Examining Cognitive Distortions Contribution to Preservice Teachers Academic Burnout during Online Teaching Practice

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KEYWORDS

Academic burnout;

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ABSTRACT:

Introduction: In practice, online learning has different settings and dynamics that impact the teacher's psychological condition. Preservice teachers who have minimal teaching experience face these dynamics directly. In addition, their dual role as students can trigger academic burnout. This complexity produces various models of factors that contribute to preservice teacher academic burnout, one of which is cognitive distortions.

Objectives: This research aims to examine the cognitive distortions that contribute to preservice teachers' academic burnout.

Methods: This non-experimental quantitative research uses a correlational design. Participants involved 790 preservice teachers in Indonesia, measured using Pre-service Teachers Academic Burnout Inventory (PTABI) and Cognitive Distortion Questionnaire (CDQ). Data analysis used descriptive, graphical, and multiple linear regression analysis.

Results: The results show the high contribution of cognitive distortions to academic burnout, as estimated at 69.5%. These results indicate that the preservice executive function did not optimally work to prevent and control their cognitive distortions.

Conclusions: This research suggests exploring academic burnout in a more specific analysis involving more variables related to their mental and executive function skills. Practical implications could use these results as a need assessment to design the teaching practice course that prevents preservice academic burnout.

1. Introduction

Online learning developed more than 20 years ago and significantly emerged recently due to the global pandemic (1,2). It has been implemented globally, whether it is effective or not. From the educational development perspective, the last few years have been massively beneficial for online learning development (3,4). Many online platforms were developed for teaching, referencing, assessment, conferences, etc (5–7). This development occurred at various levels of education, starting from kindergarten to higher education.

The current online learning setting has had a positive impact based on the results of learning services and the efficiency of education delivery. The advantages of online learning for education providers, including teachers, include time flexibility, instrument efficiency, data processing, references, asynchronous discussions, etc (5,8–10). On the other hand, several problems and challenges also arise when implementing online learning. Common issues that occur from a student's perspective tend to be low engagement, support systems (devices and environmental conduciveness), academic cheating, and limited interaction between students (11,12). Apart from support system problems, teachers play a role in providing an adequate academic atmosphere online. Teacher consistency, involvement, and dedication need to be at different levels in delivering online learning services (4,13,14).

The different roles of teachers in online learning settings provide different workloads and demands. The results of previous research cannot conclude whether these differences result in higher burdens and demands in online learning settings (14). However, using a hybrid system certainly requires teachers to play an optimal role in online and offline settings (15,16).

This complex role has the potential to build up the workload of teachers. Preservice teachers also experienced similar conditions during their internship period. Even though they are not entirely responsible for organizing learning, they have service responsibilities to students and academic responsibilities to their campus. In other words, preservice teachers also have the same vulnerability to obstacles in providing education. This dual role provides various pressures, unfavorable events, and the risk of failure, which becomes a burden on their cognitive abilities (17). This vulnerability can take the form of stress, anxiety, negative countertransference, disengagement, and burnout.

In particular, preservice teacher burnout tends to occur as a result of the accumulation of the burden of study and teaching practice they have undergone. The overlapping of roles as student, offline teacher, and online teacher is one of the triggers for increased stress and exhaustion among preservice teachers (18). At the results of previous research reveal that the too much workload and task among preservice teachers as their academic activities. Other factors of preservice teacher academic burnout might came from their lack of energy, limited cognitive reserve, emotional hijacking, lower cognitive flexibility and failure of executive function activation (14,19–21). Psychologically, failure in cognitive processes can trigger inaccurate or biased habitual negative thoughts and beliefs, which have an impact on emotional and behavioral disorders (22,23). In other words, these factors have the probability of influencing the psychological condition of preservice teachers, including leading to cognitive distortions. Cognitive distortion might be a cognitive disorder that leads to various mild psychological disorders (24–26), including burnout.

2. Objectives

This research aims to explore the academic burnout of preservice teachers during their online practice. This exploration focused on the mental and cognitive experience of the preservice teacher. This research will provide perspective and describe the cognitive distortion in the preservice teacher. This research result can contribute to the psychological assessment of preservice teachers, the basis of assistance programs (counseling and consultation) for preservice teachers, and also the development of a preservice education curriculum by minimizing burnout for preservice teachers. Moreover, the main research question is, "How is the Preservice teacher burnout condition related to their cognitive

distortion to their online Teaching Practice?". In specific, there are specific questions to support the main research questions as follows:

(a) How is the Preservice teacher's burnout level in Online Teaching Practice?

(b) How are Preservice teacher's cognitive distortions affecting their online teaching practice?

(c) What is the correlation between the level of preservice teacher cognitive distortions and burnout.

3. Methods

3.1. Measurement

This research used a quantitative method with a survey design. The design is suitable to explore and describe the data to generalize the population condition (27,28). The survey delivery is a web-delivery survey using online forms. The data collection process involved many lecturers and supervisors of preservice teaching practices held in online settings.

The measurement used the Preservice Teacher Academic Burnout Inventory (PTABI) had 12 items from three indicators of (a) Exhaustion; (b) Cynicism; (c) Reduce of Professional Efficacy (29). The response of each item is defined as “Strongly Agree,”; "Agree,”; “Less Agree",” or "Disagree." The PTABI was tested for item validity, and each item had more than 0.3 bivariate. The reliability test of the PTABI resulted in 0.830 Cronbach's Alpha coefficients and McDonald's Omega (ω) at 0.836, which means the PTABI had high reliability. The cognitive distortions were measured using the Cognitive Distortions Questionnaire (CDQ), which identifies the presence and level of each cognitive distortion participant's online teaching performance. The CDQ developed is based on ten forms of cognitive distortions (30), which are All-or-Nothing Thinking (CD1); Overgeneralization (CD2); Mental Filtering (CD3); Discounting the Positive (CD4); Jumping to Conclusions (CD5); Magnification and Minimization (CD6); Emotional Reasoning (CD7); Should Statements (CD8); Labeling (CD9); Self-Blame and Other-Blame (CD10). The overall CDQ has 20 items on a Likert-style scale that have choices of "never,” "seldom,” “often,” and "Always.” The CDQ was tested for item validity, and each item had more than 0.3 bivariate. The reliability test of CDQ was Cronbach's Alpha with 0.582 and McDonald's Omega (ω) at 0.601 which indicate the moderate and acceptable reliability level.

3.2. Participants

This research population consists of all college students majoring in education who are preservice teachers in East Java and Center Java Region, Indonesia. The samples involved were 790 preservice teachers selected by purposive-random sampling. The purposive selection refers to semester criteria and teaching practice models as initial criteria for participants. Specifically, the participants must be (a) at least in 6th semester, (b) currently undertaking teaching practice at the time data collection is carried out, and (c) under the supervision of a lecturer who has coordinated with the research team. Based on this purposive selection, there were thousands of preservice teachers in only East Java and Central Java regions. Then, the participant was selected using random sampling to gain 790 participants who agreed to informed consent for this research. From those samples, there were 317 Male (40,13%) and 473 Female (59,87%) from various subjects.

3.3. Data Analysis

Data analysis used in this research is descriptive, graphical, and multiple linear regression analysis. The descriptive analysis measures and calculates the mean, median, and standard deviation of the Academic Burnout (AB) of preservice teachers in general. The graphical analysis will describe the academic burnout level of each indicator in detail. The multiple linear regression analysis will measure the model fit of cognitive distortions contribution to the preservice academic burnout. The multiple linear regression analysis also provides the respective forms of contribution, effect change, and correlation estimates to academic burnout.

4. Results

4.1. Descriptive Statistics and Assumption Check

Descriptive results for all variables are presented in Table 1. Academic burnout performed at a moderate level based on the mean score (M=69.245) and the maximum score (Max=92.308), with a standard deviation of SD=12.385. Among the cognitive distortions forms, the range of the Mean (M) score was at 57.310 (CD7) to 83.291 (CD5). For the assumption checking, the data was analyzed using normality and colinearity tests. The regression model passed the normality test with the Asymp—Sig (2-tailed) value at 0.172. The collinearity with VIF value is in the range of 1.114 to 2.396, which generally indicates that multicollinearity is not a significant concern in this regression model.

4.2. Regression Linear Analysis and Effect Estimation

The results of the multiple linear regression analysis show the overall model fit and the coefficients of covariates. The overall model indicates that cognitive distortions had a statistically significant effect on the preservice teacher's academic burnout. Table 2 shows the detailed results of the Model Fit indicated by the R-square at 0.695. The R-square number suggests that approximately 69.5% of the variance in academic burnout can be explained by the overall cognitive distortions included in the model. Furthermore, in Table 3, the value of F (10, 779) = 177.361 with a p-value of 3.944 x 10-193 indicates the significant proportion in academic burnout to define the cognitive distortions effect.

The following results in Table 4 present the unstandarized andstandarized coefficients for each cognitive distorions forms and academic burnout in multiple liniear regression model. Based on Table 4, the standardized coefficients provide insights into the relative importance of each covariate in predicting academic burnout (AB). Among the cognitive distortions, CD1 had the largest standardized coefficient ($\beta = 0.250$, $p < 0.05$), followed by CD9 ($\beta = 0.229$, $p < 0.05$) and CD4 ($\beta = 0.215$, $p < 0.05$). These results suggest that higher levels of CD1, CD9, and CD4 are associated with increased levels of academic burnout. In contrast, the standardized coefficient for CD7 ($\beta = -0.036$, $p = 0.107$) and CD8 ($\beta = -0.031$, $p = 0.141$) were not statistically significant. It indicated that CD7 and CD8 did not significantly predict academic burnout in this sample.

The unstandardized coefficients in Table 4 provide insights into the practical significance of each covariate in predicting academic burnout. In other words, Table 4 indicates the absolute change of academic burnout predicted at the one-unit change in each cognitive distortion form. Based on its results, CD9 predicted the highest change in academic burnout at 0.129, followed by CD1 at 0.128 and

CD4 at 0.111. As an insignificant effect, CD7 and CD8 had only a negative effect change at -0.018 and -0.016 on academic burnout.

Table 1. Descriptive and assumptions check results

	Descriptives				Collinearity Statistic	
	N	Mean	SD	SE	Tolerance	VIF
AB	790	69.245	12.385	0.441		
CD1	790	80.949	24.199	0.861	0.502	1.991
CD2	790	73.196	22.426	0.798	0.822	1.216
CD3	790	68.133	21.534	0.766	0.659	1.518
CD4	790	81.930	23.986	0.853	0.466	2.148
CD5	790	83.291	24.425	0.869	0.417	2.396
CD6	790	63.418	22.559	0.803	0.746	1.341
CD7	790	57.310	24.624	0.876	0.790	1.266
CD8	790	58.101	23.599	0.840	0.898	1.114
CD9	790	70.095	21.920	0.780	0.746	1.341
CD10	790	65.665	22.983	0.818	0.729	1.371

Source: Authors

Table 2. Summary model of Academic Burnout regressions

Model Summary - AB				
Model	R	R^2	Adjusted R^2	RMSE
H_0	0.000	0.000	0.000	12.385
H_1	0.834	0.695	0.691	6.886

Source: Authors

Table 3. ANOVA results of the regression model

ANOVA						
	Model	Sum of Square	df	Mean Square	F	p
H_1	Regression	84092.857	10	8409.286	177.361	3.944×10^{-193}
	Residual	36935.081	779	47.413		
	Total	121027.938	789			

Source: Authors

Table 4. Coefficients table of the regression model

Coefficients						
	Mode	Unstandardized	SE	Standardized	t	p
H_0	(intercept)	69.245	0.441		157.145	
H_1	(intercept)	20.767	1.694		12.257	1.044×10^{-31}
	CD1	0.128	0.014	0.250	8.969	2.192×10^{-18}

CD2	0.091	0.012	0.166	7.587	9.324×10^{-14}
CD3	0.072	0.014	0.125	5.124	3.772×10^{-7}
CD4	0.111	0.015	0.215	7.397	3.613×10^{-13}
CD5	0.066	0.016	0.131	4.261	2.286×10^{-5}
CD6	0.026	0.013	0.047	2.029	0.043
CD7	-0.018	0.011	-0.036	-1.614	0.107
CD8	-0.016	0.011	-0.031	-1.473	0.141
CD9	0.129	0.013	0.229	9.976	3.863×10^{-22}
CD10	0.049	0.012	0.091	3.926	9.390×10^{-5}

Source: Authors

This effect is then described as the part and partial correlation between each cognitive distortion. Table 5 presents the part and partial correlation between cognitive distortions and academic burnout. In partial correlation analysis, CD7 and CD8 had weak negative correlation, CD9 (0.337) and CD1 (0.306) had moderate positive correlation, and the rest of CD2, CD3, CD4, CD5, and CD6 had weak positive correlation. In the partial correlation analysis, all variables were performed with weak correlation, with CD7 and CD8 having negative directions and the rest having positive correlation directions. This result (described in Table 6) indicates how each cognitive distortion and absence affect and correlate to academic burnout. Aligned with previous research, most cognitive distortions change, or absence affect academic burnout change. However, the magnitude of the score indicates that the effect was at a moderate level.

Table 5. Partial and Part Correlations

	Correlations		
	Model	**Partial**	**Part**
H_1	CD1	0.306	0.178
	CD2	0.262	0.150
	CD3	0.181	0.101
	CD4	0.256	0.146
	CD5	0.151	0.084
	CD6	0.073	0.040
	CD7	-0.058	-0.032
	CD8	-0.053	-0.029
	CD9	0.337	0.197
	CD10	0.139	0.078

Source: Authors

5. Discussion

The findings of the multiple linear regression analysis suggest that cognitive distortions might predict 69.5% of academic burnout in general. Specifically, eight forms of cognitive distortion had significant

contributions and effect changes on preservice teacher academic burnout. However, CD7 and CD8 did not significantly affect academic burnout. Those two cognitive distinctions, as measured by descriptive measurement, show the lowest level of preservice teachers, which is moderate. Moreover, each variable change and absence had various effects on academic burnout.

External sitmuli (environment, workload, subject matter) are part and factor in the presence of unfavorable events experienced by preservice teachers. Automatic thoughts and beliefs then interpret this unfavorable situation. This condition becomes vulnerable when preservice teachers experience a lack of energy with weak cognitive capacities (31,32). In the end, the interpretation process leads to misperceptions and inaccurate assumptions (33,34). At this point, cognitive distortions occur, which provide excessive psychological burden. In some conditions, cognitive distortions can be strengthened by negative and irrational beliefs that have previously been indoctrinated in preservice teachers self and personality (20). Irrational beliefs that tend to make demands can strengthen the cognitive distortions that occur, especially in conditions vulnerable to psychological expulsion (35,36). The existence of cognitive distortions as a malfunction of cognitive processes indirectly results in excess energy expenditure and ultimately triggers mental fatigue in preservice teachers (26). Cognitive distortions can trigger demands, dramatization, and low-frustration tolerance, which can weaken a person's mental condition. The condition has consequences in the form of unhealthy emotions and maladaptive behavior (25). This condition reduces the quality of students' performance both in their academic assignments and in their teaching practice.

Based on the results of this research, CD7 and CD8 do not show any significant contribution to the level of preservice teacher academic burnout. Both forms of cognitive distortion use emotional foundations and the construct of "necessity" in interpreting and concluding an event. This kind of process blurs the objectivity of meaning so that it fails to capture information accurately (37,38). In practice, these two forms of thinking have been successfully overcome by some preservice teachers (at a moderate level) so that they do not have a significant influence on the burnout they experience. These results can refer to several supporting aspects, including emotional intelligence and social support which support emotional management in avoiding "emotional reasoning" (39) and a constructive atmosphere and social support in avoiding distorting "should statements" (40,41). In particular, both cognitive distortions involve a portion of personal thoughts and philosophies and lower the complexity of cognitive processes (42). At the same time, the mental load obtained from the "emotional reasoning" and "should statement" thought processes is also lower, so it does not have a significant impact on preservice teacher academic burnout.

In other conditions, eight different forms of cognitive distortions make a significant contribution to the occurrence of burnout in preservice teachers. In general, the eight cognitive distortions use individual and subjective points of view in perspective-taking (38,43). The dichotomous thinking model, which oversimplifies and overgeneralizes, is the basic thinking model that produces these eight forms of cognitive distortions. Failure of the cognitive processes of flexibility, defusion, and decentering means that individual executive functions do not work optimally (44–46). In the end, it made the mental and cognitive burdens in the form of blurred, biased, and distorted misperceptions.

Learning performance through online settings requires cognitive functions from teachers in a more significant role. The teacher's cognitive involvement model in online teaching demands higher sensitivity and awareness (47). Cognitive involvement refers to managing mental conditions in facing

online learning situations, risk factors for media and network interference, observing and understanding student behavior, and preventing misperceptions and teacher bias thinking (19,23). Failure to anticipate these conditions increases the opportunity for cognitive distortions to emerge from teachers in online learning settings.

In practice, although online learning pretends to be more flexible for students, there are complexities that teachers tend to experience. This complexity lies in the preparation of designs, more integrative materials and media, data security in the learning process, and the design of accurate learning evaluations (48–50). The pre-learning process requires checking resources, not only learning materials but also the media and platforms prepared. The learning process involves the designed activity being carried out independently by students, but it still provides the same quality and learning experience as a face-to-face learning setting. Post-learning requires a more comprehensive evaluation model, both in terms of measuring knowledge and measuring attitudes towards student learning outcomes, anticipating academic cheating, and security of student learning outcomes data.

The complexity of the role and failure of cognitive processes trigger the presence of mental fatigue in the academic life of preservice teachers. Stressful events, demanding tasks, workloads, and teaching processes become unfavorable events that trigger emotional and physical fatigue in preservice teachers (Beutel et al., 2019; Even- Zahav et al., 2022; Fuentes-Abeledo et al., 2020). On the other hand, cognitive distortions due to unfavorable events result in cognitive disruption and fatigue in preservice teachers. Overall, a high level of cognitive ability is required to regulate the entire mental experience of preservice teachers (53,54). Metacognitive regulation might be a necessry skill for preservice teachers to deal with risk factors and unfavorable events in their online teaching practice.

The results of this research have limitations in specifically exploring the mental fatigue experienced by preservice teachers, whether for academic assignments, offline teaching practices, or online teaching practices. In addition, this research cannot provide empirical evidence regarding the specific forms of unfavorable events experienced by preservice teachers as triggers for emerging cognitive distortions. The results of this research provide empirical evidence for the identification of cognitive conditions in academic burnout experienced by preservice teachers. Cognitive distortion might be a risk factor that significantly correlates with the accumulation of mental fatigue in preservice teachers.

An in-depth exploration of each cognitive distortion becomes a recommendation for further research. Apart from that, exploration of more specific burnout conditions in academic assignments, offline teaching practices, and online teaching can provide more specific empirical evidence of burnout experienced by preservice teachers. Furthermore, the results of this research form the basis for needs and recommendations for strengthening the cognitive capacity of preservice teachers. Metacognitive regulation training might be an alternative to increasing their cognitive capacity for managing cognitive processes regarding unfavorable events. Successful management of cognitive processes in preventing burnout can indirectly strengthen the mental condition of preservice teachers and improve their psychological well-being.

6. Conclusions

This research examined the cognitive distortions that contribute to the academic burnout of preservice teachers. The cognitive distortions, in general, contribute and correlate significantly to their academic

burnout during their online teaching performance. This cognitive distortion indicates their executive function failure due to unfavorable events. This cognitive disorder becomes an excessive mental burden and accumulates with emotional and physical fatigue, which results in burnout in preservice teachers. The complexity of the role triggers unfavorable events that impact emotional and physical fatigue. Cognitive distortions become additional accumulations that give rise to academic burnout in preservice teachers' mentality. The implications of this research lead to a deeper exploration of more specific identification of preservice teacher burnout. Furthermore, the practical implications of the results of this research point to the foundation and need for alternative strategies for increasing the cognitive capacity of preservice teachers.

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