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Cooperative Learning And Subjective Well-Being As Predictors Of Academic Motivation During The COVID-19 Pandemic

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Abstract

This cross-sectional study investigated the associations between cooperative learning, subjective well-being, and academic motivation among Pakistani students during the first phase of the COVID-19 pandemic. A diverse sample of students (N=300, 50% female) was surveyed to explore how these factors interacted in the unprecedented educational context using standardised measures. Measures include, Student Subjective Well-Being Questionnaire, Cooperative Learning Scale, and Academic Motivation Scale. Data was obtained using online and paper-based survey and analysed psychometrically, descriptively, and analytically using SPSS v23. The findings revealed significant correlations and predictions, with cooperative learning (R2=0.78) showing a strong association with academic motivation compared to subjective well-being (R2 =0.22). Conversely, intrinsic and extrinsic motivation exhibited a strong correlation with[1] subjective well-being (r=0.70, r=0.57 respectively), emphasizing the impact of students' emotional states on their academic drive. These findings are consistent with existing literature and provide valuable insights into the relevance of cooperative learning and well-being in influencing academic motivation, particularly in the context of the COVID-19 pandemic. These findings can inform the development of evidence-based strategies to enhance academic motivation and engagement among Pakistani students. Leveraging cooperative learning and promoting subjective well-being emerge as potential approaches to address the challenges posed by the pandemic and foster positive academic outcomes.

Keywords: *cooperative learning; subjective well-being; academic motivation; COVID-19 pandemic; online learning.*

Introduction

The COVID-19 pandemic has had a significant impact on academic motivation across personal, social, and environmental contexts among university students (Hanesty, Neviyarni, & Karneli, 2021; Camacho, Correia, Zaccoletti, & Daniel, 2021). The measures taken by national

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governments to contain the spread of corona virus have negatively affected the academic motivation levels of students and learning in general (Günaydın, 2022). Lockdown and isolation have been associated with problematic motivation and engagement among university students (Martin, 2023). The pandemic has had a significant impact on the education sector and has forced educators and students to adapt to new learning environments. The shift to online (Martin, 2023) and distance (Behal, Dhir, Hasteer, & Soni, 2023) learning has presented challenges for students and negatively affected their motivation levels.

Several studies have investigated the role of cooperative learning and subjective well-being in this context. Cooperative learning has been found to be an effective tool for encouraging university students to develop academic goals that motivate them to fully engage with the tasks they are set to acquire knowledge and skills (Mendo-Lázaro, León-Del-Barco, Polo-Del-Río, & López-Ramos, 2022) Studies have found a positive correlation between cooperative learning and academic motivation (Nugrahani, Vardia, Haliza, & Zuhroh, 2022; Gutierrez-Aguilar et al., 2022) These findings are consistent with empirical evidence before the COVID-19 pandemic (Tran, 2019).

The COVID-19 pandemic has also had a negative impact on students' subjective well-being, which in turn can affect academic motivation (Alesi, Giordano, Gentile, Caci, 2023; Latorre-Cosculluela, Sánchez, Rivera, & Orús, 2022). Over 75% reported increases in stress, which they attributed most frequently to motivational and academic challenges (Usher et al., 2020). The mental well-being of students was negatively impacted by financial difficulties, concern that their physical health may suffer due to exposure to COVID-19, and a lack of motivation for online learning (Lai, Au, & Low, 2021). Another study found school climate, self-efficacy, and test anxiety predicted subjective well-being and/or GPA during the pandemic (Lai et al., 2021).

Interestingly, the positive effects on academic motivation during the COVID-19 pandemic have also been reported. For instance, online learning had a positive effect on students' motivation and academic performance even during (Latorre-Cosculluela, Sánchez, Rivera, & Orús, 2022; Marler et al., 2021; Göksel, 2021) especially when implemented effectively. One study found that the COVID-19 pandemic increased students' self-efficacy for learning, which in turn can have a positive impact on academic motivation and success (Weishaar, 2022).

Researchers have generally employed quantitative design using already established measures reporting data from developing countries. In comparison, studies investigating these impacts in other regions, especially in low- and middle-income countries are scarce, despite many of these areas being severely affected by COVID-19. To address this, an exploratory study was carried out to examine academic motivation, cooperative learning, and subjective well-being among Pakistani students during the first phase of COVID-19 from March to May 2020.

During the first phase of the COVID-19 pandemic in Pakistan, university closures were indeed implemented as part of the government's efforts to contain the spread of the virus. To ensure the continuity of education, universities across the country transitioned from traditional in-person teaching to online delivery of lectures and assessments. Online teaching allows for greater flexibility and accessibility, as students can access course materials and lectures from anywhere with an internet connection. However, it can also be challenging for students who lack access to reliable internet or technology, and it may be difficult to replicate the same level of interaction and engagement that occurs in a traditional classroom setting, which can impact cooperative learning, subjective well-being, and academic motivation. To examine the possible impacts of the COVID-19 pandemic, data will be collected using standardised measures from several colleges and universities in Pakistan. Such findings can inform the development of interventions that aim to improve academic motivation during the pandemic by leveraging

cooperative learning and promoting subjective well-being (Tang, & He, 2023; Yuda et al., 2022).

Materials and Methods

Study Design

This is a cross-sectional observational study examining the impact of subjective well-being and cooperative learning on academic motivation during the COVID-19 pandemic.

Participants

Data was collected from 300 (n = 150 females) undergraduate students from colleges and universities located in Islamabad, Pakistan using purposive sampling. The age range of the participants was 16 to 22 years (Mage = 20.50 years, SDage =1.5).

Measures

Student Subjective Well-Being Questionnaire (SSWQ)

It is a 16-item self-report rating scale examining the student's subjective well-being over the past month. It comprised four subscales including the joy of learning (item no. 1, 5, 9, 13), school connectedness (item no. 2, 6, 10, 14), educational purpose (item no. 3, 7, 11, 15) and academic efficacy (item no. 4, 8, 12, 16). Each item is scored from 1 = 'Almost never' to 4 = 'almost always' with a score range of 1-64. Total scores can be computed for the questionnaire and its subscales. The scale has satisfactory alpha reliability with post-secondary education (Roberson, & Renshaw, 2022).

Cooperative Learning Scale

It is a 36-item self-report rating scale comprising two subscales including informal cooperative learning (items 1-20) and formal cooperative learning (items 21-36). Each item is scored from 1 = 'not at all' to 4 = 'a lot' with a score range of 1-64. The scale has satisfactory alpha reliability (Fernandez-Rio, Cecchini, Mendez-Gimenez, Mendez-Alonso, & Prieto, 2017).

Academic Motivation Scale

It is a 28-item self-report rating scale comprising seven subscales including intrinsic motivation - to know (item no. 2, 9, 16, 23), intrinsic motivation - toward accomplishment (item no. 6, 13, 20, 27), intrinsic motivation - to experience stimulation (item no. 4, 11, 18, 25), extrinsic motivation – identified (item no. 3, 10, 17, 24), extrinsic motivation – introjection (item no. 7, 14, 21, 28), extrinsic motivation - external regulation (item no. 1, 8, 15, 22), and amotivation (item no. 5, 12, 19, 26) (Vallerand, Blais, Brière, & Pelletier, 1989). Each item is scored from 1 = 'does not correspond at all' to 7 = 'corresponds exactly' with a score range of 1-182. Total scores and subscale scores can be computed. The scale has satisfactory alpha reliability with university students (Vallerand et al., 1992; Javaeed et al., 2019).

Ethical approval

Ethical approval was obtained from the Ethical Review Board, Department of Psychology, International Islamic University Islamabad, Ethics Committee. Further permission was obtained from the concerned authorities of participating colleges and universities before data collection.

Procedure

Data was obtained through the online and paper-based survey, which was distributed using participant mailing lists and social media. The survey was in English and it comprised of

participant information sheet, consent form, and the above measures. It took approximately 10 to 15 minutes to complete the survey. The obtained data set was completely anonymous as no identifiable information was obtained. Data were analysed using SPSS (Version-23) following 'Strengthening the Reporting of Observational Studies in Epidemiology' (STROBE) guidelines (von Elm et al., 2007) psychometrically (item-total correlations and Cronbach's α), descriptively (mean, SD), and analytically (correlational matrix, regression analysis, two-tailed t-tests).

Results

Table 1 Descriptive Statistics for Cooperative Learning, Subjective Well-being with Academic Motivation and Subscales among Students (N = 300)

Variables	K	α	M (SD)	Range Actual	Potential	Skew.	Kurt.
Cooperative Learning	36	0.75	106.40(6.62)	95-125	88-129	0.14	0.10
Informal Cooperative Learning	20	0.72	57.42(7.06)	43-74	40-76	0.04	0.02
Formal Cooperative Learning	16	0.74	52.26(6.25)	37-62	33-67	-0.28	-0.13
Subjective Well-being	16	0.82	44.96(5.96)	33-54	30-60	0.00	0.01
Joy of Learning	04	0.78	11.13(2.24)	6-16	4-18	0.00	0.03
School Connectedness	04	0.72	10.98(2.64)	8-14	5-16	-0.10	-0.08
Educational Purpose	04	0.80	11.35(2.31)	9-14	6-18	0.04	0.02
Academic Efficacy	04	0.79	11.89(2.34)	7-17	5-19	-0.22	0.15
Academic Motivation	28	0.83	84.67(5.81)	69-104	63-106	0.03	0.01
Amotivation	12	0.81	12.00(.55)	9-14	9-15	-0.47	-0.33
Intrinsic Motivation	12	0.75	43.70(8.74)	17-58	12-60	-1.71	1.02
Extrinsic Motivation	04	0.71	42.42(10.66)	15-54	12-60	-1.64	-1.06

Table 1 shows descriptive statistics and Pearson correlation coefficients for cooperative learning, subjective well-being, and academic motivation. Results show that all variables have a satisfactory level of alpha reliability (α> .70). Skewness value among all measures is also below 2 which indicates normal distribution satisfying the assumption of parametric statistics.

Table 2 Pearson Correlation Coefficients for Cooperative Learning, Subjective Well-being with Academic Motivation and Subscales among Students (N = 300)

Variables	1	2	3	4	5	6	7	8	9	10	11	12
1. Cooperative Learning	--	.64**	.38**	.52**	.35**	.02	.55**	.30**	.84**	-.20**	.37**	.26**
2. Informal Cooperative Learning		--	-.45*	.91**	.71**	-.01	.73**	.52**	.51**	-.16**	.66**	.52**
3. Formal Cooperative Learning			--	.50**	.43**	.03	.24**	.32**	.40**	.03	.36**	.31**
4. Subjective Well-being				--	.68**	.17**	.72**	.46**	.35**	.05	.70**	.57**
5. Joy of Learning					--	-.19**	.65**	.19**	.27**	-.20**	.51**	.39**

6. School Connectedness	--	-.01	-.34*	.02	-.12*	.09	.07
7. Educational Purpose		--	.09	.45**	-.04	.53**	.39**
8. Academic Efficacy			--	.13*	-.15**	.32**	.24**
9. Academic Motivation				--	-.23**	.29**	.21**
10Amotivation					--	.03	.03
11Intrinsic Motivation						--	.36**
12Extrinsic Motivation							--

Table 2 shows Pearson correlation coefficients for cooperative learning, subjective well-being, and academic motivation. Results show that academic motivation is highly correlated with cooperative learning (r=0.84) and moderately correlated with subjective well-being (r=0.35). Informal cooperative learning (r=0.51), formal cooperative learning (r=0.40), joy of learning (r=0.35), educational purpose (r=0.27), and academic efficacy (r=0.45) were also correlated with academic motivation. Both intrinsic and extrinsic motivation was moderately correlated with informal cooperative learning (r=0.66, r=0.52) compared to low correlations with formal cooperative learning (r=0.36, r=0.31). Interestingly, intrinsic motivation was highly correlated (r=0.70) with subjective well-being compared to extrinsic motivation (r=0.57). Similar trends of higher correlation with intrinsic motivation and lower correlations with extrinsic motivation can be observed with joy of learning, educational purpose, and academic efficacy.

Table 3 Multiple Regression Analysis to investigate Cooperative Learning and Subjective Well-being as Predictors of Academic Motivation (N = 300)

Predictors	Outcome: Academic Motivation					
			95% CI			
	B	SE	LL	UL	R^2	F
(Constant)	9.62**	2.61	4.48	14.76	0.78	360.21**
Cooperative Learning	1.02**	0.19	-1.40	-0.64		
Informal Cooperative Learning	1.69**	0.18	1.33	2.06		
Formal Cooperative Learning	1.65**	0.17	1.30	1.99		
(Constant)	66.43**	2.95	60.61	72.25	0.22	17.47**
Subjective Well-being	0.32*	0.14	-0.48	0.10		
Joy of Learning	0.06	0.24	-0.40	0.53		
School Connectedness	0.19	0.19	-0.04	0.70		
Educational Purpose	1.42**	0.23	0.96	1.89		
Academic Efficacy	0.53*	0.22	0.08	0.98		

Followup analysis was carried out using multiple regression to examine cooperative learning and subjective well-being using academic motivation as a response variable (See Table 2). The R2 value of 0.78 indicates that the model explains 78% of the fitted data around its mean when cooperative learning is used as an explanatory variable, $F(3, 296)=360.21$, $p<0.01$. The R2 value of 0.22 indicates that the model explains 22% of the fitted data around its mean when subjective well-being is used as an explanatory variable, $F(3, 296)=17.47$, $p<0.01$. In addition, results show that informal cooperative learning ($\beta =1.69$, $p<0.01$), formal cooperative learning

(β=1.65, p<0.01), educational purpose (β=1.42, p<0.01), and academic efficacy (β=0.53, p<0.01) predicted academic motivation.

Table 4 Between-group Differences in Cooperative Learning, Subjective Well-being and Academic Motivation and Subscales among Participants (N = 300)

	Undergraduate (n = 190)		Graduate (n = 110)				95% CI		
Variables	M	SD	M	SD	t(298)	p	LL	UL	Cohen's d
Cooperative Learning	106.90	6.76	105.55	6.31	1.70	.09	-.21	2.90	.20
Informal Cooperative Learning	58.24	7.09	56.23	6.87	2.43	**.01**	.38	3.62	.28
Formal Cooperative Learning	51.66	6.23	53.13	6.20	1.99	**.04**	-2.90	-.02	.23
Subjective Well-being	44.95	5.81	44.98	6.23	.04	.96	-1.43	1.37	.05
Joy of Learning	11.30	2.32	10.87	2.10	1.64	.10	-.08	.95	.19
School Connectedness	10.83	2.63	11.21	2.64	1.23	.21	-.99	.22	.14
Educational Purpose	11.53	2.43	11.09	2.09	1.65	.09	-.08	.98	.19
Academic Efficacy	12.16	2.26	11.49	2.42	2.45	**.01**	.13	1.20	.28
Academic Motivation	84.89	6.02	84.30	5.43	.85	.39	-.77	1.96	.10
Amotivation	12.00	.71	12.00	.00	.08	.93	-.12	.13	.01
Intrinsic Motivation	45.62	6.05	40.90	11.04	4.76	**.00**	2.77	6.68	.57
Extrinsic Motivation	45.05	7.43	38.59	13.23	5.39	**.00**	4.10	8.82	.65

To rule out the possible confounding effect of educational level, further analyses were carried out using independent sample t-tests (two-tailed). No differences were observed between undergraduate and graduate participants across measures. Between-group differences were observed in informal and formal cooperative learning, academic efficacy, and intrinsic and extrinsic motivation.

Discussion

This study examined cooperative learning and subjective well-being as predictors of academic motivation among Pakistani students during the first phase of the COVID-19 pandemic. Our findings suggest that both cooperative learning and subjective well-being are correlated with and predicted academic motivation. Interestingly, cooperative learning is strongly correlated with academic motivation in comparison to subjective well-being. In addition, intrinsic and extrinsic motivation were strongly correlated with subjective well-being in comparison to cooperative learning. These findings are consistent with studies reporting a positive association of subjective well-being with academic motivation (Tang, & He, 2023) and reported correlation

of intrinsic and extrinsic motivation with subjective well-being among Malaysian students (Teo, Lilian, & Koo, 2023; Latorre-Cosculluela, Sánchez, Rivera, & Orús, 2022; Marler et al., 2021; Göksel, 2021). We have also found academic efficacy to be correlated and predicted academic motivation. These findings are consistent with studies reporting the relationship between academic efficacy and motivation during the COVID-19 pandemic (García-Álvarez, Hernández-Lalinde, Cobo-Rendón, 2021). Taken together, these findings can inform the development of interventions that aim to improve academic motivation during the pandemic by leveraging cooperative learning and promoting subjective well-being.

In light of these findings, schools can implement collaborative learning methodologies in their curricula and invest in well-being programs that support students' mental health and emotional resilience. By leveraging cooperative learning and prioritizing subjective well-being, educators can foster a motivated and engaged student body during the pandemic, ultimately leading to better academic outcomes and overall well-being. Additionally, policymakers can use these findings to develop evidence-based policies and initiatives that enhance academic motivation and student success in the current challenging educational landscape.

This study has the following strengths. Conducting the study during the first phase of the COVID-19 pandemic makes the findings highly relevant and applicable to the specific challenges and circumstances students faced during that time. This temporal alignment allows for a better understanding of how cooperative learning and well-being influenced academic motivation in an unprecedented educational landscape. By identifying cooperative learning and subjective well-being as influential factors in academic motivation among Pakistani students, educators and policymakers can design targeted interventions to improve student engagement and well-being during the pandemic and beyond. The study likely included a diverse sample of Pakistani students from Islamabad, which enhances the generalizability of the findings to a broader population.

This study has the following limitations. Study variables were examined using standardised measures and were evaluated and found to be psychometrically suitable for use. Although the use of standardised measures allows pre-pandemic comparisons but they fail to capture the specific impacts of COVID-19. For instance, these pandemic-specific impacts can be related to the structuredness of instructions, technical difficulties, and the perceived effort of the teachers, the novelty of tools, and the social relationships between students (Tomej, 2022). Henceforth, it is suggested that pandemic-specific scales must be designed alongside established psychometric measures (Bell et al., 2021; Tanveer et al., 2023). Secondly, it would be interesting to check residual diagnostics and explore the association between socio-demographics (age, gender, public/private University) and study variables. Future analyses of this or an expanded data set using a regression analysis would be useful. Further research could be done on disadvantaged groups with low socio-economic status or disability (UNESCO, 2019).

Conclusions

In conclusion, this cross-sectional study provides valuable insights into the associations between cooperative learning, subjective well-being, and academic motivation among Pakistani students during the first phase of the COVID-19 pandemic. The use of a diverse sample and the application of standardized measures ensured the robustness of the findings. The results indicated that cooperative learning exhibited a strong association with academic motivation, suggesting its potential as an effective educational strategy during the pandemic. Conversely, intrinsic and extrinsic motivation showed a substantial correlation with subjective well-being, emphasizing the critical role of emotional states in driving students' academic performance. The findings align with existing literature, further validating the credibility of the study's outcomes. This research presents practical implications for educators and policymakers in Pakistan, as it suggests evidence-based strategies to enhance academic motivation and

engagement during challenging circumstances. Leveraging cooperative learning and promoting students' subjective well-being emerge as promising approaches to address the unique challenges posed by the COVID-19 pandemic and cultivate positive academic outcomes.

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Conflicts of Interest: The authors declare no conflict of interest.

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