

TRAIT MINDFULNESS AS A BUFFER: EXPLORING ITS ASSOCIATION WITH NEGATIVE EMOTIONAL STATES AMONG UNIVERSITY STUDENTS

Shazia Jabeen^{a*} & Dr. Farah Iqbal^b

^a Department of Psychology, Jinnah University for Women, Karachi, Pakistan

^b Department of Psychology, University of Karachi, Karachi, Pakistan

*Correspondence to: Ms. Shazia Jabeen, Department of Psychology, Jinnah University for Women, Karachi, Pakistan. E-mail: jabeenshazia2021@gmail.com

KEYWORDS:

Mindfulness, Negative Emotions, Young Adults

CITE THIS ARTICLE:

Jabeen, S., & Iqbal, S. (2026). Trait mindfulness as a buffer: Exploring its association with negative emotional states among university students. *Pakistan Journal of Positive Psychology*, 3(9), 120-127.

ABSTRACT

The present study investigated the predictive role of trait mindfulness in relation to depression, anxiety, and stress among Pakistani young adults. The following hypotheses were formulated: H1: Trait mindfulness will significantly and negatively predict depression among Pakistani young adults. H2: Trait mindfulness will significantly and negatively predict anxiety among Pakistani young adults. H3: Trait mindfulness will significantly and negatively predict stress among Pakistani young adults. A sample of 405 participants (189 males, 216 females; aged 18–30 years, $M = 22.39$, $SD = 2.823$) completed an online survey including the Mindful Attention Awareness Scale (MAAS) and the Depression Anxiety Stress Scale (DASS-21). Reliability and normality assessments confirmed the adequacy of the measures. Linear regression analyses revealed that trait mindfulness significantly and negatively predicted depression ($R^2 = .237$, $p < .001$), anxiety ($R^2 = .210$, $p < .001$), and stress ($R^2 = .201$, $p < .001$). These findings were consistent with the hypotheses formulated and the theoretical perspectives. The study adds value to global evidence in relation to the Pakistani context, highlighting trait mindfulness as a preventive factor against negative emotions and emphasizing the need for culturally adapted mindfulness-based interventions to enhance psychological resilience among young adults.

I. INTRODUCTION

Over the past two decades, there has been a significant rise in negative emotional states, including depression, anxiety, and stress, observed globally. Existing data indicate a 59.3% increase in depression between 1990 and 2019 (Wu et al., 2024), as well as an 18.2% rise in anxiety disorders from 1990 to 2021 (Wu et al., 2025). Moreover, an overall increase of 6.03% in emotional stress was recorded between 2009 and 2021 (Daly & Macchia, 2023), further highlighting growing concerns about mental health problems. These trends stem from psychological damage caused by changing modes of communication, emerging digital technologies, and shifting social and economic environments. Such environmental changes have led to constant shifts in the demands of academic and work-related skills. Within this context, factors such as interrupted connectivity, time-limited tasks, demands for immediate responses, and information overload contribute to heightened levels of performance pressure. When individuals are unable to cope with these environmental demands, the risk of developing negative emotional states such as depression, anxiety, and stress increases (Kaur & Kaur, 2024; Norabuena-Figueroa et al., 2025). Previous findings suggest that the causative factors behind these negative emotional states include a lack of relevant academic and work-related skills, as well as diminishing employment opportunities resulting from economic and social shifts (Piao et al., 2024).

Theoretical Foundations

Along with environmental demands, a more comprehensive way to understand negative emotional states is by considering the underlying cognitive mechanisms. Negative emotional states, including depression, anxiety, and stress—share a common pattern of disengagement from present realities and increased engagement with emotion-related negative thoughts. This intentional or unintentional shift in attention, which is characterized by an absence of mindfulness, is referred to as mind wandering (Christoff et al., 2016). According to previous findings, the risk of mind wandering increases when individuals experience negative emotional states such as depression, anxiety, and stress (Seli et al., 2019). Individuals manifest mind wandering in the form of spontaneous thoughts, worry, and rumination. Spontaneous thoughts are particularly common among individuals with depression and negative affect, which often involve intrusive thoughts related to unattained goals and discrepancies between current and desired states, disrupting their connection to external reality (Marchetti et al., 2016). An increased frequency of thoughts characterized by self-criticism, demoralization, lack of motivation, brooding, and interpersonal disappointments has been found to be associated with elevated scores on cognitive, affective, and somatic symptoms of depression (Mohammadkhani et al., 2018). Similarly, individuals with anxiety disorders exhibit increased susceptibility to excessive worry (Vander-Haegen & Etienne, 2016). Like spontaneous thoughts, worry involves recurring future-oriented thoughts about uncertain or negative outcomes, disengaging individuals from their external environment (Fell et al., 2023). Excessive worry has been associated with a heightened level of threat estimation and intolerance of uncertainty in individuals with generalized anxiety disorder (Wilson et al., 2025).

Unlike spontaneous thoughts and worry, rumination is prevalent across all three emotional states. It involves recurrent negative thoughts about past events, which interfere with present-moment awareness and task engagement (Michl et al., 2013; Willis & Burnett, 2016). Du et al. (2018) found a strong link between stress and rumination, with rumination acting as a mediator between stress and negative emotions among college students. Whereas mind wandering increases vulnerability to negative emotional states and trait mindfulness is identified as a positive psychological attribute that enables individuals to regulate their emotions in adaptive ways (Roemer et al., 2015). Trait mindfulness is an individual's tendency to purposefully shift attention toward current thoughts, sensory input, and emotional experiences, thereby preventing overindulgence in past trauma or future apprehension through greater insight into internal states (Duraney et al., 2022). Individuals with an inclination to observe their internal experiences demonstrate a lower risk of developing depression, anxiety, and stress (Carpenter et al., 2019). Past research has consistently shown that higher levels of trait mindfulness are associated with reduced levels of depression, anxiety, and dysfunctional attitudes (Wilson et al., 2019). Similarly, findings from another study indicated that trait mindfulness was linked to reduced perceived stress and enhanced psychological well-being (Hepburn et al., 2021).

Beyond direct association, trait mindfulness serves as a significant factor in shaping the underlying cognitive mechanisms of these emotional states. A strong negative association between trait mindfulness and rumination was observed in an online study conducted in China. Rumination and cognitive reappraisal mediate the association between trait mindfulness and depression (Zhang et al., 2025). Similarly, a strong negative association between trait mindfulness and sleep-related worry was observed in another study (Hu et al., 2025). Conclusively, trait mindfulness is a meta-cognitive skill that helps individuals observe emotions and protect against negative emotional states. Individuals with negative emotional states tend to ruminate more often, which leads to mood difficulties. In contrast, mindful individuals are aware of their emotional experiences, so they do not become immersed in emotions; instead, they direct their attention to the tasks at hand. This redirection of attentional focus reduces repetitive negative thoughts, which in turn lowers the risk of negative emotional states.

Trait Mindfulness and Depression

Based on these theoretical foundations, empirical research has consistently demonstrated the association between trait mindfulness and reduced negative emotional states. Among these, depression has been one of the most extensively investigated outcomes. Carpenter et al. (2019) reported that individuals with higher trait mindfulness scores showed a significantly lower risk of depression and anxiety disorders in a meta-analysis of diverse population samples. Similarly, Wilson et al. (2019) found that trait mindfulness was negatively correlated with dysfunctional attitudes such as rumination, worry, and depressive symptoms, which is suggestive of the

protective role of trait mindfulness against maladaptive cognitive patterns. Furthermore, Strohmaier et al. (2021) investigated the effects of mindfulness practice programs of two different lengths on depression, anxiety, and stress. Their results indicated that mindfulness practice, regardless of the length of the program, increased trait mindfulness while reducing symptoms of depression, anxiety, and stress. Notably, shorter-duration practice of mindfulness led to more favourable outcomes compared to longer-duration practice. In Pakistan, Sibghat Ullah and Batool (2020) examined the linear relationship between trait mindfulness and depressive symptoms among university students. They found a weak negative relationship between trait mindfulness and depression. Moreover, rumination partially mediated the relationship between trait mindfulness and depression. This indicates that trait mindfulness may buffer against depressive tendencies both directly and indirectly, such as through rumination; however, the existing evidence is still scarce.

Trait Mindfulness and Anxiety

In contrast, only a limited number of studies have indicated a direct association between trait mindfulness and anxiety. In a study conducted by Wang et al. (2018), a moderate negative relationship was found between trait mindfulness and state-trait anxiety. Trait anxiety also mediated the link between mindfulness and depression, highlighting mindfulness as a protective factor against anxiety. Internationally, mindfulness-based interventions (MBIs) consistently showed reduced anxiety symptoms among university students. In Pakistan, Irfan and Nayyar (2025) studied the efficacy of mindfulness practice in reducing anxiety in a culturally adapted mindfulness-based intervention program for young adults. These findings suggest that mindfulness practices can reduce anxiety symptoms in Pakistani populations, even if anxiety symptoms are not extensively studied in relation to trait mindfulness.

Trait Mindfulness and Stress

Unlike depression and anxiety, however, stress reduction is one of the most widely investigated benefits of mindfulness. Strohmaier et al. (2021) found that mindfulness practice was highly effective in stress reduction. Similarly, in Pakistan, intervention studies have shown positive outcomes. Sarfraz and Siddiqui (2023) reported that mindfulness-based programs resulted in increased psychological well-being and reduced stress among young adults. Although most of the studies were intervention-based and trait mindfulness was studied less in relation to stress reduction, the findings of these studies still indicate the effectiveness of mindfulness in reducing stress. Taken together, although mindfulness is a widely studied construct, there remains limited evidence regarding its relationship with depression, anxiety, and stress. Most existing studies on anxiety and stress have been intervention-based, with comparatively fewer studies focusing on trait mindfulness. Furthermore, researchers have mostly relied on a single assessment measure, the Five-Facet Mindfulness Questionnaire, while alternative tools such as the Mindful Attention Awareness Scale have been used in only a limited number of studies related to negative emotional states. The existing data are also constrained by inconsistent findings, with some studies reporting weak associations between mindfulness and psychological outcomes, which are insufficient to establish valid conclusions. Notably, one study indicated that longer-term mindfulness practice led to less favourable results compared to shorter-term practice, raising questions about the optimal duration of mindfulness interventions. These limitations highlight the need for more comprehensive research, based on diverse methodologies and culturally adapted approaches to clarify the role of trait mindfulness in reducing depression, anxiety, and stress.

According to recent findings, the prevalence of negative emotional states—including depression, anxiety, and stress—has reached a critical level among young adults (university students' data) in Pakistan (Haqqani et al., 2024). In a sample of 321 participants, the prevalence of depression was 51.6%, anxiety was 62%, and stress was 46.1%, highlighting the necessity of immediate attention to the management of mental health challenges in this population. It is therefore essential to explore protective factors that may reduce vulnerability to these outcomes. While intervention studies have demonstrated that mindfulness practices can increase baseline trait mindfulness levels (Strohmaier et al., 2021; Sakagami et al., 2024), evidence is limited about whether trait mindfulness itself predicts emotional outcomes in Pakistani young adults. Investigating this relationship is crucial because trait mindfulness is a naturally occurring disposition that may buffer against negative emotional states as a preventive measure. Considering this assumption, the study aims to clarify the predictive role of trait mindfulness in relation to depression, anxiety, and stress, thereby addressing both a theoretical and methodological gap in the literature.

Moving forward to the significance of the current study. First, it will add value to the global evidence on linking trait mindfulness and negative emotional states, particularly in the Pakistani context where relevant literature is scarce. Second, it provides the grounds for the development and implementation of mental health-related intervention programs in Pakistani universities and workplaces. The impact of mindfulness interventions in increasing baseline trait mindfulness levels (Strohmaier et al., 2021; Sakagami et al., 2024) would justify the development of culturally adapted programs. Finally, the study contributes to mental health policymaking by highlighting trait mindfulness as a skill to reduce depression, anxiety, and stress among students and young adults and promoting psychological resilience in different settings. The objective and hypotheses are given below;

Objective

- To explore the linear relationship between trait mindfulness and negative emotional states—including depression, anxiety, and stress—among Pakistani young adults.

Hypotheses

1. Trait mindfulness will significantly and negatively predict depression among Pakistani young adults.
2. Trait mindfulness will significantly and negatively predict anxiety among Pakistani young adults.
3. Trait mindfulness will significantly and negatively predict stress among Pakistani young adults.

II. METHOD

Participants

A total of 405 participants (189 males and 216 females) aged 18 to 30 years ($M = 22.39$, $SD = 2.823$) participated in the current study through an online survey form, which was randomly distributed on different social media platforms and student groups. The sample mostly consisted of students and working young adults; only a few participants identified themselves as nonworking young adults. A total of young adults participated; however, responses of sixteen participants were excluded for not meeting the age- or qualification-related inclusion criteria. The minimum qualification requirement for participation in the study was being a student in an undergraduate degree program.

Measures

Following measures were used for data collection. [I] Mindful Attention Awareness Scale (MAAS; Brown & Ryan, 2003) is a unidimensional assessment tool designed to measure awareness of one's thoughts and actions through self-report statements of mindless experiences. The measure consists of 15 reverse-coded items in with a six-point scale ranging from *Almost Always* = 1 to *Almost Never* = 6. Higher scores indicate a higher level of trait mindfulness. The internal consistency of the measure was 0.87 in standardization sample (Brown & Ryan, 2003). [II] Depression Anxiety Stress Scale (DASS-21; Henry & Crawford, 2005) is a nonclinical assessment tool developed for the measurement and identification of distinctive patterns of negative emotional states, including depression, anxiety, and stress. The DASS is composed of three subscales, namely depression, anxiety, and stress. Each subscale consists of seven self-report items rated on a four-point scale ranging from *Never* = 0 to *Almost Always* = 3. Scores are converted to the 42-item version by multiplying by 2, with possible ranges from 0–42. Higher scores on any subscale indicate higher levels of the respective emotional state. Internal consistency was 0.88 for depression, 0.82 for anxiety, and 0.90 for stress in a sample of 1,794 adults (Henry & Crawford, 2005).

Procedure

An application along with consent form, study material, and the other required details of the study was submitted to the Institutional Bioethical Committee, University of Karachi, Karachi, Pakistan for ethical approval. After reviewing the study detail, the ethical approval was granted (Approval no. IBC KU-606/2025). After approval from the ethical committee a survey form including a consent form, demographic form, MAAS, and DASS-21 was generated using Google Forms. Participants were invited to complete the survey through social media platforms and student groups. Before beginning the survey, participants were presented with an informed consent form outlining the purpose of the study, their rights as participants, and assurances of confidentiality. They were required to indicate consent before proceeding. Data were collected anonymously, and participants could withdraw at any time without penalty. Data collection continued for two months. Statistical Package for Social

Sciences version 26 (SPSS v26) was used to carry out the required statistical procedures. For reliability of measures, Cronbach's alpha was calculated, and for normality assessment, skewness and kurtosis were calculated. The sample characteristics were assessed through descriptive statistics, and linear regression analysis was carried out to test the study hypothesis. The alpha level for all parametric analyses was set at 0.05.

III. RESULTS

Table I: Reliability and Normality Diagnostics for the Measures (N= 405)

Variables	Number of Items	α	Skewness	Kurtosis
1. Trait Mindfulness	15	.87	.246	-.529
2. Depression	7	.79	.740	.233
3. Anxiety	7	.74	.558	-.064
4. Stress	7	.71	.492	.371

The results presented in Table 1 show that reliability indicators for all measures and their subscales were ≥ 0.70 , indicating good reliability. The skewness and kurtosis of the sample on all measures were less than ± 1 , demonstrating that the sample was normally distributed.

Table II: Descriptive Statistics

Variables	M	SD	SE
1. Trait Mindfulness	3.63	1.037	.051
2. Depression	12.92	8.608	.427
3. Anxiety	13.09	8.024	.398
4. Stress	14.65	7.314	.363

The descriptive assessment of variables presented in Table 2 shows that participants' average score on trait mindfulness indicated moderate attention ($M = 3.63$, $SD = 1.037$). Average scores on negative emotional states indicated mild depression ($M = 12.92$, $SD = 8.608$), moderate anxiety ($M = 13.09$, $SD = 8.024$), and mild stress ($M = 14.65$, $SD = 7.314$).

Table III: Predictive Association between Trait Mindfulness and Negative Emotional States (Depression, Anxiety, and Stress)

Variables	r	R^2	B	SE	β	F
Depression	.487**	.237	-4.039	.361	-.487	125.045**
Anxiety	.459**	.210	-3.549	.343	-.459	107.346**
Stress	.448**	.201	-3.163	.314	-.448	101.433**

$p < .01$ **

Assessment of predictive associations between study variables through linear regression analysis is presented in Table 3. The results show that trait mindfulness significantly and negatively predicted depression among young adults ($r = .487$, $R^2 = .237$, $F(1, 403) = 125.045$, $p < 0.001$), accounting for 23.7% of the variance in depression. A significant negative predictive association between trait mindfulness and anxiety was also observed ($r = .459$, $R^2 = .210$, $F(1, 403) = 107.346$, $p < 0.001$), accounting for 21% of the variance in anxiety. The predictive association between trait mindfulness and stress was significant and negative ($r = .448$, $R^2 = .201$, $F(1, 403) = 101.433$, $p < 0.001$), accounting for 20.1% of the variance in stress, which was the highest among all emotional states.

IV. DISCUSSION

The present study examined the predictive role of trait mindfulness in relation to depression, anxiety, and stress among Pakistani young adults. The focus of this section is to interpret the findings in accordance with the

hypothesis formulated and previous research. The results of the statistical analysis were consistent with the hypotheses formulated. Trait mindfulness was found to be a significant predictor of all three negative emotional states — depression, anxiety, and stress (all $ps < 0.001$) — contributing between 20.1% and 23.7% of the variance in these states, which is sufficient to justify the hypothesis. These findings were consistent with previous research that reported similar associations between mindfulness and negative emotional states (Carpenter et al., 2019; Strohmaier et al., 2021; Irfan & Nayyar, 2025). The findings of the present study can be explained in accordance with the following theories. Beck's Cognitive Theory of Depression, Rumination theory, Intolerance of Uncertainty Theory of Worry, and Stress Appraisal Theory. According to Beck's cognitive theory of depression (Beck, 1967 as cited in Tsolakis, 2025) and rumination theory (Nolen-Hoeksema, 1991; Watkins, 2008 as cited in Michl et al., 2013), individuals' tendency to become indulged in negative automatic thoughts, dysfunctional beliefs, and continuous cycles of thinking about past events was the major precursor of the onset and maintenance of depressive symptoms. This might be because individuals with high dispositional mindfulness were less likely to get caught up in negative thoughts, through decentring and nonjudgmental awareness which reduces their susceptibility to identify with these negative cognitions. A reduced frequency of negative thoughts and cognitive bias weakens the impact of negative thoughts on mood. This explanation was supported by the findings of empirical studies conducted by Chahar Mahali et al. (2020) and Zhang et al. (2025).

Moving forward to the association between trait mindfulness and anxiety, findings can be interpreted through a recent model of worry and intolerance of uncertainty (Wilson et al., 2025). Excessive worry is characterized by future-oriented, recurrent thoughts and fears about potential negative outcomes, coupled with intolerance of uncertain situations. This pattern disengages individuals from their current tasks and environment. Mindful individuals may be less susceptible to worry because of their ability to redirect attention to the present moment, thereby lowering the risk of developing anxiety symptoms. The findings of Uzun et al. (2025) were suggestive of strong empirical evidence for this assumption. Likewise, stress appraisal theory (Lazarus & Folkman, 1984 as cited in Michalak, Kiffin-Petersen, & Ashkanasy, 2017) proposes that stress is not only a result of external demands but also by how individuals perceive and interpret those demands. Impairments in information processing might be a causative factor of rumination and stress (Nolen-Hoeksema, 1991; Watkins, 2008 as cited in Michl et al., 2013) however, mindfulness promotes acceptance and reappraisal although observing the individual's thoughts and emotional experiences which reduces perceived stress (Strohmaier et al., 2021). Looking at these theoretical perspectives gives a picture of how trait mindfulness operates through multiple pathways: reducing cognitive distortions, breaking rumination cycles, improving emotion regulation and reframing stressors. Taken together this explains why trait mindfulness emerged as a significant predictor across all three negative emotional states in the current study.

Beyond theory, the findings carry important real-world implications. First, they highlight trait mindfulness as a naturally occurring protective factor that can buffer against depression, anxiety, and stress among young adults. This is especially relevant in Pakistan, where university students often face high levels of stress and negative emotions (Haqqani et al., 2024). Second, the results provide empirical support for the development of culturally adapted mindfulness-based interventions in universities and workplaces. Such programs could enhance baseline levels of trait mindfulness, thereby reducing vulnerability to negative emotional states and promoting psychological resilience. One limitation of the present study is that the sample primarily consisted of students and working young adults, with very few nonworking young adults represented. As a result, the findings may not fully capture the experiences of individuals who are unemployed or not engaged in formal education or work. Since nonworking young adults may face different stressors and coping mechanisms, future research should aim to include a more diverse sample to enhance the generalizability of the results. Nevertheless, the current sample remains highly relevant, as students and working young adults represent the majority of the young adult population and are particularly vulnerable to depression, anxiety, and stress in the contemporary socioeconomic context.

V. CONCLUSION

The present study demonstrates that trait mindfulness significantly predicts lower levels of depression, anxiety, and stress among Pakistani young adults. By integrating cognitive, rumination, worry, emotion regulation, and stress appraisal theories, the findings highlight how mindfulness works in different ways to protect against negative emotional states. These results may not only add value to global evidence but also provide a foundation for culturally adapted interventions and mental health policymaking in Pakistan.

Disclosure Statement

No potential conflict of interest was reported by the authors.

Funding

The author received no funding from any organizations.

VI. REFERENCES

- Brown, K. W., & Ryan, R. M. (2003). The benefits of being present: Mindfulness and its role in psychological well-being. *Journal of Personality and Social Psychology*, 84(4), 822–848. <https://doi.org/10.1037/0022-3514.84.4.822>
- Carpenter, J. K., Conroy, K., Gomez, A. F., Curren, L. C., & Hofmann, S. G. (2019). The relationship between trait mindfulness and affective symptoms: A meta-analysis of the Five Facet Mindfulness Questionnaire (FFMQ). *Clinical Psychology Review*, 74, 101785. <https://doi.org/10.1016/j.cpr.2019.101785>
- Chahar Mahali, S., Beshai, S., Feeney, J. R., & Dobson, K. S. (2020). Associations of negative cognitions, emotional regulation, and depression symptoms across four continents: International support for the cognitive model of depression. *BMC Psychiatry*, 20, 18. <https://doi.org/10.1186/s12888-019-2423-x>
- Christoff, K., Irving, Z. C., Fox, K. C., Spreng, R. N., & Andrew-Hanna, J. R. (2016). Mind wandering as spontaneous thought: A dynamic framework. *Nature Reviews Neuroscience*, 17, 718–731.
- Daly, M., & Macchia, L. (2023). Global trends in emotional distress. *Proceedings of the National Academy of Sciences*, 120(14), e2216207120. <https://doi.org/10.1073/pnas.2216207120>
- Du, J., Huang, J., An, Y., & Xu, W. (2018). The relationship between stress and negative emotion: The mediating role of rumination. *Clinical Research and Trials*, 4(1), 1–7. <https://doi.org/10.15761/CRT.1000208>
- Duraney, E. J., Schirda, B., Nicholas, J. A., & Prakash, R. S. (2022). Trait mindfulness, emotion dysregulation, and depression in individuals with multiple sclerosis. *Multiple Sclerosis and Related Disorders*, 59, 1033651.
- Fell, J., Chaieb, L., & Hoppe, C. (2023). Mind wandering in anxiety disorders: A status report. *Neuroscience and Biobehavioral Reviews*, 155, 105432. <https://doi.org/10.1016/j.neubiorev.2023.105432>
- Haqqani, S., Fatima, S., & Khan, M. (2024). *Depression, anxiety, stress, and wellbeing of young psychology students in Pakistan: A cross-sectional descriptive study*. ResearchGate. <https://www.researchgate.net/publication/380503750>
- Henry, J. D., & Crawford, J. R. (2005). The short-form version of the Depression Anxiety Stress Scales (DASS-21): Construct validity and normative data in a large nonclinical sample. *British Journal of Clinical Psychology*, 44(2), 227–239. <https://doi.org/10.1348/014466505X29657>
- Hepburn, S., Carroll, A., & McCuaig, L. (2021). The relationship between mindfulness attention awareness, perceived stress and subjective wellbeing. *International Journal of Environmental Research and Public Health*, 18(23), 12290. <https://doi.org/10.3390/ijerph182312290>
- Hu, Y., Sun, X., Yuan, Y., & Wang, H. (2025). Association between sleep-related worry and trait mindfulness among shift nurses: A cross-sectional study. *BMC Nursing*, 24, 810. <https://doi.org/10.1186/s12912-025-03357-6>
- Irfan, N., & Nayyar, M. (2025). Efficacy of mindfulness with state-trait anxiety and emotional dysregulation in young adults. *Social Science Review Archives*, 3(2), 1–12. <https://doi.org/10.70670/sra.v3i2.652>
- Kaur, G., & Kaur, P. (2024). Adapting to global work dynamics: Navigating change and cultivating sustainable employment strategies. *Journal of Social Welfare and Management*, 16(3), 123–130. <https://doi.org/10.21088/jswm.0975.0231.16324.3>
- Marchetti, I., Koster, E. H. W., Klinger, E., & Alloy, L. B. (2016). Spontaneous thought and vulnerability to mood disorders: The dark side of the wandering mind. *Clinical Psychological Science*, 4(5), 835–857. <https://doi.org/10.1177/2167702615622383>

- Michalak, R., Kiffin-Petersen, S., & Ashkanasy, N. M. (2017). Coping with interpersonal mistreatment: Not a case of "either or," but rather "it depends." In C. L. Cooper & J. C. Quick (Eds.), *The handbook of stress and health: A guide to research and practice* (pp. 365–387). Wiley-Blackwell.
<https://ndl.ethernet.edu.et/bitstream/123456789/60531/1/146.pdf>
- Michl, L. C., McLaughlin, K. A., Shepherd, K., & Nolen-Hoeksema, S. (2013). Rumination as a mechanism linking stressful life events to symptoms of depression and anxiety: Longitudinal evidence in early adolescents and adults. *Journal of Abnormal Psychology*, 122(2), 339–352. <https://doi.org/10.1037/a0031994>
- Mohammadkhani, P., Bagheri, M., Dobson, K. S., Eskandari, E., Dejman, M., Bass, J., & Adbi, F. (2018). Negative thoughts in depression: A study in Iran. *International Journal of Psychology*, 55(1), 83–89.
- Norabuena-Figueroa, R. P., Deroncele-Acosta, A., Rodríguez-Orellana, H. M., Norabuena-Figueroa, E. D., Flores-Chinte, M. C., Huamán-Romero, L. L., Tarazona-Miranda, V. H., & Mollo-Flores, M. E. (2025). Digital teaching practices and student academic stress in the era of digitalization in higher education. *Applied Sciences*, 15(3), 1487. <https://doi.org/10.3390/app15031487>
- Piao, X., Xie, J., & Managi, S. (2024). Continuous worsening of population emotional stress globally: Universality and variations. *BMC Public Health*, 24, 3576. <https://doi.org/10.1186/s12889-024-20961-4>
- Roemer, L., Williston, S. K., & Rollins, L. G. (2015). Mindfulness and emotion regulation. *Current Opinion in Psychology*, 3, 52–57. <https://doi.org/10.1016/j.copsyc.2015.02.006>
- Sakagami, M., Yokono, T., Abeywickrama, H. M., Seki, N., Miyasaka, M., & Uchiyama, M. (2024). Changes in trait mindfulness after a brief mindfulness training program of self-breathing. *Healthcare*, 12(20), 2019. <https://doi.org/10.3390/healthcare12202019>
- Sarfraz, A., & Siddiqui, S. (2023). Cultural adaptation of a mindfulness-based intervention for young adults: An application of heuristic framework. *Pakistan Journal of Social Research*, 5(2), 40–53.
- Seli, P., Beaty, R. E., Marty-Dugas, J., & Smilek, D. (2019). Depression, anxiety and stress and the distinction between intentional and unintentional mind wandering. *Psychology of Consciousness: Theory, Research, and Practice*, 6(2), 163–170.
- Sibghat-ullah, W., & Batool, I. (2020). Mindfulness and depressive symptoms: Mediating role of rumination. *Pakistan Journal of Social and Clinical Psychology*, 18(2), 27–31.
- Strohmaier, S., Jones, F. W., & Cane, J. E. (2021). Effects of length of mindfulness practice on mindfulness, depression, anxiety, and stress: A randomized controlled experiment. *Mindfulness*, 12(1), 198–214. <https://doi.org/10.1007/s12671-020-01512-5>
- Tsolakis, P. (2025). Beck's cognitive model of depression: Evolution, modern evidence and critical appraisal. *Psychology*, 16(1), 61–79. <https://doi.org/10.4236/psych.2025.161004>
- Uzun, O., Ünlü, S., & Arslan, G. (2025). Intolerance of uncertainty and rumination in social anxiety: A mediation model in emerging adults. *Behavioral Sciences*, 15(5), 687. <https://doi.org/10.3390/bs15050687>
- Vander-Haegen, M., & Etienne, A.-M. (2016). Cognitive processes across anxiety disorders related to intolerance of uncertainty: Clinical review. *Cogent Psychology*, 3(1), 1215773. <https://doi.org/10.1080/23311908.2016.1215773>
- Wang, T., Li, M., Xu, S., Li, Y., & Wang, L. (2018). The factorial structure of trait anxiety and its mediating effect between mindfulness and depression. *Frontiers in Psychiatry*, 9, 606. <https://doi.org/10.3389/fpsy.2018.00606>
- Willis, K. D., & Burnett, H. (2016). The power of stress: Perceived stress and its relationship with rumination, self-concept clarity, and resilience. *North American Journal of Psychology*, 18, 483–498.
- Wilson, E. J., Abbott, M. J., Norton, A. R., Berle, D., & Rapee, R. M. (2025). Exploring pathways from intolerance of uncertainty to worry in adults with generalized anxiety disorder. *Cognitive Behavior Therapy*, 54(1), 1–15. <https://doi.org/10.1080/16506073.2025.2478246>
- Wilson, J. M., Weiss, A., & Shook, N. J. (2019). Mindfulness, self-compassion, and savoring: Factors that explain the relationship between perceived social support and well-being. *Personality and Individual Differences*, 152, 109.
- Zhang, S., Li, Y., & Chen, T. (2025). Mindfulness and depression: Chain mediation of rumination and cognitive reappraisal. In *Proceedings of the 2024 3rd International Conference on Public Health and Data Science (ICPHDS '24)* (pp. 25–29). Association for Computing Machinery. <https://doi.org/10.1145/3718677.3718682>