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Research Article

Research on the Correlation between Trait Mindfulness and the Emotional Mood

Kaiyi Han*

Shanghai High School International Division, Shanghai, China

Abstract: The aim of this study was to confirm if there was a correlation between trait mindfulness, negative mood states, and stress. Our study is based on the assumption that practicing mindfulness did have the efficacy and ability to regulate negative emotions and thoughts produced by negativity-inducing external stimuli. A hundred and fifteen individuals (M age = 32.17 years, SD = 8.21, 59 males and 56 females) mostly from Beijing and Shanghai completed a series of measures, which included the Five-Facet Mindfulness Questionnaire (FFMQ), the Profile of Mood States-Brief Questionnaire (POMS-B), and the Stress Self-Perception Scale. After analyzing the collected data with SPSS 22.0, results showed that trait mindfulness has a significant relation with both negative mood states and stress, the relation being negative mood states and stress having a negative correlation to mindfulness and vice versa. This study verified the ability of mindfulness to stabilize and regulate negative emotions like depression and indicated the importance of practicing mindfulness as a way to cope with negativity-inducing stimuli and associated thoughts and emotions. Limitations and future research directions are discussed.

Keywords: Mindfulness, Negative mood states, Stress, Correlation

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Corresponding author: Kaiyi Han, liaoquanneng@ivygate.cn

1 Question

Since the discovery of the practice of mindfulness, there have been many debates about whether or not it can actually help people overcome overwhelming feelings of despair and depression and become accustomed with their negative emotions by accepting them with a nonjudgmental attitude. Through three simple surveys, we are going to ask people about how practicing mindfulness have affected their emotional mood in order to verify the presence of a positive correlation between the practice of mindfulness and a person's emotional mood. We are also assessing people's levels of self-perceived stress in order to verify the presence of a significant relationship, presuming a positive correlation, between stress and negative emotions and a negative correlation between stress and trait mindfulness. Our research is based on the assumption that practicing mindfulness did have the effectiveness and ability to regulate negative emotions and thoughts.

2 Background

Since the 1970s, psychiatrists and clinical psychologists have used mindfulness to develop several therapeutic applications for helping individuals experiencing psychological disorders like depression, obsessive-compulsion disorder (OCD), post-traumatic stress disorder (PTSD), borderline personality and substance addiction. Many clinical studies have documented both physical and mental health benefits of mindfulness in both patients with psychological disorders and healthy adults and children. Research studies have also confirmed a positive relationship between mindfulness and psychological health as it provides many therapeutic benefits to individuals with psychiatric disorders and halts the development of potential mental health problems. According to Martin P. Paulus, MBSR training results in increased telomerase activity and great reductions in chronic stress, anxiety, dietary restraint, dietary fat intake, cortisol and glucose. Taking

into account all the benefits mindfulness produces, it has profound effects on mental health, affecting brain systems that are important for emotion regulation and self-awareness and altering inflammatory and epigenetic responses that are correlated to mood and stress-related disorders. Experiments carried out by Maria Fissler and her team have shown that "training in mindfulness significantly increased self-reported interceptive awareness in depressed patients, reporting significantly stronger "increases in the ability to regulate attention to body sensations and a significantly increased ability to regulate psychological distress by attention to body sensations, both aspects that are explicitly trained in mindfulness meditation", greater "trust in their body sensations", and "significant reductions in their tendencies to worry about sensations of discomfort" (Fissler et al., 2016), which further prove the ability of mindfulness to overcome and stabilize negative emotions, even in people with severe levels of depression. Additionally, the finding of Michael D. Mrazek's team has proven that mindfulness training led to an enhancement of performance while taking the GRE that was "mediated by reduced mind wandering among participants who had been prone to mind wandering at pretesting", which contrasted with nutrition training, or having a more nutritional and balanced diet, that did not cause any significant "changes in performance or mind wandering" (Mrazek et al., 2013, pg. 780). They found out that reduced mind wandering is caused by the reduced activation of the default network through practices of mindfulness, regardless of the person being a long-term professional or a beginner.

There have also been several cognitive experiments that have proved the benefits of mindfulness, such as one conducted by Farb and his team members. In this experiment, there were two groups of people, the expert group, which consisted of people that practiced mindfulness, and the novice group, which consisted of people that did not. After conducting several scans of the brains of the two different groups, the researchers found out that in the novice group, the PCC and VMPFC areas of their brains were active while in the expert group, the LPFC area and insula of their brains were active. This indicated that the novice group had a more active narrative self than experimental self, which meant that they relied more on their inner-self to translate what is happening and why into language based representations and provide them self-concept and understanding of the current situation. On the other hand, the expert group had a more active experimental self than narrative self, which meant that they relied more on controlling their attention to become more self-conscious of their emotions and actions. The experiment also proved that not only could mindfulness enhance the activation of the insula, which is in charge of receiving information about the conditions of the boy and regulating emotions related to the information received, but also could weaken the association between the insula and mPFC in the brain, thus altering cortical representations of interceptive attention (Farb et al., 2007).

Having the capacity to control emotions is an important contributes to how we humans adapt to changes in the environment, which is caused and reinforced by the active controlling of attention and changing the meaning of emotionally evocative stimuli on a cognitive basis. There were several individuals, such as Columbia University and Stanford University professors Kevin N. Ochsner and James J. Gross respectively, which made major contributions to the research of cognitive control by conducting a series of observations that contrasted the differences between behavioral and cognitive regulation of emotions. They compared the two results of behavioral and cognitive regulation, stating that behavioral regulation might "limit expressive action" but does not decrease the "intensity of unpleasant experiences" or the negative emotions correlated with them, "worsens memory and increases the activation of the sympathetic nervous system", which is in charge of expending energy to prepare the body for action in times of stress. They used an experiment on attention control, known as "selective attention", as an example. When participants were asked to selectively judge either their emotional or perceptual features, the amount of attention paid to emotional stimuli was manipulated. Results show that when participants were given tasks that focused on observing and evaluating emotional features, such as matching emotional faces based on negative emotional labels, they showed an increase in amygdala activation, but when participants were given the task to evaluate the gender of emotional faces and not the emotions themselves, there were no changes in their amygdala activation levels. On the other hand, cognitive regulation "neutralizes negative experiences and emotions without impairing associated memories" and might "decrease physiological arousal" in which

differences in emotional responsivity is dependent on both "normal and pathological variation in well-being and social behavior". One method of cognitive regulation is cognitive change, which may be used to either generate an emotional response when there was none, also known as controlled generation, or evaluate an already triggered emotional response, also known as controlled regulation. Both controlled generation and regulation have been studied in the context of three different forms of higher cognition and approaches, one of them being the examination of neural correlation of anticipatory responses that precede expected emotional value for the former and the reinterpreting of the meaning of a stimulus to change one's emotional response to it through the process of reappraisal for the latter. In general, the results of cognitive change-related studies have consistently shown the ability of emotional appraisal systems to be modulated by PFC, OFC and cingulate control systems activated by either interpretations of stimuli or the learning process of associating new emotional responses with stimuli (Gross and Ochsner, 2005).

Therefore, due to the efficiency of cognitive regulation of negative emotions, various techniques of control regulation are adapted and widely used in therapy sessions for mindfulness patients, especially appraisal. Most individuals with depression tend to find themselves repeatedly reviewing past events that have most likely brought out "losses, humiliations, and defeats that leave them feeling trapped by their current circumstances" (Williams et al., 2007, pg. 14). Even when prescribed with an antidepressant, depressed individuals would only feel a temporary improvement in their moods before returning to their depressed self again. Research have shown that at least "fifty percent of those experiencing depression find that it comes back, despite the fact that they appeared to have made a full recovery" and the "risk of recurrence (of depression) rises to between eighty and ninety percent after a second or third episode" (Williams et al., pg. 16). One of the main reasons why this happens is because of the human tendency to unknowingly fall into rumination, becoming so preoccupied with the fact that we are unhappy and with the causes and consequences of our unhappiness while frantically looking for a nonexistent solution. People believe that the root cause of their unhappiness is their emotions themselves, completely ignorant of the fact that emotions serve as "messages that reconnect us in the most basic and intimate of ways with the adventure and experience of being alive" (Williams et al., pg. 49).

3 Theoretical basis

Mindfulness is a psychological process of bringing one's focus to the present moment, allowing one to not exhibit any sense of worry or anxiety over the past or future. The official definition of mindfulness is a type of attention that has "purpose, no judgement and awareness at the present moment". Founded and popularized in the Western culture by American professor Jon Kabat-Zinn through his founding of the Mindfulness-Based Stress Reduction (MBSR) program at the University of Massachusetts Medical School in 1979, the practice of mindfulness adopted several aspects and teachings the of Eastern world, such as sati, a key element of Buddhist traditions, Zen from Mahayana Buddhism that originated from China, Vipassanā from Theravada Buddhism traditions and Tibetan mediation techniques. Kabat-Zinn himself was introduced to meditation by Philip Kapleau, a Zen missionary who was invited to speak at MIT, before he decided to study mediation at the Insight Mediation Society under other Zen Buddhist teachers like Seungsahn. Contrary to popular belief, mindfulness is not a type of mindless mediation that serves to help one relax in a quiet physical environment and keep the mind empty and isolated from the busyness of one's fast-paced lifestyles. It is about how we can develop ways to transform the nature of our experiences in life by changing how we pay attention to them, taking in all the information an experience offers to us before we act or make a judgment. As we continue to act with intention and direction, each present moment is embraced as it is, in its "full depth, width and richness" (William and co., 65). It also allows us to understand and acknowledge the fact that our thoughts are only "passing mental events" that come and go in the mind and that we are more in touch with life as it is when we "allow ourselves to experience things through our bodies and our senses" rather than mostly though our "unexamined and habitual thoughts" (Williams et al., pg. 55). When we are in doing mode, we tend to become so preoccupied with thoughts about what is going on and the pressing needs of our daily lives that we are almost unaware of what is actually happening in the present moment, finding ourselves completely entangled in the automatic stream of consciousness from past thought patterns and ignoring the signals of satisfaction our body gives. Lack of awareness blinds

us to other possibilities and changes in our lives, so it is extremely important to cultivate mindfulness and adopt it into our lifestyles, which can be achieved when one practices these exercises on a daily basis.

There are four main therapy techniques of mindfulness that all focus on attention control, letting the individual occupies certain cognitive resources and thus interrupting any unconscious negative thoughts and emotions attached to them. The first technique, known as having awareness of the body, includes practices like Watching the Breath, Body-Scan, Mindfulness Walking and Hearing, and Embracing a Difficulty. These are various exercises that are designed to develop mindfulness mediation alongside with the aid of several guidance mediations like yoga. One exercise called Watching the Breath is to sit on a straight-backed chair, close one's eyes and bring one's attention to the sensations of breathing in proximity of one's nostrils or to the movements of one's abdomen when inhaling and exhaling. Through this exercise, the individual can become aware of one's natural breathing patterns and irreverent thoughts that have appeared in one's mind, which would allow one to acknowledge the fact that the mind has wandered off and once again attempt to solely focus on breathing. The second technique, known as having awareness of feelings, include practices like turning a negative feeling into an objective item, such as giving it a specific name and treating it as a living person, which allows the individual to more easily detach oneself from it. This technique is based on the different ways people react to negative emotions: some people turn their attention to themselves when they are depressed, while others do things to avert their attention to the outside world. The former behavior is known as "reverse reaction style", which causes the individual to become more prone to immersing their experiences in negative emotions and makes it harder for one to detach from those emotions. The last two techniques, known as having awareness of the consciousness and object, focus on having different concepts, developing a third-person viewpoint, of events and turning to the unconsciousness to acquire a nonjudgmental attitude, altering negative emotions into neutral or even positive ones. As a whole, mindfulness is designed to help reduce drive-action mode, the process of completing a goal of a special mental setting and focusing on the analysis of the past and prediction of the future, and convert it into existence mode, which focuses on accepting the events happening at the present moment and all possibilities in the future.

Although we mostly take it for granted, the ability to have various types of feelings and emotions in response to different events is one of the most important assets we have as it allows us to stand at the top of the social hierarchy of nature. According to researchers, there are two major classifications for feelings. The first classification is known as basic feelings, which consists of emotions like happiness, sadness, anger and fear. They are basic emotions that have evolved in response to the ecological challenges faced by our ancestors, which eventually became hardwired to each of their corresponding neurological circuit in the brain and caused them to become innate, universal and automatic to trigger behavior that led to higher chances of survival (Burton, "What are Basic Emotions?"). The second classification is known as complex feelings, which consists of more complicated emotions like desire, guilt, attachment and pride. These emotions are produced from the amalgams of two or more basic feelings, like contempt, a combination of the feelings of disgust and anger, which have emerged from experiences from events in society. Each emotion also has several distinctive ranges of intensity, so feelings could also be classified into three different dimensions: the 1st dimension is a range of sadness to happiness, the 2nd dimension is a range of calmness to aggression, and the 3rd dimension is a range of personal motivation and priority, a measure of how much a particular emotion caused the person to carry out a certain action and prioritize it.

Whenever one encounters any negative emotions like depression, it causes the brain to create a connection between sad mood and negative thoughts, which would be strengthened by exposure to more negativity and despondency, proving the hidden ability for normal sad thoughts to rekindle major negative thoughts correlated to depression. This was further amplified by Aaron Beck's discovery that mood is strongly shaped by thoughts and how it is one's interpretation of an event that determines the emotions one correlate to that event, not the event itself. Most of the time, we are completely unaware of the interpretations we make, thinking that it was the situation itself that caused our emotional and physical reactions. This can be extremely dangerous as humans tend to pick out and elaborate on the most negative interpretations when they feel downcast, usually settling on a theme of "worthlessness and inadequacy" and thus starting the never-ending

loop of reminiscing the past and the emotional burden and exhaustion it brings. During this process, the brain activates a series of mostly involuntary reactions that help us deal with that problem, causing us to feel negatively towards and want to avoid or remove it through aversion. It is a vital skill we need to survive in times of physical danger, but when we react to our own negative emotions and thoughts with aversion, the brain's system involved in physical avoidance, submission or defense attack is activated, which causes the entire body to tense up and the mind to close in on itself. The doing mode of mind, responsible for solving problems in the external world with critical analytical skills, is also activated, which prompts us to think our way out of our negative moods and narrow the gap between our ideal and actual self. Under this condition, moods can function as powerful internal contexts, automatically bringing back strong thoughts and memories associated with that particular mood to the mind, including reoccurring thought patterns that created the mood in the first place. The reason why these thought patterns have a tendency to reappear every time we feel downcast and depressed is because we often do not realize they are past memories at all and find ourselves compulsively trying to understand our deficiencies and ways to fix them, which fuels further unhappiness and keeps us fixated on the very thoughts and memories that make us unhappy. The only way to prevent the activation of the doing mode of mind is to switch on the being mode of mind by cultivating our awareness of the present moment, which opens us up to "limitless possibilities for happiness that life has to offer", allows us to become "more aware of ourselves", recognize the times when we are most likely to slide into depression and makes it easier for us to dismiss the idea that we are "no good, unlovable and ineffectual" (William et al., pg. 47).

4 Method

4.1 Participants

There were 115 participants, ranged from 16 to 45 years old, which took part in our questionnaires. The mean age of the participants was 32.17 years with an SD of 8.21. There were 59 male participants and 56 female participants, which indicated a larger male population in our research. The mean ages of the two genders are 32.89±8.14 years for males and 31.88±8.34 years for females. The majority of participants were either from Beijing, China or Shanghai, China. Before completing the questionnaires, each participant was given directives on the purpose of each questionnaire and how they should answer the questions.

4.2 Measures

4.2.1 Five-facet mindfulness questionnaire

The Five-Facet Mindfulness Questionnaire (FFMQ; Deng et al., 2011) is utilized to assess the participant's level of mindfulness. In our study, we used the 39-item Chinese version of the original instrument that was developed by Baer et al. (2003). This questionnaire includes five subscales: observing (OB, sample item: ''When I walk, I will pay attention to my bodily sensations in motion), describing (DS, sample item: "I can easily describe my inner emotions with words''), acting with awareness (AWA, sample item: ''When I do things, I easily lose focus and become distracted''), nonjudging of inner experiences (NJ, sample item: ''I tell myself I shouldn't be feeling the way I'm feeling''), and no reactivity to inner experiences (NR; , sample item: ''When I have distressing thoughts or images, I just notice them and let them go"; Baer, Smith, Hopkins, Krietemeyer, & Toney, 2006). A 5-point Likert-type scale was used to rate the five subscales. From 1 (never or rarely true) to 5 (very often or always true), higher scores meant higher trait mindfulness. The present study indicated that Cronbach's α of the total scale was 0.84, and Cronbach's α ranged from 0.79 to 0.89 for the five subscales.

4.2.2 Profile of mood states-brief

The Profile of Mood States-Brief (POMS-B; Albrecht & Ewing, 1989) is a valid instrument for the assessment of emotion mood (Chi & Lin, 2003). The Chinese version is a 30-item measure of the participant's present mood state. Items are rated on a 5-point Likert scale ranging from 0 (Not at all) to 4 (Extremely). The POMS-B contained six emotional dimensions: tension-anxiety (TA, sample item: Tense); depression-dejection (DD, sample item: Worthlessness); anger-hostility (AH, sample item: Furious); vigor-activity (VA, sample item: Stimulated); fatigue-inertia (FI, sample item: Fatigued); and confusion-bewilderment (CB, sample item: Confused). A total mood disturbance score (TMD) was calculated by adding the sub-scores of each negative dimension (i.e., tension-anxiety, depression-dejection, anger-hostility, fatigue-inertia, and confusion-bewilderment) and deducting it by the sub-score of

each positive emotional dimension (i.e., VA), and a higher TMD indicated a higher level of experienced negative mood states. The data of current study showed that Cronbach's α of total mood disturbance was 0.89, and Cronbach's α ranged from 0.80 to 0.90 for the six subscales.

4.2.3 Stress self-perception scale

The Stress Self-Perception Scale is an instrument that allows participants to rate their self-perceived level of stress on a 5-point Likert scale ranging from 1 (Never) to 5 (All the time) based on their responses to recent stress-induced situations. It is in Chinese and has 14 questions in total, with the sub-scores of 7 questions being calculated in the reverse order, meaning that 5 (All the time) has a sub-score of one, 4 (Frequently) has a sub-score of two and so on. The final score is calculated by deducting 14 from the sum of all sub-scores from each question. A higher final score indicated a higher self-perception and experience of stress.

4.3 Procedure

Participants were recruited from Moments, a platform provided by WeChat that allowed users to share any form of media, such as photos, links, and short videos, to their family members, peers, and acquaintances, as the three questionnaires participants needed to complete were also posted onto Moments. The questionnaires were created on an online platform called "WenJuanXin", which allowed users to create different types of questionnaires for free and upload them onto social media platforms like WeChat and Email. After a questionnaire is completed and posted by the user, participants can participate by scanning the associated Quick Response (QR) code or clicking on the associated link that directs them to the questionnaire. After completing The Five-Facet Mindfulness Questionnaire (FFMQ), The Profile of Mood States-Brief (POMS-B), and the Stress Self-Perception scale, participants were given 6 RMB to 10 RMB for participating. All data collection was anonymous, and the only personal information that was collected was the participant's age and gender. The data was recorded onto an Excel sheet and then pasted onto a SPSS 22.0 dataset for further analysis. 17 items were collected for each participant: their subject number, gender, age, TMD, DD sub-score, VA sub-score, AH sub-score, FI sub-score, FI sub-score, TA sub-score, CB sub-score, FFMQ score, Observation sub-score, Description sub-score, Action sub-score, Nonjudgement sub-score, Nonaction sub-score, and Stress Self-Perception score.

4.4 Data analysis

Means, standard deviations (*SD*), correlations, *p* (Sig.), and *T* values for independent samples tests were all analyzed by SPSS 22.0.

5 Results

Means, standard deviations *(SD*), and correlations of the results of POMS-B, FFMQ, and Stress Self-Perception scale are shown in Table 1. Trait mindfulness has a significant relation to both TMD and stress, having a correlation coefficient of -0.424 and -0.496 (*ps* < 0.01) respectively. More specifically, trait mindfulness has a significant relation to all negative mood states (DD, AH, FI, TA and CB) assessed in the POMS-B, which is shown in Table 2. It has a correlation coefficient of -0.429 with Depression-Dejection, -0.414 with Anger-Hostility, -0.379 with Fatigue-Inertia, -0.398 with Tension-Anxiety, and -0.280 with Confusion-Bewilderment (*ps* < 0.01). This indicates that trait mindfulness has a significant negative correlation with all major negative moods and vice versa, meaning that increasing the level of mindfulness would decrease the level of experienced negative mood states while decreasing the level of mindfulness would increase the level of experienced negative mood states.

Table 1. Mean, SD, and correlation between TMD, FFMQ, and Stress Self-Perception (N = 115)

Questionnaires	Mean (*SD*)	POMS-B (TMD)	FFMQ	Stress Self- Perception
POMS-B (TMD)	68.90 (18.58)	1	-0.424**	0.658**
FFMQ	121.83 (15.70)	-0.424**	1	-0.496**
Stress Self-Perception	26.50 (8.80)	0.658**	-0.496**	1

Note: *SD*: Standard deviation. POMS-B: Profile of Mood States-Brief; TMD: Total Mood Disturbance; FFMQ: Five-Facet Mindfulness Questionnaire; Stress Self-Perception: Stress Self-Perception Scale. The correlations are Pearson correlation coefficients. *p<0.05. **p<0.01. (**: Correlation is significant at the 0.01 level (2-tailed).)

Table 2. Mean, SD, and correlation between FFMQ, Negative Mood States and Stress Self-Perception (N = 115)

	Mean (SD)	Stress Self-Perception	FFMQ	DD	AH	FI	TA	CB
Stress Self-Perception	26.50 (8.80)	1	-0.496**	0.618**	0.518**	0.584**	0.401**	0.613**
FFMQ	121.83 (15.70)	-0.496**	1	-0.429**	-0.414**	-0.379**	-0.398**	-0.280**
DD	9.41 (4.32)	0.618**	-0.429**	1	0.718**	0.762**	0.830**	0.654**
AH	9.72 (4.06)	0.518**	-0.414**	0.718**	1	0.695**	0.739**	0.518**
FI	11.9 (4.64)	0.584**	-0.379**	0.762**	0.695**	1	0.775**	0.706**
TA	9.92 (3.74)	0.401**	-0.398**	0.830**	0.739**	0.775**	1	0.667**
CB	12.28 (3.15)	0.613**	-0.280**	0.654**	0.518**	0.706**	0.667**	1

Note: *SD*: Standard deviation. FFMQ: Five-Facet Mindfulness Questionnaire; Stress Self-Perception: Stress Self-Perception Scale. DD: Depression-Dejection; AH: Anger-Hostility; FI: Fatigue-Inertia; TA: Tension-Anxiety; CB: Confusion-Bewilderment. The correlations are Pearson correlation coefficients. *p<0.05. **p<0.01. (**: Correlation is significant at the 0.01 level (2-tailed).)

Means, standard deviations (*SD*), and results of an independent samples test between gender and trait mindfulness are shown in Table 3. The mean levels of mindfulness for females and males are 118.27 with a *SD* of 13.59 and 125.22 with a *SD* of 16.90 respectively. When equal variances are assumed, the *T* value is -2.423 and the *p* value is 0.017. When equal variances are not assumed, the *T* value is -2.437 and the *p* value is 0.016. The mean difference of both conditions is -6.95. *T* values and mean differences measure the size of the difference relative to the variation in the sample data, which are calculated by deducting the *SD* and mean of Group 2 (Males) from those of Group 1 (Females), so having a negative *T* value and mean value indicates that males have a higher tendency of being mindful than females.

Means, standard deviations (*SD*), and correlations of the sub-scores of POMS-B and Stress Self-Perception scale are shown in Table 3. Stress also has a significant relation to all negative mood states (DD, AH, FI, TA and CB) assessed in the POMS-B. It has a correlation coefficient of 0.618 with Depression-Dejection, 0.518 with Anger-Hostility, 0.584, with Fatigue-Inertia, 0.613 with Tension-Anxiety, and 0.401 with Confusion-Bewilderment (*p*s < 0.01). This indicates that stress has a positive correlation with all major negative moods and vice versa, meaning that both levels of stress and experienced negative mood states would either increase or decrease together.

Table 3. Mean, SD, and results of an *independent samples test between gender and trait mindfulness* (N = 59 for M, N= 56 for F)

Mindfulness	Mean (*SD*)	*T* Value when equal variances assumed	*T* Value when equal variances not assumed
Gender		-2.423 (*p* value = 0.017)	-2.437 (*p* value = 0.016)
Female	118.27 (13.59)		
Male	125.22 (16.90)		
Mean Differences		-6.95	-6.95

Note: *SD*: Standard deviation. M: Males; F: Females. FFMQ: Five-Facet Mindfulness Questionnaire. *p* value: Sig. (2-tailed).

6 Discussion

The objective of this research is to confirm and determine a type of correlation between trait mindfulness, negative mood states, and stress as there has been some skepticism about the ability of mindfulness to stabilize and regulate negative emotions regardless of their severity and causation. After analyzing the collected data with SPSS 22.0, we came to the conclusion that trait mindfulness had a negative correlation with negative mood states and stress, which meant that increasing levels of trait mindfulness would decrease levels of experienced negative mood states

and stress while decreasing levels of trait mindfulness would increase levels of experienced negative mood states and stress. This founding supports the view of promoting better mental health and decreasing risks of experiencing depression and other negative emotions by practicing mindfulness, thus proving the ability of mindfulness to alleviate experienced emotions by helping people accept negative thoughts and emotions through acknowledging their existence in a nonjudgmental way and letting them go. Prior to previous studies (Wang et al. 2017), we assessed levels of experienced negative mood states through splitting the POMS-B into six sub-categories (Depression-Dejection, Vigor-Activity, Anger-Hostility, Fatigue-Inertia, Tension-Anxiety, and Confusion-Bewilderment) and separately calculating sub-scores for negative mood states (DD, AH, FI, TA and CB) and positive mood states (VA) instead of directly using the Total Mood Disturbance score (TMD) for analysis.

Before initiating this research, we based our research topic and method on the assumption that mindfulness did have the ability to help people accept and cope with negativity-inducing stimuli and their associated interpretations, thoughts, and emotions. The result of our research, trait mindfulness having a negative correlation with experienced negative mood states and stress, proves this assumption and its accuracy. There are multiple past research studies that support our result, one of them being a study done by Lutz and her team members. In their study, they wanted to study the neural correlates of a short mindful state during expectation and perception of negative or potentially negative stimuli without a behavioral component, using functional magnetic resonance imaging (fMRI) in a group of healthy subjects who were compared with a matched group not applying any emotion-regulation strategy. The results showed that the amygdala showed decreased activation in the mindfulness group during the perception of negative stimuli (Lutz et al., 2013). The amygdala has been found to be activated in expectation of 'unknown' or negative pictures (Phelps et al., 2001; Bermpohl et al., 2006; Herwig et al., 2007a). Rather than valence-specific processing, amygdala activation supposedly reflects more general emotional arou- sal or salience (Anderson and Phelps, 2001; Fusar-Poli et al., 2009; Morrison and Salzman, 2010). The mindfulness group also displayed decreased activity in the parahippocampal area and insula during the perception of negative stimuli, and more mindful subjects had a reduced insula activity in the expectation phase. This reduced activity in brain regions associated with emotional arousal supports the interpretation that the short mindfulness interventions had emotion-regulatory effects on the neural level (Lutz et al., 2013), thus also supporting the view that mindfulness has the ability to regulate negativity-inducing stimuli and associated emotions. Another similar study done by Wang and his team members wanted to assess the relationship between trait mindfulness and mood and examine whether the relationship is mediated by mind wandering. Their results showed that mind wandering mediated the relationship between mindfulness and negative mood. They also revealed that people more prone to mind wandering may have issues in executive control function or attentional allocation (Smallwood & Schooler, 2006) while people with higher levels of trait mindfulness are prone to less negative emotions and disturbances in attention allocation, which proves the ability of mindfulness to regulate negative emotions through redistributing the attentional resources between the present task and intrusive thoughts that are unrelated to the task (Wang et al., 2017). Last but not least, a study done by Arch and Craske wanted to investigate whether a fifteen-minutes recorded focused breathing induction in a normal population would decrease the intensity and negativity of emotional responses to aversive picture slides and increase willingness to remain in contact with aversive picture slides (Arch and Craske, 2006). Their results showed that a focused breathing induction positively effects emotional regulation regardless of the intent or background knowledge of the participant, which once again proves the ability of mindfulness to regulate negative emotions through a series of exercises that include focused breathing.

There are several exercises that help people become aware of their bodily sensations and view thoughts as mental events that come and go in the mind instead of taking them literally. Three of the most common ones are Watch the Breath, Body-Scan, and Mindful Walking. As we have mentioned before, Watching the Breath is one of the mindfulness exercises that cultivates awareness of the body by bringing one's attention to the sensation of breathing. After settling down into a comfortable position, such as sitting cross-legged on the floor or on a chair, one can place their legs out in front of their body and close their eyes to completely relax the mind. There is no need to control

the flow of the breath as it would leave both the mind and person calmer and clear. As one breathes in and out, they should notice the expansion and retraction of the chest cavity and abdomen, the movement of air in and out of the nostrils and the small pauses in between each exhalation and inhalation, using their sole attention on breathing as a way to remain in the present. However, if one does find their mind wandering and preoccupied with other irrelevant thoughts, just know that it is absolutely normal for beginners and it is not a mistake nor failure. Just briefly acknowledge where the mind has been, accept it in a nonjudgmental attitude and gently escort one's attention back to the physical sensations of breathing. This is meant to bring about a quality of kindness to one's awareness, allowing one to see the mind's wanderings as natural and inevitable opportunities to nurture greater patience, self-compassion and acceptance for oneself.

Another exercise that cultivates awareness of the body is known as the Body-Scan. After lying on a comfy surface in any posture that seems comfortable, one could close their eyes and relax while focusing on their breathing through Watching the Breath. Then, one could slowly shift their focus to their left shoulder, chest, abdomen and move down to their left thigh, left calf, left foot to the very end of the five toes on their foot and back, as if one is following the flow of the bloodstream. Repeat this process with the right side of the body and alternate between the two sides, focusing on the sensations in each body part, such as the textures of the bedsheet beneath one's hands or one's weight on the mattress of the bed while noticing how that weight changes as one alternates between breathing in and out.

The last exercise, Mindful Walking, begins with placing their feet onto the ground, parallel to the shoulders and keeping one's eyes on the other end of the route. While standing still, one should put their entire focus on both of their feet and notice how they are carrying the entire weight of the body and their intimate connection to the surface of the floor. Then, starting with the left heel, one should slowly lift up their left foot while observing how the connection between the sole and the floor is broken as it is being lifted up into the air and how that broken connection is reestablished when the left foot is replaced onto the ground. Repeat this process with the right foot and alternate between both feet while focusing on the different walking and breathing patterns associated with one's current walking speed until one reaches the other end. Once one reaches the other side, they should take a few steps to slowly turn around and notice the pattern between the lifting of a foot and the turning of the body to a new angle. It is important to keep in mind that there is no final destination, so there is no need to worry about where one is headed or how long the journey would take. Just focus on the current sensation of walking and let the feet do the walking as they are designed to help one walk without any conscious control due to the cerebellum and pons' function to involuntarily process sensory information and coordinate muscle movement. Mindful walking has been proven to be extremely useful for calming an anxious person by starting off with a faster pace and gradually slowing down.

Our result has proven the effectiveness and ability of mindfulness to prevent negativity-inducing stimuli from affecting people's moods with negative and intrusive thoughts. This is significant in both the clinical and cognitive sense as mindfulness provides a form of emotion regulation that is both cost-efficient and without the aid of external medications, thus limiting the risk of any side effects. Unlike traditional mediation, practicing mindfulness does not require a specific physical environment that is really quiet and peaceful. It could be done anywhere and at any time. It is also not time-consuming as people only need to dedicate ten to fifteen minutes to complete a few mindfulness exercises, which would eventually become a habit where people become mindful of their bodily sensations and emotions at every present moment. Previous studies, such as ones carried out by Maria Fissler and her team, have shown that training in mindfulness have significantly increased self-reported interceptive awareness in people with depression, which once again prove the capability of mindfulness to regulate emotions of people, regardless of the severity and intensity of the negative emotions they are experiencing. Our result of mindfulness having a negative correlation with negative mood states and stress is also significant in the cognitive sense because of how practicing mindfulness can significantly alter a person's think process and patterns. As mentioned before, one of the main reasons why people become depressed is the human tendency to unknowingly fall into the process of rumination, becoming so preoccupied with the fact that one is unhappy and with the causes and consequences of that unhappiness while frantically looking for a nonexistent solution and believing that it would free one from feelings of unhappiness (Williams et al., 49). Practicing

mindfulness is an alternative to rumination. By bringing one's attention to bodily sensations at every present moment and regarding thoughts as temporary mental processes, one can easily switch to the being mode of mind, which allows people to open themselves up to the limitless possibilities for happiness that life has to offer, recognize automatic thought patterns and emotion changes that might slide one into depression, and become more aware of the self through the senses, emotions and the mind (Williams et al., 49). When one becomes aware of what is happening in the present moment, the mind becomes so preoccupied with the current sensations and experiences that there is no room for any unrelated thoughts that might initiate the process of rumination, such as worrying about upcoming events.

There are several limitations in our research. Firstly, our research method is based on three questionnaires: Profile of Mood States-Brief (POMS-B), Five-Facet Mindfulness Questionnaire (FFMQ), and Stress Self-Perception scale. This type of research method might influence the validity of the results as it has a higher risk of human errors, such as misreading or misinterpreting a question and accidentally clicking onto a wrong answer, and may include some personal biases or false information. Therefore, more scales and questionnaires are needed in future studies. In addition, our research had a small population of a hundred and fifteen participants that ranged from sixteen to forty-five years old and mostly came from China, so we cannot be certain that our finding would apply to other populations that are outside of China and/or not within the age group between sixteen to forty-five years old. Last but not least, we did not address the relationships of the correlation coefficients between trait mindfulness and the negative mood states assessed in the POMS-B. We also did not find a correlation between age and levels of trait mindfulness, negative mood states, and stress, so future research are also encouraged to address and explore the relations between the various correlation coefficients and between age and levels of trait mindfulness, negative mood states, and stress. However, despite these limitations, the current study investigated the relations between trait mindfulness and levels of experienced negative mood states and stress, which may provide important insight into the abilities of mindfulness in the clinical and cognitive sense and the benefits it provides for people's mental health.

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