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**THE MEDIATING ROLE OF ATTITUDE IN THE CORRELATION BETWEEN CREATIVITY AND CURIOSITY REGARDING THE PERFORMANCE OF OUTSTANDING SCIENCE TEACHERS****Z. Ramdani\*<sup>1</sup>, D. Hadiana<sup>2</sup>, A. Amri<sup>3</sup>  
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Significant and unexpected changes need to be anticipated by all teachers, especially when facing difficult situations in the learning process. This study aims to determine the mediating role of attitude in the correlation between creativity and curiosity regarding the performance of outstanding science teachers. A quantitative causal method was used which involves 100 teachers that were selected using a purposive sampling technique. Collection of research data using four questionnaire instruments with a Likert-scaled were derived from the existing grand theory and met the psychometric properties as a suitable instrument to use. Multiple regression analysis is used to identify the relationship between these variables. The results of the data analysis showed that the creativity affects attitude directly and attitude also affects performance. Other results show that curiosity has a direct effect on performance and has no indirect effect on performance. Meanwhile, other results also explained that the investigated variables are positively correlated with the outstanding science teachers. The results of the study concluded that attitude can act as an effective mediator in the relationship between creativity and performance. Creativity and curiosity are important variables to support the performance of outstanding science teachers. The limitations of this study and discussions were subsequently explained in this article.

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**INTRODUCTION**

Most scientific literature has found that success in the learning process in recent decades, is determined by an intelligent teacher who has a good personality and is able to optimally transfer knowledge to students (Kanya et al., 2021a, 2021b; Warsihna et al., 2021). This fact is supported by many works of literature that make teachers an educator and a facilitator in the

learning process (Ramdani et al., 2021; Warsihna et al., 2021). The studies conducted by most scholars agreed that the elements supporting a teacher's personal success include pedagogical competency, knowledge, and personality (Klassen et al., 2018; Magulod et al., 2020; Bruggeman et al., 2021; Sheridan et al., 2021). In the pedagogical aspect, the methods and activities performed by teachers is often the suitable strategies for achieving optimal learning. In the aspect of knowledge, teachers having adequate understanding are the ones that provide helps concerning the

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things that students do not know. Meanwhile, in the personality context, teachers' characters and positive approaches certainly provide a supportive atmosphere for the students. Based on these facts, it is safe to conclude that teachers have a vital position in learning at school.

Teachers are often confronted with many problems and dynamics in their education journey, which reveals their limitations. For example, changes in the learning process that are full of uncertainty due to the pandemic are currently the crucial situations faced by many teachers globally (Voogt et al., 2013; Caena & Redecker, 2019; Flores & Swennen, 2020; la Velle et al., 2020) and has undoubtedly hindered them from maintaining optimal learning. Klassen et al. (2018) found that personality is the most important among many other aspects for teachers to survive and implement the best learning process. This aspect includes positive characteristics such as creativity and curiosity to enhance learning towards a better situation (Hartley et al., 2016; Mullet et al., 2016; Harris & de Bruin, 2018). Therefore, this aspect is undoubtedly the most prominent determinant of teacher's quality and performance in delivering optimal learning.

Creativity and curiosity are two things that are indispensable for an individual to face challenges in this 21st century. Technological advances and changes that can occur at any time make a teacher must have these two characters. Meanwhile, the data shown by several studies show that these two characteristics are needed for a teacher to answer global challenges, so that they can improve their performance in the learning process at school (Hartley et al., 2016; Mullet et al., 2016; Harris & de Bruin, 2018). In addition, with these two characters, the weaknesses of teachers in Indonesia in facing global competition can also be optimized. As it is well known that the competitive index of Indonesian teachers is still at a moderate level, so it is necessary to significantly improve in developing individual character (Rosser & Fahmi, 2016; Kusumah & Nurhasanah, 2017; Kusdiyanti et al., 2020; Rusydiyah et al., 2020).

The importance of creativity and curiosity for a teacher is also shown by the results of an initial study conducted by the author in a previous focus group discussion activity. Preliminary studies were conducted to confirm the role of the two variables, particularly in science teachers. The results of the initial study show that as difficult as the character of creativity is needed and supports a teacher in creating adaptive learning. It is predicted to be one indicator of their work productivity. This fact is also reinforced by another

preliminary study conducted by the author through a series of interviews with high-achieving science teachers in Indonesia (Ramdani et al., 2019a).

Runco and Jaeger (2012) theoretically explained creativity as an individual's ability to generate unique ideas and provide quick and precise solutions to problems. Prakoso et al. (2020) discovered that this kind of character helps teachers to have a sense of optimism, creates effective coping strategies in difficult situations (Jaarsveld & Lachmann, 2017; Martz et al., 2017), increases productivity at work (Tsai et al., 2020), and provides good psychological well-being (Gordon & O'Toole, 2015; Anderson et al., 2021). Another essential character in the learning process is curiosity, of which Peterson and Seligman (2004) found that it is able to increase an individual's awareness of acquiring knowledge continuously according to the goals to be achieved. This implies that both creativity and curiosity is able to predict teacher's good performance (Linley et al., 2007; Banicki, 2014; Chan & Yuen, 2014; Hartley & Plucker, 2014; Kaparounaki et al., 2020).

Other studies that also agreed that teachers' performance is primarily determined by many personality traits include (Klassen et al., 2018; Kaparounaki et al., 2020; Magulod et al., 2020). It has been observed that these characters are linked to teachers' performances in school, but none has specified on the characters of creativity and curiosity. In fact, it has been empirically proven that these two characters have a significant effect on teacher's performance. Several investigations provided information that contributed to the novelty of this study, where the attitude variable was used as a mediator of positive characters and teacher's performance.

Studies conducted by several experts displayed information adding to the novelty of this research; the attitude variable was used as a mediator of positive characters and teacher's performance. Attitude is a very important variable in supporting individual life. This variable is explained as a person's tendency to judge the good or bad of an object that is in their mind so that it determines the behavior and activities they will take. Attitudes towards science teachers have been studied by Klassen et al. (2018). The results of his research indicate that there are three aspects attached to the attitude of science teachers, namely cognitive, affective and self-efficacy. The results of his research also strengthen the researcher's assumption that attitude plays a role in improving the performance of science teachers in Indonesia (Klassen et al., 2018). Previous

studies positioned attitude as the main variable that plays a role in the performance of a teacher, but this study did not look at other aspects of the teacher that could form the attitude, namely positive characters (Copriady, 2014; Kao et al., 2019; Longobardi et al., 2021). In addition, the researchers did not find similar research conducted on high achieving science teachers, even though this condition is important to know so that it can be a good example for other teachers in various regions.

Meanwhile, some only examined attitude as a mediator of knowledge and behavior (Copriady, 2014; Kao et al., 2019; Longobardi et al., 2021). Research by Prakoso et al. (2020) also demonstrated that attitude was an optimal mediator of personality, performance, and psychological well-being. In this scenario, it was assumed that no one had directly examined how attitude was able to mediate the correlation of creativity and curiosity with reference to teacher's performance. Based on various descriptions presented earlier, this study aims to examine the mediating role of attitude in the correlation between creativity and curiosity with reference to the performance of outstanding science teachers.

## METHODS

To achieve the purpose of this study, a quantitative causal design was used to thoroughly determine the influence of one variable on another (Knapp, 2016). Through this design, a clear picture of the extent to which the data are generalized was gotten (Ramdani, 2018). Furthermore, it examined the indirect influence i.e. mediating function of the attitude variable in the correlation between two independent variables, namely creativity and curiosity with reference to the performance of this study samples (Kim, 2015).

The characteristics of respondents include (1) An active teacher at the junior high school level; (2) Teaching Natural Science (*IPA*) subject; (3) Being active in the activities and association of Natural Science Subject Teacher Deliberation (*MGMP IPA*); (4) Having specific achievements as shown by the data from the education office and; (5) Willingness to be a research respondent. Purposive sampling techniques were used to select respondents according to the predetermined characteristics (Etikan, 2016). Each of the selected respondents received an informed consent regard-

ing their willingness to consciously and actively participate in this study. This present study focused on outstanding teachers as research samples, of which (Sheridan et al., 2021) suggested that they are role models when at their best compared to others. The reason for selecting science teachers was that several previous investigations had shown that the criteria for a science teacher are different from that of a social teacher. Moreover, the most significant factor was that the materials being taught required creativity and high curiosity, hence there is need for selecting science teachers (Murphy et al., 2015; Criswell et al., 2018; Perera & John, 2020).

This research used a quantitative data collection scheme described by Ramdani (2018), which includes (1) preparation; (2) strengthening literature and instruments; (3) data collection; and (4) data analysis and interpretation. Preparation includes determining research objectives, problem formulation and variables raised. Then, the researcher establishes a grand theory, conducts a literature study, and develops the measuring instrument used. Next, data collection is carried out on a predetermined sample according to the existing instrument. Finally, all existing data are analyzed and interpreted according to the purpose and report the research results in writing.

A total of 4 instruments that had been validated and psychometrically accounted were employed. The first instrument was a creativity questionnaire developed by Park et al. (2004) and Peterson and Seligman (2003, 2004), containing 10 statements used to measure the construct of individual creativity. The validation result by Prakoso et al. (2020) showed a scale reliability coefficient of .787, indicating that all items already met the level of data validity. The second instrument was also developed initially by Peterson and Seligman (2003), which consist of 10 favorable statements measuring the dimension of an individual's curiosity. Prakoso et al. (2020) validated this questionnaire and obtained a reliability value of .749.

For the third instrument, the attitude questionnaire used was a series of statements presented using a Likert scale, which was represented by 3 positive statements thereby resulting to a reliability coefficient of .787, while the discriminating power of each item was more than .5 ( $d > .3$ ). For the instrument part 3 itself, the researcher uses the attitude concept that has been

developed by Klassen et al. (2018). Furthermore, the fourth instrument about teacher performance was modified by deriving the theoretical basis from Kanya et al. (2021b) and Ramdani et al. (2019b). This instrument was in the form of a performance questionnaire which consists of 13 statements and a Likert scale having a reliability coefficient value of .928 and validity ranging from .632 to .836. All instruments use a Likert scaling model so that all data can be analyzed simultaneously. After all questionnaires used were declared psychometrically feasible, they were distributed to the selected samples using Google Forms or online versions of questionnaires.

The data obtained were the responses of all respondents in the form of raw scores (Prakoso et al., 2020; Kanya et al., 2021b). Furthermore, SPSS software was used to descriptively ana-

lyze the respondents' demography and inference in order to determine whether or not the study objectives using SPSS to test regression analysis and to find out whether the research objectives were achieved or not (Prakoso et al., 2020; Kanya et al., 2021b). The results were then interpreted using a quantitative inferential data analysis model to examine the significance of one variable over another.

## RESULTS AND DISCUSSION

The results showed that the total number of respondents who completely filled the questionnaire was 100. The data were collected for 2 weeks in mid-November 2021, and after being declared appropriate, it was used to establish the respondents' demographics as seen in Table 1.

**Table 1.** Demographics of Research Respondents

No	Category	Frequency	Percentage (%)
1	Gender		
	Male	27	27%
	Female	73	73%
2	Working experience		
	Less than 1 year	5	5%
	1 to 5 years	11	11%
	6 to 10 years	10	10%
	More than 10 years	74	74%

According to Table 1, female respondents, representing 73% were more dominant than males with 27%. In the length of service category, it was observed that those who had more than 10 years of working experience are more dominant,

representing 74%. The correlational analysis results were therefore presented in Table 2 in order to observe the correlation between the variables tested.

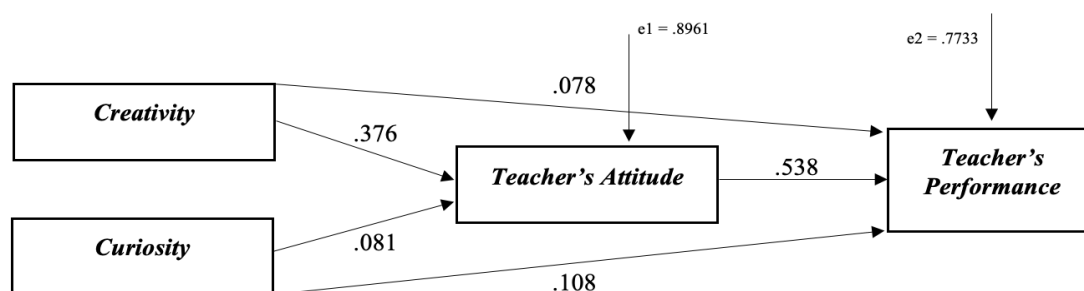
**Table 2.** Correlation between Variables

Category	Curiosity	Creativity	Attitude	Performance
Curiosity	1	.808**	.385**	.378**
Creativity	.808**	1	.442**	.403**
Attitude	.385**	.442**	1	.614**
Performance	.378**	.403**	.442**	1

Note. \*\*Significant in 1%.

Table 2 presents the correlations among the four variables tested, and it was observed that the correlation coefficient reached a value of more than .3. The highest value was observed in the correlation between creativity and curiosity, which is .808 ( $r > .3$ ), indicating that the two variables were significantly and positively correlated. Meanwhile, the lowest value was shown in

the correlation between curiosity and attitude ( $r = .385$ ). Nevertheless, the two variables remained positively and significantly correlated. All the variables tested had a significant and positive correlation coefficient, indicating that when one variable increases, the others also increase, and vice versa. These results of mediating variables are shown in Figure 1.



**Figure 1.** Model of Attitude as a Mediator Variable in the Correlation of Creativity and Curiosity with Performance

Figure 1 illustrates the correlation model tested in this study. From the data processing results, the values of direct and indirect influence on the existing model was found. For the creativity variable, the result of multiplying the beta values of teacher's creativity by their performance showed a direct and indirect influence of .078 and .201, respectively. This implies that attitude played a significant role as a mediating variable between creativity and teacher's performance. Meanwhile, the result of multiplying beta values of teacher's curiosity by their performance showed that the curiosity variable had a direct and indirect influence of .108 and .0435, respectively. Since the value of direct influence was higher than the indirect, it was concluded that the attitude did not play an influential role as a mediator variable in the relationship between curiosity and teacher's performance.

These results adequately depicted that all variables are significantly correlated. Several assumptions corroborated this condition, one of which was because all four variables were theoretically complementary for teachers to maintain their qualities (Seligman et al., 2005; Seligman & Csikszentmihalyi, 2014; Prakoso et al., 2020). Furthermore, other studies also reinforced the strong correlation between these variables, based on the fact that they belong to the same dimension, namely positive psychology. Hunter et al. (2016) described that the results of the correlation was positive and significant. The information presented in Table 2 confirmed that when a teacher exhibits high levels of creativity and curiosity, the other variables such as attitude and performance tend to increase.

This study also determines the mediating role of attitude in the correlation between teachers' creativity and performance. It is important to note that several evidences has strongly confirmed why attitude is proven to be an influential

mediator (Tran et al., 2017; Suryawati & Osman, 2018; Huang et al., 2019). Basically, teachers' attitudes do not arise directly, rather, it is a consequence of what they have and how they feel. This implies that the occurrence of a variable has no significant effect when its influence is not decisive. It was therefore concluded that creativity is a strong predictor influencing the emergence of teachers' attitudes, and was able to trigger the optimal behavior in their works. It is important to note that previous studies have also confirmed the role of attitude as a mediator, even though the focused variable was not creativity. Nevertheless, creativity is an essential characteristic of a person's personality and attributes to get an optimal job (Tran et al., 2017; Suryawati & Osman, 2018).

Another finding of this study was the role of attitude, which has been proven to be incapable of mediating the correlation between curiosity and performance of the outstanding science teachers. This fact became an important note for other studies because, theoretically, curiosity is a personality and a strong predictor of a positive attitude and for achieving optimal performance. Based on this, it was therefore concluded that curiosity was not strong enough to contribute significantly to changes in an individual's attitude, yet it is a trait that everyone needs to possess, and not only the teachers. Furthermore, it was also concluded that curiosity was not suitable as a predictor but as a mediating variable of attitude. This is supported by Eren and Coskun (2016) and Tang and Salmela-Aro (2021), who studied the role of curiosity as a mediator and moderator variable. Gross et al. (2020) and Hagtvedt et al. (2019) found that curiosity was a predictor of an individual's creativity.

Previous studies did not focus on the study of science teachers who excel, even though the results of the study here describe in detail the im-

portance of developing psychological character in science teachers. Most of the previous studies looked at teachers in general, without focusing on the performance of science teachers. Science teachers with all the advantages and situations that are considered more modern make them more aware of the importance of their creativity and curiosity (Murphy et al., 2015; Criswell et al., 2018; Klassen et al., 2018).

Consequently, the fairly comprehensive information provided revealed that all the examined variables were essential to support the performance of outstanding science teachers. The samples are advantageous in terms of their characteristics, but it is not sufficient to only conduct the study with a limited number of samples. Therefore, a larger number of respondents need to be employed in the future (Meng, 2013; Etikan, 2016; Tomy et al., 2016). The role of curiosity as a mediator or moderator variable, also needs to be considered. The conclusions in the study are useful as bedrock in the future.

### CONCLUSION

The result showed that teachers' attitude played a significant role in mediating the correlation between their creativity and performance. This implies that an optimal work attitude and creativity certainly determine the performance of a good teacher. Furthermore, creativity and curiosity are considered as important personality traits that teachers need to possess in order to achieve optimal performance. This is also supported by the results of this study, which interpreted that all the variables involved were significantly correlated. This study provides a fairly clear picture of the importance of the power of creativity and curiosity for a science teacher in carrying out a lesson, so this result must be of great concern to all parties in the school to optimize these two characters as an important part of learning, especially through activities that support.

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