

Does Happiness Benefit Learning?

Well-being predicts GPA and online learning engagement during COVID-19.

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Introduction

- Well-being is a crucial factor that predicts a variety of life outcomes.
- However, there is a lack of research on whether well-being predicts learning outcomes in online learning environments.
- To address this gap, we conducted two longitudinal studies during the first two semesters of the COVID-19 outbreak.
- Here, we aim to investigate whether students with higher well-being would subsequently show greater engagement and better academic performance in online classes.**

Methods

Participants. We conducted two longitudinal studies with 1,724 college students for Study 1 and 1,209 for Study 2.

Predictors. We used a self-reported scale to measure students' well-being during the first month of the semester.

Outcomes. We objectively measured 1) students' online learning performance by using semester GPA, and 2) online learning engagement by analyzing massive log data in *the Blackboard Learn*, the Learning Management System (LMS), based on frequency and entropy (see the right panel).

Controls. We measured depression and anxiety symptoms using self-reported questionnaires as control variables.

Being Happy May Benefit Online Learning: Findings From Two Longitudinal Studies During the COVID-19 Pandemic

Regression analyses of predicting online learning engagement t2

Predictors	Study 1			Study 2		
	Step 1 β	Step 2 β	Step 3 β	Step 1 β	Step 2 β	Step 3 β
Well-Being	0.07**	0.04**	0.03	0.08**	0.02	0.00
Engagement t1		0.72***	0.71***		0.74***	0.74***
Depression			-0.03			-0.03
Anxiety			-0.00			-0.01

Regression analyses of predicting GPA

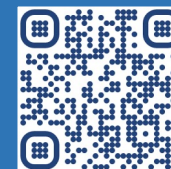
Predictors	Study 1			Study 2		
	Step 1 β	Step 2 β	Step 3 β	Step 1 β	Step 2 β	Step 3 β
Well-Being	0.12***	0.06***	0.04*	0.05 [†]	0.04	-0.00
Previous GPA		0.76***	0.76***		0.61***	0.61***
Depression			-0.03			-0.06
Anxiety			-0.00			0.00

Note. [†] $p < .10$. * $p < .05$. ** $p < .01$. *** $p < .001$. β s in bold are significant at $p < .05$. Engagement = online learning engagement; t1 = the first month of the semester; t2 = the second month of the semester.



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Method (cont.)

Online Learning Engagement Index:

- Log-Count:** Average number of learning activities on *the Blackboard Learn*, the Learning Management System (LMS), indicating the level of participation.
- Log-Entropy:** Calculated using Shannon entropy, indicating the evenness of learning activity across a semester.
- Access-Ratio:** Proportion of days with at least one learning activity over total days in a semester, indicating steady participation regardless of total activity.
- Engagement index:** we standardized the above three indicators and averaged them to generate the engagement index

Results

In Study 1, students with higher well-being at the beginning of the semester subsequently showed higher levels of online learning engagement and had higher GPAs, even after controlling for previous engagement and GPAs, respectively. The link between well-being and engagement became nonsignificant after controlling for depression and anxiety, but the link between well-being and GPA remained. **Study 2** partially replicated these findings, showing that students with higher well-being engaged more in online learning and achieved marginally higher GPAs. However, these links were no longer significant after controlling for previous LMS engagement and previous GPAs, respectively.

Discussion

Our findings emphasize the significance of well-being in online education. Interventions promoting well-being may enhance students' engagement and performance. Longitudinal design and objective measures add to the strength of the results. Further research is needed to establish a stronger causal relationship.