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Loneliness, Self-Esteem, and Maladaptive Daydreaming in University Students: The Mediating Role of Perceived Stress

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Abstract

Maladaptive daydreaming (MD) is excessive, immersive daydreaming that causes significant distress. MD can disrupt well-being and academic functioning in university students, giving reason for the investigation of its risk factors among this population. Since loneliness, low self-esteem, and perceived stress are common among university students, the present study examined whether loneliness and self-esteem predicted MD individually, and whether perceived stress mediated these relationships. Using a cross-sectional study design with a convenience sample of 119 university students (71.40% female) aged 18–35, mediated regression analyses revealed that higher loneliness and lower self-esteem significantly predicted higher MD. Perceived stress partially mediated the relationship between loneliness and MD, and fully mediated that between self-esteem and MD. The findings indicate that university students engage in MD to compensate for unmet belongingness needs directly, and to cope with stress. Thus, interventions that target stress may reduce MD engagement and mitigate its consequences.

Keywords: Maladaptive daydreaming, loneliness, self-esteem, perceived stress, university students

Introduction

Maladaptive daydreaming (MD) is excessive, immersive daydreaming that interferes with social, occupational, and academic functioning (Somer, 2002). It is characterised by vivid, story-like fantasies featuring fictional characters or idealised personal experiences, often triggered by movement and music, and can cause severe distress (Bigelsen et al., 2016; Somer, 2002). University students are particularly at risk, as they exhibit higher rates of MD and its associated risk factors and experience impairment in their academic performance (Bigelsen et al., 2016). Therefore, understanding the predictors of MD is crucial to develop interventions to mitigate its consequences among this population.

Loneliness, which stems from the unmet need for belonging and social relationships, often motivates MD (Mellor et al., 2008; Somer, 2002). Research shows that it predicts MD in individuals with attention-deficit/hyperactivity disorder (ADHD) and autism spectrum disorder traits (Theodor-Katz et al., 2022; West et al., 2023), but research on non-clinical populations is yet to be conducted. Individuals also turn to MD due to low self-esteem, which is the negative view of the self that results from the unmet need for esteem (Pietkiewicz et al., 2018; Rosenberg, 1965; Somer, 2002). Studies show that those with comorbid

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ADHD and MD have significantly lower self-esteem than those with ADHD alone (Theodor-Katz et al., 2022). Perceived stress also plays a role in MD, which occurs when individuals feel that they lack the resources to handle difficult situations (Li et al., 2014). For example, MD was an immediate response to the stress associated with the COVID-19 pandemic (Musetti et al., 2023). Research suggests that stress exacerbates the relationship between MD and risk factors like depression (Metin et al., 2023), but its association with factors like loneliness and self-esteem are yet to be studied in non-pathological populations.

In light of the aforementioned evidence, this study aims to investigate how loneliness and self-esteem contribute to MD in university students through the mediation of perceived stress. We hypothesised that higher loneliness scores would predict higher MD scores (H1), and that perceived stress would mediate the loneliness-MD relationship (H2). We also hypothesised that lower self-esteem scores would predict higher MD scores (H3), and that perceived stress would mediate the self-esteem-MD relationship as well (H4). See Figure 1 for the conceptual model examined in this study.

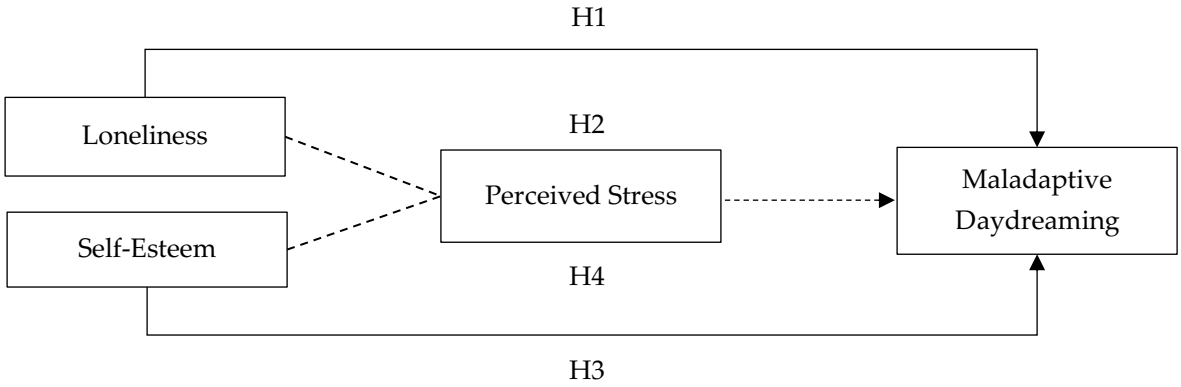

Figure 1: Conceptual framework and the study hypotheses

Materials and methods

Participants

A convenience sample of 119 undergraduate and postgraduate students (71.4% female, 25.2% male, 3.4% non-binary) aged 18–35 years (M = 21.70, SD = 2.41) were recruited from a Malaysian university. The majority of participants were Malaysian (53.8%) and Sri Lankan (21.8%). Participants were considered eligible if they were between 18 and 35 years of age, and students who were not studying at the university of recruitment were excluded.

Materials

MD was measured using the 16-item Maladaptive Daydreaming Scale (MDS-16; Somer et al., 2017). Originally scored from 0% (*never*) to 100% (*extremely frequent*), responses were converted to a scale of 0 to 10 in the present study for ease. Item scores were averaged, with higher scores indicating higher MD. The scale demonstrated excellent internal consistency in the present study with a Cronbach's α of .94.

Loneliness was measured using the 8-item UCLA Loneliness Scale (ULS-8; Hays & DiMatteo, 1987). This was rated on a Likert scale of 1 (*never*) to 4 (*often*), and a total sum was found after reverse scoring two

items. Possible scores ranged from 8 to 32, with higher scores indicating more loneliness. In this study, the scale demonstrated good internal consistency with a Cronbach's α of .86.

Self-esteem was assessed using the Rosenberg Self-Esteem Scale (RSE; Rosenberg, 1965). Responses were rated on a Likert scale from 1 (*strongly disagree*) to 4 (*strongly agree*), with five out of 10 items being reverse scored. An overall score ranging from 10 to 40 was calculated by summing the item scores, with higher scores indicating higher self-esteem. In this study, the RSE demonstrated high internal consistency with a Cronbach's α of .89.

Perceived stress was measured using the Perceived Stress Scale (PSS-10; Cohen et al., 1983), a 10-item measure rated on a 5-point Likert scale ranging from 0 (*never*) to 4 (*very often*). Four items were reverse scored, and a total score was obtained by summing the item scores. The range of possible scores lay between 0 and 40, with higher scores indicating higher perceived stress. A Cronbach's α of .85 was obtained for the PSS-10 in the present study.

Procedure

Participants were recruited via social media using a 10-minute online survey. Participation was voluntary, responses were kept anonymous and confidential, and withdrawal was allowed at any point during the completion of the questionnaire. Twenty Grab vouchers worth RM20 were offered to the participants on a lucky draw basis as an incentive to take part. Ethics approval was obtained from the Monash University Human Research Ethics Committee.

Data analysis

Data was analysed using SPSS PROCESS Macro v4.2 with an α level of .05. Pearson's correlation coefficients were calculated, and the hypotheses were tested using mediated multiple regressions. Due to the sample's wide age range and the overrepresentation of females, age and gender were added to the models as covariates. To avoid singularity issues in the bootstrapping process, the non-binary individuals ($n = 4$) were excluded from the models. H1 and H3 were addressed by examining the total effect of the predictor on the outcome, which is the sum of the direct and indirect effects. H2 and H4 were addressed by observing the direct and indirect effects of the respective models; the direct effect showing the effect of the predictor on the outcome while controlling for the mediator, and the indirect effect showing the effect of the predictor on the outcome through the mediator. The variance attributed to the mediation was calculated manually, and the significance level was assessed using the bias-corrected bootstrap 95% confidence intervals (CI), created with 5000 bootstrap samples. The mediation was considered significant if the bias-corrected bootstrap 95% CI excluded zero.

Results

Pearson's correlation coefficients for the variables of interest and covariates are summarised in Table 1.

Table 1: Pearson's correlation coefficients between the main variables of interest and the covariates

Variable	1	2	3	4	5	6	7	8
1. Loneliness	-	-.66**	.55**	.50**	-.08	.15	-.14	-.03
2. Self-esteem	-	-	-.67**	-.37**	.05	-.18	.18*	-.01
3. Perceived stress	-	-	-	.49**	-.08	.18	-.20*	.04
4. MD	-	-	-	-	-.003	.14	-.09	-.14

5.	Age	-	-	-	-	-	-.08	.12	-.09
6.	GF	-	-	-	-	-	-	-.92**	-.30**
7.	GM	-	-	-	-	-	-	-	-.11
8.	GNB	-	-	-	-	-	-	-	-

Note. MD = maladaptive daydreaming, GF = female gender, GM = male gender, GNB = non-binary gender. *p < .05. **p < .001.

Loneliness, perceived stress, and MD

Addressing H1, one unit increase in loneliness significantly predicted a 0.21 increase in MD scores. This total effect accounted for 25% of the variation in MD scores (R^2 = .25, F (3, 115) = 13.06, p < .001). Addressing H2, the direct effect of loneliness on MD scores was statistically significant, with the model accounting for 32% of the variance in MD scores (R^2 = .32, F (4, 114) = 13.36, p < .001). The indirect effect of loneliness on MD scores was also statistically significant, and explained 34% of the total effect of self-esteem on MD scores. Since both the direct and indirect effects were significant, perceived stress partially mediated the relationship between loneliness and MD.

Self-Esteem, perceived stress, and MD

Addressing H3, one unit increase in self-esteem significantly predicted a 0.14 decrease in MD scores. This total effect accounted for 14% of the variation in MD scores (R^2 = .14, F (3, 115) = 6.38, p < .001). Addressing H4, the direct effect of self-esteem on MD was not statistically significant (p = .53), and the model accounted for 25% of the variation in MD scores (R^2 = .25, F (4, 114) = 9.44, p < .001). The indirect effect of self-esteem on MD scores was statistically significant, and explained 80% of the total effect of self-esteem on MD scores. Since only the indirect effect was significant, perceived stress fully mediated the relationship between self-esteem and MD.

Refer to Table 2 for the standardised and unstandardized regression coefficients, 95% CI, t-values, and p-values for the total, direct, and indirect effects in Models 1 and 2.

Table 2: Regression coefficients for the predictor variables in each step of the mediation analyses

Regression pathway		***B* [95% CI]**	**β**	***t***
Model 1				
	Loneliness → Perceived stress	0.62 [0.44, 0.80]**	0.54	6.88
	Perceived stress → MD	0.11 [0.04, 0.18]*	0.31	3.30
	Total effect	0.21 [0.14, 0.28]**	0.49	6.02
	Direct effect	0.14 [0.06, 0.21]**	0.33	3.50
	Indirect effect	0.07 [0.03, 0.12]*	0.17	-
Model 2				
	Self-esteem → Perceived stress	-0.71 [-0.87, -0.56]**	-0.65	-9.32
	Perceived stress → MD	0.16 [0.08. 0.24]**	0.44	4.01
	Total effect	-0.14 [-0.21, -0.07]**	-0.36	-4.07
	Direct effect	-0.03 [-0.11, 0.06]	-0.07	-0.64
	Indirect effect	-0.11 [-0.17, -0.06]*	-0.29	-

Note. *B* = unstandardised regression coefficient, β = standardised regression coefficient, CI = confidence interval, MD = maladaptive daydreaming. *p < .05. **p < .001.

Discussion

This study investigated how loneliness and self-esteem contribute to MD through the mediation of perceived stress. It was hypothesised that higher loneliness would predict higher MD (H1), and that perceived stress would mediate this relationship (H2). The results supported H1, but only partially supported H2. It was also hypothesised that lower self-esteem would predict higher MD (H3), and that perceived stress would mediate this relationship as well (H4). The results supported both hypotheses.

These findings align with the reports that identify loneliness as a motivator for excessive daydreaming (Pietkiewicz et al., 2018; Somer et al., 2016). Since social daydreams elicit positive emotions and feelings on connection, loneliness may lead individuals to daydream excessively to fulfil their relationship needs (Poerio et al., 2015). Perceived stress partially mediating this relationship suggests that loneliness predicts MD directly, as well as indirectly by first increasing stress. Also consistent with the existing literature (e.g., Theodor-Katz et al., 2022), lower self-esteem predicted higher MD in this study. MD provides individuals with a chance to live their ideal lives, so those with lower self-esteem may gravitate towards excessive daydreaming to achieve their personal desires (Somer et al., 2016). However, the mediation of perceived stress implies that low self-esteem did not directly influence MD, but predicted excess daydreaming when stress levels were high.

Our results align with the findings of Metin and colleagues (2023), which suggested that the individuals who possessed the risk factors of MD were more prone to excessive daydreaming when their appraisal of stress was high. In the present study, the heightened perception of stress during university life acted as a facilitator of MD behaviour, activating risk factors that may otherwise be uncorrelated. This study contributes to the theoretical understanding of the motivation behind MD in university students – to compensate for loneliness, and to cope with stress. The results also have practical implications for the development of holistic interventions for MD that consider its immediate predictors as well as the surrounding circumstances. Awareness of MD among university counsellors and mental health practitioners will ensure that suitable action is taken when students seek help.

This study has a few limitations. The cross-sectional nature of the data limits inferences of causality, so collecting longitudinal data would enrich our results. Also, the use of the self-report MDS-16 as the sole indicator of MD prevented the identification of pathological levels of MD. Future research should use the MDS-16 in conjunction with the Structured Clinical Interview for Maladaptive Daydreaming (Somer et al., 2017) to enable differentiation between MD groups and allow comparisons and specific inferences to be drawn.

Conclusion

This study brings to light the complex interplay between MD severity and its risk factors amidst elevated stress levels in university students. Loneliness and low self-esteem significantly increase the vulnerability of this population to MD, and the mediation of perceived stress reveals that it facilitates the association between MD and its predictors. The findings reveal the potential mechanisms by which these risk factors influence MD – either directly by fulfilling unmet belongingness needs, or indirectly by increasing the perception of stress. The results suggest that interventions that target stress in university students will help to mitigate the impact of loneliness and low self-esteem on MD, ultimately reducing MD engagement in this population.

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