

The Effect of Loneliness, Social Isolation, and Boredom on Creativity During COVID-19

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Abstract

The COVID-19 pandemic has caused monumental changes in the lifestyle of people all around the world. The pandemic has brought to the fore feelings of loneliness, social isolation, and boredom. At the same time, there is also an increase in creative activity that has taken place during this period. Given the importance of creative endeavours to cope with the pandemic, it is fruitful to explore the factors that affect it and consequently, predict it. The present study hypothesised that loneliness, social isolation, and boredom proneness would predict the frequency of self-reported creative behaviour. A sample of 128 young adults was assessed. Participants were administered the Short General Health Questionnaire, Short Form Boredom Proneness Scale, Lubben Social Network Scale, Short Form UCLA Loneliness Scale (ULS-8), and a modified version of the Biographical Inventory of Creative Behaviours. Findings indicate that creative behaviour is significantly and negatively correlated with boredom proneness and loneliness. Regression analysis indicates that a model of loneliness, social isolation, and boredom proneness significantly predicts creative behaviour, controlling for age, sex, and current mental health. Specifically, boredom proneness demonstrates a statistically significant effect. These findings are discussed along with their possible explanations and theoretical implications.

Keywords: creativity, boredom proneness, social isolation, loneliness, COVID-19

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The COVID-19 pandemic has caused monumental changes in the lifestyle of people all around the world. The pandemic has brought to the fore feelings of loneliness, social isolation, and boredom. At the same time, there is also an increase in creative activity that has taken place during this period. Given the importance of creative endeavours to cope with the pandemic, it is fruitful to explore the factors that affect it and consequently, predict it. The present study hypothesised that loneliness, social isolation, and boredom proneness would predict the frequency of self-reported creative behaviour. A sample of 128 young adults was assessed. Participants were administered the Short General Health Questionnaire, Short Form Boredom Proneness Scale, Lubben Social Network Scale, Short Form UCLA Loneliness Scale (ULS-8), and a modified version of the Biographical Inventory of Creative Behaviours. Findings indicate that creative behaviour is significantly and negatively correlated with boredom proneness and loneliness. Regression analysis indicates that a model of loneliness, social isolation, and boredom proneness significantly predicts creative behaviour, controlling for age, sex, and current mental health. Specifically, boredom proneness demonstrates a statistically significant effect. These findings are discussed along with their possible explanations and theoretical implications.

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Introduction

Creativity is theoretically conceptualised in different ways by researchers. Creative ideas are characterised as being innovative, original, and task-appropriate (Kaufman & Sternberg, 2007). Kaufman and Beghetto (2009) proposed the Four C model of creativity consisting of little-c (“everyday creativity”), Big-C (“eminent creativity”), mini-C (“creativity inherent to the learning process”), and pro-c (“the developmental and effortful progression beyond little-c that represents professional-level expertise in any creative area”) (p. 1). Kaufman et al. (2012) also proposed five domains of creativity – “Self/Everyday, Scholarly, Performance (encompassing writing and music), Mechanical/ Scientific, and Artistic” (p. 298). In a broader sense, Besse (2012) defined

creativity as “the abilities such as being imaginative, innovative, original, and engaging in novel problem-solving behavior” (p. 4). For the purpose of this study, creativity is conceptualised as any behaviour or activity that inherently exhibits these qualities.

The global pandemic between the years 2020 and 2022 caused by COVID-19 led to large-scale changes in the lives of people worldwide. People all over the world were in forced quarantine (lockdown), working and attending college from home. An interesting phenomenon observed during the lockdown was the relative increase in creative endeavours (Karwowski et al., 2021; Mercier et al., 2021). In order to understand this better, it is necessary to explore other characteristics manifested during the lockdown. Research indicated that boredom was prominently experienced by people as a result of the COVID-19 lockdown (Droit-Volet et al., 2020; PTI, 2020). Studies indicated increased levels of social isolation among specific vulnerable groups such as older adults (Berg-Weger & Morley, 2020; Cornwell & Waite, 2009), HIV patients (Marziali et al., 2020), and working women (Gao & Sai, 2020) as well. COVID-19-induced loneliness was also reported to be experienced by populations across all ages (Berg-Weger & Morley, 2020; Li & Wang, 2020). This may be indicative of a potential relationship between the aforementioned factors and creativity.

Boredom and Creativity

There is a plethora of literature exploring creativity in the context of boredom. Mann & Cadman (2014) theorised that “boredom stems from a situation where none of the possible things that a person can realistically do appeal to the person in question”. For many years, boredom was considered to only have negative implications on creativity, intelligence, and personality (Schubert, 1977; Schubert, 1978). However, recent research delves into alternative perspectives. Creativity research predominantly conceptualised boredom as a state (emotion) or as a personality trait (Vodanovich, 2003). Some utilised the state approach, which employed boredom-inducing tasks, followed by creativity tasks. These indicated that incidental boredom affects the quality of ideas and level of creativity depending on the kind of boredom-inducing activity and the kind of divergent thinking task provided (Mann & Cadman, 2014; Park et al., 2019). In a convergent thinking task, boredom did not have any significant effect on creativity (Park et al., 2019). Liang et al. (2020) found no significant relationship between engagement in creative behaviour and state boredom of individuals during the COVID-19 pandemic. An individual’s trait creativity was, however, found to moderate the relationship between engagement in creative behaviour and boredom. In other words, engagement in creative behaviour was found to negatively predict an individual’s state boredom when they have high creativity.

The trait approach involves assessing an individual’s propensity to be bored, i.e., boredom proneness. Boredom proneness was negatively associated with task effectiveness at work (Drory,

1982). Hunter et al. (2016) argued that although there was a negative correlation between boredom proneness and creativity, boredom proneness as a personality trait was not a predictor of creativity, specifically creative personality. Research exploring creative behaviour does so in the context of state boredom. On the other hand, research on boredom proneness examines it in the context of creative personality. This calls for an exploration into the relationship between trait boredom and creative behaviour.

Social Isolation and Creativity

For the purpose of this study, social isolation was defined as “the objectively quantified shortfall in an individual’s social relationships often measured in terms of social network size, diversity or frequency of contacts” (Malcolm et al., 2019, p. 1). The inability to leave one’s house and engage in physical social interaction with peers and family members could result in feelings of social isolation among individuals (Usher et al., 2020). Social interactions and social support are found to impact creativity. Fischer and Giacardi (2007) highlighted the importance of social and material surroundings in creative activities. Parenting styles dominant in acceptance were associated with higher levels of creativity in children (Lim & Smith, 2008). Workplace creativity was also fostered by quality social interactions between employees and their work group (Fischer & Giacardi, 2007). Barnes (2018) found that employees working remotely were perceived to have less creativity in comparison with co-working employees. Perceived social support was found to have a statistically significant positive correlation with creativity in young adults (Mahon et al., 1999). Perceived social support was also found to be a positive predictor of creativity in university undergraduates (Yousaf & Ghayas, 2015). This could be extended to the intercultural dimension as well, where engaging in intercultural friendships and relationships positively predicted employee creativity in convergent and divergent thinking tasks (Lu et al., 2017). Thus, it can be inferred that an objective lack of social support or social isolation could affect everyday creativity in young adults.

Loneliness and Creativity

Negative implications of loneliness on physical and mental health were observed among older adults (Berg-Weger & Morley, 2020; Tomaka et al., 2006), remote working employees (Barnes, 2018), and young adults (Matthews et al., 2016). Loneliness was defined as “a perceived deficit between actual and desired quality or quantity of relationships” (Malcolm et al., 2019, p. 1). Recent research found significant negative correlations between loneliness and creativity (Mahon et al., 1999; Besse, 2012). However, studies indicated a positive correlation between an individual’s perception of loneliness and creativity. Thus, individuals who viewed their experience of loneliness positively were associated with being more creative (Besse, 2012). The role of creativity as a mediator between accepting parenting styles and loneliness was also

established (Lim & Smith, 2008). These findings corroborate the aforementioned literature indicating that social support is essential in facilitating creativity.

Although studies have explored the effects of loneliness, social isolation, and boredom proneness on creativity individually, their compounded effect is scarcely investigated. Additionally, most of these studies are conducted in Western or other South Asian countries and it remains to be seen whether or not the results obtained would be similar in an Indian context. Creativity is conceptualized and assessed in different manners across studies, be it through creative performance on a task or creative behaviour demonstrated. While most studies focus on performance or task-based creativity, everyday creative behaviours are relatively unexplored, especially in the aforementioned contexts of loneliness, social isolation, and boredom proneness.

The lockdown-induced change to a predominantly virtual lifestyle could be particularly hard for young adults as it also coincides with a paradigm shift from adolescence into adulthood (Arnett, 2001). Studies examining the effect of loneliness, social isolation, and boredom on young adults are few and far between and they primarily discuss the broader implications on mental health or the specific effects on aspects such as depression and social media usage (Matthews et al., 2016; Primack et al., 2017). The experience of loneliness, social isolation, and boredom proneness during the lockdown on young adults is yet to be thoroughly explored.

Some studies have explored creativity in the context of the COVID-19 crisis. They identified the pandemic to be a catalyst in driving creative action (Beghetto, 2021) as well as explored the role of creativity in coping with the pandemic (Karwowski et al., 2021; Tang et al., 2021). Creativity also serves as an avenue for meaning-making during the pandemic (Kapoor & Kaufman, 2020). While there is an increase in creativity during the lockdown, studies exploring it in the context of loneliness, social isolation, and boredom proneness are limited. Given their theoretical linkages with creativity, investigating these factors as predictors of young-adult creativity during the lockdown is a fruitful endeavour. Thus, the present study aims to bridge these gaps in the existing literature and explore the compounded effect of loneliness, social isolation, and boredom proneness on the frequency of young-adult creative behaviour in urban India during the COVID-19 lockdown.

The objectives of this study are:

- To assess the levels of loneliness, social isolation, and boredom proneness concurrently in young adults in urban India during the COVID-19 lockdown
- To assess the extent of creative behaviour in young adults in urban India during the COVID-19 lockdown
- To study the individual relationships between all study variables (loneliness, social isolation, boredom proneness, age, sex, social desirability)

- To determine whether loneliness, social isolation, and boredom proneness are predictors of creativity during COVID-19

Consequently, this study aims to answer the question – What is the effect of loneliness, social isolation, and boredom proneness on creativity in young adults during the COVID-19 lockdown? It hypothesizes that the frequency of self-reported creative behaviour in young adults will be predicted by loneliness, social isolation, and boredom proneness.

Materials and Methods

Materials

Participants were required to respond to the following instruments –

Short General Health Questionnaire (Goldberg & Blackwell, 1970)

It is a 12-item questionnaire used to assess the general mental health of a non-clinical population. The questionnaire consists of a 4-point Likert Scale ranging from 0 to 3. For positive statements, 3 = more so than usual or better than usual, 2 = same as usual, 1 = less so than usual or less than usual, and 0 = much less than usual. For negative statements, 0 = not at all, 1 = no more than usual, 2 = rather more than usual, and 3 = much more than usual. The scoring for this instrument is such that each item is referred to a symptom and dichotomised into two values: 0 = “absence of the symptom” and 1 = “presence of the symptom. The maximum score is 12 while the minimum score is 0 (Kim et al., 2013; Sánchez-López & Dresch, 2008). Higher scores indicate poor mental health and consequently, greater psychological distress. This scale is chosen to assess the general mental health and well-being of the sample, given the implications of COVID-19 and the potential toll it might have taken on their mental health.

Boredom Proneness Scale – Short Form (Struk et al., 2017)

This is an 8-item questionnaire to measure a participant’s boredom proneness, or propensity to be bored. It consists of a 7-point Likert Scale ranging from 0 to 7 where 0 = strongly disagree, 1 = somewhat disagree, 2 = disagree, 3 = neutral, 4 = agree, 5 = somewhat agree, and 6 = strongly agree. Participants have to rate each of the given statements on this scale. No items are reverse-scored. Higher scores on the scale indicate higher boredom proneness. Struk et al. (2017) established construct validity by correlating the measure with other appropriate measures of aggression, anxiety, stress, depression, anxiety, ADHD symptoms, “spontaneous mind-wandering, and lapses of attention” (p. 10).

Short-Form UCLA Loneliness Scale (ULS-8) (Hays & DiMatteo, 1987)

This is an 8-item questionnaire measuring the levels of loneliness in a participant. It consists of a 4-point Likert Scale ranging from 1 to 4 where 1 = never, 2 = rarely, 3 = sometimes, and 4 = often. Participants rate each of the given statements on this scale, with some items being reverse-scored. Higher scores on the scale indicate higher loneliness. This scale is chosen to provide measures of participant loneliness or their subjective evaluation of their social network and relationships. Xu et al. (2018) found the Chinese form of ULS-8 to have good construct validity, high internal consistency, and convergent validity among Chinese adolescents.

Biographical Inventory of Creative Behaviours (BICB) (Batey, 2007)

This is a 34-item questionnaire designed to measure creative behaviour in participants. It is used in a modified form and the existing dichotomous response format is changed into a 4-point Likert Scale from 0 to 4 assessing the frequency of creative behaviour during the months of lockdown (will vary depending on when data collection is done; for now, it is assumed to be 6 months). 0 = not at all, 1 = rarely, 2 = sometimes, 3 = frequently, 4 = very frequently. None of the items are reverse-scored. Higher scores on the scale indicate higher creative behaviour. This scale is chosen to measure the level of engagement of participants in everyday creative activity, and, thereby, assess their creative behaviours.

Lubben Social Network Scale (Lubben et al., 2006)

It is a 6-item questionnaire used to measure the levels of social networks in participants. It consists of a 6-point Likert Scale ranging from 0 to 5 where 0 = none, 1 = one, 2 = two, 3 = three or four, 4 = five through eight, and 5 = nine or more. No items are reverse-scored. High scores on the scale indicate a robust social network and high social support whereas lower scores signify social isolation. This scale is chosen to measure the objective level of social networks of participants. Low scores on this scale imply social isolation, which is the objective lack of a person's social networks and relationships. The scale showed high internal consistency and discriminant validity among three distinctly different European community-dwelling populations (Lubben et al., 2006).

Marlowe-Crowne Social Desirability Scale Short Form C (Crowne & Marlowe, 1960)

It is a 13-item questionnaire used to measure social desirability. It records a dichotomous response for each question where 0 = false, and 1 = true. Scores from this instrument are used to control for lack of participant honesty and the social desirability effect. Higher scores on the scale signify the need for greater social desirability. This scale is used to control for the effect of social desirability on the results of the study.

In addition to the instruments mentioned above, participants also filled out an informed consent form, stating that they had understood the purpose of the study and consequently, consented to participate. 3 items were chosen to serve as attention checks. All the aforementioned instruments were chosen to suit the demographics of the population being studied.

Participants

Young adults across India, ranging from 18 to 25 years of age, participated in the study. The a-priori estimated sample size, calculated using G*Power was 115 participants. This figure was arrived at by using an F-test (Linear multiple regression: Fixed model R^2 , deviation from zero; effect size = 0.15; α = 0.05; power = 0.85; predictors = 7). Participants were recruited by circulating the survey within the researcher's social network and these contacts were then asked to circulate it in their respective networks as well using platforms such as WhatsApp, Instagram, Facebook, and LinkedIn. Thus, participants were recruited using convenience sampling followed by snowball sampling. Based on the data collected, participants were selected if they fell within the required age bracket, score 7 or more on the English fluency self-assessment, and passed two out of three attention checks. The final sample size was 128 participants (90 females, 38 males). Based on this sample size, the achieved power computed post-hoc was 0.91 (Linear multiple regression: Fixed model R^2 , deviation from zero; effect size = 0.15; α = 0.05; sample size= 128; predictors = 6).

Design

The study was conducted using a cross-sectional survey design. Participants responded to the informed consent form, failing which they were not allowed to participate. After consenting to participate, participants were required to complete the 84-item questionnaire on Google Forms consisting of the instruments mentioned above. The form contained questions about the age, sex, and English language fluency of the participant and standard instructions for filling out each scale. All the scales were retained in their original form except the BICB which was modified as detailed above. On completing the questionnaire, participants were debriefed by providing them with resources to seek out professional help and support if they feel uncomfortable or unsettled.

Procedure

The consolidated Google form consisting of all the above-mentioned details and scales was circulated among participants. Only those participants who consented to participate in the study were able to access the scales. Participants were required to complete and submit the questionnaire online. Responses were anonymously recorded in an automated manner on a Google Sheet. This means that the names and email addresses of participants were not recorded. There were no follow-ups for data collection. Data was considered only for those participants

who fell within the required age bracket, scored 7 or more on the English fluency self-assessment, and passed two out of three attention checks.

All the necessary ethical procedures were followed while conducting the study. Requisite ethical approval was obtained from the necessary authorities and all participants were informed of the ethical approval status of the study.

Results

The consolidated 87-item questionnaire was distributed through Google Forms to the target population satisfying the inclusion criteria. 153 responses were recorded out of which 1 was incomplete. A total of 152 (46 male, 106 female) participants filled out the questionnaire and completed the study. Out of these, 128 (38 male, 90 female) participant responses were considered valid based on the inclusion criteria of age, English language fluency, and attention checks. The General Health Questionnaire was to be considered as an exclusion criterion. However, the sample size after exclusion was too small to conduct a regression analysis. Hence, current mental health was incorporated into the regression model.

Data analysis was carried out using JASP 0.14.0.0. The variable sex was coded such that 1=Female, 0=Male. Single-test reliability analysis was conducted for all the scales used in the study. Descriptive statistics were computed for all variables, followed by Pearson’s correlations. Lastly, a multiple hierarchical regression analysis was carried out to test the hypothesis.

Descriptive Statistics

Descriptive statistics were calculated for all the variables as seen in Table 1. This included the mean, standard deviation, variance, maximum and minimum values.

	Age	Sex	Current Mental Health (Distress)	Loneliness	Social Network	Boredom Proneness	Creative Behaviour	Social Desirability
Valid	128	128	128	128	128	128	128	128
Missing	0	0	0	0	0	0	0	0
Mean	20.281	0.703	6.727	20.359	16.500	35.969	31.672	6.000
Std. Deviation	1.374	0.459	3.660	5.136	4.818	10.604	17.927	2.462
Variance	1.889	0.210	13.397	26.374	23.213	112.440	321.372	6.063
Minimum	18.000	0.000	0.000	8.000	5.000	10.000	0.000	0.000
Maximum	24.000	1.000	12.000	30.000	28.000	56.000	85.000	11.000

Table 1: Descriptive statistics

Cronbach's Alpha Single-Test Reliability

Single-test reliability analysis was conducted for all scales. The Cronbach's alpha values are presented in Table 2. All the scales were reliable (Cronbach's alpha >0.7) except the Marlowe-Crowne Social Desirability Scale Short Form C, which had an alpha value of 0.585 and was, therefore, not included in the regression model.

Estimate	McDonald's ω	Cronbach's α
Point estimate	0.862	0.860
95% CI lower bound	0.827	0.821
95% CI upper bound	0.898	0.893

Table 2: Short General Health Questionnaire: Single-Test Reliability Analysis

Estimate	McDonald's ω	Cronbach's α
Point estimate	0.823	0.816
95% CI lower bound	0.777	0.763
95% CI upper bound	0.869	0.860

Table 3: Short-Form UCLA Loneliness Scale: Single-Test Reliability Analysis

Estimate	McDonald's ω	Cronbach's α
Point estimate	0.761	0.774
95% CI lower bound	0.697	0.704
95% CI upper bound	0.825	0.830

Table 4: Lubben Social Network Scale: Single-Test Reliability Analysis

Estimate	McDonald's ω	Cronbach's α
Point estimate	0.865	0.861
95% CI lower bound	0.829	0.821
95% CI upper bound	0.900	0.894

Table 5: Boredom Proneness Scale: Single-Test Reliability Analysis

Estimate	McDonald's ω	Cronbach's α
Point estimate	0.876	0.872
95% CI lower bound	0.845	0.837
95% CI upper bound	0.907	0.901

Table 6: Biography of Creative Behaviours: Single-Test Reliability Analysis

Estimate	McDonald's ω	Cronbach's α
Point estimate	0.598	0.595
95% CI lower bound	0.497	0.482
95% CI upper bound	0.700	0.689

Table 7: Marlowe-Crowne Social Desirability Scale Short Form C: Single-Test

Reliability Analysis

Correlation Analysis

Correlation analysis for all variables is presented in Table 8. Results indicated that age did not have significant correlations with any of the variables while sex significantly correlated with current mental health and boredom proneness. Current mental health (distress) had a positive correlation with loneliness and boredom proneness whereas it negatively correlated with social networks and these results were significant. Measures of loneliness, social networks, and boredom proneness significantly correlated with each other. Loneliness had moderate negative

correlations with social network and moderate positive correlations with boredom proneness. Meanwhile, social network and boredom proneness had only a modest negative correlation between themselves. Creative behaviour demonstrated significant negative correlations with both loneliness and boredom proneness. It also negatively correlated with current mental health (distress) and positively correlated with social network, but the results were not significant. Social desirability had no significant correlations with any of the other variables in the study.

Variable		Age	Sex	Current Mental Health (Distress)	Loneliness	Social Network	Boredom Proneness	Creative Behaviour	Social Desirability
Age	Pearson's r	—							
	p-value	—							
Sex	Pearson's r	-0.104	—						
	p-value	0.243	—						
Current Mental Health (Distress)	Pearson's r	0.108	0.223 *	—					
	p-value	0.226	0.011	—					
Loneliness	Pearson's r	-0.067	0.062	0.490 ***	—				
	p-value	0.453	0.484	<.001	—				
Social Network	Pearson's r	0.032	0.007	-0.219 *	-0.410 ***	—			
	p-value	0.719	0.936	0.013	<.001	—			
Boredom Proneness	Pearson's r	-0.063	0.228 **	0.578 ***	0.537 ***	-0.282 *	—		
	p-value	0.483	0.010	<.001	<.001	0.001	—		
Creative Behaviour	Pearson's r	-0.108	-0.043	-0.091	-0.199 *	0.148	-0.250 **	—	
	p-value	0.223	0.633	0.305	0.024	0.096	0.004	—	
Social Desirability	Pearson's r	-0.054	-0.070	-0.086	-0.148	-0.023	-0.126	-0.005	—
	p-value	0.549	0.434	0.332	0.095	0.795	0.157	0.955	—

* p < .05, ** p < .01, *** p < .001

Table 8: Pearson's Correlations

Multiple Hierarchical Regression Analysis

A three-step multiple hierarchical regression analysis was conducted to test the predictive value of loneliness, social isolation, and boredom with respect to creative behaviour, controlling for covariates such as age, sex, and current mental health. The first step included age and sex. The second step included age, sex, and current mental health. The final step comprised age, sex, current mental health, loneliness, social network, and boredom proneness. The results of the step-wise regression analysis are detailed in Tables 9-14. The R-squared value of the final model was 0.102. There was an increase of 8.2% in the R-squared value in the alternative model in comparison with the null model and these results were significant ($p=0.014$). In terms of the individual effects of variables, boredom proneness was found to be a significant negative predictor of self-reported creative behaviour ($B= -0.262$, $p=0.025$). Loneliness was also a negative predictor of creative behaviour but the results were not significant. Social network was found to be a positive predictor of self-reported creative behaviour, but the results were not significant in this case as well.

Model	R	R ²	Adjusted R ²	RMSE	R ² Change	F Change	df1	df2	p
H ₀	0.121	0.015	-0.001	17.937	0.015	0.931	2	125	0.397
H ₁	0.140	0.019	-0.004	17.965	0.005	0.607	1	124	0.437

Note. Null model includes Age, Sex

Table 9: Regression Model Summary – Step 1

Model		Sum of Squares	df	Mean Square	F	p
H ₀	Regression	599.213	2	299.606	0.931	0.397
	Residual	40215.006	125	321.720		
	Total	40814.219	127			
H ₁	Regression	795.249	3	265.083	0.821	0.484
	Residual	40018.970	124	322.734		
	Total	40814.219	127			

Note. Null model includes Age, Sex

Table 10: Analysis of Variance (ANOVA) – Step 1

Model		Unstandardized	Standard Error	Standardized	t	p
H ₀	(Intercept)	63.341	24.047		2.634	0.010
	Age	-1.488	1.164	-0.114	-1.278	0.204
	Sex	-2.127	3.489	-0.054	-0.610	0.543
H ₁	(Intercept)	62.724	24.098		2.603	0.010
	Age	-1.364	1.177	-0.105	-1.159	0.249
	Sex	-1.462	3.597	-0.037	-0.407	0.685
	Current Mental Health (Distress)	-0.351	0.451	-0.072	-0.779	0.437

Table 11: Regression Coefficients – Step 1 Coefficients

Model	R	R ²	Adjusted R ²	RMSE	R ² Change	F Change	df1	df2	p
H ₀	0.140	0.019	-0.004	17.965	0.019	0.821	3	124	0.484
H ₁	0.319	0.102	0.057	17.405	0.082	3.704	3	121	0.014

Note. Null model includes Age, Sex, Current Mental Health (Distress)

Table 12: Regression Model Summary – Step 2

Model		Sum of Squares	df	Mean Square	F	p
H ₀	Regression	795.249	3	265.083	0.821	0.484
	Residual	40018.970	124	322.734		
	Total	40814.219	127			
H ₁	Regression	4160.977	6	693.496	2.289	0.040
	Residual	36653.242	121	302.919		
	Total	40814.219	127			

Note. Null model includes Age, Sex, Current Mental Health (Distress)

Table 13: Analysis of Variance (ANOVA) – Step 2

Model		Unstandardized	Standard Error	Standardized	t	p
H ₀	(Intercept)	62.724	24.098		2.603	0.010
	Age	-1.364	1.177	-0.105	-1.15 9	0.249
	Sex	-1.462	3.597	-0.037	-0.40 7	0.685
	Current Mental Health (Distress)	-0.351	0.451	-0.072	-0.77 9	0.437
H ₁	(Intercept)	88.208	26.844		3.286	0.001
	Age	-2.007	1.158	-0.154	-1.73 3	0.086
	Sex	-1.030	3.535	-0.026	-0.29 1	0.771
	Current Mental Health (Distress)	0.751	0.553	0.153	1.357	0.177
	Loneliness	-0.404	0.392	-0.116	-1.03 1	0.304
	Social Network	0.242	0.353	0.065	0.685	0.494
	Boredom Proneness	-0.442	0.195	-0.262	-2.27 1	0.025

Table 14: Regression Coefficients – Step 2 Coefficients

Discussion

The results of the study provide interesting insights into the interplay of boredom proneness, loneliness, social isolation, and everyday creative behaviour in the context of the COVID-19 pandemic. It is seen that females suffer from poorer current mental health and greater psychological distress during the pandemic as opposed to males, in accordance with existing research (Li & Wang, 2020). They also have a higher propensity to be bored. People with poorer current mental health demonstrate greater loneliness, boredom proneness, and social isolation. This is aligned with findings that point to an increase in the experience of negative emotions during the pandemic (Banerjee & Rai, 2020; Dimitra & Ioannis, 2020; Id et al., 2020; Usher et al., 2020). Experiencing greater loneliness, boredom proneness and social isolation could potentially explain the deterioration of mental health as well.

Boredom, social isolation, and loneliness correlate with each other in a manner consistent with previous literature, even in the given context of the pandemic. Individuals who are more socially isolated are lonelier (Matthews et al., 2016; Tomaka et al., 2006). Similarly, higher levels of boredom proneness are associated with increased loneliness (Farmer & Sundberg, 1986; Skues et al., 2016). A novel correlation found through this study is between social isolation and boredom proneness. Higher boredom proneness is associated with increased social isolation, which is also a novel addition to the existing body of literature.

In terms of creativity, a higher frequency of self-reported creative behaviour is associated with reduced levels of loneliness and social isolation, consistent with existing work in the domain of creativity research. Previous studies highlighted the positive effects of state boredom on creativity. However, trait boredom was found to negatively correlate with creativity and this finding is supported by the present study. It was hypothesised that the frequency of self-reported creative behaviour can be predicted by loneliness, social isolation, and boredom proneness. On controlling for the effects of age, sex, and current mental health, results indicate that 10.2% of the variance in the frequency of self-reported creative behaviour can be explained by loneliness, social isolation, and boredom proneness. In other words, a regression model consisting of loneliness, social isolation, and boredom proneness significantly predicts self-reported creative behaviour, controlling for the effects of age, sex, and current mental health. H_1 is, thus, not rejected.

When the effects of individual predictors are examined, it is found that boredom proneness significantly and negatively predicts the frequency of self-reported creative behaviour during the pandemic. In other words, individuals who have a lower propensity to be bored are likely to engage in creative behaviour more frequently. This is in contrast to existing literature that explores boredom proneness and creativity. Hunter et al. (2016) concluded that boredom proneness is not a predictor of creativity, over and above personality. This difference in findings could be explained by methodological variations; this study does not control for personality. Additionally, Hunter et al. (2016) conceptualised creativity in terms of creative personality whereas, in this study, creativity is conceptualised in terms of the frequency of engagement in creative behaviour.

Vodanovich and Kass (1990) proposed that boredom proneness has conceptual similarities with certain factors such as a lack of external stimulation, deficiencies in internal stimulation, low affective responses, perception of the slower passage of time, and imposing constraints. Research done during the COVID-19 pandemic indicates that individuals are likely to experience feelings such as the slowing down of time (Droit-Volet et al., 2020). Additionally, constraints are imposed on physical movement to comply with social distancing norms. This could also result in people suffering from a lack of external stimulation that they would otherwise gain from social interactions and experiences in the external world. Thus, individuals scoring higher on boredom

prone to experience these feelings in a heightened manner, affecting their inclination to engage in creative behaviour. For instance, high boredom proneness could be due to constraints resulting in a lack of external stimulation, which affects an individual's ability to be imaginative and original. A lack of internal stimulation could also hamper creativity because individuals may not feel intrinsically motivated to engage in creative behaviour. Another plausible explanation is that individuals who have a higher propensity to be bored may be unable to sustain creative behaviours for long periods. Thus, they might engage in a wide variety of creative activities but the frequency of a particular creative behaviour might be lower as compared to an individual scoring lower on boredom proneness.

In terms of the relationship between loneliness and social isolation with creativity, the results of this study are consistent with the existing literature in these domains. Although loneliness and social isolation correlate with creativity, they are not significant predictors of creative behaviour. Existing literature highlights the role of social relationships in creativity. However, these findings indicate that the subjective and objective lack of social relationships does not have significant predictive value when it comes to creative behaviour. The study also indicates that loneliness negatively predicts creative behaviour frequency, i.e., lonelier people are less likely to demonstrate creative behaviour, but the results are not significant. An explanation for this outcome as offered by Mahon et al. (1996) is that lonely individuals direct their energy and resources toward identifying ways to mitigate their loneliness and, therefore, do not have adequate time and energy to spend on creative endeavours. Social network is a positive predictor of creative behaviour. Consequently, people who are more socially isolated are likely to be less frequently engaged in creative behaviour. These results, too, are not significant. There could be two probable explanations for these findings. First, higher social isolation results in a lack of social interaction and experience that individuals can draw inspiration from to engage in creative behaviour. Second, a lack of encouragement from other people would serve as a deterrent to engaging frequently in creative behaviour. Limited communication and the exchange of ideas due to a lack of social support could also be a factor hampering creativity (Yousaf & Ghayas, 2015). The predictive value of loneliness and social isolation in terms of creativity is probably not significant because the individual's perception of these feelings is not accounted for by the scales used for measurement. Drawing from the findings of Besse (2012), a more significant predictor of creative behaviour could be an individual's perception of the experience of loneliness and social isolation during the pandemic.

Conclusion

The present study is not without its limitations. The role of affect and its effect on creativity is not specifically considered in this study. Creativity could also be seen as an anxiety-alleviating mechanism and could also depend on the mood of an individual (Kaufmann, 2003). Further research can be done to explore these relationships in greater depth. Another factor that could

influence study outcomes is the extent to which lockdown protocol was followed by participants. Despite measures instated, several individuals may have violated isolation and stay-at-home practices. These individuals may have experienced loneliness, social isolation, and boredom proneness at lower levels, which could affect the results of the study. Furthermore, the BICB requires participants to evaluate the frequency of behaviour by relying on their memory of activities undertaken during the lockdown period. Results could be affected by participants' inability to recall information accurately. The fact that the lockdown period might have varied for participants and some people may have experienced unlock before others could also influence study outcomes. Respondent fatigue from having to answer 84 items could affect the study results as well. Future research can build on the findings of the existing study. An interesting area of exploration would be to compare the influence of state and trait boredom in their predictive value in terms of creativity. Researchers could also study an individual's interpretation of the experience of loneliness and social isolation and the role it plays in creativity. Finally, controlling for the effects of personality while examining the role of loneliness, social isolation, and boredom proneness on creative behaviour could produce interesting findings.

The results of this study have several theoretical as well as practical implications. While several studies have individually evaluated the effects of loneliness, social isolation, and boredom proneness on creativity, this study is one of the first to explore the compounded effect of these variables on creativity, especially in the context of COVID-19. Its findings also enhance our understanding of young adult creativity, which remains a relatively unexplored area of enquiry. The context of the study offers a unique opportunity to understand the expression of creativity during times of crisis. Interventions utilizing creativity activities as a buffer against social isolation, loneliness, and boredom proneness can be designed based on the findings of this study.

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