.312**	.279**	.275**	.309**	.391**	.450**	.442**	.385**	.429**	.524**															
20	.143*	.144*	.086	.140*	.057	.087	.110	.090	.209**	.192**	.183**	.237**	.231**	.386**	.369**	.393**	.459**	.549**	.585**														
21	.033	-.017	.032	.032	.091	-.063	.053	.220**	.138*	.163**	.111	.089	.184**	.262**	.284**	.237**	.301**	.298**	.467**	.430**													
22	.137*	.171**	.070	.230**	.146*	.169**	.151*	.076	.307**	.278**	.224**	.202**	.339**	.299**	.328**	.288**	.245**	.427**	.460**	.506**	.528**												
23	.202**	.247**	.068	.157*	.154*	.098	.120	.056	.445**	.453**	.395**	.355**	.376**	.445**	.441**	.425**	.347**	.553**	.493**	.468**	.464**	.698**											
24	.224**	.194**	.050	.097	.066	.019	.046	.327**	.156*	.151*	.134*	.192**	.118	.252**	.262**	.228**	.219**	.267**	.266**	.226**	.347**	.305**	.334**										
25	.206**	.149*	-.101	.074	.070	-.078	.092	-.018	.519**	.490**	.395**	.388**	.500**	.312**	.301**	.350**	.245**	.320**	.302**	.213**	.221**	.289**	.463**	.247**									
26	.005	.094	.083	.067	.120	.000	.141*	.259**	.146*	.110	.053	.106	.165**	.253**	.266**	.253**	.198**	.283**	.322**	.247**	.421**	.315**	.320**	.495**	.250**								
27	.125*	.133*	.058	.111	.072	-.128*	.046	.050	.197**	.111	.124*	.180**	.105	.207**	.237**	.253**	.156*	.206**	.060	.088	.119	.174**	.203**	.204**	.233**	.269**							
28	.055	.117	.177**	.082	.091	-.033	.193**	.279**	.098	.078	.052	.062	.144*	.197**	.187**	.125*	.215**	.117	.319**	.198**	.363**	.282**	.292**	.303**	.125*	.453**	.278**						
29	.128*	.158*	.165**	.127*	.160*	.013	.179**	.349**	.067	.095	.007	.034	.137*	.104	.123*	.056	.219**	.142*	.305**	.284**	.424**	.315**	.290**	.312**	.114	.343**	.081	.467**					
30	.208**	.308**	.245**	.251**	.127*	.120	.259**	.070	.256**	.304**	.296**	.258**	.283**	.288**	.320**	.274**	.294**	.377**	.319**	.245**	.153*	.314**	.383**	.293**	.270**	.161*	.182**	.111	.199**				
31	.126*	.240**	.128*	.235**	.139*	.098	.222**	.077	.350**	.377**	.330**	.401**	.313**	.411**	.382**	.354**	.333**	.347**	.306**	.229**	.125*	.290**	.391**	.253**	.310**	.198**	.157*	.171**	.146*	.572**			
32	.192**	.175**	.081	.213**	.158*	.038	.181**	.019	.315**	.315**	.310**	.411**	.223**	.375**	.370**	.348**	.334**	.352**	.293**	.313**	.201**	.277**	.400**	.226**	.316**	.199**	.266**	.250**	.218**	.490**	.660**		

Note: **p <.01, *p <.05

Table 6. Inter-Item Correlations for MSCS (Women Sample)

Item	Physical Care								Supportive Relationships					Mindful Awareness				Self-Compassion & Purpose						Mindful Relaxation						Supportive Structure			
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33
1	--																																
2	.449**	--																															
3	.301**	.496**	--																														
4	.322**	.405**	.423**	--																													
5	.220**	.306**	.304**	.609**	--																												
6	.014	.057	.096*	.310**	.229**	--																											
7	.297**	.408**	.476**	.746**	.538**	.253**	--																										
8	.161**	.200**	.333**	.275**	.316**	.096*	.357**	--																									
9	.098*	.220**	.075	.166**	.074	-.091*	.150**	.011	--																								
10	.130**	.255**	.155**	.177**	.109**	-.076	.193**	.033	.636**	--																							
11	.127**	.227**	.125**	.170**	.113**	-.082*	.155**	.039	.582**	.702**	--																						
12	.163**	.192**	.053	.120**	.079	-.123**	.127**	-.001	.485**	.633**	.621**	--																					
13	.139**	.210**	.089*	.164**	.149**	-.097*	.171**	.023	.543**	.547**	.542**	.486**	--																				
14	.192**	.294**	.201**	.181**	.128**	-.060	.171**	.004	.292**	.410**	.313**	.385**	.376**	--																			
15	.188**	.311**	.204**	.200**	.148**	-.059	.198**	.050	.300**	.422**	.304**	.380**	.357**	.865**	--																		
16	.205**	.326**	.227**	.184**	.157**	-.038	.189**	.033	.310**	.412**	.273**	.350**	.345**	.779**	.797**	--																	
17	.147**	.270**	.174**	.156**	.166**	-.025	.135**	.035	.283**	.287**	.207**	.219**	.335**	.571**	.583**	.569**	--																
18	.166**	.246**	.149**	.181**	.157**	-.023	.183**	.024	.255**	.335**	.265**	.322**	.375**	.555**	.569**	.576**	.637**	--															
19	.202**	.266**	.176**	.213**	.216**	.006	.233**	.141**	.263**	.308**	.251**	.248**	.371**	.459**	.461**	.470**	.468**	.560**	--														
20	.171**	.232**	.157**	.217**	.182**	.032	.226**	.120**	.185**	.270**	.253**	.213**	.329**	.420**	.403**	.393**	.387**	.516**	.684**	--													
21	.087*	.157*	.114*	.084*	.095*	-.032	.121**	.117**	.187**	.193**	.181**	.178**	.2187**	.339**	.349**	.318**	.284**	.402**	.476**	.519**	--												
22	.130**	.219**	.175**	.167**	.174**	-.020	.173**	.131**	.259**	.290**	.215**	.204**	.368**	.400**	.396**	.405**	.364**	.410**	.575**	.535**	.643**	--											
23	.158**	.271**	.195**	.197**	.187**	-.006	.189**	.137**	.299**	.365**	.310**	.266**	.421**	.440**	.456**	.442**	.407**	.445**	.590**	.554**	.549**	.777**	--										
24	.067	.125**	.127**	.111**	.076	-.003	.139**	.184**	.114**	.193**	.145**	.150**	.205**	.244**	.242**	.254**	.204**	.235**	.286**	.320**	.303**	.321**	.351**	--									
25	.153**	.186**	.059	.185**	.166**	-.042	.151**	.061	.425**	.421**	.405**	.355**	.537**	.360**	.374**	.340**	.293**	.349**	.323**	.362**	.310**	.358**	.414**	.310**	--								
26	.026	.072	.105**	.111**	.178**	-.034	.135**	.159**	.150**	.166**	.132**	.134**	.228**	.216**	.231**	.241**	.196**	.200**	.330**	.329**	.297**	.355**	.372**	.440**	.371**	--							
27	.048	.149**	.082*	.052	.059	-.134**	.040	.070	.155**	.173**	.190**	.163**	.269**	.239**	.233**	.207**	.235**	.211**	.242**	.244**	.240**	.276**	.282**	.307**	.370**	.379**	--						
28	.026	.106**	.099*	.073	.094*	-.076	.132**	.127**	.129**	.101*	.062	.105**	.196**	.167**	.207**	.167**	.164**	.210**	.267**	.284**	.265**	.269**	.310**	.312**	.295**	.448**	.387**	--					
29	.102*	.146**	.143**	.084*	.077	-.036	.149**	.222**	.120**	.105**	.066	.044	.118**	.117**	.133**	.124**	.139**	.135**	.217**	.213**	.147**	.181**	.229**	.225**	.197**	.291**	.217**	.449**	--				
30	.219**	.252**	.223**	.235**	.183**	-.004	.280**	.170**	.206**	.264**	.153**	.243**	.227**	.280**	.304**	.293**	.266**	.278**	.246**	.287**	.215**	.291**	.327**	.245**	.242**	.217**	.204**	.185**	.217**	--			
31	.182**	.309**	.265**	.251**	.176**	-.010	.232**	.103*	.210**	.338**	.263**	.305**	.240**	.370**	.383**	.316**	.269**	.296**	.221**	.278**	.225**	.245**	.259**	.221**	.294**	.183**	.160**	.165**	.173**	.633**	--		
32	.208**	.307**	.251**	.260**	.182**	.050	.250**	.108**	.274**	.382**	.266**	.319**	.336**	.431**	.436**	.387**	.361**	.367**	.364**	.340**	.302**	.361**	.404**	.255**	.358**	.263**	.174**	.185**	.185**	.536**	.679**	--	

Note: **p <.01, *p <.00

Table 7. Physical Care Inter-Item Correlations

Item	1	2	3	4	5	6	7	8
1	--							
2	.48**	--						
3	.30**	.50**	--					
4	.35**	.44**	.42**	--				
5	.22**	.31**	.28**	.63**	--			
6	.02	.08**	.10**	.34**	.25**	--		
7	.31**	.43**	.49**	.76**	.57**	.26**	--	
8	.13**	.18**	.29**	.24**	.29**	.07*	.34**	--

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

Table 8. Supportive Relationships Inter-Item Correlations

Item	9	10	11	12	13
9	--				
10	.67**	--			
11	.61**	.72**	--		
12	.51**	.64**	.61**	--	
13	.56**	.56**	.55**	.48**	--

Note: **$p <.01$

Table 9. Mindful Awareness Inter-Item Correlations

Item	14	15	16	17
14	--			
15	.87**	--		
16	.81**	.81**	--	
17	.59**	.59**	.58**	--

Note: **$p < .01$

Table 10. Self-Compassion and Purpose Inter-Item Correlations

Item	18	19	20	21	22	23
18	--					
19	.55**	--				
20	.53**	.65**	--			
21	.36**	.47**	.47**	--		
22	.42**	.54**	.53**	.60**	--	
23	.48**	.56**	.53**	.51**	.75**	--

Note: **$p < .01$

Table 11. Mindful Relaxation Inter-Item Correlations

Item	24	25	26	27	28	29
24	--					
25	.29**	--				
26	.44**	.33**	--			
27	.28**	.33**	.34**	--		
28	.30**	.25**	.45**	.36**	--	
29	.25**	.18**	.31**	.17**	.44**	

Note: **$p < .01$

Table 12. Supportive Structure Inter-Item Correlations

Item	30	31	32	33
30	--			
31	.61**	--		
32	.52**	.66**	--	
33	.51**	.57**	.58**	--

Note: **$p <.01$

Table 13. MSCS Subscale Correlations

Subscale	Physical Care	Supportive Relationships	Mindful Awareness	Self-Compassion and Purpose	Mindful Relaxation	Supportive Structure
Physical Care	--					
Supportive Relationships	.194**	--				
Mindful Awareness	.254**	.471**	--			
Self-Compassion and Purpose	.272**	.434**	.601**	--		
Mindful Relaxation	.212**	.326**	.362**	.538**	--	
Supportive Structure	.334**	.450**	.482**	.480**	.400**	--

Note: **$p < .01$

Table 14. MSCS Subscale Correlations among Men

Subscale	Physical Care	Supportive Relationships	Mindful Awareness	Self-Compassion and Purpose	Mindful Relaxation	Supportive Structure
Physical Care	--					
Supportive Relationships	.234**	--				
Mindful Awareness	.182**	.508**	--			
Self-Compassion and Purpose	.240**	.444**	.583**	--		
Mindful Relaxation	.242**	.302**	.378**	.561**	--	
Supportive Structure	.268**	.500**	.489**	.501**	.417**	--

Note: **$p < .01$

Table 15. MSCS Subscale Correlations among Women

Subscale	Physical Care	Supportive Relationships	Mindful Awareness	Self-Compassion and Purpose	Mindful Relaxation	Supportive Structure
Physical Care	--					
Supportive Relationships	.195**	--				
Mindful Awareness	.263**	.469**	--			
Self-Compassion and Purpose	.292**	.434**	.614**	--		
Mindful Relaxation	.215**	.335**	.370**	.525**	--	
Supportive Structure	.371**	.432**	.495**	.473**	.392**	--

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

Table 16. Internal Consistency of MSCS Subscales

	Number of Items	Cronbach's Alpha
Physical Care	8	.80
Supportive Relationships	5	.88
Mindful Awareness	4	.91
Self-Compassion and Purpose	6	.87
Mindful Relaxation	6	.73
Supportive Structure	4	.84
MSCS	33	.91

Table 17. Scale-Level Correlation Coefficients with Criterion measures

Subscale/Scale	Depression	Anxiety	Stress	Satisfaction with Life Scale
Physical Care	-.214**	-.160**	-.157**	.269**
Supportive Relationships	-.345**	-.224**	-.212**	.448**
Mindful Awareness	-.366**	-.281**	-.313**	.418**
Self-Compassion and Purpose	-.271**	-.156**	-.188**	.379**
Mindful Relaxation	-.052	.025	-.003	.177**
Supportive Structure	-.354**	-.279**	-.273**	.425**

Note: **$p <.01$

Table 18. CFA Model and Goodness-of-Fit Indexes

Model	RMSEA (90% CI)	SRMR	X^2 (df)	CFI	ΔCFI
Original	.065	.071	2312.14 (480)	.879	--
1	.065 (.063, .068)	.069	2053.10 (419)	.889	.01
2	.056 (.053, .059)	.056	1400.97 (362)	.923	.034
3	.059 (.055, .062)	.062	1863.30 (730)	.916	-.007

Note: *RMSEA* Root-mean-square error of approximation, *SRMR* Standardized root-mean-square residual, *CFI* Comparative fit index, X^2 Chi-square test, *df* degree of freedom, Δ change in the model. Model 1 = Removal of item 6 and item 8; Model 2 = Item 18 and item 25 switched to load onto different factors; Model 3 = Removal of item 18 and item 25.

Table 19. Invariance Models and Goodness-of-Fit Indexes for Men and Women

Model	RMSEA (90% CI)	SRMR	X^2 (df)	CFI	ΔCFI
Configural	.059 (.055, .062)	.062	1863.30 (730)	.916	--
Metric	.058 (.054, .061)	.065	1882.328 (753)	.917	.001
Scalar	.062 (.058, .065)	.070	2118.82 (782)	.901	.016
Partial Scalar[a]	.060 (.057, .063)	.070	2058.24 (781)	.906	.011
Partial Scalar[b]	.059 (.056, .062)	.069	2010.29 (780)	.909	.008

Note: *RMSEA* Root-mean-square error of approximation, *SRMR* Standardized root-mean-square residual, *CFI* Comparative fit index, X^2 Chi-square test, *df* degree of freedom, Δ change in the model
[a] with one free intercept, [b] with two free intercepts

Table 20. Latent Mean Estimates

	Estimate	SE	*p*-value
Physical Care	0.29	0.08	0.000
Supportive Relationships	-0.12	0.08	0.127
Mindful Awareness	0.25	0.08	0.001
Self-Compassion and Purpose	0.03	0.08	0.708
Mindful Relaxation	-0.04	0.09	0.619
Supportive Structure	-0.05	0.08	0.536

Table 21. Subscale Level Correlations for the Revised MSCS

Subscale	Physical Care	Supportive Relationships	Mindful Awareness	Self-Compassion and Purpose	Mindful Relaxation	Supportive Structure
Physical Care	--					
Supportive Relationships	.189**	--				
Mindful Awareness	.247**	.461**	--			
Self-Compassion and Purpose	.273**	.428**	.596**	--		
Mindful Relaxation	.214**	.328**	.359**	.536**	--	
Supportive Structure	.332**	.449**	.486**	.481**	.400**	--

Note: $**p < .01$

Appendix A
The Mindful Self-Care Scale (MSCS)

<u>Direction:</u> Circle the number that reflects the frequency of your behavior (how much or how often) within the past week (7 days):

Never (0 days)	Rarely (1 day)	Sometimes (2 to 3 days)	Often (4 to 5 days)	Regularly (6 to 7 days)
1	**2**	**3**	**4**	**5**

		Never	Rarely	Sometimes	Often	Regularly
Physical Care (8 items)						
1	I drank at least 6 to 8 cups of water.	（1）	（2）	（3）	（4）	（5）
2	I ate a variety of nutritious foods (e.g., vegetables, protein, fruits, and grains).	（1）	（2）	（3）	（4）	（5）
3	I planned my meals and snacks.	（1）	（2）	（3）	（4）	（5）
4	I exercised at least 30 to 60 minutes.	（1）	（2）	（3）	（4）	（5）
5	I took part in sports, dance, or other scheduled physical activities (e.g., sports teams, dance classes).	（1）	（2）	（3）	（4）	（5）
6*	I did sedentary activities instead of exercising (e.g., watched TV, worked on the computer).	（1）	（2）	（3）	（4）	（5）
7	I planned/scheduled my exercise for the day.	（1）	（2）	（3）	（4）	（5）
8*	I practiced yoga or other mind/body practice (e.g., Tae Kwon Do, Tai Chi).	（1）	（2）	（3）	（4）	（5）
Supportive Relationships (5 items)						
9	I spent time with people who are good to me (e.g., support, encourage, and believe in me).	（1）	（2）	（3）	（4）	（5）
10	I felt supported by people in my life.	（1）	（2）	（3）	（4）	（5）
11	I felt that I had someone who would listen to me if I became upset (e.g., friends, counselor, group).	（1）	（2）	（3）	（4）	（5）
12	I felt confident that people in my life would respect my choice if I said "no."	（1）	（2）	（3）	（4）	（5）

13	I scheduled/planned time to be with people who are special to me.	（1）	（2）	（3）	（4）	（5）
Mindful Awareness (4 items)						
14	I had a calm awareness of my thoughts.	（1）	（2）	（3）	（4）	（5）
15	I had a calm awareness of my feelings.	（1）	（2）	（3）	（4）	（5）
16	I had a calm awareness of my body.	（1）	（2）	（3）	（4）	（5）
17	I carefully selected which of my thoughts and feelings I used to guide my actions.	（1）	（2）	（3）	（4）	（5）
Self-compassion and purpose (6 items)						
18*	I kindly acknowledged my own challenges and difficulties.	（1）	（2）	（3）	（4）	（5）
19	I engaged in supportive and comforting self-talk (e.g., "My effort is valuable and meaningful").	（1）	（2）	（3）	（4）	（5）
20	I reminded myself that failure and challenge are part of the human experience.	（1）	（2）	（3）	（4）	（5）
21	I gave myself permission to feel my feelings (e.g., allowed myself to cry).	（1）	（2）	（3）	（4）	（5）
22	I experienced meaning and/or a larger purpose in my *work/school* life (e.g., for a cause).	（1）	（2）	（3）	（4）	（5）
23	I experienced meaning and/or larger purpose in my *private/personal* life (e.g., for a cause).	（1）	（2）	（3）	（4）	（5）
Mindful Relaxation (6 items)						
24	I did something intellectual (using my mind) to help me relax (e.g., read a book, wrote).	（1）	（2）	（3）	（4）	（5）
25*	I did something interpersonal to relax (e.g., connected with friends).	（1）	（2）	（3）	（4）	（5）
26	I did something creative to relax (e.g., drew, played instrument, wrote creatively, sang, organized).	（1）	（2）	（3）	（4）	（5）
27	I listened to relax (e.g., to music, a podcast, radio show, rainforest sounds).	（1）	（2）	（3）	（4）	（5）

28	I sought out images to relax (e.g., art, film, window shopping, nature).	（1）	（2）	（3）	（4）	（5）
29	I sought out smells to relax (lotions, nature, candles/incense, smells of baking).	（1）	（2）	（3）	（4）	（5）
Supportive Structure (4 items)						
30	I kept my work/school area organized to support my work/school tasks.	（1）	（2）	（3）	（4）	（5）
31	I maintained a manageable schedule.	（1）	（2）	（3）	（4）	（5）
32	I maintained a balance between the demands of others and what is important to me.	（1）	（2）	（3）	（4）	（5）
33	I maintained a comforting and pleasing living environment.	（1）	（2）	（3）	（4）	（5）

Note:* indicates item not included in the revised scale.

Appendix B
The Depression, Anxiety, and Stress Scale - 21 Items (DASS-21)

Directions: Please read each statement and circle a number 0, 1, 2, or 3, which indicates how much the statement applied to you **over the past week**. There are no right or wrong answers. Do not spend too much time on any statement.

The rating scale is as follows:

0	Did not apply to me at all
1	Applied to me to some degree, or some of the time
2	Applied to me to a considerable degree or a good part of time
3	Applied to me very much or most of the time

1	I found it hard to wind down.	0	1	2	3
2	I was aware of dryness in my mouth.	0	1	2	3
3	I couldn't seem to experience any positive feeling at all.	0	1	2	3
4	I experienced breathing difficulty (e.g. excessively rapid breathing, breathlessness in the absence of physical exertion).	0	1	2	3
5	I found it difficult to work up the initiative to do things.	0	1	2	3
6	I tended to over-react to situations.	0	1	2	3
7	I experienced trembling (e.g. in the hands).	0	1	2	3
8	I felt that I was using a lot of nervous energy.	0	1	2	3
9	I was worried about situations in which I might panic and make a fool of myself.	0	1	2	3
10	I felt that I had nothing to look forward to.	0	1	2	3
11	I found myself getting agitated.	0	1	2	3
12	I found it difficult to relax.	0	1	2	3
13	I felt down-hearted and blue.	0	1	2	3
14	I was intolerant of anything that kept me from getting on with what I was doing.	0	1	2	3
15	I felt I was close to panic.	0	1	2	3
16	I was unable to become enthusiastic about anything.	0	1	2	3
17	I felt I wasn't worth much as a person.	0	1	2	3
18	I felt that I was rather touchy.	0	1	2	3

19	I was aware of the action of my heart in the absence of physical exertion (e.g. sense of heart rate increase, heart missing a beat).	0	1	2	3
20	I felt scared without any good reason.	0	1	2	3
21	I felt that life was meaningless.	0	1	2	3

Appendix C
The Satisfaction with Life Scale (SWLS)

Directions: Below are five statements that you may agree or disagree with. Using the 1-7 scale below, the appropriate number to indicate your agreement with each item. Please be open and honest in your responding.

- 7 - Strongly agree
- 6 - Agree
- 5 - Slightly agree
- 4 - Neither agree nor disagree
- 3 - Slightly disagree
- 2 - Disagree
- 1 - Strongly disagree

1	In most ways my life is close to my ideal.	1	2	3	4	5	6	7
2	The conditions of my life are excellent.	1	2	3	4	5	6	7
3	I am satisfied with my life.	1	2	3	4	5	6	7
4	So far I have gotten the important things I want in life.	1	2	3	4	5	6	7
5	If I could live my life over, I would change almost nothing.	1	2	3	4	5	6	7