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# The Effect of Mindfulness-Based Stress Reduction on Mind Wandering, Negative Affect, and Sleep Quality among Young Adults

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Mind wandering refers to the occurrence of thoughts that are not tied to the immediate environment (Murray et al., 2020). Inadequate sleep can worsen negative affect and increase mind wandering, both of which can further lead to a decline in cognitive functioning (Carciofo et al., 2014). The purpose of the study was to investigate the effectiveness of mindfulness-based stress reduction (MBSR) on mind wandering, negative affect, and sleep quality among young adults. The Mind-Wandering Questionnaire (Mrazek, M. D., et al., 2013), the Positive and Negative Affect Schedule (Watson, D., et al., 1988), and the Pittsburg Sleep Quality Index (Buysse, D. J. et al., 1989) were used to collect the data. Eight sessions of MBSR were administered to the participants. The results indicated that MBSR effectively reduces mind wandering and negative affect while improving sleep quality among young adults.

**Keywords:** Mind Wandering, Negative Affect, Sleep Quality, Mindfulness Based Stress Reduction

Young adults, particularly those in college, are a significant demographic in psychological research due to their unique challenges and developmental transitions. Increased academic pressure, societal changes, and the demand for independence are common challenges for this age, and they may aggravate mental health conditions including depression and anxiety (Eisenberg et al., 2009). Many students find college to be a difficult period. As a result, mental health issues have gained attention, and the quantity of college students needing mental health services has significantly grown (Kirsch et al., 2014).

Mind wandering refers to the occurrence of thoughts that are unrelated to the immediate environment (Murray et al., 2020). It occurs when individuals experience task-unrelated thoughts, often referred to as spontaneous or involuntary thoughts that can range from daydreaming to planning future activities (Buckner et al., 2008; Smallwood & Schooler, 2013). Studies show that mind wandering can take up a large amount of our day; estimations range from 25% to 50% of a person's waking hours (Killingsworth & Gilbert, 2010). Research indicates that a greater tendency of mind wandering is linked to negative impacts such as decreased academic performance and elevated levels of anxiety and depression (Mrazek et al., 2013). Also, mind wandering is usually associated with poor sleep quality because those who think off-task often find it difficult to focus at night, which makes it harder to fall and remain asleep (Cárdenas-Egúsquiza & Berntsen, 2022).

Negative affect is a broad concept that can be summarized as feelings of emotional distress (Watson, Clark, & Tellegen, 1988). More precisely, negative affect is a construct that is defined by the shared variance among unpleasant emotions such as sadness, guilt, anger, anxiety, irritability, shame and others.

Cognitive functioning also gets negatively impacted by experiencing negative affect. Research has indicated that negative mood states hinder the ability to make decisions, solve problems, and retrieve memories (Carciofo et al., 2014; Gniewosz, 2023). This might be because negative affect tends to be frequently accompanied by attentional biases and rumination, which can consume cognitive resources and obstruct task performance (Carciofo et al., 2014). Mind wandering is strongly correlated with high levels of negative affect (Yamaoka & Yukawa, 2020). This is because people who experience high levels of negative affect dwell on their unpleasant thoughts, which can exacerbate their emotional distress and decrease their cognitive abilities (Keng et al., 2011).

Sleep quality is defined as an individual's self-satisfaction with all aspects of the sleep experience, including attributes such as sleep efficiency, sleep latency, sleep duration, sleep disturbance, and wake after sleep onset (Nelson et al., 2022). Young adults and adolescents often experience poorer sleep quality compared to older adults, largely due to lifestyle factors, academic pressures, and increased use of technology (Wang & Bíró, 2021). College students frequently have poor sleep quality, which can have several side effects on their performance in the classroom, their ability to think clearly, and their likelihood of developing mental health conditions including depression and anxiety (Dinis & Bragança, 2018). Studies show that even in young adults, sleep issues are prevalent and linked to worse mental health (Quach et al., 2012).

Mindfulness-Based Stress Reduction (MBSR) is a structured comprehensive programme that uses mindfulness meditation and mindfulness-based practices to lower stress and promote well-being (Kabat-Zinn, 2001). MBSR typically takes place in an eight-week format and includes body awareness, yoga, and mindfulness meditation together with discussions and introspection on the basic concepts of mindfulness. Through structured activities and group discussions, the direct experience of mindfulness was the main focus of this group-based intervention.

A study by Giannandrea et al. (2019) found that MBSR programme enhanced dispositional mindfulness and decreased attentional lapses. Several studies have found complex dynamics between mind wandering, negative affect, and sleep quality among college students (Carciofo et al., 2014). Inadequate sleep can worsen negative affect and increase mind wandering, both of which can further lead to a decline in cognitive functioning (Carciofo et al., 2014). Research has also indicated that the MBSR programme contributes to a decrease in negative affect in everyday life (Kim et al., 2021; Snippe et al., 2017; Soltani et al., 2023). In context with Chennai's cultural conditions, it is imperative to assess the effectiveness of these interventions among these populations to ensure their cultural significance and relevance. By addressing the intertwined issues of mind wandering, negative affect, and sleep quality, this psychological intervention not only promotes individual well-being but also fosters environments. conducive to better academic performance, emotional resilience, and overall mental health. Ultimately, such interventions help build a foundation for young adults to thrive both personally and professionally, contributing to long-term mental health and quality of life improvements within this population. The present study aims to examine the effect of Mindfulness-Based Stress Reduction (MBSR) on mind wandering, negative affect, and sleep quality among young adults.

## Objectives

- To ascertain the relationship between mind wandering, negative affect, and sleep quality among young adults.
- To examine the effect of Mindfulness-Based Stress Reduction on mind wandering, negative affect, and sleep quality among young adults.

## Hypotheses

$H_1$: There will be a significant positive relationship among mind wandering, negative affect, and sleep quality among young adults.

$H_2$: MBSR will have a significant effect on mind wandering among young adults.

$H_3$: MBSR will have a significant effect on negative affect among young adults.

$H_4$: MBSR will have a significant effect on sleep quality among young adults.

# Method

## Sample

In Phase I, 300 college students, age ranges between 18 and 25 years, studying from different colleges in Chennai were selected using convenience sampling. In Phase II, ten participants who obtained moderate scores in the mind wandering, negative affect, and sleep quality from Phase I were selected for the programme using the purposive sampling method.

## Tools

*The Mind-Wandering Questionnaire (MWQ)*, developed by Mrazek et al. (2013), is a 5-item tool that assesses the levels of mind wandering using a 6-point Likert scale. The scores range from 5 to 30, with higher totals indicating more frequent mind-wandering experiences. This questionnaire has been used extensively to evaluate people's tendency for mind wandering (Kajimura et al., 2016; Luo et al., 2016), and the results have produced estimated rates of mind wandering that are similar to what was found in tasks that required experimentation (Mrazek et al., 2013). The Cronbach's alpha was found to be 0.73 in the present sample.

*Negative affect was measured using the Positive and Negative Affect Schedule (PANAS)* developed by Watson, D., et al. (1988). The PANAS includes 20 statements, with 10 items each for positive affect (PA) and negative affect (NA). Using a 5-point scale, respondents rate how much they have felt each specific emotion during a certain period. Items 1, 3, 5, 9, 10, 12, 14, 16, 17, and 19 measure positive affect, while items 2, 4, 6, 7, 8, 11, 13, 15, 18, and 20 measure negative affect. The measures have been verified by comparison with multiple other scales commonly utilised in the field of psychopathology (Huebner & Dew, 1995). A good reliability was indicated in the sample with the Cronbach's alpha of 0.77 for negative affect.

*The Pittsburgh Sleep Quality Index (PSQI)* is a self-reported questionnaire used to evaluate sleep quality and disturbances over a one-month period, developed by Buysse et al. (1989). It consists of 19 items that assess seven components, including subjective sleep quality, sleep latency, sleep duration, habitual sleep efficiency, sleep disturbances, use of sleeping medication, and daytime dysfunction. The responses are rated on a 4-point Likert scale, resulting in a global score that ranges from 0 to 21, where a score above 5 indicates poor sleep quality. Research has demonstrated the high levels of internal homogeneity, validity, and reliability of the PSQI (Buysse et al., 1989; Knutson et al., 2006).

## Procedure

The study was conducted in 2 phases. For phase I, the ex post facto research design was used. The participants were asked to fill

out the questionnaires. The purpose of the study was clearly explained to them, and informed consent was procured from the participants, highlighting the confidentiality of their responses. In phase 2, a quasi-experimental research design without a control group was used. It was an 8-week programme which consisted of one session each week. The programme included various mindfulness practices and relaxation techniques and the participants were given homework assignments to practice mindfulness in their daily lives. Following the programme, post-test data was collected.

## Results

Table 1. Demographic details of the sample (N = 300)

| S. No. | Variables | Category | N | Percentage (%) |
|---|---|---|---|---|
| 1 | Sex | Male | 148 | 49.3 |
| | | Female | 152 | 50.7 |
| 2 | Education | Under graduate | 133 | 44.3 |
| | | Post graduate | 167 | 55.7 |
| 3 | Residence | Day Scholar | 213 | 71 |
| | | Hosteler | 87 | 29 |
| 4 | Socio-economic status | Low | 49 | 16.3 |
| | | Middle | 217 | 72.3 |
| | | High | 34 | 11.3 |

Table 1 shows the demographic data of the participants. 49.3% were male and 50.7% were female participants. It also shows that 44.3% were undergraduate students and 55.7% were postgraduate students. The residents were classified as hostelers and day scholars with 71% and 29%, respectively. The table also shows the socio-economic status of the participants.

Table 2. Correlation between mind wandering, negative affect, and sleep quality (N = 300)

| S.No | Variable | M | SD | 1 | 2 | 3 |
|---|---|---|---|---|---|---|
| 1 | Mind Wandering | 20.83 | 4.866 | - | - | - |
| 2 | Negative Affect | 31.60 | 7.750 | 0.30** | - | - |
| 3 | Sleep Quality | 18.26 | 3.529 | 0.65** | 0.24** | - |

**. Correlation is significant at the 0.01 level (2-tailed).

Table 2 shows that there was a significant positive correlation between mind wandering and negative affect, which implies that individuals with mind wandering tendencies are prone to experiencing unpleasant feelings. The results also shows that there was a significant positive relationship between negative affect and sleep quality, which indicates that negative affect imposes sleep disturbances leading to poorer sleep quality. There was also a significant positive relationship between mind wandering and sleep quality, which indicates that individuals who experience sleep disturbances struggle with cognitive abilities and experience task-unrelated thoughts.

Table 3. Effect of Mindfulness-Based Stress Reduction in Mind Wandering, Negative Affect, and Sleep Quality (N = 10)

| Variables | Phase | M | SD | Mean Difference | t |
|---|---|---|---|---|---|
| Mind Wandering | Pre-test | 22.80 | 1.47 | 2.60 | 4.99** |
| | Post-test | 20.20 | 1.39 | | |
| Negative Affect | Pre-test | 27.30 | 3.49 | 3.90 | 4.59** |
| | Post-test | 23.40 | 3.71 | | |
| Sleep Quality | Pre-test | 17.80 | 2.78 | 1.90 | 5.01** |
| | Post-test | 15.90 | 2.13 | | |

**. Significance at 0.01 level (2-tailed).

Table 3 shows the mean, standard deviation, and the mean difference of the pre-test and post-test groups on mind wandering, negative affect, and sleep quality among young adults. Findings showed that there

were significant mean differences between the pre-test and post-test groups on mind wandering, negative affect, and sleep quality. The mean scores of pre-test and post-test in mind wandering were 22.80 and 20.20, respectively. This indicates that the post-test group exhibited lower scores on mind wandering compared to the pre-test group. The mean scores of the pre-test and post-test in negative affect were 27.30 and 23.40, respectively. The post-test group exhibited lower scores on negative affect compared to the pre-test group. The mean scores of the pre-test and post-test in sleep quality were 17.80 and 15.90, respectively. When comparing with the mean scores, the post-test group exhibited lower sleep disturbances compared to the pre-test group. This clearly shows that the level of mind wandering and negative affect decreases when MBSR is implemented. Also, sleep disturbance is decreased, which enhances the sleep quality among the participants after the intervention. This indicates that MBSR programme was effective in enhancing sleep quality and reducing mind wandering and negative affect.

## Discussion

The purpose of the study was to investigate the effectiveness of Mindfulness-Based Stress Reduction on mind wandering, negative affect, and sleep quality among young adults. The findings show a significant positive correlation between mind wandering, negative affect, and sleep quality, which aligns with previous research indicating interconnectedness among them (Carciofo et al., 2014; Li et al., 2020; Poh et al., 2016; Yamaoka & Yukawa, 2020).

The result of this research indicates that Mindfulness-Based Stress Reduction is useful in decreasing mind wandering and negative affect and enhancing sleep quality among young adults. The findings are consistent with research on the effect of Mindfulness-Based Stress Reduction on dispositional mindfulness aspects and mind wandering conducted by Giannandrea et al. (2019). Previous research has demonstrated the importance of MBSR in allowing effective regulation of unpleasant emotions in daily life (Keng et al., 2021). Wunsch et al. (2017) examined the effects of MBSR programme on female collegiate rowers, showcasing improvements in psychological well-being, sleep quality, and athletic performance through mindfulness training.

Another study found that mindfulness meditation can enhance cognitive flexibility, allowing individuals to shift their attention more effectively, which can reduce mind wandering by helping individuals remain focused on the present moment, thereby decreasing the likelihood of engaging in unproductive or negative thought patterns (Zeidan et al., 2010). Thus, the implementation of Mindfulness-Based Stress Reduction programme as an intervention helps in lowering the tendency of the individuals to get lost in thoughts, decreasing negative emotions, and improving their sleep. By learning to stay present and accept their experiences without judgement, young people can gain better control over their minds and emotions, leading to overall better mental health and well-being.

Utilising techniques like mindful breathing, body scans, and guided meditation helps focus attention, reducing distractions and rumination. These practices also lower stress and anxiety, leading to better mood and sleep quality. Using these mindfulness techniques promote present-moment awareness, enhance emotional stability, and alleviate stress. MBSR encourages relaxation and calms the mind, which in turn improves sleep patterns and overall well-being.

## Conclusion

The Mindfulness-Based Stress Reduction (MBSR) was effective in enhancing sleep quality and reducing mind wandering and

negative affect. Future studies should incorporate long-term follow-up assessments to evaluate the sustainability of MBSR effects and utilize active control groups to determine the specific impact of the intervention. By embracing these therapeutic practices, young adults can experience a significant improvement in mental clarity and quality of life.

## References


Buckner, R. L., Andrews Hanna, J. R., & Schacter, D. L. (2008). The brain's default network: anatomy, function, and relevance to disease. *Annals of the New York Academy of Sciences*, *1124*(1), 1-38.

Buysse, D. J., Reynolds III, C. F., Monk, T. H., Berman, S. R., & Kupfer, D. J. (1989). The Pittsburgh Sleep Quality Index: a new instrument for psychiatric practice and research. *Psychiatry research*, *28*(2), 193-213.

Carciofo, R., Du, F., Song, N., & Zhang, K. (2014). Mind wandering, sleep quality, affect and chronotype: an exploratory study. *PloS one*, *9*(3), e91285.

Cárdenas-Egúsquiza, A. L., & Berntsen, D. (2022). Sleep well, mind wander less: A systematic review of the relationship between sleep outcomes and spontaneous cognition. *Consciousness and cognition*, *102*, 103333.

Dinis, J., & Bragança, M. (2018). Quality of sleep and depression in college students: a systematic review. *Sleep Science*, *11*(04), 290-301.

Eisenberg, D., Golberstein, E., & Hunt, J. B. (2009). Mental health and academic success in college. *The BE journal of economic analysis & policy*, *9*(1).

Giannandrea, A., Simione, L., Pescatori, B., Ferrell, K., Olivetti Belardinelli, M., Hickman, S. D., & Raffone, A. (2019). Effects of the Mindfulness-Based Stress Reduction Program on Mind Wandering and Dispositional Mindfulness Facets. *Mindfulness*, *10*(1), 185–195.

Gniewosz, G. (2023). Adolescent loneliness and negative affect during the COVID-19 pandemic: The role of extraversion and neuroticism. *Journal of Youth and Adolescence*, *52*(9), 1965-1982.

Huebner, E. S., & Dew, T. (1995). Preliminary validation of the positive and negative affect schedule with adolescents. *Journal of Psychoeducational Assessment*, *13*(3), 286-293.

Kabat-Zinn, J. (2001). Full catastrophe living: how to cope with stress, pain and illness using mindfulness meditation. London: Piatkus Books.

Kajimura, S., Kochiyama, T., Nakai, R., Abe, N., and Nomura, M. (2016). Causal relationship between effective connectivity within the default mode network and mind-wandering regulation and facilitation. *Neuroimage 133*, 21–30.

Keng, S. L., Smoski, M. J., & Robins, C. J. (2011). Effects of mindfulness on psychological health: A review of empirical studies. *Clinical psychology review*, *31*(6), 1041-1056.

Keng, S. L., Tong, E. M., Yan, E. T. L., Ebstein, R. P., & Lai, P. S. (2021). Effects of mindfulness-based stress reduction on affect dynamics: A randomized controlled trial. *Mindfulness*, *12*, 1490-1501.

Killingsworth, M. A., & Gilbert, D. T. (2010). A wandering mind is an unhappy mind. *Science*, *330*(6006), 932-932.

Kim, A. S., Jang, M. H., & Sun, M. J. (2021). Effects of mindfulness-based stress reduction (MBSR) on stress, heart rate variability, affect, and wellbeing among people with schizophrenia. *International journal of environmental research and public health*, *18*(22), 11871.

Kirsch, D. J., Pinder-Amaker, S. L., Morse, C., Ellison, M. L., Doerfler, L. A., & Riba, M. B. (2014). Population-based initiatives in college mental health: Students helping students to overcome obstacles. *Current Psychiatry Reports*, *16*, 1-8.

Knutson, K. L., Rathouz, P. J., Yan, L. L., Liu, K., & Lauderdale, D. S. (2006). Stability of the Pittsburgh Sleep Quality Index and the Epworth Sleepiness Questionnaires over 1 year in early middle-aged adults: the CARDIA study. *Sleep*, *29*(11), 1503-1506.

Li, L., Griffiths, M. D., Mei, S., & Niu, Z. (2020). Fear of missing out and smartphone addiction mediates the relationship between positive and negative affect and sleep quality among Chinese university students. *Frontiers in Psychiatry*, *11*, 877.

Luo, Y., Zhu, R., Ju, E., & You, X. (2016). Validation of the Chinese version of the Mind-Wandering Questionnaire (MWQ) and the mediating role of self-esteem in the relationship between mind-wandering and life satisfaction for adolescents. *Personality and Individual Differences*, *92*, 118-122.

Mrazek, M. D., Franklin, M. S., Phillips, D. T., Baird, B., & Schooler, J. W. (2013). Mindfulness training improves working memory capacity and GRE performance while reducing mind wandering. *Psychological science*, *24*(5), 776-781.

Mrazek, M. D., Phillips, D. T., Franklin, M. S., Broadway, J. M., & Schooler, J. W. (2013). Young and restless: validation of the Mind-Wandering Questionnaire (MWQ) reveals disruptive impact of mind-wandering for youth. *Frontiers in psychology*, *4*, 560.

Murray, S., Krasich, K., Schooler, J. W., & Seli, P. (2020). What's in a task? Complications in the study of the task-unrelated-thought variety of mind wandering. *Perspectives on Psychological Science*, *15*(3), 572-588.

Nelson, K. L., Davis, J. E., & Corbett, C. F. (2022, January). Sleep quality: An evolutionary concept analysis. In *Nursing forum* (Vol. 57, No. 1, pp. 144-151).

Poh, J. H., Chong, P. L., & Chee, M. W. (2016). Sleepless night, restless mind: Effects of sleep deprivation on mind wandering. *Journal of experimental psychology: general*, *145*(10), 1312.

Quach, J., Hiscock, H., & Wake, M. (2012). Sleep problems and mental health in primary school new entrants: Cross sectional community based study. *Journal of paediatrics and child health*, *48*(12), 1076-1081.

Smallwood, J., & Schooler, J. W. (2013). The restless mind.

Snippe, E., Dziak, J. J., Lanza, S. T., Nyklíèek, I., & Wichers, M. (2017). The shape of change in perceived stress, negative affect, and stress sensitivity during mindfulness-based stress reduction. *Mindfulness*, *8*, 728-736.

Soltani, M., Farhadi, H., Manshaee, G., & Mehdad, A. (2023). Effects of Mindfulness-Based Stress Reduction on Positive Affect, Negative Affect, and Emotional Exhaustion of Employees With Occupational Stress. *Archives of Hygiene Sciences*, *12*(3), 155-160.

Wang, F., & Bíró, É. (2021). Determinants of sleep quality in college students: A literature review. *Explore*, *17*(2), 170-177.

Watson, D., Clark, L. A., & Tellegen, A. (1988). Development and validation of brief measures of positive and negative affect: the PANAS scales. *Journal of personality and social psychology*, *54*(6), 1063.

Wilson, K., Gullone, E., & Moss, S. (1998). The youth version of the positive and negative affect schedule: A psychometric validation. *Behavior Change, 15*, 187-193.

Wunsch, K., Kasten, N., & Fuchs, R. (2017). The effect of physical activity on sleep quality, well-being, and affect in academic stress periods. *Nature and science of sleep*, 117-126.

Yamaoka, A., & Yukawa, S. (2020). Does Mind Wandering During the Thought Incubation Period Improve Creativity and Worsen Mood? *Psychological Reports*, *123*(5), 1785–1800.

Zeidan, F., Johnson, S. K., Diamond, B. J., David, Z., & Goolkasian, P. (2010). Mindfulness meditation improves cognition: Evidence of brief mental training. *Consciousness and cognition*, *19*(2), 597-605.

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