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Metacognition and Mental Health: Unravelling the Mediation effect of graduates' Self-efficacy

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Abstract

This study employed a descriptive survey method to explore the mediation effect of graduates self efficacy in association with metacognition and mental health among graduates. Total of 211 graduates made up the study group, and data were collected through convenience sampling. The inquiry made use of the Baron and Kenny approach of mediation analysis. Among the reliable and valid research tools employed were the Positive Mental Health Inventory, the Metacognition Inventory Scale (MCI), and the General Self Efficacy Scale. Findings indicated that although self efficacy, metacognition, and mental health were positively correlated, their relationship was not very strong. The regression coefficients indicated that there might not be a causal relationship between the variables. Although the entire model for predicting self-efficacy did not show statistical significance, there was a strong correlation between self-efficacy and mental health. According to a study that looked at how self-efficacy affected the association between metacognition and mental health, the indirect effect was responsible for 30% of the difference between the direct and total effects. The findings indicate a weak but positive correlation between self-efficacy, mental health, and metacognition, but the correlations are insufficient to demonstrate a causative link. Self-efficacy was discovered to mediate the association between metacognition and mental health in a statistically significant way. It is necessary to conduct more study to examine additional causes and treatment options for improving wellbeing.

Key words: Mediation,   Self-Efficacy,   Metacognition, Mental Health, Graduates

Introduction

The linkage between self-efficacy, metacognition, and mental health has attracted an abundance of curiosity from psychologists. In the work of Bandura (1997) and Schwarzer & Fuchs (1996), individuals' self-efficacy defined as having trust in their ability to complete activities and overcome obstacles has been shown to contribute to better mental health outcomes. But it's still unclear how precisely self-efficacy, mental health, and metacognition interact, especially in graduate groups. Similar to this, metacognition—the understanding and management of one's own cognitive processes has been connected to a variety of characteristics of mental health (Flavell, 1979; Schraw & Dennison, 1994). The significance of metacognition in nurturing mental health and well-being has been emphasized in numerous studies (Baumgartner et al., 2019; De Bruin et al., 2017; Schraw & Moshman, 1995). Greater self-awareness, self-control, and adaptive learning techniques are displayed by people with higher levels of metacognitive skills, and these characteristics help to enhance mental health outcomes (Baars et al., 2017; Sella et al., 2020). On the other hand, deficiencies in metacognition have been linked to unfavourable outcomes in terms of mental health, including anxiety and depression (Wells, 2000; Young et al., 2014).

Additionally discovered to be a significant predictor of outcomes related to mental health is self-efficacy. According to Bandura (1997), self-efficacy beliefs can have an impact on people's motivation, behavior, and psychological health. Higher levels of self-efficacy are associated with better resilience and adaptability. Metacognition and self-efficacy have been favourably correlated with mental health, according to research (Zimmerman, 1990; Bandura, 1997). In other words, individuals with a high degree of self-efficacy and good metacognitive abilities usually exhibit better mental health. Nevertheless, it is uncertain exactly how these variables relate to one another. One hypothesis is that the link between metacognition and mental health is mediated by self-efficacy. As a result, they are more likely to experience favourable results for their mental health, such as greater levels of life satisfaction and decreased psychological discomfort (Jerusalem & Schwarzer, 1992; Schwarzer, 2008). In other words, those with good metacognitive skills typically have better mental health, which self-efficacy may help to explain in part. This is so because one's sense of self-efficacy can affect how they respond to obstacles and failures. People with strong self-efficacy, for instance, are more inclined to see obstacles as chances for development than as dangers. They also have a higher propensity to persevere in the face of failure than to give up readily. Although metacognition and self-efficacy have each been individually linked to improvements in mental health, research on self-efficacy's mediating function in the connection between metacognition and mental health among graduates is still lacking. Understanding the mechanisms that mediate the relationship between metacognition and mental health may help researchers develop therapies and marketing plans that will help graduate populations maintain their mental health.

In other words, self-efficacy may help to partially account for why individuals who possess good metacognitive abilities frequently have improved mental health. This is so because one's sense of one's own ability to succeed can affect how one responds to obstacles and failures. People who have a high sense of personal competence, for instance, are more prone to see obstacles as chances for development than as dangers. Additionally, they are more inclined to keep going after failures than to give up readily. Although metacognition and self-efficacy have each been linked to improved mental health, this relationship between metacognition and mental health among graduates has not received as much attention as it deserves. Understanding the underlying processes that mediate the relationship between metacognition and mental health may help to inform therapies and marketing tactics that aim to improve graduate populations' mental health. Therefore, the current study's goal is to learn more about how self-efficacy mediates the link between metacognition and graduates' mental health.

Research Objectives
- To investigate the graduates level of self-efficacy, metacognition, and mental health
- To look into the disparities between graduates self-efficacy, metacognition, and mental health according to educational level and their field of study
- To inquire into how self-efficacy in graduates impacts the relationship between metacognition and mental health.

Research Hypotheses
- The graduates do not exhibit high levels of self-efficacy, metacognition, or mental wellness
- There exist no significant differences in graduates' levels of self-efficacy, metacognition, and mental health according to their educational level and their field of study

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- The association between metacognition and mental health among graduates will be greatly influenced by the mediation function of self-efficacy.

Research Tool used for the study

The researcher used a powerful research instrument to ensure the authenticity and reliability of the data acquired. The following resources were employed in the research:

- Positive Mental Health Inventory by Dr. C.D.Agashe and Dr. R.D.Helode.
- Meta-Cognition Inventory Scale(MCI) by Dr.Punita Govil
- General Self Efficacy Scale by Schwarzer and Jerusalem

Research Design

In this study descriptive survey method was used and mediating effect of self-efficacy in the association between metacognition and mental health among graduates was analyzed through mediation analysis. Utilizing the convenience sampling model, the data was gathered. The study group consisted of 211 graduate students (undergraduate 52.6%, postgraduate 47.4%). The independent variable is "Metacognition," which is the capacity to consider and consider one's own thought processes, is the independent variable. The dependent variable is "Mental Health," which represents the overall psychological well-being and emotional state of the graduates. The mediating variable is "Self-Efficacy," which is the faith in one's can carry actions to successfully perform specific tasks or achieve desired outcomes.

There are three requirements that must be carried out in order to use this analysis method. There is a strong connection between;

1. **Path A:** Self-Efficacy as a meditational variable and Metacognition as an independent variable
2. **Path B:** Mental Health as a dependent variable and Self-Efficacy as a meditative variable
3. **Path C:** Metacognition as Independent variable and Mental Health as a dependent variable

Data Analysis

The Statistical Package for Social Sciences (SPSS) program, specifically version 25.0, was used for data analysis. In accordance with the goals of the study, a combination of descriptive and inferential statistics was used to analyze the correlations between the variables. Frequency distributions were created using descriptive statistics, which produced a profile of the respondents' demographic traits. Mediation analysis is allowed for a thorough investigation of the mediating effects within the study variables.

Hypotheses Testing:

Hi: The graduates do not possess high level of self-efficacy, metacognition and mental health

Table 1 provides the various levels of the study's variables

Variables	Levels	N	Mean	S. D	Mean	S.D
Mental Health	High	24	22.91	2.25	23.28	4.55
	Average	160	32.83	2.39		
	Low	27	17.04	1.55		
Metacognition	High	34	78.93	4.04	79.43	9.18
	Average	148	93.76	4.66		
	Low	29	65.14	6.09		
Self Efficacy	High	31	21.73	2.81	23.17	4.54
	Average	180	31.48	2.98		

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The results can be interpreted as follows based on the provided descriptive statistics:

Mental Wellness: The mean mental health scores for the "High," "Average," and "Low" levels are, in that order, 22.91 (SD = 2.25), 32.83 (SD = 2.39), and 17.04 (SD = 1.55). According to these findings, participants who were assigned a "High" level of mental health had a mean score of 22.91, which corresponds to being to be in fairly good mental health. Participants who performed at a "Average" level received a mean score that was significantly higher, 32.83, indicating a higher level of mental health. Participants who scored "Low" obtained the lowest mean score, 17.04, indicating worse mental health.

Metacognition: The mean metacognition scores for the "High," "Average," and "Low" levels are, in that order, 78.93 (SD = 4.04), 93.76 (SD = 4.66), and 65.14 (SD = 6.09). According to these findings, participants who were classified as having a "High" level of metacognition had a mean score of 78.93, which suggests that they had significantly weaker metacognitive skills. A higher mean score of 93.76 among participants with a "Average" level indicates better metacognition. Participants who scored at the "Low" level had the lowest mean score, 65.14, indicating that they had less advanced metacognitive skills than the other two groups.

Self-Efficacy: The mean self-efficacy ratings for the "High" and "Average" classes are 21.73 (SD = 2.81) and 31.48 (SD = 2.98), respectively. These findings imply that participants with a mean score of 21.73 who were classified as having a "High" level of self-efficacy have a substantially lower level of self-efficacy. The mean score of 31.48 is greater for those who scored at the "Average" level, indicating higher self-efficacy.

H2: There exist no significant differences in graduates' levels of self-efficacy, metacognition, and mental health according to their educational background and their field of study.

Table 2: Comparative Analysis of Mental Health, Metacognition, and Self-Efficacy among according to their educational background and their field of study

Variables		Mental Health		Metacognition		Self Efficacy	
Subgroups	%	Mean	S.D	Mean	S.D	Mean	S.D
UG	52.6	23.48	4.58	78.86	9.35	22.95	4.6
PG	47.4	23.07	4.54	80.05	9	23.41	4.49
t-value (p-value)		0.582 &0.561		0.599(0.550)		0.121(0.904)	
Arts	60.2	23.43	4.53	79.12	9.17	23.2	4.76
Science	39.8	23.06	4.6	79.89	9.23	23.12	4.22
t-value (p-value)		0.648(0.518)		0.935(0.351)		0.739(0.461)	

As inferred from Table 2, the findings indicate that

- **Mental Health:** The average score of undergraduate students (UG) is 23.48 (SD = 4.58), while the mean score of postgraduate students (PG) is 23.07 (SD = 4.54).There are no discernible difference in the two categories' levels of mental health, as shown by the t-value of 0.582 (p-value = 0.561) when comparing the undergraduate and Postgraduate groups. The mean mental health score for students majoring in the arts is 23.43 (SD = 4.53), whereas the average for students specializing in science is 23.06 (SD = 4.6).There is no discernible difference in the two groups' levels of mental health, as shown by the t-value of 0.648 (p-value = 0.518) when comparing the Arts and Science groups.

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- **Metacognition:** The mean score among undergraduate students is 78.86 (SD = 9.35), and the mean score among postgraduate students is 80.05 (SD = 9).There is no discernible difference in the two groups' levels of metacognition, as indicated by the t-value of 0.599 (p-value = 0.550) when comparing the UG and PG groups. Science students received a mean score of 79.89 (SD = 9.23), while students in the arts received a mean score of 79.12 (SD = 9.17).There is no discernible difference between the two groups' levels of metacognition, according to the t-value of 0.935 (p-value = 0.351) comparing the Arts and Science groups.
- **Self-Efficacy:** The mean score is 22.95 (SD = 4.6) for undergraduate students and 23.41 (SD = 4.49) for postgraduate students. The t-value comparing the UG and PG groups is 0.121 (p-value = 0.904), showing that there is no discernible difference in the two groups' levels of self-efficacy. Science students received a mean score of 23.12 (SD = 4.22) whereas students in the arts received a mean score of 23.2 (SD = 4.76).There is no discernible difference in self-efficacy between the Arts and Science groups, as indicated by the t-value of 0.739 (p-value = 0.461) when comparing the two groups.

In outcome, the findings indicate no appreciable changes in self-efficacy, metacognition, or mental health between undergraduate and graduate students. Furthermore, there are no appreciable variations in these factors between students majoring in the arts and sciences.

H3: The association between metacognition and mental health among graduates will be greatly influenced by the mediation function of self-efficacy.

Table 3: Result of Regression Analysis

Dependent	Independent	R	R square	B	Standard Error	β	F	t - value	p- value
Metacognition	Self-Efficacy	0.04	0.02	0.09	0.14	0.05	0.46	0.58	0.01
Self-Efficacy	Mental Health	0.01	0.01	0.02	0.89	0.01	0.07	0.13	0.01
Metacognition	Mental Health	0.04	0.01	0.40	0.53	0.09	0.14	0.64	0.01

As inferred from table 3, the findings indicate that

- **Metacognition and self-efficacy:** Both have a tenuous, positive link. Metacognition is predicted to rise by 0.095 units for every unit increase in self-efficacy. As shown by the F-value of 0.462 and p-value of 0.498, the entire model is not statistically significant in predicting metacognition. The association between self-efficacy and metacognition has a t-value of 0.140 and a p-value of 0.579, which indicates that there is no statistically significant relationship. Therefore, we are unable to draw the conclusion that the two variables are causally related.
- **Self-efficacy and mental health:** According to the findings, there is a very slight but favorable association between self-efficacy and mental health. Mental Health is predicted to improve by 0.018 units for every unit rise in self-efficacy. Nevertheless, the correlation is not statistically significant, indicating that there is no connection between the two variables in terms of cause and effect. Mental Health and Self-Efficacy have a positive but slender association when Self-Efficacy is the dependent variable (R = 0.009, R-square = 0.010). A one-unit rise in Mental Health corresponds to a 0.018-unit gain in Self-Efficacy, according to the standardized coefficient () of 0.018. The whole model has a statistically

noteworthy F-value of 0.069 and p-value of 0.009 for predicting self-efficacy. The relation between mental health and self-efficacy's t-value, however, is 0.894, and its p-value is 0.133, indicating that this relationship is not statistically significant.

- **Metacognition and mental health:** The findings show a marginally positive connection between metacognition and mental health. Mental Health is predicted to rise by 0.403 units for every unit improvement in metacognition. Although there is a correlation between the two variables, it is not statistically significant, proving that there is no causal connection. When Mental Health is the dependent variable, a positive but sluggish association (R = 0.044, R-square = 0.002) is seen between the two variables. A one-unit rise in Mental Health causes a 0.403-unit increase in Metacognition, according to the standardized coefficient (), which is equal to 0.403. The whole model has a statistically significant F-value of 0.139 and a p-value of 0.044 for predicting metacognition. The association between mental health and metacognition, however, has a t-value of 0.526 and a p-value of 0.635, which suggests that this relationship is not statistically significant.

The findings show that self-efficacy, mental health, and metacognition have small but positive associations. These correlations, however, are insufficient to prove a causal link between the variables. Furthermore indicating the lack of a causal relationship, the regression coefficients are not statistically significant. Only the association between Mental Health and Self-Efficacy demonstrates statistical significance among the weak overall relationships between the variables. However, there is no statistically significant difference between the overall models for Metacognition and Self-Efficacy prediction.

Fig 1: Mediating effect of Self-Efficacy in the association between Metacognition and Mental Health among Graduates
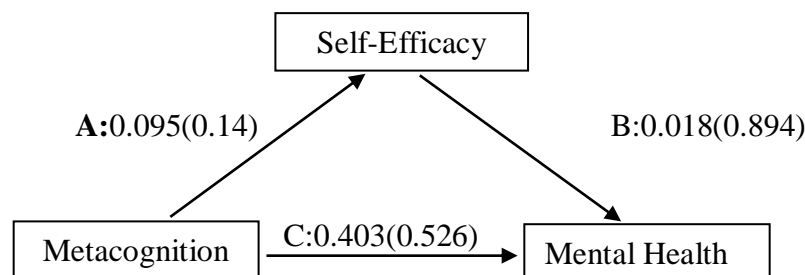
Path A = 0.095(0.14); Path B = 0.018(0.894); Path C = 0.403(0.526).

The mediation effect of self-efficacy in the relationship between metacognition and mental health was assessed and presented in Table 3 and Fig 1. As inferred there is significant effect of metacognition on self-efficacy was found (Path 'a'; R=0.047, R2=.02, F(1,209)=0.462, p<.001; t= 0.579, p < 0.05). For the second criterion, the effects of self-efficacy on mental health were examined, yielding a significant result (R=0.009, R2=0.01, F(1,209)=0.069, p<.001 ;t= 0.133, p < 0.05). However, the third criterion, which investigated the direct effect of metacognition on mental health, was also found to be significant (R=0.044, R2=0.002, F(1,209)=0.139, p<.001 ;t= 0.635, p < 0.05). In the subsequent step, the mediator variable (self-efficacy) was included in the model to evaluate its mediating effect. Notably, the significance of paths 'a', 'b', 'c', and 'c1' was observed. Specifically, the β value increased from 0.089 to 0.403 when evaluating the c1 path. To determine if this increase was due to the mediator variable's effect, the Sobel Test was conducted.

The evaluation of the total effect and direct effect indicated that the indirect effect accounted for 30% of the difference.

Major findings and Discussion of the study

The results of this study show that although there is a favorable but not a substantial association between self-efficacy, metacognition, and mental health. The regression coefficients, which were not statistically significant, are a sign of these weak associations. This implies that the variables might not be connected causally. With the exception of one statistically significant link between mental health and self-efficacy, the overall model for predicting self-efficacy likewise failed to attain statistical significance. These results imply that self-efficacy may have an impact on graduates' mental health outcomes. These results are consistent with those of a study by Chamanabad et al. (2011), which found a statistically significant link between self-efficacy and mental health (r = -0.29, p 0.001) and between metacognition and mental health (r = -0.73, p 0.001). According to the results, self-efficacy and metacognition combined explained 59% of the variation in the mental health of students. Additionally, Krok and Gerymski (2019) hypothesized that self-efficacy may act as a mediator between a person's sense of purpose in life and their mental health in young adults in India who are attending college. The Sobel Test was used in the study to further investigate how self-efficacy affected the relationship between metacognition and mental health. The findings showed that self-efficacy's indirect influence was responsible for 30% of the difference between the direct and total effects. According to this finding, self-efficacy mediates the link between metacognition and mental health. Graduating students' self-efficacy may have an impact on how they use their metacognitive skills and, in turn, on the results for their mental health. In summary, this study's findings suggest a weak but positive relationship between self-efficacy, mental health, and metacognition. The found correlations, however, are insufficient to show causation between these variables. It is crucial to take into account other variables that may affect graduates' mental health outcomes and research strategies that can improve their wellbeing. However, the study emphasizes the critical role of self-efficacy as a significant mediating factor in the relationship between metacognition and mental health, highlighting the significance of self-beliefs in obtaining beneficial mental health outcomes.

Conclusion

To sum up, the current study looked into the mediating function of self-efficacy in the association between metacognition and mental health among graduates.The results shed important light on how these variables interact and what they can mean for mental health. The findings suggested that self-efficacy, mental health, and metacognition have weak but favorable relationships. These connections, however, did not reach statistical significance, indicating that these factors have complex, multiple linkages. The research discovered that self-efficacy contributed to the explanation of the link between metacognition and mental health. In other words, the link between these factors was mediated by self-efficacy. Although the metacognitive effect of self-efficacy on mental health was noted, it only made up 30% of the overall effect, suggesting that other factors may also have a major impact. This finding has significant ramifications for graduate student mental health promotion. These results highlight the significance of taking into account a variety of elements and variables when analyzing the connection between metacognition, self-efficacy, and mental health. More investigation is required to determine viable interventions or techniques that can improve metacognitive abilities and self-efficacy in graduates and, ultimately, promote favorable mental health outcomes. Additional mediators and moderators that may affect

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this association are also needed to be explored. Through understanding can help stakeholders to create tailored treatments and support systems to enhance people's wellbeing and achievement in professional and educational environments by better understanding these complicated relationships. We may be able to improve graduates' mental health by boosting their self-efficacy. This could be accomplished by interventions that concentrate on assisting graduates in gaining solid metacognitive abilities and self-belief.

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