CLINICAL STUDY

An Investigation of the Equivocal Relationship Between Daydreaming, Creativity and Well-Being

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ABSTRACT

An extensive number of studies have been conducted on the relationship between daydreaming, creativity and well-being, with mixed results, nonetheless. Particularly, research has demonstrated both positive and negative effects of daydreaming on creativity and well-being, as well as of creativity on well-being. In addition, most studies have been conducted on adults. Therefore, the purpose of this survey-based study conducted in, Delhi University in May 2023 was to further explore the relationship among the aforesaid constructs on a sample of late adolescents. To this aim, 622 Indian were asked to complete three psychometrically validated scales. The following research hypotheses were proposed: H1) Daydreaming would be a statistically significant predictor of creativity; H2) Daydreaming would be a statistically significant predictor of overall distress, stress, anxiety and depression; H3) There would be a statistically significant difference in daydreaming among severity levels of stress, anxiety and depression; H4) Creativity would be a statistically significant predictor of overall distress, stress, anxiety and depression; and H5) There would be a statistically significant difference in creativity among severity levels of stress, anxiety and depression. Results showed that daydreaming was not a statistically significant predictor of creativity, but greater daydreaming was related to higher distress, stress, anxiety and depression. Furthermore, participants with higher creativity experienced greater anxiety. Nevertheless, creativity was not a statistically significant predictor of distress, stress and depression. Finally, participants with extremely severe depression displayed lower creativity than those with moderate depression. Further research is advised before practical implications are recommended.

Keywords: Daydreaming, stress, anxiety, late adolescents

Daydreaming can be defined as thoughts and images emerging when attention shifts from external tasks to a private, internal flow of consciousness[1]. According to the extensive research of Singer on daydreaming, three styles of daydreaming can be identified: positive constructive daydreaming (i.e., playful-wishful imagery and resourceful-creative thought), guilty-dysphoric daydreaming (i.e., obsessive, distressful fantasies) and poor attentional control (lack of ability to focus on current thought or task)[2]. Based on this classification, studies have explored the benefits of daydreaming, as well as its relationship with rumination, mood and cognitive failure[3].

To elaborate, a large body of research has investigated the impact of daydreaming on creativity with seemingly contradictory findings. Particularly, it has been observed that daydreaming can boost overall creativity[4] or creativity after a demanding activity[5] and lead to spontaneous insights[6]. However, other studies portrayed daydreaming as a source of distraction,[3] with individuals rarely considering daydreaming to be pleasurable[7]. In addition, it has been suggested that mindful awareness enhances more creativity than daydreaming[8] and that daydreaming may be indirectly related to creativity through individual differences[9]. Nevertheless, it has been argued that a distinction between different types of daydreaming and creativity should be made for accurate conclusions to be drawn, as different types of daydreaming benefit different types of creativity[10,11].

In the same vein, mixed findings have been reported on the relationship between daydreaming and well-being. In further detail, it has been demonstrated that daydreaming can promote well-being through adaptive emotion regulation[12] and distancing oneself from stressful situations[13]. On the other hand, Killingsworth and Gilbert based on their research on daydreaming and positive feelings, concluded that a "*wandering mind is an unhappy mind*"[14]. However, as in the case of

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daydreaming and creativity, it has been proposed that the impact of daydreaming on mood is dependent on the content of daydreaming, with positive constructive daydreaming being related to personal growth and positive affect and guilty-dysphoric daydreaming being associated to negative affect, lower well-being and depressive symptoms[15].

Finally, the relationship between creativity and well-being is another topic that has sparked research interest. Specifically, it has been documented that creativity promotes psychological well-being[16] and can act as a protective against psychopathology[17] Also, a meta-analysis of 32 studies with a total sample of approximately 8,000 individuals concluded that creativity is positively related to well-being and that past links between creativity and psychopathology (the mad-genius hypothesis) are most likely applicable to clinical levels of psychopathology. Also, it was argued that the direction of the relationship differentiates between the type of psychopathology, the domain of creativity and the scales used to assess creativity[18].

Considering the above, the purpose of the current study was to investigate the relationship between daydreaming, creativity and well-being and provide further evidence on the direction of this association. In addition, a late adolescent sample was used, as to the best of our knowledge, previous research on the subject matter has been primarily conducted on adults. Finally, a large sample size was collected (n = 622) and well-established scales with sound psychometric properties were used, so that reliable observations are made.

In total, five research hypotheses were proposed: H1) Daydreaming would be a statistically significant predictor of creativity; H2) Daydreaming would be a statistically significant predictor of overall distress (H2a), stress (H2b), anxiety (H2c) and depression (H2d); H3) There would be a statistically significant difference in daydreaming among severity levels of stress (H3a), anxiety (H3b) and depression (H3c); H4) Creativity would be a statistically significant predictor of overall distress (H4a), stress (H4b), anxiety (H4c) and depression (H4d); and H5) There would be a statistically significant difference in creativity among severity levels of stress (H5a), anxiety (H5b) and depression (H5c).

MATERIALS AND METHODS

Permissions and Participants

Prior to the distribution of the survey, approval was sought and received by a Scientific Review Committee (SRC). Data was collected online via Google Forms and a sample of 622 Indian late adolescents (60.3% women), currently studying at Delhi University, was recruited. Participants had an age range between 18 to 21 years, with a mean age of 18.57 years (SD = 0.67). First, respondents were informed about the purpose of the study. Also, it was stated that their participation was voluntary and they could withdraw at any point in the study. Afterwards, participants were asked to provide their consent. Finally, respondents who agreed to participate in the study were presented with the questionnaire battery.

Survey Design and Testing

All respondents completed an online survey that consisted of 69 questions. The first two questions collected data about the age and gender of participants. The rest of the questions assessed respondents' daydreaming, creativity and well-being (Appendix A*).

Methodology and Data Collection

A questionnaire battery evaluating levels of daydreaming, creativity and distress was prepared. The scale examining distress comprised three subscales, stress, anxiety and depression. Sum scores were calculated for each scale and subscale, with higher scores indicating higher levels of the construct under investigation. Simple linear regression analyses were conducted for H1, H2 and H4, while one-way between-subjects ANOVAs were performed for H3 and H5.

In order to assess daydreaming in daily life, the Daydreaming Frequency Scale (DDFS) was used, which is one of the 28 scales included in the Imaginal Process Inventory[19]. The DDFS contains 12 items (α = 0.90), with responses provided on a 5-point Likert scale. Sample items are "*I daydream instead of paying attention when I attend a meeting or a show that is not very interesting*" and *"I daydream whenever I have free time"*. Although response options differ among questions, in all items higher scores indicate a higher daydreaming frequency. Participants' everyday creativity was measured using the Biographical Inventory of Creative Behaviors (BICB)[20]. The BICB includes 34 items (α = 0.88) listing common creative activities and respondents indicate whether they engage in this activity (*yes*) or not (*no*). Sample items are "*Organized an event, show, performance or activity"* and "*Invented and made a product that can be used*". Finally, the Depression, Anxiety and Stress Scale - 21 Items (DASS-21)[21] were used to examine distress. The DASS-21 consists of 21 questions (α = 0.91) evaluating depression (7 items, α = 0.83), anxiety (7 items, α = 0.76) and stress (7 items, α = 0.78) severity over the past week. Sample items are "*I felt that I had nothing to look forward to*", "*I felt I*

was close to panic" and "*I tended to over-react to situations*", respectively. Responses are provided on a 4-point Likert scale, ranging from 0 (*did not apply to me at all*) to 3 (*applied to me very much or most of the time*). Sum scores were computed for all scales and DASS-21 subscales, with higher scores indicating greater daydreaming, creativity, distress, depression, anxiety and depression. The data were analyzed using SPSS, version 25.0.

RESULTS

Results showed that greater daydreaming was related to lower well-being, but no association was identified with creativity. Also, higher creativity was related to higher anxiety and to lower depression severity. The rest of the findings were nonstatistically significant.

When H1 was analyzed, the results indicated a non-statistically significant model, $F(1,620) = 0.58$, $p = 0.45$, which accounted for less than 1% of the variance in creativity, ($R^2 = 0.001$; $R^2_{adj.} = -0.001$) (Table 1).

Table 1. Simple Linear Regression with Creativity as the Outcome Variable and Daydreaming as the Predictor Variable (N = 622)

Variable	B (95% CI)	SE_B	β	t	p
Daydreaming	–0.020 (–0.071, 0.031)	0.026	–0.030	–0.76	0.45

B = Unstandardized regression coefficient; CI = Confidence interval; SE_B = Standard error of unstandardized regression coefficient; β = Standardized regression coefficient.

Table 2. Simple Linear Regressions with Overall Distress, Stress, Anxiety and Depression as the Outcome Variables and Daydreaming as the Predictor Variable (N = 622)

Variable	B (95% CI)	SE_B	β	t	p
Overall distress	0.45 (0.36, 0.54)	0.045	0.38	10.07	<0.001
Stress	0.14 (0.11, 0.17)	0.015	0.35	9.33	<0.001
Anxiety	0.13 (0.10, 0.17)	0.016	0.32	8.26	<0.001
Depression	0.17 (0.14, 0.21)	0.018	0.35	9.33	<0.001

Proceeding with H2, results showed a statistically significant model for H2a [$F(1,620) = 101.38$, $p < 0.001$] that accounted for 13.9% of the variance in distress [$R^2 = 0.141$; $R^2_{adj.} = 0.139$], a statistically significant model for H2b [$F(1,620) = 86.97$, $p < 0.001$] that accounted for 12.2% of the variance in stress [$R^2 = 0.123$; $R^2_{adj.} = 0.122$] and a statistically significant model for H2c [$F(1,620) = 68.28$, $p < 0.001$] that accounted for 9.8% of the variance in anxiety [$R^2 = 0.099$; $R^2_{adj.} = 0.098$]. Also, a statistically significant model was identified for H2d [$F(1,620) = 87.04$, $p < 0.001$] that accounted for 12.2% of the variance in depression [$R^2 = 0.123$; $R^2_{adj.} = 0.122$]. Daydreaming was a statistically significant positive predictor of overall distress, stress, anxiety and depression, indicating that individuals who daydreamed more frequently were more likely to experience greater feelings of distress, stress, anxiety and depression (Table 2).

As to H3, the analysis suggested a statistically significant difference for H3a [$F(4,617) = 15.47$, $p < 0.001$, $\eta_p^2 = 0.091$], H3b [$F(4,617) = 12.80$, $p < 0.001$, $\eta_p^2 = 0.077$], and H3c [$F(4,617) = 19.99$, $p < 0.001$, $\eta_p^2 = 0.12$]. Bonferroni's post-hoc comparisons showed a significant difference in daydreaming between normal and mild stress ($p < 0.001$), normal and moderate stress ($p < 0.001$), normal and severe stress ($p < 0.001$), normal and extremely severe stress ($p < 0.001$) and mild and extremely severe stress ($p < 0.001$). Also, a significant difference in daydreaming between normal and mild anxiety ($p = 0.043$), normal and severe anxiety ($p = 0.003$), normal and extremely severe anxiety ($p < 0.001$), mild and extremely severe anxiety ($p = 0.018$), and moderate and extremely severe anxiety ($p < 0.001$) was identified. Finally, there was a significant difference in daydreaming between normal and mild depression ($p = 0.004$), normal and moderate depression ($p = 0.001$), normal and severe depression ($p < 0.001$), normal and extremely severe depression ($p < 0.001$), mild and extremely severe depression ($p < 0.001$), and moderate and extremely severe depression ($p < 0.001$). In all instances, individuals with higher stress, anxiety and depression severity displayed greater daydreaming (Table 3 and Figs. 1-3).

Table 3. Mean Differences in Daydreaming among Different Levels of Stress, Anxiety and Depression Severity

	Normal		Mild		Moderate		Severe		Extremely severe	
	M	SD	M	SD	M	SD	M	SD	M	SD
Stress	33.43	9.92	36.30	8.41	39.17	9.99	40.10	9.71	45.56	9.52
Anxiety	31.93	10.92	35.66	9.44	34.66	8.67	36.69	8.83	39.48	9.93
Depression	31.38	10.20	35.99	9.85	35.55	9.03	38.41	8.72	42.20	10.01

Concerning H4, the analysis indicated a nonstatistically significant model for H4a [F(1,620) = 1.65, p = 0.20] that accounted for less than 1% of the variance in distress [R^2 = 0.003; $R^2_{adj.}$ = 0.001], as well as a nonstatistically significant model for H4b [F(1,620) = 2.85, p = 0.092] that accounted for less than 1% of the variance in stress [R^2 = 0.005; $R^2_{adj.}$ = 0.003].

However, a statistically significant model was identified for H4c [F(1,620) = 6.92, p = 0.009] that accounted for 0.9% of the variance in anxiety [R^2 = 0.011; $R^2_{adj.}$ = 0.009]. Creativity was a statistically significant positive predictor of anxiety, suggesting that respondents with greater creativity were more likely to experience higher anxiety.

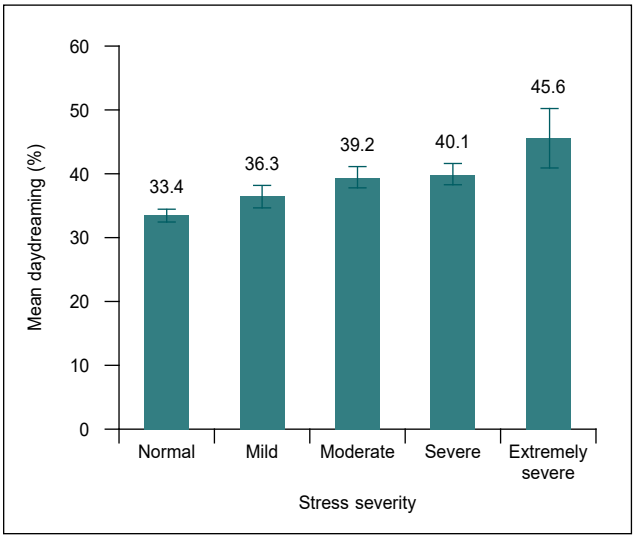


Figure 1. Mean differences in daydreaming among different levels of stress severity.

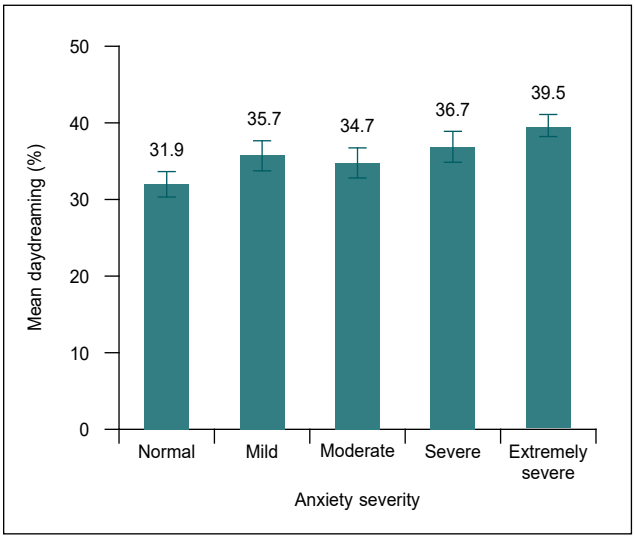


Figure 2. Mean differences in daydreaming among different levels of anxiety severity.

Finally, a nonstatistically significant model was identified for H4d [F(1,620) = 0.31, p = 0.58] that accounted for less than 1% of the variance in depression [R^2 = 0.000; $R^2_{adj.}$ = –0.001] (Table 4).

Regarding H5, the analysis suggested a nonstatistically significant difference for H5a [F(4,617) = 1.03, p = 0.39, η_p^2 = 0.007]. However, a statistically significant difference was identified for H5b [F(4,617) = 3.31, p = 0.011, η_p^2 = 0.021] and H5c [F(4,617) = 3.12, p = 0.015, η_p^2 = 0.020].

Bonferroni's post-hoc comparisons showed a significant difference in creativity between normal and severe anxiety (p = 0.018) and between normal and extremely severe anxiety (p = 0.025).

Also, a significant difference in creativity between moderate and extremely severe depression was identified

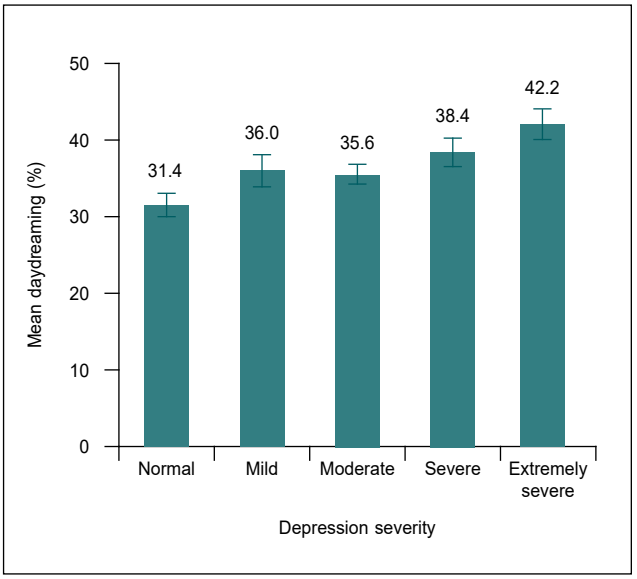


Figure 3. Mean differences in daydreaming among different levels of depression severity.

Table 4. Simple Linear Regressions with Overall Distress, Stress, Anxiety and Depression as the Outcome Variables and Creativity as the Predictor Variable (N = 622)

Variable	B (95% CI)	SE_B	β	t	p
Overall distress	0.095 (–0.050, 0.24)	0.074	0.052	1.29	0.20
Stress	0.043 (–0.007, 0.092)	0.025	0.068	1.69	0.092
Anxiety	0.069 (0.017, 0.12)	0.026	0.11	2.63	0.009
Depression	–0.017 (–0.076, 0.042)	0.030	–0.022	–0.56	0.58

Table 5. Mean Differences in Creativity among Different Levels of Stress, Anxiety and Depression Severity

	Normal		Mild		Moderate		Severe		Extremely severe	
	M	SD	M	SD	M	SD	M	SD	M	SD
Stress	11.46	6.59	12.87	6.47	11.58	6.53	11.98	6.38	12.38	6.63
Anxiety	10.25	5.61	11.41	5.92	11.91	7.00	13.00	7.37	12.46	6.60
Depression	11.27	5.78	11.95	6.48	13.01	7.26	11.38	6.35	10.41	5.96

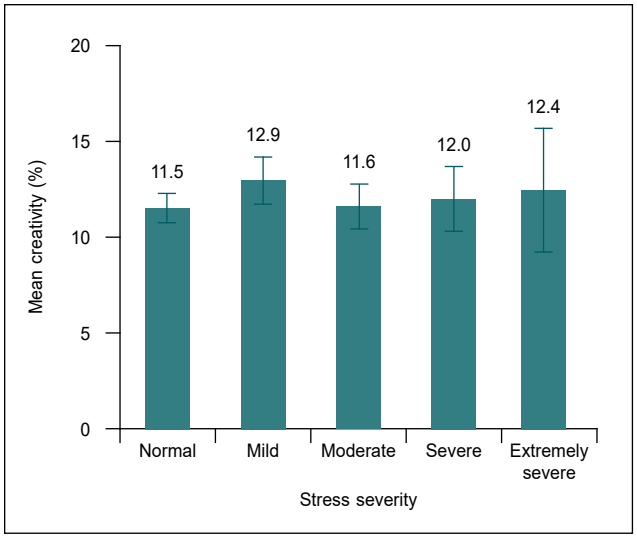


Figure 4. Mean differences in creativity among different levels of stress severity.

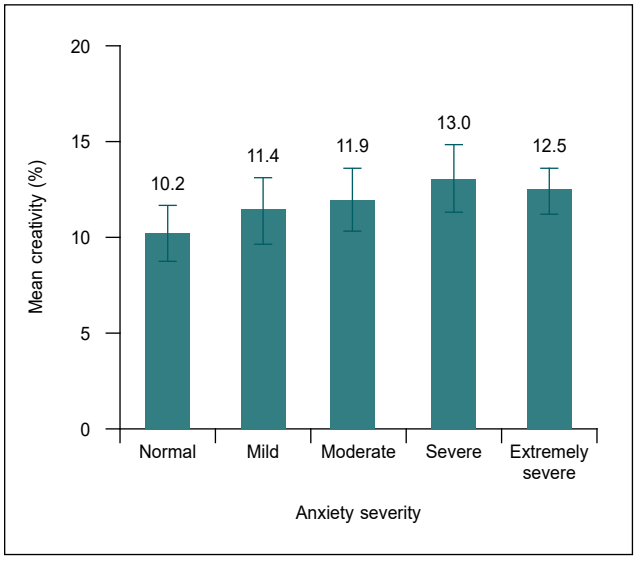


Figure 5. Mean differences in creativity among different levels of anxiety severity.

(p = 0.017). Individuals with higher anxiety severity reported greater creativity, whereas individuals with higher depression severity displayed lower creativity (Table 5 and Figs. 4-6).

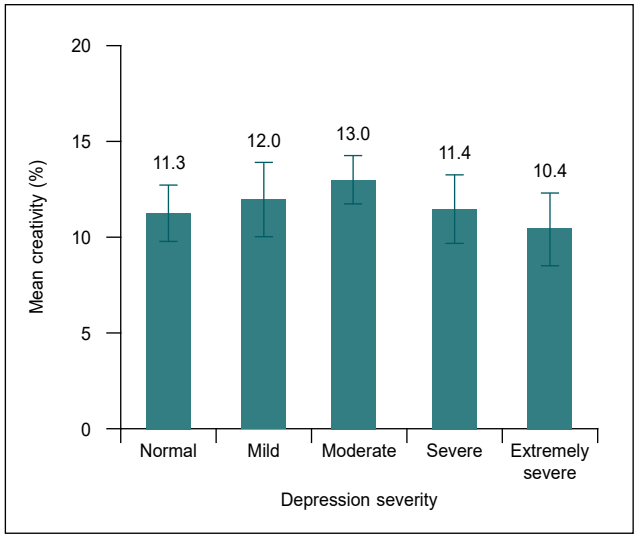


Figure 6. Mean differences in creativity among different levels of depression severity.

DISCUSSION

Results showed that daydreaming was not a statistically significant predictor of creativity (H1). However, it was suggested that late adolescents who daydreamed more frequently were more likely to experience greater feelings of distress (H2a), stress (H2b), anxiety (H2c) and depression (H2d). Also, individuals with more severe stress (H3a), anxiety (H3b) and depression (H3c) engaged more frequently in daydreaming. Furthermore, late adolescents with higher creativity experienced greater anxiety (H4c). Nevertheless, creativity was not identified as a statistically significant predictor of distress (H4a), stress (H4b) and depression (H4d).

In addition, respondents with more severe anxiety reported higher levels of creativity (H5b), while a non-statistically significant difference among levels of stress severity was indicated (H5a).

Finally, it was interesting to observe that although depression did not predict creativity, participants with extremely severe depression displayed lower creativity than those with moderate depression (H5c).

The current study adopted a series of methodological steps to enhance the reliability of conclusions and contribute to the current body of knowledge. First, a large sample size was collected to increase the representativeness of observations. Also, scales with sound psychometric properties were used to accurately assess the constructs of interest. In addition, the analyses conducted allowed us to determine the predictive power of one variable on another, instead of solely evaluating the relationship among variables. Finally, the classification of distress subscales into severity levels revealed differences that would otherwise be shadowed if only sum scores were used.

However, certain limitations were also present. First, the sample comprised only Indian participants and the majority of them were female (60.3%). Hence, the lack of ethnicity and gender diversity might have influenced the results. Also, although well-established scales were used, these scales did not differentiate between types of daydreaming and creativity; a limitation that could have had an impact on the direction of the relationship among daydreaming, creativity and well-being. In addition, the analyses employed in this study do not allow causal inferences to be made. Finally, respondents may have been reluctant to provide honest responses in the items assessing distress and therefore, the possibility of social desirability bias cannot be excluded.

It is important that future research adopts advanced statistical techniques like Structural Equation Modeling (SEM) or experimental designs that would allow to determine if daydreaming and creativity lead to lower well-being or if individuals use daydreaming and creativity as a means to improve an already impaired well-being. In addition, scales that distinguish between types of daydreaming and creativity could be used and/or developed to identify potential differences. Moreover, qualitative research could provide in-depth insights on the experience of individuals and their perception of daydreaming and creativity benefits and drawbacks.

CONCLUSION

The objective of the current research was to explore the relationship among daydreaming, creativity, and well-being in late adolescents and a large sample of approximately 600 Indian individuals was recruited. Results showed that greater daydreaming was related to lower well-being, but no association was identified with creativity. Also, higher creativity was related to higher anxiety and to lower depression severity. Although these findings indicate a negative impact of daydreaming and creativity on well-being, further research is required before practical implications are proposed. Therefore, it is aspired that this study will act as a source inspiration for scholars to advance knowledge in the subject matter and amend past and present methodological pitfalls.

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*APPENDIX A: Daydreaming, Creativity and Mental Well-Being
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