

## Research Article

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## Academic Integrity, Religiosity, and Morality of Indonesian Pre-Service Teachers: Does Field of Study Matter?

Indah Widiastuti , Rian Munawati , Evi Gustina , Yuyun Estriyanto

**Abstract**

**Background/purpose.** Academic misconduct has become a significant, unresolved issue at all educational levels, notably higher education, worldwide. Since teachers play a major role in instilling the values of academic integrity, this issue is expected to be considered in the teacher preparation program.

**Materials/methods.** This quantitative study explores the behaviour of academic dishonesty among 439 pre-service teachers at two universities in Indonesia, each representing the status of public and private universities. Different fields of teacher education were examined: engineering, science, and humanities. To better understand which background and personal characteristics are related to cheating behaviour, this current work also sought to examine the impact of demographic factors as well as religiosity and morality factors.

**Results.** We first analyzed the quantitative data from an online survey by looking at the differences in academic misconduct behaviour by the variables of study disciplines, gender, university status, and parents' background. The linear regression analysis highlighted how the personal characteristics of religiosity and morality influence the student teacher's attitude toward academic dishonesty. The findings indicated that academic dishonesty was more prevalent among men than women and that it was more commonplace in engineering education than in other scientific subjects.

**Conclusion.** The results indicated that religiosity and morality characteristics predict the cheating behaviour of the pre-service teachers. It is expected that this research would be advantageous for teaching institutions in paying specific attention to preparing future educators with excellent ethics and professionalism.

## 1. Introduction

Academic dishonesty is a type of internal moral transgression that appears at all levels, from primary to higher education. According to Rosander (2009), academic dishonesty can be classified into three categories: plagiarism and fabrication, cheating, and unapproved cooperation. Brown and Choong (2005) stated that 90% of academic fraud was shown by students during exams. Mustapha et al. (2016) explained that an average of 70.4% of students had committed academic misconduct behaviour, where 47% plagiarised on assigned tasks, 43.1% cheated on exams, and 40.9% cheated on homework. A survey conducted by Bowers (McCabe et al., 2001) at 99 universities in the United States with more than 5000 students as respondents showed that 75% of respondents had engaged in academic dishonesty behaviour in one or more incidents. At the university level in Indonesia, Ampuni et al. (2020) found that as many as 80% of students had committed academic dishonesty behaviour.

Unethical behaviour would have immediate consequences at the collegiate level and longer-term impacts that may imply greater concern. Several studies have identified that academic dishonesty in the past could positively correlate with unethical workplace behaviour (Rujoiu, 2014; Carpenter et al., 2006; Mulisa & Ebessa, 2021; and Guerrero-Dib, 2020). In addition, corruption in various contexts, such as in business, politics, and even everyday life, is also closely related to academic cheating behaviour (Denisova-Schmidt, 2015; Teixeira, 2013; Orosz et al., 2018). To reduce the incidents, many studies have been carried out to analyze this cheating behaviour and the factors behind it in various disciplines across several countries (McCabe, 1997; Ghanem & Mozahem, 2019; Maloshonok & Shmeleva, 2019; Ampuni et al., 2020).

Among higher education institutions, specific attention should be paid to those preparing future teachers since the graduates will be the model of integrity for their students at school. Several studies found that pre-service teachers admit to academic cheating behaviour at relatively the same rate as other undergraduate students from different majors (Sabrina, 2021; Fontaine et al., 2020; Malone, 2020; Taşgin, 2018). Given that the unethical behaviour of pre-service teachers can have great consequences for society, it is necessary to understand what factors influence cheating to establish appropriate preventive action.

## 2. Literature Review

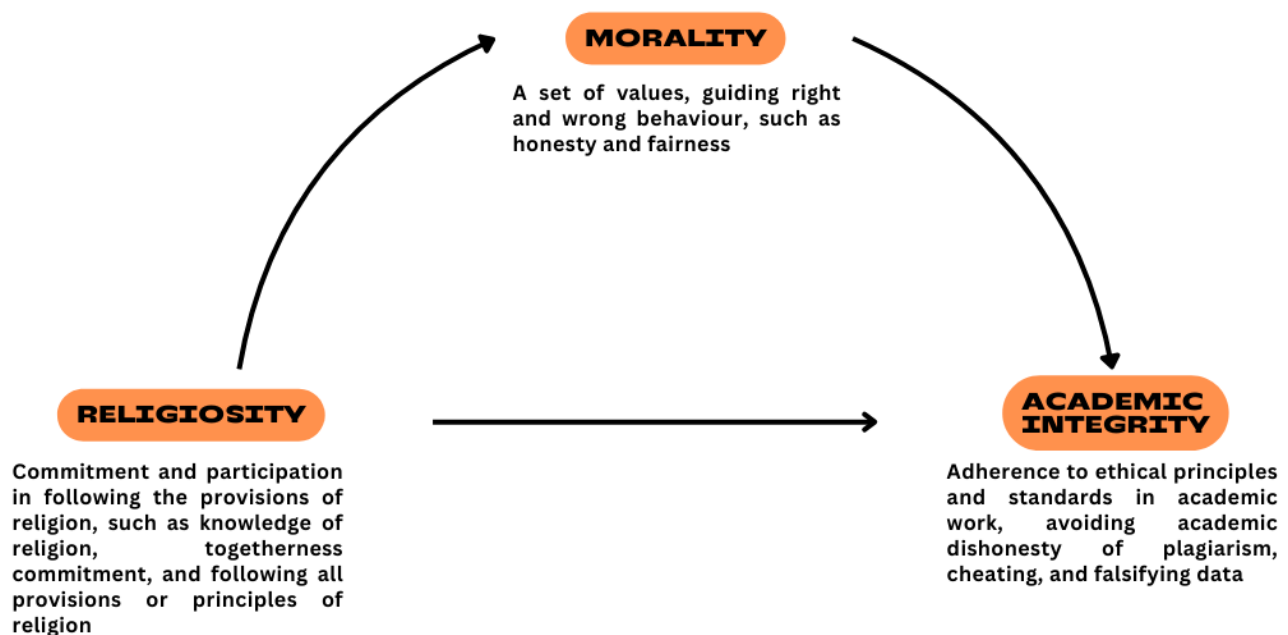
Academic dishonesty is an act of violating values, social rules, and norms related to academic scientific work in an educational environment (Thomas & Sassi, 2011). Bowers (1964) also highlighted that it refers to any disgraceful action for achieving academic success. Academic dishonesty includes: (1) Fabrication: intentional and unauthorised falsification of data or discovery of information or quotations in academic assignments; (2) Cheating: intentionally using or attempting to use unauthorized materials, study aids, or information in academic assignments; (3) Plagiarism: Intentionally or unintentionally citing other people's words as one's own in an academic assignment, (4) Facilitating academic dishonesty: unintentionally or intentionally helping and trying to help others to commit fraudulent academic behaviour. Murdock and Anderman (2006) indicated that some students cheated because they were worried about upholding their reputation among their peers or for themselves, while others cheated because they were excessively fixated on irrelevant results like rankings and failed to employ self-efficacy in challenging tasks.

Religiosity is a person's commitment and participation in following the provisions of religion, such as knowledge of religion, togetherness commitment, and following all provisions or principles of religion (Bloodgood et al., 2008). When a person implements a religious dimension in his life, his experience can influence maintaining a person's behaviour or actions and words and can avoid actions that violate religious regulations.

Morality is the value of human goodness as a human being. Pursuing the good life—the ultimate purpose of humans—requires certain behaviours toward others and oneself, which are demonstrated through morality (Henderson 1964). According to Harris (1976), morality is a domain of behaviour that deals with good and evil, right and wrong, and obligations and duties. Additionally, according to Durkheim (1990), morality will deter people from engaging in prohibited behaviour.

Part of the basic morals of the individual is honesty and integrity (Schiller & Bryant, 2002). Besides that, they also added that a person is regarded to have integrity when they uphold their moral principles and are honest with themselves, as it was also mentioned. People must be honest because it is a universal moral value demonstrated by treating people fairly, not lying, following the law, being truthful, not cheating, and not acting dishonestly (Elliott et al., 2000).

Based on the insights from the literature, this study proposes a conceptual framework to explore the relationship between religiosity, morality, and academic integrity. This framework, as presented in Figure 1, is designed to clarify how these factors are interconnected and provide a basis for understanding the behavioural outcomes of pre-service teachers in academic settings. The hypothesis of this study is that religiosity, defined as an individual's commitment to religious principles, including the knowledge of religious teachings and adherence to religious practices, will significantly affect academic integrity. The assumption is that individuals who exhibit higher levels of religiosity will display a stronger commitment to ethical behaviour, which in turn translates to higher academic integrity. The more religious a person is, the more likely they are to uphold ethical standards in academic settings, such as honesty, fairness, and adherence to institutional rules.



**Figure 1. Conceptual Framework of the Study**

To investigate this relationship further, mediation analysis was performed. Mediation analysis helps to explore the causal pathway between religiosity (the independent variable), morality (the mediator), and academic integrity (the dependent variable). The analysis suggests that religiosity influences morality, which in turn influences academic integrity. This means that religiosity does not directly affect academic integrity; rather, its impact is mediated through moral values. In other words, an individual's religious beliefs foster a moral foundation, and this morality influences how they approach ethical behaviour, including academic integrity. By understanding this pathway, the study highlights the importance of moral integrity as a crucial mechanism through which religiosity affects academic honesty. This suggests that fostering both religious and moral values can be an effective strategy in promoting academic integrity, especially in educational settings.

This paper examines the academic dishonesty among pre-service teachers in engineering, science, and humanities. Further, the contributions of demographic, moral, and religiosity factors toward the behaviour are also evaluated. Research has shown that religiosity could be associated with students' moral reasoning (Baumsteiger et al., 2013), while self-regulation controlling behaviour is based on internal moral standards (Ampuni et al., 2020).

The research is guided by the following research questions and hypotheses

1. Are there any differences in the prevalence rate of academic misconduct among pre-service teachers with various demographic backgrounds
  - Hypothesis 1: The prevalence of academic dishonesty is not equal among pre-service teachers with different genders, parents' backgrounds, fields of study, and university orientations
2. How does the role of moral integrity in mediating the causal relation of religiosity factor on pre-service teacher academic integrity
  - Hypothesis 2: The religiosity factor affects pre-service teachers' academic dishonesty through the moral integrity factor
3. How do the causal relations differ for females and males in different university orientation
  - Hypothesis 3: university orientation affects the strength of the relation between religiosity level and academic integrity in female and male pre-service teachers

### 3. Methodology

This quantitative study utilised a self-developed survey measuring students' academic integrity in the faculty of education from two universities in Surakarta, Indonesia.

#### 3.1. Participants

A total of 439 pre-service teachers enrolled at two universities during the academic year 2022 participated in the study. One of the universities is a state university that is in the top ten-ranked in Indonesia, while the other one is commonly believed to be the best Islam-centered private university in the region. The teacher candidates study different subjects of engineering, science, and social humanities from 20 undergraduate study programs in education. The participants were male (N = 113, 25.7%) and female (N = 326, 74.3%) from a state university (N = 268, 61.1%) and a private university (N = 171, 38.9%) and enrolled at the study program in engineering education (N = 131, 29.8%), science education (N = 131, 29.8%), social and humanities education (N = 119, 27.2%), and general education (N = 58, 13.2%). The participants' ages range from 18 to 25 years old, and they start enrolling in the university from 2017 to 2021. Table 1 shows the detailed information in each group of participants.

#### 3.2. Data Collections

This study utilized 4 (four) self-reporting questionnaires distributed using an online survey consisting of a demographic survey, academic dishonesty scale, religiosity scale, and moral integrity scale. All questionnaires were written in Bahasa Indonesia and previously verified using validity and reliability analysis from a preliminary survey. It was found that there were 11 valid questions on the academic dishonesty scale, 13 valid items on the religiosity scale, and eight valid items on the integrity scale. Meanwhile, the values of Cronbach's alpha for measuring internal consistency are 0.84, 0.84, and 0.72 on each academic dishonesty, religiosity, and moral integrity scale.

The academic integrity scale was derived from McCabe and Trevino (2002) and Ampuni et al. (2020), whereas participants rated the frequency of previous cheating prevalence (4 = never; 1 = many times). It is indicated that the higher the score obtained, the lower the student admitted to academic dishonesty. The Santa Clara Strength of Religious Faith Questionnaire of 10 question items

was used to measure the religiosity level. In measuring the moral integrity level, the authors used a scale adapted from Schlenker et al. (2008), which initially had 18 items, but, after the CFA was conducted by Ampuni (2019), was shortened to 10 items. For the two last scales, participants were asked how much they agreed with each statement (4 = strongly agree; 1 = strongly disagree).

### 3.3. Data Analysis

The inferential statistics of t-test and ANOVA examining statistical differences among different demographic factors were employed following a descriptive statistic (frequency count/percentage and mean) to answer research question #1. Multiple linear regression models were developed to investigate whether religiosity and moral integrity could predict pre-service teachers' academic integrity.

## 4. Results

RQ1: Prevalence of academic dishonesty within different demographic groups

The prevalence of academic dishonesty among each respondent was calculated from eleven indicators in the questionnaire. It was found that the most common form of academic dishonesty reported is "Use the internet for help on an assignment", as 46% of participants rated it "very often". On the other hand, 87.8% of participants declared "never" for the statement "Does not participate in group work but claims to contribute".

Table 1 shows the descriptive statistics of academic integrity across demographic characteristics.

**Table 1.** Descriptive statistics of academic integrity among pre-service teachers

Characteristics	Academic Integrity				
	N	%	M	SD	p
University orientation					
1. State university	268	61.0	33.72	4.431	0.000
2. Private university	171	39.0	35.27	4.269	
Fields of study					
1. Engineering					0.000
2. Life sciences, physics, chemistry	131	29.8	32.34	4.669	
	131	29.8	34.63	3.767	
3. Social and humanities	119	27.1	35.24	4.247	
4. Other educational subjects	58	13.2	36.24	3.429	
Study year					
1. 2017	8	1.8	35.75	3.105	0.645
2. 2018	132	30.1	34.01	4.509	
3. 2019	136	31.0	34.40	4.587	
4. 2020	77	17.5	34.14	4.231	
5. 2021	86	19.6	34.76	4.352	

Gender					
1. Male	113	25.7	31.97	4.761	0.000
2. Female	326	74.3	35.14	4.003	
Father's educational background					
1. Primary school	77	17.5	34.94	4.228	
2. Junior high school	67	15.3	34.28	3.721	0.508
3. Senior high school	175	39.9	34.34	4.742	
4. College	120	27.3	33.95	4.453	
Mother's educational background					
1. Primary school	87	19.8	34.70	4.152	
2. Junior high school	72	16.4	34.94	4.456	0.276
3. Senior high school	158	36.0	34.26	4.417	
4. College	122	27.8	33.79	4.600	

**Table 2.** Homogeneous Subsets of different fields of study

Tukey HSD <sup>a,b</sup>				
	N	Subset for alpha = 0.05		
		1	2	3
Engineering	111	32.77		
Life sciences, physics, chemistry	115	34.69		
Social sciences	118	35.30		
Other education	56	36.45		
Sig.		1.000	.742	.225

Means for groups in homogeneous subsets are displayed.

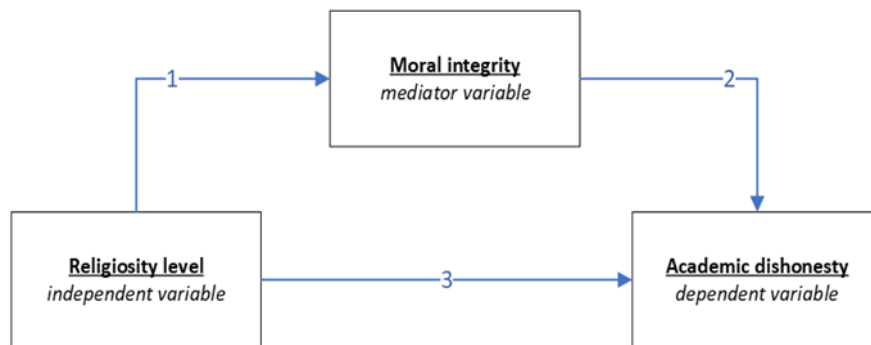
a. Uses Harmonic Mean Sample Size = 90.834.

b. The group sizes are unequal. The harmonic mean of the group sizes is used. Type I error levels are not guaranteed.

As indicated in Table 1, the prevalence of dishonest behaviour significantly differed with university orientation, the field of study, and gender but did not differ across study years and parents' educational backgrounds. By university orientation, student academic dishonesty at the private university was lower than that from the state university ( $F [1, 437] = 13.159 < 0.05$ ). In terms of the study field, academic dishonesty was more prevalent in preservice teachers majoring in engineering ( $F [3, 435] = 15.72 < 0.05$ ). Based on gender, academic dishonesty prevalence was lower in females, with an average of 35.14 ( $F [1, 437] = 47.587 < 0.05$ ). Table 2 shows no significant difference in academic integrity between the Science and Social Education student teachers. The significant difference was profound in engineering and other educational subjects (counselling, early childhood, and primary school education).

## RQ2: Predicting Academic Integrity from Religiosity and Moral Integrity

Mediation analysis was performed to investigate the effect of religiosity as the predictor of pre-service teachers' academic integrity via an intervening variable of moral integrity. Figure 2 shows the diagram of mediation analysis between religiosity and academic dishonesty.



**Figure 2.** Diagram of mediation analysis between religiosity and academic dishonesty

To answer RQ#2, a series of regression analyses were performed to investigate the hypothesis stating that the effect between student teacher's religiosity and academic integrity could be mediated by morality. It tested any statistical significance for the indirect effect for paths (1) and (2), as shown in Figure 2.

**Table 3.** Linear regression models predicting academic integrity

	Model 1		Model 2		Model 3	
	b	SE	b	SE	b	SE
Constant	14.226	(1.206) *	18.301	(1.483)*	16.058	(1.855) *
Religiosity	0.247	(0.028) *	-	-	0.081	(0.041) *
Moral integrity	-	-	0.645	(0.059)*	0.595	(0.064)
	R <sup>2</sup> = 15.2%		R <sup>2</sup> = 21.4%		R <sup>2</sup> = 22.1%	

Table 3 summarize the regression analysis results for the model of academic dishonesty among preservice teachers. From Table 3, all regression models reached statistical significance, explaining 15.2%, 21.4%, and 22.1% of the total variance. Model 1, which estimates the total effect between independent and dependent variables, showed that the preservice teachers' academic integrity was significantly and positively related to religiosity level. In estimating the direct effect of the independent variable on the mediator variable, another regression model was built, indicating a significant effect of religiosity on morality ( $F [1, 437] = 78.625, p < 0.05$ ). Meanwhile, model 3, developed to estimate the direct effect of independent and mediator variables on the dependent variable, showed a significant contribution of religiosity and morality to academic integrity ( $F [2, 436] = 61.760, p < 0.05$ ). To test if the indirect effect of morality is statistically significant, a Sobel test was performed, and the p-value was found to be less than 0.05. Therefore, the indirect effect of morality on religiosity and academic integrity is statistically significant. The correlation between religiosity and academic integrity is greater when morality is considered in the regression model.

### RQ3: Differences in university orientation and gender within fields of study

To explore differences in university orientation and gender in the relationship, two regression models were separately built for engineering and non-engineering disciplines. Interaction terms with university orientation and gender were added to the models after controlling for the main effect of moral integrity.

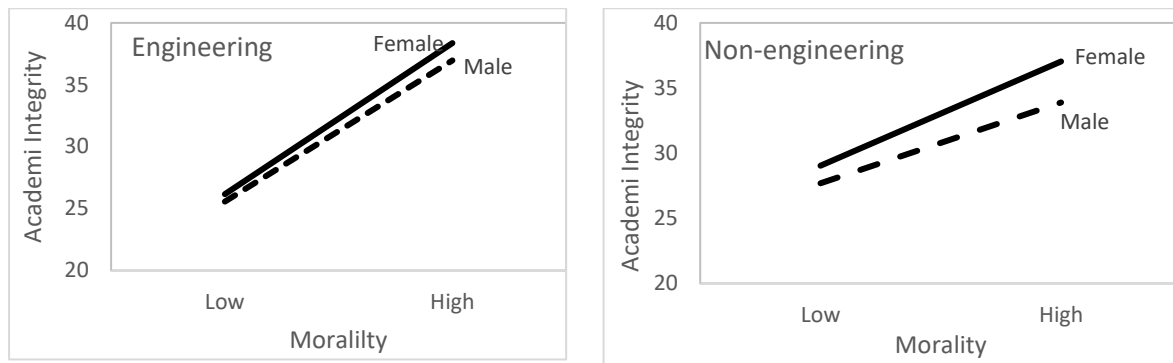
**Table 4.** Linear regression models predicting academic dishonesty for female

	Engineering				Non-Engineering			
	Model 1		Model 2		Model 1		Model 2	
	b	SE	b	SE	b	SE	b	SE
Constant	15.02	(2.95)**	15.23	(2.98)**	18.84	(2.31)**	19.54	(2.28)**
Religiosity	0.037	(0.067)	0.043	(0.068)	0.094	(0.049)*	0.082	(0.048)*
Morality	0.653	(0.103)**	0.56	(0.126)**	0.488	(0.079)**	0.291	(0.097)**
Morality – Gender	-	-	0.042	(0.03)	-	-	0.086	(0.278)**
Morality – University	-	-	0.014	(0.046)	-	-	0.018	(0.017)
	R = 0.54, R <sup>2</sup> = 28.7%		R=0.55, R <sup>2</sup> = 30.0%		R = 0.40, R <sup>2</sup> = 16.1%		R = 0.44, R <sup>2</sup> = 19.2%	

Considering the smaller size when splitting the samples, the regression also used a  $p < 0.1$  significance level (Gibson et al., 2008). Table 3 summarises the result of regression models for engineering and non-engineering (natural sciences and social humanities) student teachers. The first models in each field of study included no interaction terms that reached statistical significance, explaining 28.7% for engineering students ( $F [2, 128] = 25.7, p < 0.05$ ) and 16.1% for non-engineering students ( $F [2, 305] = 29.3, p < 0.05$ ). Based on the beta coefficient, the moral integrity factor predicts that academic dishonesty is stronger in engineering than in non-engineering pre-service teachers.

The second model in Table 3 was constructed with interaction terms to test whether the differences in moral integrity are significant for different university orientations and genders. The models with interaction terms were significant and explained 30% ( $F [4, 126] = 13.5, p < 0.05$ ) and 19.2% ( $F [4, 303] = 18.05, p < 0.05$ ) of the total variance in engineering and non-engineering students, respectively. The interaction terms of morality with gender had a significant and positive relationship with academic integrity for non-engineering student teachers. As clearly seen in Figure 3, the rate of academic integrity in female pre-service teachers is steeper compared to males in non-engineering study fields.





**Figure 3.** Interaction plot of gender and morality on pre-service teachers' academic integrity

## 5. Discussion

This current study's main objectives were to examine Indonesian pre-service teachers' academic integrity behavior and assess how morality may help understand the relationship between academic integrity and religiosity. It also aimed to identify how gender and university orientation may explain the differences in academic integrity among engineering and non-engineering student teachers.

This study found that the prevalence rate of academic dishonesty among Indonesian pre-service teachers was similar to the findings of other studies. Ampuni (2020) reported that more than 98% of 574 college students in Indonesia admitted academic dishonesty during their studies. In the Indonesian context, it is stated that there are at least 2 (two) main reasons for the high dishonesty prevalence: (1) a lack of students' understanding of the honour codes and ethical rules related to academic misconduct, (2) in the collectivistic culture, the students tend to perceive unauthorized collaboration as fulfilling a social obligation.

Eshet and Margaliot (2022) found that 73% of education students admitted to engaging in academic dishonesty at some point in their studies, a finding that is consistent with DiPaulo (2022), which revealed that more than 80% of pre-service teachers in the United States self-reported engaging in at least one act of academic dishonesty. Fontaine et al. (2020) also reported a similar finding, who specifically examined the pre-service teachers' propensity to cheat on exams. These findings raise a concern about whether the pre-service teachers could demonstrate a commitment to academic integrity and create a culture of discouraging unethical academic behaviour in their future teaching profession.

The results of this study also highlight the difference in academic integrity levels among pre-service teachers from different demographic backgrounds. From a gender perspective, it is indicated that male student teachers commit more intellectual dishonesty than their female counterparts. It supports the findings from other studies by McCabe and Trevino (1997), Bowers (1964), Whitley and Keith-Spiegel (1999), and Gibson et al. (2008)). Fa'iezah (2009) argued that it may relate to the tendency of females, especially from Asian culture, to give more attention to moral values than males. Females might consider the moral aspect and express their emotions when deciding to admit academic misconduct.

As expected, pre-service teachers from the Islamic-based university showed fewer tendencies toward academic dishonesty than their counterparts who studied in a state university. This confirmed the expectation that more religious students would be more about academic ethical behaviour (Whitley and Keith-Spiegel (1999). Furthermore, it has been found that college students who are prepared to be future teachers in engineering are more prone to academic dishonesty than those in other fields of study. This finding agrees with the study of Trevor S. Harding et al. (2007), which reveals that engineering students are the group that engages in academic dishonesty most frequently.

The hypothesis proposed in this study that morality would mediate the relationship between religiosity and academic integrity received support. The regression models showed that the level of religiosity was positively related to morality, while higher morality was associated with a lower level of academic dishonesty. Pre-service teachers with stronger religious beliefs were less likely to admit unethical academic behaviour than those with less religious beliefs. This finding supports prior research indicating a significant contribution of morality in explaining the effect of religiosity on unethical decision-making (Cardwell, 2017 and Detert et.al, 2008). Additionally, this study explores whether the relationship between religiosity, morality, and academic integrity would differ among engineering and non-engineering pre-service teachers. The analysis indicated that pre-service teachers' fields of study did appear to modify the relationship. Results exhibited that religiosity was associated with less self-reported academic dishonesty in non-engineering pre-service teachers but not in their engineering counterparts. The strength of this relationship revealed from previous research also varies. Sofyani and Rahma (2015) and McCabe and Trevino (1997) found that religious practice significantly correlated to students' academic integrity, while Williamson and Assadi (2005) and Huelsman et al. (2006) claimed that religiosity has no discernible impact on academic dishonesty. These findings could relate to Bandura's theory on situational inducement, which may temporarily violate a religious belief in admitting an offending action (Rifani et al., 2021). However, it was found that morality is a significant predictor in both models of engineering and non-engineering students.

Regarding morality, further analysis was performed to identify the interaction of morality and gender and university orientation in explaining the differences in academic integrity between engineering and non-engineering pre-service teachers. The moderating effect of gender on the relationship between morality and academic integrity was only significant for non-engineering pre-service teachers. The relationship between morality and academic integrity for male and female pre-service teachers showed a similar trend in engineering. On the other hand, the result for non-engineering subjects confirms the finding of Gibson et al. (2008), who concluded that moral beliefs matter more for women in predicting the intention for offending.

Romanowski (2021) supports the findings of this study by emphasising the role of religiosity in shaping students' views on plagiarism, suggesting that religious beliefs influence attitudes toward academic dishonesty. Similarly, Wang and Zhang (2022) highlighted the importance of honesty-humility and traditional personality traits as key factors in fostering integrity, which aligns with the current study's findings that religiosity is positively related to morality and that higher morality is associated with lower levels of academic dishonesty.

Further, several studies provide additional recommendations for reducing the prevalence of academic dishonesty. Eshet & Margaliot (2022) recommended integrating creative thinking courses into teacher education programs that foster creativity and minimise unethical behaviour. Cebrián-Robles et al. (2023) suggested that national policies should prioritize safe implementing artificial intelligence (AI) in education while addressing risks such as cyber-plagiarism and identity theft through tools like institutional repositories. Rodrigues et al. (2025) added that AI could assist in detecting plagiarism, advocating for collaboration between teacher preparation institutes and society to create policies that prevent dishonest behavior. Together, these studies show that combining religiosity, moral integrity, creative thinking, and technology can effectively reduce academic dishonesty and promote a culture of academic integrity.

## 6. Conclusion

This study has highlighted the extent of academic dishonesty behaviour among pre-service teachers in Indonesia. The results showed an alarming rate of academic integrity in the student's education to be future teachers. Given that many studies have shown the correlation between past

academic misconduct and unethical behaviour in the current professional career, these results should raise more concern in teacher preparation programs.

Different relationships of religiosity, morality, and academic integrity between different demographic groups in this study indicate that the strength of the relationship may vary depending on the type of sample utilized. Religiosity level was a significant predictor of pre-service teacher academic dishonesty prevalence as the higher level of religiosity was associated with less prevalence of academic dishonesty. However, this result may vary when factoring in the interaction between other factors.

## 7. Limitation

This current study is not without limitations. The first limitation is related to the use of self-reports of academic dishonesty, which may raise concerns about the possibility of attenuating the prevalence of these misconduct behaviours. A second limitation comes from the generalizability of the sample that was collected from two colleges in Indonesia. Therefore, the data might not be generalisable to all pre-service teachers worldwide. A third limitation is the inability to control other factors that may correlate to pre-service teachers' academic integrity. Prior research has shown that multiple mediators may exist in explaining misconduct behaviour, for example, as shown by Pirutinsky (2014). Therefore, future research might consider different aspects in predicting academic integrity among pre-service teachers. For further research, it is recommended to include different samples that consider not only personal factors but also situational factors related to the influence of peers, enforcement of honour codes, and faculty support. Understanding the relationship between pre-service teachers' academic dishonesty and a range of behaviours could be useful for teacher education programs to develop effective intervention strategies.

## Declarations

**Author Contributions.** IW: Review-editing and writing, as well as original manuscript preparation. RM & EG: methodology, data analysis. YE: Literature review, conceptualisation. All authors have read and approved the published on the final version of the article

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

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**Ethical Approval.** Ethical approval reference number: 1332.3/UN27.02/PT.01.04/2022

**Data Availability Statement.** The datasets generated and/or analysed during the current study are available from the corresponding author upon reasonable request.

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