

Research Paper

## A Correlational Study between Growth Mindset, Delay of Gratification and Subjective Well-being during COVID-19

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### ABSTRACT

The current study was conducted in order to determine whether there exists a relationship between Growth Mindset, Delay of Gratification and Subjective Well-Being (SWB) in the context of the COVID-19 pandemic. Data were collected from two hundred and forty-six (n=246) undergraduate students enrolled in educational institutions in the city of Mumbai, Maharashtra, India. Scales used to assess the aforementioned variables were the 3-item Growth Mindset Scale (Dweck, 1999, 2006), Delay of Gratification Inventory (DGI-10) (Hoerger, M., et al 2011) and Satisfaction with Life Scale (Diener, E, 1985) respectively – all of which were administered online in light of the COVID-19 pandemic. IBM SPSS Statistics for Mac Operating System (ver. 27.0.1.0). was used in order to compute a correlational analysis; and all, except DGI and SWB, were found to have no significant correlation. Moreover, the correlation found between DOG and SWB was low ( $r=0.254$ ,  $p<0.05$ ). Lastly, a linear regression analysis – for delay of gratification and SWB - was conducted, and it was found that 6.4% of the variance in SWB can be predicted by Delay of Gratification ( $p<0.001$ ) Ultimately, the findings of this study indicate no statistically significant relationships between growth mindset and delay of gratification or between growth mindset and subjective well-being.

**Keywords:** Subjective Well-Being, Delay of Gratification, COVID-19 Pandemic, Academic Learning, Growth Mindset, Correlation, Linear Regression Analysis, India

The COVID-19 pandemic, the defining global health crisis of current times, has not only disrupted free mobility of individuals, but also the mental health of millions (Cullen, W., et al., 2020; Ferrer, R., 2020). Under such unprecedented circumstances, understanding the significance of subjective well-being (SWB) becomes crucial.

Ed Diener (2000, p.34), defined SWB as “people’s cognitive and affective evaluations of their lives.” Psychosocial well-being, quality of life, flourishing, happiness, job satisfaction and life satisfaction are some of the related concepts to SWB.

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Growth mindset and delay of gratification are the other variables being evaluated. The implicit intelligence theory identifies people as holding either a growth mindset or a fixed mindset (Hong, Chiu & Dweck, 1995). People with a growth mindset see challenges and setbacks as opportunities for learning. In contrast, individuals with a fixed mindset see difficulties and setbacks as risky situations. Growth mindset has been seen to have a positive correlation with mastery-orientation, well-being, and several other positive attributes. Lastly, delay of gratification is defined as “forgoing immediate reward in order to obtain a larger, more desired or more pleasurable reward in the future” (APA, 2007). The Stanford marshmallow study is a classic experiment investigating delay of gratification, (Mischel, Ebbesen & Raskoff Zeiss, 1972) wherein children who resisted their impulse for a smaller treat were more successful socially and academically. A few other variables related to the delay related to delay of gratification are self-control, self-regulation and ego resiliency.

The rationale for the current investigation entailed examining the relationship between growth mindset and delayed gratification with respect to subjective well-being of students attending lectures in light of the COVID-19 pandemic. Very few studies have examined these three constructs together. Therefore, the findings of the current study would add useful information to the existing body of research. The findings can further help researchers and mental health practitioners in developing interventions and techniques based on growth mindset and delayed gratification to help enhance an individuals' SWB.

Research has shown that cultivating a growth mindset can have an incremental impact on success and happiness. Ortiz Alvarado, Rodríguez Ontiveros & Ayala Gaytán (2019) found a positive relationship between growth mindset and academic performance ( $p < 0.05$ ), while SWB had a mediating role in the relationship between the two, indicating that developing a growth mindset can have an incremental effect on academic achievement and well-being. Zhao et al. (2021) found an association between the growth mindset of socio-economic status and higher level of SWB ( $p = 0.041$ ). In a cross-sectional investigation by Ronnin B. King (2017), it was found that the implicit theory of intelligence was adversely connected with life fulfilment and negative affect. A consequent research revealed that implicit theories and certain components of subjective well-being were correspondingly related. However, results obtained by Berlin (2019), indicated no significant relationship between growth mindset and psychological well-being. Chan (2012), found that life satisfaction and happiness were significantly correlated with perfectionism. The healthy perfectionist scored higher for the growth mindset, the non-perfectionist scored equally on both growth and fixed mindset whereas the unhealthy perfectionist scored more on fixed mindset than others.

Poon, Chan and Tang (2019) demonstrated a positive growth trajectory for delay of gratification and psychosocial well-being ( $p = 0.02$ ). Delayed gratification was associated with consequent changes in three facets of psychosocial well-being (life satisfaction, life flourishing and lack of depressive symptoms) and had a reciprocal effect with life flourishing. The findings thus elucidate delayed gratification as a possible predictor of well-being. Galla and Wood (2014) revealed that adolescents with higher self-control showed less extreme stress appraisals and less mindlessness ( $p < 0.001$ ). Supporting research by Hofmann, et al., (2013) established that higher trait self-control (TSC) is related to higher subjective well-being partly because of low levels of stress. TSC was positively correlated with life satisfaction ( $r = 0.34$ ,  $p < 0.001$ ) and positive affect ( $r = 0.30$ ,  $p < 0.001$ ), and negatively correlated with negative affect. A longitudinal study by Buyukcan-Tetik, Finkenauer and Bliedorn (2018) demonstrated a positive relationship between self-control and happiness, mood, and life satisfaction.

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Mrazek et al. (2018), revealed that participants having a growth mindset opined that self-regulation was malleable as compared to those having a fixed mindset. Participants in the growth mindset condition also exhibited greater persistence on a task, and displayed significant impact on appraisals of fatigue. Hoffeld (2016) outlined that people with a growth mindset and who could delay gratification by forgoing instant rewards for the greater good in future, are more likely to succeed in life. Datu, Labarda, and Salanga (2019) indicated that flourishing was linked to greater levels of academic delay of gratification and higher levels of mastery-approach goals.

### **MATERIALS & METHODS**

#### *Objective*

To investigate the relationship between Growth Mindset, Delay of Gratification and Subjective Well-Being.

#### *Hypotheses*

- There is a significant positive statistical relationship between Growth Mindset and Subjective Well-Being.
- There is a significant positive statistical relationship between Delay of Gratification and Subjective Well-Being.

#### *Variables*

- **Subjective Well-Being:** was measured using the 5-item Satisfaction with Life Scale (SWLS; Diener et al., 1985). Higher composite scores obtained on the scale indicated higher levels of life satisfaction.
- **Growth Mindset:** was measured using the 3-item Growth Mindset Scale (retrieved from the SPARQtools). Higher composite scores obtained on the scale indicated an individual having a growth mindset.
- **Delay of Gratification:** was measured using the 10-item Delaying Gratification Inventory short form (DGI-10; Hoerger et al., 2011). Higher composite scores obtained on the scale indicated higher levels of gratification delay.

#### *Participants*

In the current study, only undergraduate students - enrolled in an educational institution located in Mumbai - falling between the ages 18 and 23, with basic English proficiency, were considered for the study. The reason we incorporated a limited age range was the appeal of a smaller, more homogenous cohort, which, if left inconsistent, could impact individuals' growth mindset (Zenbergh & Folkman, 2016) and subjective well-being (Horley & Lavery, 1994). Furthermore, participants who experienced any major life event (e.g., death of a loved one, contracting COVID-19 at the time of the study, etc.), were excluded from the study as said event could impact their scores on the SWLS scale. Lastly, individuals diagnosed with a physical or mental disability were excluded from the study as well, as this, too, could impact their scores on the SWLS scale.

In the current study, we collected data from a total of 297 participants, during March and April of 2021, out of which 9 individuals did not consent to participate in the study. Out of the 288 individuals who did provide consent, only 246 individuals fit the inclusion criteria, and were included in the study (n=246; M=71, F=174, Unspecified=1; Mean age=20.4).

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With regards to sample characteristics, we found that 97.96% of the participants were of Indian nationality, and 2.03% participants were of another nationality. As for the course that the participants were enrolled in, 37.80% of the participants were from Bachelor of Arts, 9.76% were from Bachelor of Commerce, 8.50% were from Bachelor of Science, 8.13% were from Bachelor of Mass Media, (6.50% were from Bachelor of Management Studies, 4.07% were from Bachelor of Medicine and Bachelor of Surgery, 2.43% Bachelor of Business Administration, and 41.87% were from other courses. As for the current year of study, 70.73% participants were in their Third Year, 19.51% were in their Second Year, 4.47% were in their First Year, 4.07% were in their Fourth Year and 1.22% were in their Fifth Year of study. Lastly, with regards to mode of learning, we found that 90.24% participants were learning via an online format, 5.28% participants were learning via an offline format and 4.47% participants were learning via a blended, both offline and online, format.

In order to find a sample for the study, we employed the technique of snowball sampling; that is, the link to the google form was sent to prospective respondents and they were requested to forward the same link to people they believed fit the inclusion criteria.

### ***Materials***

- Microsoft Excel
- IBM SPSS Statistics for Mac Operating System (ver. 27.0.1.0)
- Google Forms
- Social Media Platforms (example, WhatsApp and Instagram)
- 3-Item Growth Mindset Scale (Dweck, 1999, 2006) (Reliability = 0.71)
- Delaying Gratification Inventory (DGI-10) (Hoerger, et al., 2011) (Reliability = 0.77)
- 5-Item Satisfaction with Life Scale (SWLS) (Diener, E., 1985) (Reliability = 0.87)

### ***Procedure***

For the current study, we examined a total of three variables – and their relationship with each other.

The first variable was Growth Mindset; in order to assess the participants' growth mindset, we employed the 3-item Growth Mindset Scale, developed by psychologist Carol Dweck (1999, 2006). We requested permission for the use of the scale and its online administration, and it was kindly granted by Stanford SPARQ - which is an authorised platform wherein the scale was publicly offered.

The second variable was Delay of Gratification; in order to assess the participants' ability to delay gratification, we employed the 10-item Delay of Gratification Inventory (DGI-10), developed by Michael Hoerger, Stuart W. Quirk, and Nathan C. Weed (2011). Although this scale was free to use for the public, we requested permission for its online administration, which was granted by the first author, Michael Hoerger, via e-mail.

The third variable was Subjective Well-Being; in order to assess the participants' subjective well-being, we employed the Satisfaction with Life Scale developed by E. Diener. The scale was available for public use and hence we did not request permission for the same.

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We created a Google Form in order to compile all the three aforementioned scales. In addition to the scales, we also incorporated the informed consent form, demographic details questionnaire, and some open-ended questions – relevant to the variables under study - along with a concluding debrief, in the Google form in order to make it a comprehensive whole, with everything collated on one platform. The order of consents and questionnaires was as follows,

Section 1 – Informed Consent;

Section 2 – Demographic Details (Name, Age, Sex, City, etc.);

Section 3 – Growth Mindset Scale;

Section 4 – Delaying Gratification Inventory;

Section 5 – Satisfaction with Life Scale;

Section 6 onwards – Open Ended Questions.

Section 6 of the Google form consisted of a fourth questionnaire wherein open-ended questions - relevant to the variables under study – were included in order to obtain a better understanding of the variables.

Lastly, we displayed a ‘Thank-You’ message, along with the debrief once the participants successfully completed and submitted the form.

The current study was conducted digitally, in light of the COVID-19 pandemic. We reached out to participants, who fit the inclusion criteria of the study, via social media platforms such as Instagram and WhatsApp. Additionally, we employed snowball sampling wherein the initial participants distributed the link to the google form to the other prospective. The google form took around 10-15 minutes for the participants to finish.

### ***Data Analysis***

Data obtained for the current study were on interval scales; reason being, each score is placed at an equal distance from one another, and there is no absolute zero point. We screened the data before performing data analyses in order to eliminate the responses of participants who failed to fit the predetermined inclusion criteria.

In the raw individual data, we observed two outliers in the scores for Delay of Gratification; we used winsorizing in order to account for this. The process of winsorization entails replacing the outlier with the maximum or minimum value at the threshold – that is, value that is closest to +3 or -3 standard deviation. Before winsorizing, the standard deviation for Delay of Gratification scores were 5.280, therefore, the -3 SD was 20.55. Thus, upon using winsorization, this value was replaced with 22 (lowest value close to the -3 SD).

We employed a Pearson’s Correlation on the IBM SPSS Statistics (27.0.1.0) in order to analyse the obtained data. The results of the same are elaborated upon in the ‘Discussion’.

## **RESULTS AND DISCUSSION**

The aim of the current study was to investigate the relationship between growth mindset, delay of gratification and subjective well-being. The alternative hypothesis for the same is as follows: There is a significant positive statistical relationship between growth mindset and subjective. Furthermore, we also hypothesised that there is a significant positive statistical relationship between delay of gratification and subjective well-being.

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The inclusion criteria for the study were; (a) undergraduate students, (b) currently enrolled in an educational institution located in Mumbai, (c) basic English proficiency, (d) between ages 18 to 23, and the exclusion criteria were; (a) any known physical and mental disability, (b) any major recent life event (example, contracting COVID-19, loss of a loved one, etc.).

Descriptive statistics for each of the scales (Refer Appendix D) was calculated and it was found to be as follows: (a) Growth Mindset (M=36.5, SD=5.162), (b) Delay of Gratification (M=10.5, SD=3.713), and (c) Satisfaction with Life (M=21.46, SD=6.567).

Table 1 indicates the correlation between growth mindset, delay of gratification and subjective well-being. With respect to the relationship between growth mindset and subjective well-being, the results of the output indicated that there exists no statistically significant relationship ( $r = -0.046$ ,  $p=0.238$ ) between the two. A similar trend was observed when the scores of the aforementioned variables were plotted on a scatterplot (Figure 1), that is, the points seemed to be scattered randomly indicating no relationship or no correlation between the variables. This finding can be substantiated by the above-reviewed, recent research conducted by Berlin (2019) - the results of which demonstrate that there was no significant relationship between students' self-reported growth mindset and psychological well-being. This suggests that results of the current study are in contrast with an above-reviewed study conducted by Alvarado (2019) that investigated similar variables - the results of which found a positive and significant relationship between growth mindset and well-being.

Table 1 also indicates the relationship between Delay of Gratification and Subjective Well-Being, the results of the output indicated that there exists a positive low correlation ( $r=0.254$ ,  $p<0.001$ ) between the two, which was statistically significant. A similar trend was observed when the scores of the aforementioned variables were plotted on a scatterplot (Figure 2), that is, the points are spread out and seem to be nearly flat. This finding can be validated by the above reviewed, recent research conducted by Poon et al. (2019), the results of which suggest that delay of gratification contributed to the subsequent increase in facets of psychosocial well-being which are, life satisfaction, life flourishing and decrease of depressive symptoms. Since the obtained correlation is low, there could be a third variable (for example, grit, financial well-being) that would account for subject well-being (Hoffeld, 2016; Iannello, et al., 2020).

**Table 1: Descriptive Statistics**

Descriptive Statistics					
	N	Minimum	Maximum	Mean	Std. Deviation
Growth	246	3	18	10.50	3.713
DoG	246	22	47	36.42	5.162
SWLS	246	5	35	21.46	6.567
Valid N (listwise)	246				

Furthermore, Table 1 also indicates the correlation between growth mindset and delay of gratification ( $r=0.097$ ,  $p=0.064$ ). The results of the relationship were not statically significant. A similar trend was observed when the scores of the aforementioned variables

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were plotted on a scatterplot (Figure 3), that is, the points seemed to be scattered randomly indicating no relationship or no correlation between the variables. Research by Mrazek et al. (2018) implied that participants under growth mindset condition demonstrated higher levels of self-regulation as against participants under fixed mindset condition.

The overall findings of the current study do not provide support for the first hypothesis which stated that there would be a significant positive statistical relationship between Growth Mindset and Subjective Well-Being. This is to say that, although, it was expected that there would be a significant relationship between growth mindset and subjective well-being ( $\alpha=0.05$ ), it was found that Growth Mindset was not significantly correlated ( $r = -0.046, p=0.238$ ) with Subjective Well-being, as can be seen from Table 1.

However, the results do provide support for the second hypothesis that stated that there would be a significant positive statistical relationship between Delay of Gratification and Subjective Well-Being. As expected, the relationship between Delay of Gratification and Subjective Well-Being was significant ( $p<0.001$ ), as can be seen from Table 1. However, it is important to note that despite this, the magnitude of the Pearson’s correlation was low ( $r=0.254$ ).

**Table 2: Correlations**

**→ Correlations**

		Growth	DoG	SWLS
Growth	Pearson Correlation	1	.097	-.046
	Sig. (1-tailed)		.064	.238
	N	246	246	246
DoG	Pearson Correlation	.097	1	.254**
	Sig. (1-tailed)	.064		<.001
	N	246	246	246
SWLS	Pearson Correlation	-.046	.254**	1
	Sig. (1-tailed)	.238	<.001	
	N	246	246	246

\*\* . Correlation is significant at the 0.01 level (1-tailed).

The graphical representation for the same correlation has been depicted in Figure 2 on a scatter plot, after the elimination of two outliers and it represents a low correlation. Lastly, an ancillary observation was observed wherein the researchers found no significant correlation ( $r=0.097, p=0.064$ ) between scores on the Delaying Gratification Inventory-10 (Hoerger et al., 2011) and the scores on the Growth Mindset Scale (Dweck, 1999).

**CONCLUSION**

Although, Delay of Gratification and Subjective Well-Being was found to have low correlation, some practical applications for the same are elaborated upon further. In educational settings, the practice of delaying gratification should be emphasised in order to help improve students’ subjective well-being. Furthermore, awareness and benefits of delaying gratification should be touched upon as well. However, in conclusion, more research is required in this area.

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### **Conflict of Interest**

The author(s) declared no conflict of interest.

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