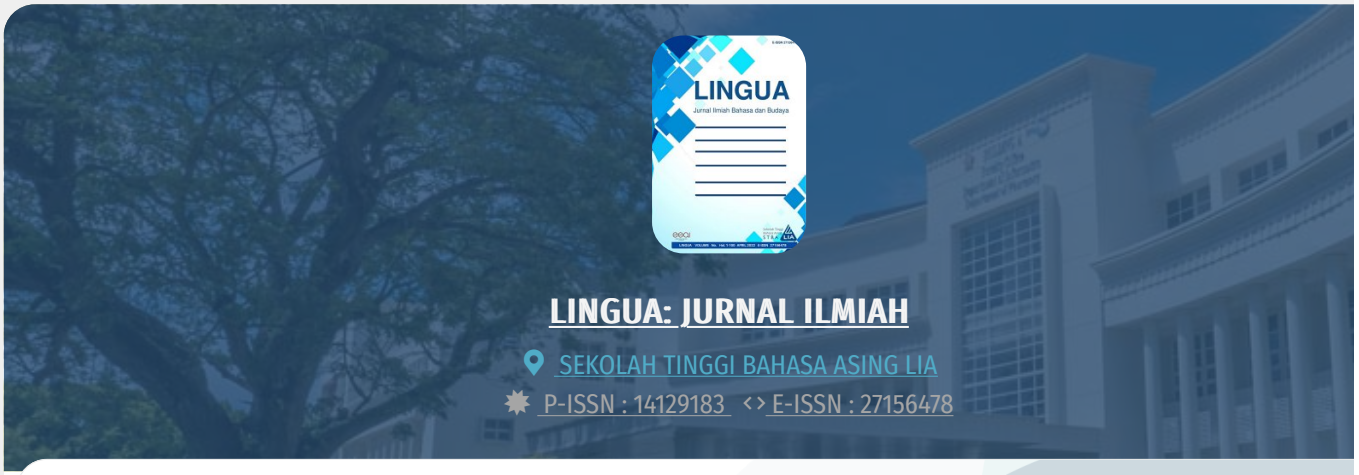

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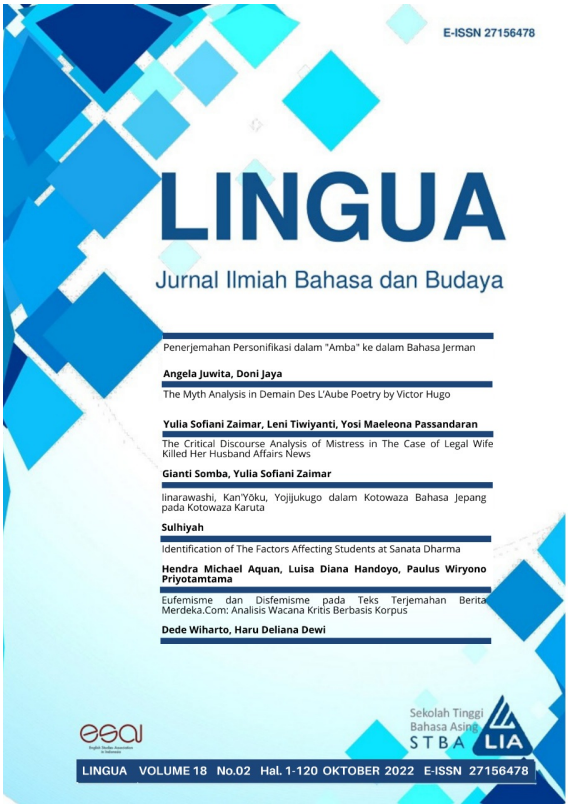

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THE MYTH ANALYSIS IN DEMAIN DES L'AUBE POETRY BY VICTOR HUGO

IDENTIFICATION OF THE FACTORS AFFECTING UNIVERSITY STUDENTS OPTIMISM DURING THE COVID-19 PANDEMIC

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ABSTRACT

The pandemic COVID-19 has disrupted global society and its order, including the educational sector. Reports from other countries indicated the pandemic situations increased the levels of stress and anxiety among college students. Sometimes, a difficult situation does not always cause negative responses. Some studies suggested the pandemic may affect positive attitudes and optimism. This study aimed to identify the factors that contribute to developing optimism among university students at a private university in Yogyakarta. The researchers employed an online questionnaire to gather information from 317 respondents. Three methods of analysis: exploratory factor analysis (EFA), confirmatory factor analysis (CFA), and structural equation modeling (SEM) were used. The EFA results indicated reasoning and experience as independent variables, and optimism as a dependent variable. The CFA results suggested the factor of type of information as a mediating variable. Further, a structural model reported excellent goodness of fit indices from the model: $\chi 2 = 63.922$ (df = 55; alpha = 0.05), probability = 0.192, CMIN/DF = 1.162(≤ 2.00), RMSEA = 0.023 (≤ 0.08), GFI = 0.970 (≥ 0.90), and TLI = 0.985 (≥ 0.90).

***Keywords**: Optimism, COVID-19, SEM, CFA, EFA, Factor analysis*

ABSTRAK

Pandemi COVID-19 telah mengganggu masyarakat global dan tatanannya, termasuk sektor pendidikan. Laporan dari negara lain menunjukkan situasi pandemi meningkatkan tingkat stres dan kecemasan di kalangan mahasiswa. Terkadang, situasi yang sulit tidak selalu menimbulkan tanggapan negatif. Beberapa penelitian menunjukkan bahwa pandemi dapat mempengaruhi sikap optimisme. Penelitian ini bertujuan untuk mengetahui faktor-faktor yang berkontribusi dalam mengembangkan sikap optimis pada mahasiswa di universitas swasta di Yogyakarta. Peneliti menggunakan kuesioner online untuk mengumpulkan informasi dari 317 responden. Tiga metode analisis: analisis faktor eksplorasi (EFA), analisis faktor konfirmatori (CFA), dan pemodelan persamaan struktural (SEM) digunakan. Hasil penelitian dengan EFA menunjukkan penalaran dan pengalaman sebagai variabel bebas, dan optimisme sebagai variabel terikat. Hasil CFA disarankan faktor jenis informasi sebagai variabel mediasi. Lebih lanjut, analisis structural model menunjukkan bahwa Goodness of fit indices dari model yang baik sekali dengan hasil hasil dibuat: $\chi 2 = 63.922$ (df = 55; alpha = 0.05), probability = 0.192, CMIN/DF = 1.162(≤ 2.00), RMSEA = 0.023 (≤ 0.08), GFI = 0.970 (≥ 0.90), dan TLI = 0.985 (≥ 0.90).

Kata Kunci: Optimisme, COVID-19, SEM, CFA, EFA, Analisis faktor

INTRODUCTION

The Corona Virus Disease 2019 (COVID-19) pandemic is believed to affect the psychological health of students. This psychological effect is compounded by the uncertainty of when the pandemic will end. In their research, Jovančević and Milićević (2020) stated that COVID-19 causes several psychological problems. These problems can be expressed as fear, depression, and anxiety. This response is suggested to be normal in humans as preventive behavior related to health.

The high health risk from COVID-19 has the potential to increase depression, stress, anxiety, and obsessive-compulsive disorder (OCD) in society (Ifdil et al., 2020a). Research on anxiety and stress levels among adults was investigated by Ifdil et al. (2020b) and involving 669 respondents from 22 provinces in Indonesia. In this study, the findings showed that in the stress level category, as many as 492 respondents (75%) were included in the moderate to severe stress category. Analysis on the level of anxiety found 495 respondents (74%) were in the moderate to severe anxiety category. The researchers stated that the high levels of stress and anxiety of these respondents were caused by the length of time the respondents used the Internet to access news related to COVID-19 through social media accounts.

In the early months of the confirmation of positive cases in Indonesia, there were many hoaxes news spread in the community, especially through social media. Research on hoax news related to COVID-19 conducted by Rahayu and Sensusiyati (2020) between January and March 2020 found that there were as many as 50 stories categorized as hoaxes spreading through WhatsApp, Facebook, and Twitter. On March 10 and 24, 2020, it was identified that there was a high spread of hoax news, namely 4 and 10 hoax news, respectively. Rahayu and Sensusiyati (2020) suspected that the high spread of hoax news is a sign of increasing anxiety in the community.

Uncertainty conditions with high risk factors of transmission certainly have negative psychological impacts. These negative impacts include, among others, feelings of anxiety and insecurity. Research by Cao et al. (2020) on the psychological impact of the COVID-19 epidemic on students in China found several factors that influence the level of anxiety. Factors such as the location where someone lives in urban areas, the stability of family income, and living with parents

can reduce anxiety. Cao et al. (2020) stated that closeness of social relations is what students especially need during a pandemic.

Efforts to prevent the transmission of COVID-19, such as working at home and maintaining social distancing, have not been able to reduce the risk of transmission. The absence of an effective vaccine to inhibit the rate of transmission has also had a negative effect on society. This is due to the high transmission capacity of COVID-19 among humans. Threats to health and safety factors have continued to significantly worry people.

Support from the social environment as an external factor is of course needed at this time to build a positive attitude amid a pandemic. These external factors will directly or indirectly influence internal factors such as optimism. Optimism is an attitude that has an important role for humans. Scheier and Carver (1985) stated that optimism is the expectation for positive things to happen.

Someone who has an optimism attitude will also have good physical and mental health impacts. An attitude of optimism is closely related to physical and mental health. Research showed that in stressful situations optimists tend to show better ways of coping than pessimists (Fancourt & Steptoe, 2020). Furthermore, Fancourt and Steptoe (2020) stated that people with optimism tend to have lower health problems than pessimists. Optimism does not only affect the psychological condition, but also affects the physical health, namely by increasing cellular immunity. Optimism attitudes have been demonstrated to have beneficial impacts on people who practice it.

In general, attitudes are dynamic and can change from negative to positive or vice versa. This dynamic movement is the unique character of attitudes. Some researchers suggested there are at least three factors that change or shape attitudes that can be summarized as: experiences, reasoning, and the kinds of convincing information (Baron & Byrne, 2003; Walgito, 2003; Azwar, 2013).

The first factor is experience. Allport (1967) mentioned that “An attitude is a mental and neural state of readiness, organized through experience, exerting a directive or dynamic influence upon the individual's response to all objects and situations with which it is related.” It has been shown that experiences dynamically influence individual attitudes towards objects and related situations. It is further

explained that individual experiences of objects and related situations can be negative or positive. If the individual's experience with the object or situation is negative, the attitude that is generated is negative. Likewise, if the individual's experience of the object or situation is positive, the resulting attitude is positive.

However, in the individual the correlation between experiences and attitudes is not automatic. Negative experiences such as failure in examinations can be considered positive by individuals and foster a positive attitude. In fact, the failure of examinations often occurs as a very valuable learning and in science can be a motivator to try to repeat the test or experimental trial until it is successful. Additionally, the experience itself can change when the object or situation changes. This is self-evident. There are other factors that determine the nature of an experience, namely how the individual gives value or reasoning to the related experience.

In this study, optimism is seen as the attitude of someone who always has good hopes in everything. An optimism attitude is dynamic, which can vary from positive to negative and vice versa. Based on theory, there are three factors that influence individual attitudes, namely: (1) people's experiences and changes in these experiences in the course of life towards objects, (2) reasoning, meanings and judgments of people who can always change towards objects and their experiences of objects, and (3) types of information that are used by people to make reasoning, judgments, as well as interpreting and changing these types of convincing information.

In this research, these three factors will be explored from students' responses to find out how optimistic they are, especially during the current COVID-19 pandemic.

Based on descriptions above, optimism is an important individual attitude, especially during a difficult situation like the current pandemic. Study on level of university students' optimism has been reported by Roza (2021). To the best of researchers' knowledge, factors that affect students' optimism during the pandemic has not been reported. Hence, research questions from the current study are what factors that contribute to students optimism?

Therefore, this study aimed to examine what kind of factors influence optimism among university students. Figure 1 depicts our proposed hypotheses of correlations between factors that may affect optimism.

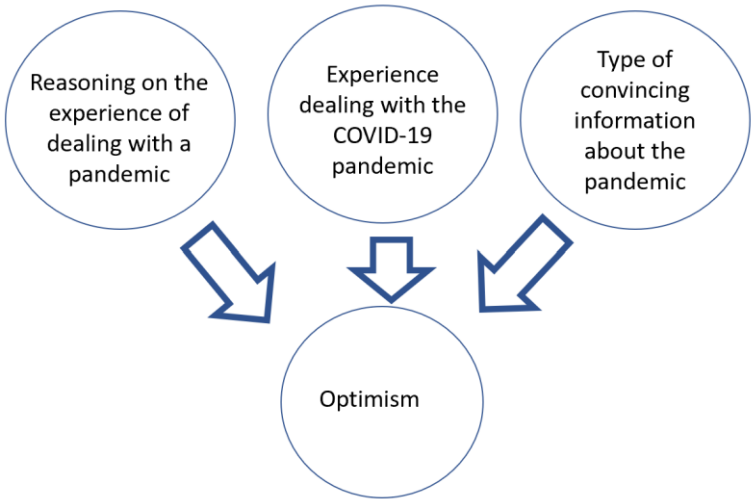

Figure 1. Proposed hypotheses of correlation between factors that may affect optimism.

METHODS

Respondents

This survey was conducted from 26 June to 7 July 2020. The survey was conducted three months after the decision to study from home was implemented in the university on 16 March 2020. The implication was that data collection was done by using Google Forms. The study population was 422 students at a private university in Yogyakarta, Indonesia. The online form link was distributed to the respondents after getting the approval of the department head. The researchers conducted the data feasibility selection stage for further analysis. The amount of data analyzed in this study was 317 data. Demographic data of respondents are presented in **Table 1**.

Table 1. Demographic data of respondents (n=317)

Category	Frequency (n)	Percentage (%)
Age		
17 – 25 years old	315	99
> 25 years old	2	1
Gender		
Male	89	28.1
Female	228	71.9
Status of Residence		
Parents' house	204	64.4
Boarding / rented house	101	31.9
Relatives' home	11	3.5
Dormitory	1	3
Year of University Entry		
2015 - before	6	1.9
2016	36	11.4
2017	85	26.8
2018	90	28,4
2019	100	31,5

The age range of the respondents ranged between 17 and 29 years (Median = 20; SD = 1.46). Judging from the gender proportions, there were more women (n = 228; 71.9%) than men (n = 89; 28.1%). During the pandemic, the USD campus is conducting a distance learning process. A number of students have remained in Yogyakarta. This can be seen from 101 respondents (31.9%) who still live in a boarding house / rented house and 1 respondent (3%) in a dormitory. The largest number of respondents, as many as 204 people answered that they lived with their parents (n = 204; 64.4%).

Judging from their year of entry at the university, it is known that the longest span of entry for students is in the 2015 and previous categories. Respondents who fall into this category are the lowest (n = 6; 1.9%). These respondents fall into the category of students who have completed their studies. The second year group of respondents, namely students who entered USD in 2019 had the largest number (n = 100; 31.5%). The next categories are students in the third year (n = 90; 28.4%), the fourth year (n = 85; 26.8%) and the fifth year (n = 36; 11.4%).

Measures

This study aimed to determine what construct variables play an important role in fostering an optimism attitude among university students in facing the COVID-19 pandemic. The number of construct variables that we observed in this study were four: namely, (1) experience facing the COVID-19 pandemic, (2) reasoning for the experience of facing the COVID-19 pandemic, (3) type of information related to the COVID-19 pandemic, and (4) optimism. The mentioned variables were used in research instrument. Scales to measure variables experience, reasoning, and type of information The instrument in this research was adapted and developed from adopted and developed from Ifdil et al. (2020b), Jovančević & Milićević (2020), and Schweizer & Koch, (2001).

(1) Experience facing the COVID-19 pandemic (Experience)

We used 16 questions to find out the respondent's experience during the pandemic. As with the other two variables, a Likert scale was used to measure the respondent's experience with a value range of 1 to 4. The highest value indicates that the respondents strongly agree with the statement given.

(2) Reasoning for the experience of facing the COVID-19 pandemic (Reasoning)

This study used 10 indicators to measure the reasoning factor. Respondents were asked to choose only one scale score that applied. A 4-point Likert scale was used. The scale ranged from 1 (strongly disagree) to 4 (strongly agree).

(3) Types of information related to the COVID-19 pandemic (Type of Information)

A total of 10 questions were used in measuring the type of information that respondents usually use. Respondents were asked to choose conditions that were appropriate to their circumstances using a 4-point Likert scale. The response options were 1 (strongly disagree) for the lowest score to the highest score 4 (strongly agree).

(4) Optimism

We measured the scale of student optimism using 10 question items adopted from the Positive and Negative Expectancy Questionnaire for the Assessment of

Personal Optimism and Social Optimism Extended (POSO-E) (Schweizer & Koch, 2001). We made several adjustments so that it could be used according to the research context. The assessment of the 10 questions used a 4-point Likert scale starting from 1 (strongly disagree) and 4 (strongly agree). The high score indicates the high level of optimism of the respondents towards the items being assessed.

Table 2. Internal consistency (Cronbach's alpha coefficient) for the Scale of Student's Optimism (SSO) questionnaire (n=317)

Scale	Number of Indicators	Cronbach's alpha
Scale of Student's Optimism (SSO)	43	0.865
Experience facing the COVID-19 pandemic.	16	0.747
Reasoning for the experience of facing the COVID-19 pandemic.	10	0.682
Type of information related to the COVID-19 pandemic	10	0.752
Optimism	7	0.747

Using an individual respondent as the unit analysis, the Cronbach alpha reliability coefficient for each scale ranged between 0.682 and 0.865 (Table 2). Taber (2018) suggested that alpha value > 0.70 is considered desirable. However, Taber also mentioned that an alpha value greater than 0.60 is still considered desirable. Therefore, the researchers decided to include a scale for reasoning in this analysis.

Data Analysis

Exploratory factor analysis (EFA) was used to reduce factors and indicators. EFA analysis was done with SPSS 26 (IBM Corp., Chicago). Besides that, EFA helps to group variables that have inter-correlations and to find out dimensionality of a data set. Results from EFA were then analyzed using Confirmatory Factor Analysis (CFA). Prior to analysis by CFA, we filtered out the groups of variables that have Cronbach's alpha values below 0.6. To calculate the alpha coefficient from each variable, loading factors from each indicator was employed. Results obtained from the CFA suggested a model of interaction between variables and indicators. In the final step those connections were modeled between variables and indicators through Structural Equation Modelling (SEM). The initial hypotheses that were built then could be compared with the SEM model. Both EFA and SEM were conducted on AMOS 26.

RESULTS AND DISCUSSION

Data screening

First, the raw questionnaire data were screened to find out any problems in the data set by examining the standard deviation (SD) of answers from each respondent. Collier (2020) suggested that acceptable level of the SD is based on the best judgement of the researchers. In this study we defined that any value of SD equal to 0.00 was subject to deletion. The initial data set prior to the deletion step was 422. The amount of data after screening was 317 in the data set. The 317 data then were used for further analyses.

Exploratory Factor Analysis (EFA)

The Likert scale data from the four variables: experience during the pandemic, optimism attitude, reasoning and type of information were examined by using EFA. Results from EFA indicated that each examined variable has multi dimensions that ranged from 2 to 4 dimensions. Variables of experience and type of information have the highest number of dimensions, which are 4 dimensions, followed by the optimism variable with 3 dimensions, and reasoning with 2 dimensions. In total, there were 13 dimensions identified. Further, alpha values of variables were compared from the 13 dimensions measured. To further clean the data, any alpha value less than 0.6 was subject to deletion. Hence, we found 6 variables were desirable. Cronbach's alpha values ranged between 0.611 for variable of reasoning and 0.786 for optimism 1 (**Table 3**).

Table 3. Accepted variables and indicators after EFA

Variables and indicators	Factor loadings	Cronbach's Alpha
Optimism 1		**0.786**
SO3. I was able to carry out lecture assignments during the COVID-19 pandemic.	.866	
SO4. I was able to complete difficult lecture assignments during the COVID-19 pandemic well.	.819	
SO5. I was able to do the Mid-Semester Exam and Semester Final Exam well.	.765	
Optimism 3		**0.662**
SO6. Even though there is a COVID-19 pandemic, I am sure that I can complete my studies on time.	.868	

SO7. I believe that I can complete my studies at USD well according to my talents, abilities and passion.	.795	
Experience 1		**0.662**
PL3. I leave the house only for important purposes (for example: buying food, taking remittances, buying medicines, etc.).	.769	
PL1. I support the government's recommendation to do social distancing.	.710	
PL4. I avoided crowding areas.	.686	
PL2. I am comfortable living in a house / boarding house / hostel as recommended by the government.	.510	
Reasoning 2		**0.611**
PN9. I think that the Indonesian government is very swift in handling the COVID-19 pandemic.	.761	
PN3. I feel that the news I read has strong scientific reasons.	.751	
PN4. I am sure that the COVID-19 pandemic in Indonesia will end by the end of 2020, as stated by President Jokowi.	.708	
Kind of Information 1		**0.726**
JI3. I read the national newspaper (print / electronic) to get the correct news about COVID-19.	.890	
JI2. I followed the development of the COVID-19 case in Yogyakarta and my place of origin.	.775	
JI4. I follow government / health organization social media accounts to get the right news about COVID-19.	.670	
Kind of Information 4		**0.654**
JI9. I feel the need to keep up with information from WHO as a reliable source of information.	-.847	
JI10. I feel that I need to continue to follow the results of the analysis of experts related to COVID-19 as a reliable source of information.	-.675	

Confirmatory Factor Analysis (CFA)

After reducing the data from the EFA, CFA was conducted to find any correlations between variables and model the inter-correlations between them. In this analysis, we found that the variable of information 4 was not desirable in the model. Thus, this variable was deleted. One indicator from experience 1 (PL2) and reasoning 2 (PN4) were also eliminated from the analysis. In comparing to before CFA, when there were 6 variables with 17 indicators, after the CFA analysis, there were 5 variables with 13 indicators. The hypothesized model is depicted in **Figure 2.**

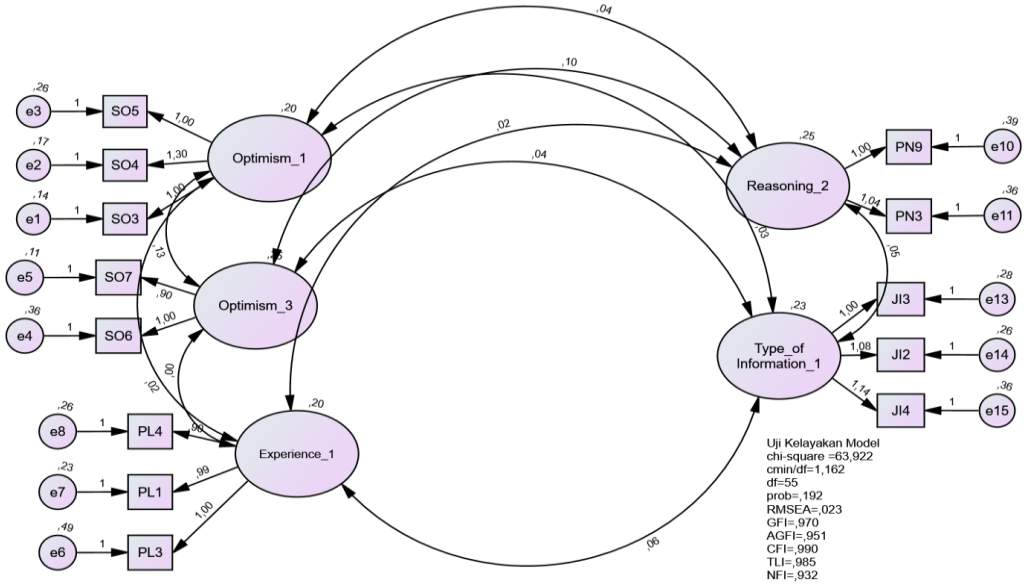

Figure 2. CFA path diagram on five hypothetical variables

After deletion of the 1 variable and 4 indicators, the proposed model was expected to fit some measurement. It can be observed from values of chi-square = 63.922; probability = 0.192; CFI = 0.990; AGFI = 0.951; TLI = 0.985; and NFI = 0.932.

Structural Equation Modeling (SEM)

After the variables and indicators fit into the model, we further reconstructed connections between variables to test our hypothesis. **Fig. 3** shows how we modeled the correlations between variables. Two variables, reasoning 2 and experience 1 were defined as independent variables. Two variables, optimism 1 and optimism 3 were observed as dependent variables. Meanwhile, the type of information 1 was suggested as a mediatory variable. All the structures illustrated were suggested to fit with the empirical data that we examined.

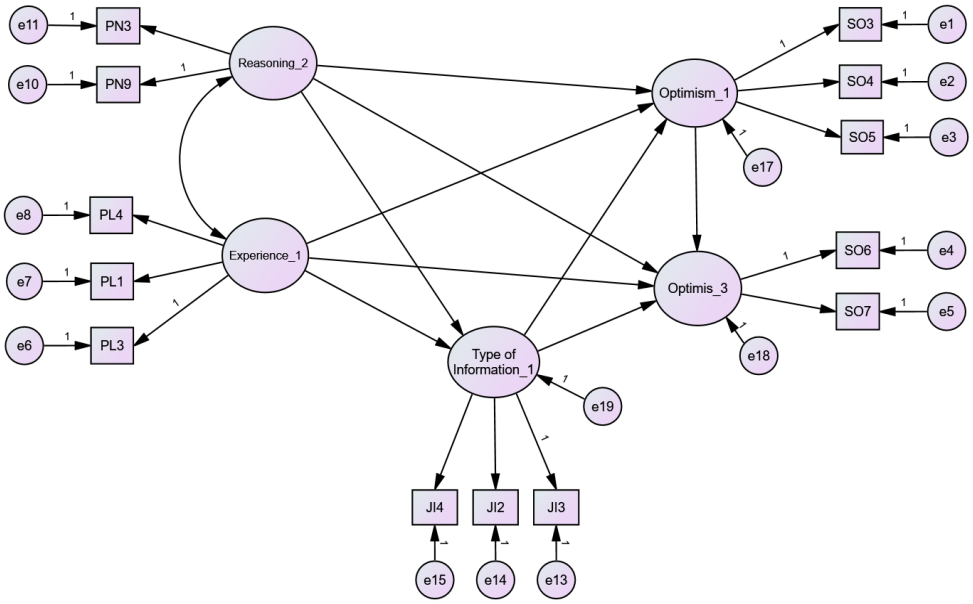

Figure 3. The structure of the correlation model between variables to test the hypothesis

SEM is used to determine the relationship between exogenous and endogenous constructs. SEM is not used to generate models, but is used to confirm theoretical models, through empirical data. The decision to determine the suitability of the model formed is seen from the Goodness of Fit Model. The SEM model is declared suitable if it meets the cutoff value criteria.

Table 4 below shows the comparison between the calculated value and the cutoff value. The value of the chi-square model is 63.922, which is lower than the chi-square table value of 73.311. Further supporting evidence can be seen in the following statistical data: the value of RMSEA = 0.031; GFI = 0.978, and CMIN / DF = 1.398. The statistical values obtained meet the cutoff value limits. The results of the Goodness of Fit indices state that the model is in accordance with the empirical data obtained.

Table 4. Comparison between Goodness of Fit indices and its cutoff value

Goodness of Fit Indices	Result from the model	Cutoff value	Meaning
Chi-squared	63,922	73,311*	Fit
Probability	0,192	≥ 0,05	Fit
CMIN/DF	1,162	≤ 2,00	Fit
RMSEA	0,023	≤ 0,08	Fit
GFI	0,970	≥ 0,90	Fit
TLI	0,985	≥ 0,90	Fit

Note (*): Chi-square with df = 55 alpha value = 0.05 is 73.311.

The effect value between variables

The relationships between variables that were confirmed on the SEM diagram are shown in **Table 5** below. There are nine relationships between variables that can be formed. The variable column 1 shows the independent variable, while the variable column 2 is the dependent variable. In general, there are two independent variables, namely reasoning and experience 1. Furthermore, this can be seen in the magnitude of the direct effect given by the two variables on the information variable. The value of the direct effect of reasoning 2 is 0.174 and in experience 1 it is 0.244. The information type variable here is not an independent variable, but a mediator variable (intermediary). In the variable column 2, the optimism 1 and optimism 3 variables appear several times. It can be concluded that the optimism variable is the dependent variable.

Table 5. Analysis of the effects between variables

Independent Variable	Path	Dependent Variable	Standard Value		
			Total Effects	Direct Effects	Indirect Effects
Reasoning_2	→	Type of Information _1	0.174	0.174	0
Experience_1	→	Type of Information _1	0.244	0.244	0
Type of Information_1	→	Optimism_1	0.108	0.108	0
Optimism_1	→	Optimism_3	0.493	0.493	0
Reasoning _2	→	Optimism_1	0.190	0.171	0.019
Reasoning _2	→	Optimism_3	0.413	0.307	0.106
Experience _1	→	Optimism_1	0.081	0.054	0.026
Experience _1	→	Optimism_3	-0.050	-0.106	0.057

Independent Variable	Path	Dependent Variable	Standard Value		
			Total Effects	Direct Effects	Indirect Effects
Type of Information _1	→	Optimism_3	0.122	0.069	0.054

Hypothesis testing

Table 6 shows the results of the correlation analysis between variables. The arrows in the path column indicate the direction of the relationship. The data in this table show the effect of variable 1 on variable 2. The number of possible hypotheses of the relationship between the variables that emerged through SEM analysis were nine possibilities. Of these nine possibilities, two hypotheses were accepted, namely H2 (Experience 1 = Types of Information 1; *P* <0.05), and H6 (Reasoning 2 = Optimism Attitude 3; *P* <0.05). Hypotheses H2 and H6 are the relationship between the independent variable and the dependent variable. H8 (Optimism 1 = Optimism 3) was identified as having a strong relationship with *P* value <0.001. However, the type of relationship formed on H8 is between the dependent variable.

Table 6. Structure of the model

Hypothesis	Independent Variable	Path	Dependent Variable	Standardized Estimate	C.R.	*P*	Result
H1	Reasoning_2	→	Type of Information_1	0.174	1.940	0.052	Rejected
H2	**Experience_1**	→	**Type of Information_1**	**0.244**	**2.809**	**0.005**	**Accepted**
H3	**Reasoning_2**	→	**Optimism_1**	**0.171**	**1.951**	**0.051**	**Marginally accepted**
H4	Type of Information_1	→	Optimism_1	0.108	1.363	0.173	Rejected
H5	**Experience_1**	→	**Optimism_1**	**0.054**	**0.670**	**0.503**	**Marginally accepted**
H6	**Reasoning_2**	→	**Optimism_3**	**0.307**	**3.147**	**0.002**	**Accepted**
H7	Type of Information_1	→	Optimism_3	0.069	0.898	0.369	Rejected
H8	Optimism_1	→	Optimism_3	0.493	5559	***	Accepted
H9	Experience_1	→	Optimism_3	-0.106	-1.347	0.178	Rejected

Note: *** indicated P value for correlation between variables is different significantly at 0.001 (two-tailed).

Beside the categories that have been mentioned above, we identified two hypotheses that can still be considered to play a role in shaping optimism. The two hypothetical relationships referred to are H1 (Reasoning 2 → Type of information 1; $P = 0.052$), and H3 (Reasoning 2 → Optimism 1; $P = 0.051$).

The hypotheses H1 and H3 are categorized as likely to be accepted. Even though the P values are >0.050, there are tendencies to associate these variables. Based on these considerations, we still considered the two hypotheses as the relationship between variables that needs to be included in the next analysis.

Based on these considerations, from nine possible hypotheses of the relationship between the variables that are formed, there are four possibilities. The four possible hypotheses when connected with the direct effect of the indirect tangents that are formed can be illustrated in **Figure 4** below.

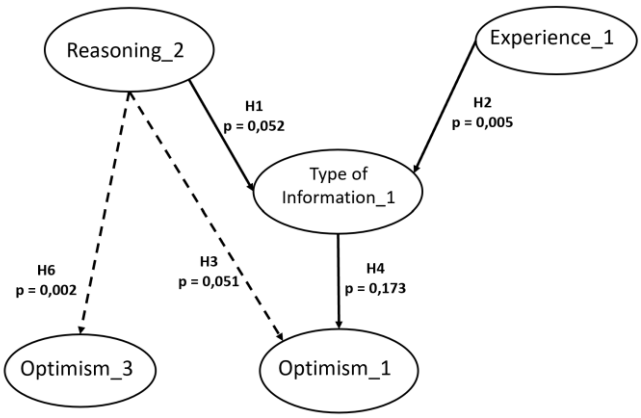

Figure 4. The relationship between four hypotheses is formed based on the type of effect and its probability value. A thick line indicates an indirect effect. The dotted line is a direct effect between variables.

Discussion

The initial hypothesis of this study states that experience is an independent variable that has a direct effect on optimism and reasoning. Through the indirect effect pathway, the experience variable influences optimism through two mediator variable channels, namely the type of information and reasoning. All the variables identified earlier are predicted to have one dimension.

The results of our research show that there are three roles for the variables, namely the independent variable, the mediator, and the dependent variable. The independent variables consist of experience and reasoning. The information type variable acts as a mediator variable. Then, the optimism variable becomes the dependent variable which has both direct and indirect effects from the two independent variables.

At the initial stage of the analysis, the four variables we analyzed had more than one dimension. Until the final analysis (SEM), we found that the variables of experience, reasoning and types of information only had one dimension, while the optimism variable had two dimensions. The two dimensions of the optimism variable are optimism 1 as a dimension of the ability to complete tasks, and optimism 3, as a dimension of trust.

The effect of reasoning on optimism 3

The second dimension of the reasoning variable consists of three indicators (PN3, PN9 and PN4). PN3 stated that "I believe the COVID-19 pandemic in Indonesia will be completed by the end of 2020, as stated by President Jokowi." The statement to PN9 stated that "I think that the Indonesian government is very swift in handling the COVID-19 pandemic." Both indicators have the same meaning, namely trust in efforts to achieve targets and actions taken by the government. The statement on the PN4 indicator mentions belief in scientific considerations: "I feel that the news I read has strong scientific reasons."

We found that the reasoning process carried out by the respondents of this study can be divided into two aspects. First is the trust in the government regarding the statement of attitude and efforts made by the government to deal with the COVID-19 pandemic. Respondents' level of trust in the government are still remarkably strong. The second aspect is related to the quality of the news. It is likely that the respondents can use scientific principles, such as check and re-check and prefer truth over fake news. This indicator shows the respondents' ability to apply habits by thinking scientifically in everyday life.

The above findings can be further analyzed using the reasoning theory. Leighton and Sternberg (2004) stated that reasoning is a process in drawing conclusions that aim to help someone achieve a goal. The conclusions obtained from this reasoning process will then trigger an action. This action can take the form of decision-making or problem-solving. Reasoning plays a role in maximizing problem-solving and decision-making that occur in that process.

The analysis between the reasoning variable and optimism 3 has a *P* value <0.005. This value shows the strength of the effect given by reasoning on optimism. 3. The researchers interpreted this to indicate that university students use reasoning in the decision-making process. For example, when respondents read news related to COVID-19, their reasoning skills help them to make decisions in believing the truth and in formability of the news. Information that is justified and worthy of being followed will then influence optimism.

More about the role of reasoning in human habits, Papineau (2006) stated that reasoning is a way to create trust. In his theory, Papineau explained that there are two forms of belief that play a role in building one's cognitive ability. The first form is a belief that is tied to the range-response relationship. The second form is the belief that is formed due to means-end reasoning. It is this belief of the second form that we identified in this study. This goal-oriented belief occurs because there is time to think about what to do. Actions taken are based on considerations.

To be able to reason on this basis, a person must have good cognitive abilities in order to be able to sort out and assess what choices of action to take. Results indicated that the ability to use reasoning based on correct considerations is a factor that has a direct effect on the respondent's optimism, namely the dimension of belief.

The effect of reasoning on optimism 1

Optimism 1 variable has three indicators (SO3, SO4 and SO5). The three indicators refer to the respondent's ability to complete lecture assignments during the COVID-19 pandemic. The optimism dimension that we interpret from the indicators indirectly targets the respondent's ability to master technology,

adaptability to new learning methods, independence in learning and confidence in the use of information and communication technology (ICT).

Changing the way of learning from face-to-face to full distance learning is certainly not easy. Respondents who are not yet proficient in using ICT devices such as laptops, cellphones and applications and software related to distance learning will certainly experience obstacles. It is likely that the background of most respondents (n = 315; 99%) aged 17-25 years is one of the supporting factors.

The study based on this general group category shows that our respondents were born between 1995 and 2003. Based on this range of birth years, the majority of research respondents belong to the Z generation category (Seemiller & Grace, 2016). Generation Z is also known as the digital natives' group or the Net Generation. Seemiller and Grace (2017) stated that the recent generations have experience using ICT products from an early age. Therefore, they have better control over the use of technology-based products better than the previous generation.

The ability to master ICT-based tools indirectly affects the way students learn. Seemiller and Grace (2017) state that Generation Z likes the independent learning process because of the support of digital technology. However, this does not affect the interpersonal domain. The desire to contribute and find solutions to social problems remains inherent in their characteristic nature.

From this description, we can conclude that changing the way of learning from conventional face-to-face learning to full distance learning is not an obstacle for respondents. This is due to the nature of Generation Z, which is familiar with the world of technology from an early age. In general, we see that implementing an online learning policy has brought Generation Z into their safe zone.

The results of our analysis show that there is a relationship between reasoning and optimism from the dimensions of technological mastery ability with a *P* value = 0.051. Although the *P* value obtained is >0.05, the results show that the relationship between the two variables is still quite strong. The strength of the

relationship between these two variables can be related to the background of the age group of respondents who belong to Generation Z.

From the description of the previous reasoning variables, it is known that there are two dimensions, namely decision-making and problem-solving. Results show that the form of the relationship between the reasoning variables and optimism 1 is more inclined towards problem-solving. Problem-solving here can be interpreted when the respondent experiences difficulties in the independent learning process. Intuitively they will try to find a way out of these difficulties. This tendency toward problem-solving has contributed to fostering the optimism of respondents in college during the pandemic.

Direct effects of reasoning and experience on types of information

Line of reasoning

This type of information has an immediate effect with a *P* value = 0.052. The *P* value obtained is >0.005, but the results show there is still a strong relationship between the two. As described, the reasoning variable plays an important role for respondents at the decision-making stage. In this case, it involves decision-making in choosing the type of information related to COVID-19 news.

Next on the path of experience - types of information.

This study found that experience has a strong effect on the type of information variable with a *P* value = 0.005. Analysis of the relationship between these two variables can be explained through the theory of experience proposed by Larsen (2007). Larsen stated that experience has two dimensions. The first dimension is awareness regarding the conditions experienced now (*erlebnis*). The second dimension is the accumulation of things that have been experienced in the long term (*erfahrung*). Based on these two forms of experiences, the respondents of this study are more inclined toward the accumulation of experiences over a certain period.

We identified four indicators that compose the experience variable, namely PL3 (0.769), PL1 (0.710), PL4 (0.686) and PL2 (0.510). The PL3 indicator states that the respondent's behavior involves more restricting access to go outside the

house, and only leaving for important purposes. The lowest loading factor value was obtained from PL2 which stated that they felt comfortable living at home during the pandemic. These two indicators show the respondents' choice to stay at home and avoid contact with large crowds. The data indicated that respondents have the awareness to stay at home, even though they feel uncomfortable. It is possible they are acting in this way to reduce the risk of contracting COVID-19.

The results of the analysis of the experience variable indicate that there is an effort to encourage factors so that respondents are willing to stay at home even though they feel uncomfortable. In addition to health factors, we see efforts to anticipate and predict conditions that will occur in the future. Larsen (2007) explained that such an action is called an expectation. This expectation is related to motivation, individual characteristics, attitudes, and value systems adopted by the respondent. When associated with the current pandemic, the researchers assessed that respondents build hopes of surviving the COVID-19 pandemic. The accumulated experiences will then be stored in the respondent's long-term memory.

This long-term memory will in turn shape new expectations and preferences. When it is associated with a pandemic condition, new habits will be formed to protect oneself from COVID-19 transmission. New habits that will form in students are the habituation of ICT-assisted distance learning and social interaction models that will maintain distance according to health protocols. The results of our research found that these new experiences will have an impact on the variable types of information.

Variable Types of Information as a mediator variable

The path diagram shows that the information type variable becomes the mediator variable between two direct variables (reasoning and experience) and one dependent variable (optimism 1).

There are three types of indicators that compose the dimensions of the type of information, namely JI3, JI2 and JI4. The JI3 indicator has the highest loading factor value (0.890), followed by JI2 (0.775) and JI4 (0.670). The JI3 indicator contains how respondents find the correct news about COVID-19, namely through

national newspapers, both printed and electronic. In this case, reasoning plays a role for respondents in making decisions to choose and trust the correct news sources. Results also show that the same pattern happened to JI2 and JI4. JI2 contains the behavior of respondents to always be updated with news related to COVID-19, while JI4 describes how respondents get news, namely through social media accounts of authorized institutions with news related to COVID-19.

Looking at the age factor, we suspect generation Z respondents will prefer accessing news through social media. This assumption is based on research by Mulyadi et al. (2020) who reported that 94% of 991 students used social media during the pandemic. However, this research did not specifically examine the choice of news access. Therefore, the estimation of Generation Z news access behavior refers to Ahmed's (2020) study that reported 60% from 415 students of the State University of New York at Oneonta get their news through social media.

In this study, we did not measure specifically the respondent's news access behavior. Loading factor data were the type of information we used to predict the news access behavior. The JI4 indicator, which is an indicator used to measure the use of social media, has a lower loading factor value (0.670) than JI3 (0.890), namely the selection of respondents on the type of media.

This study found that Generation Z tends to look more for COVID-19 news through national newspapers, both printed and electronic, compared to social media. The researchers assessed that the quality of the news presented by the newspaper, both printed and digital, can be relatively justified. This is due to the news selection process prior to publication.

Currently, it is very easy for us to find news. However, news that is obtained online is not guaranteed to be true, because there is also many fake news circulating, especially through social media. This finding was also reported by Rahayu and Sensusiyati (2020) in the early months of the pandemic. It could be that the pattern of spreading hoaxes was still occurring at the time this research was conducted, namely in June 2020. The consumption of fake news during the pandemic can trigger anxiety and mental disorders as reported by Ifdil et al. (2020a) and Ifdil et

al. (2020b). Therefore, our findings indicate that the ability to choose online news, especially those from social media sources, needs special and careful attention.

CONCLUSIONS

This study found that the three factors: experience, reasoning and information have different contribution to university students' optimism amid a pandemic. Furthermore, those factors can be divided into two category, independent and mediating factors. The independent factos of experience and reasoning, and the mediating factor is the type of information. From this study we conclude that experience and reasoning of students will form their optimism attitude, either directly or indirectly through the type of information that they consume.

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