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The relationship between human values and creative ideation among undergraduate students: The role of creative self-efficacy

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Abstract: To prepare for students’ future employment, schools should consider enhancing their students’ creative ideation by linking it to innovation, which is key to success for most organizations. The present study aimed to investigate the relationship between the multiple variables of values (self-direction, stimulation and universalism) and creative self-efficacy (CSE), as they are related to creative ideation among undergraduate students. The participants consisted of 831 undergraduate students selected from five Thai public universities, through a convenience sampling approach, in which the analysis involved structural equation modeling and mediation analysis (bootstrapping technique). The results in this study indicated that the stimulation value directly predicted creative ideation. Creative self-efficacy had the strongest relationship with creative ideation. The findings also demonstrated that CSE was a mediator between the self-direction, stimulation values and creative ideation. Conversely, the universalism value presented a non-significant relationship with CSE and creative ideation, respectively. Perceiving the importance of human values and CSE toward creative ideation, instructional designers and instructors may apply this knowledge to designing classroom settings and effective

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PUBLIC INTEREST STATEMENT

Creative skills and innovation are essential educational competencies for all students and play a vital role in their future employment; nevertheless, this requires creative ideation. Understanding the factors influencing creative ideation may help instructional designers and instructors to design educational settings that would enrich students’ creativity. Individual’s values and creative self-efficacy are crucial factors influencing students’ creativity. The findings in the current study distributed the insight that students who were motivated by the self-direction and stimulation values would tend to have high confidence in their creative skills, and this would lead to the promotion of their ideas or solutions generation. Perceiving the importance of personal values and creative self-efficacy toward creative ideation, instructional designers and instructors may apply this knowledge to design classroom settings and effective instruction to promote students’ creativity as well as beliefs in their creative capabilities.
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Subjects: Cognitive Psychology; Educational Psychology; Higher Education; Educational Psychology

Keywords: Creative ideation; creative self-efficacy; human values; self-direction; stimulation; universalism

1. Introduction
The key to a successful organization is innovative employees (Purc & Laguna, 2019; Verhees & Meulenberg, 2004). Innovation consists of two critical aspects: generating ideas or solutions and implementing them in the workplace (Amabile, 1988; Rosenbusch et al., 2011). Simultaneously, creative ideation refers to the cognitive operation in producing ideas that are considered as new or novel practical outcomes (Plucker et al., 2006; Runco et al., 2001). Therefore, this affirms that creative ideation is an integral part of innovation and, thus, is in demand in the workforce (Amabile, 2013). Moreover, in organizing the most appropriate preparation for students' future employment in an uncertain future, schools should consider enhancing their students' creative ideation (Mareque et al., 2019). However, recognition of the importance of creative ideation raises an important question for investigation, why are some students likely to exhibit a typical frequency of generating ideas while others do not? One plausible explanation is that there may be different personal values (Taylor & Kaufman, 2020) and creative self-efficacy (Karwowski et al., 2018). Therefore, before educators enrich their students’ creative thinking, they may consider investigating human values and creative self-efficacy factors among myriad other variables that affect creative ideation (Tep et al., 2018), as well as the psychological mechanism pertaining to its process.

The concept of creativity is vast: creative ideation is just a small proportion of it; nevertheless, all creativity requires ideation (Runco et al., 2001). Thus, creative ideation is an interchangeable term for a thinking disposition or ideational behavior, which is defined as the cognitive capability to conceive a number of creative ideas (Pannells & Claxton, 2008). An important, yet understudied, aspect of creative ideation is its connection to an individual’s values. Individual’s values are defined as “desirable goals, which stand above situations, vary in their importance and serve as the guiding principles in people’s lives” (Schwartz, 1992, p. 4). Based on the Theory of Basic Human Values, an individual’s values are comprised of ten types and are organized into four hierarchical dimensions. First, the openness to change dimension contains the self-direction value (SDV) and the stimulation value (STV). Second, the conservation dimension includes tradition, conformity and security values. Third, the self-transcendence dimension incorporates universalism values (UNV) and benevolence values. Finally, the self-enhancement dimension encompasses the power and achievement values, whereas hedonism shares features with all dimensions (Schwartz, 1992). The values theory of Schwartz (1992) posited that the creative individual is inclined to advocate SDV, UNV and STV. The empirical investigation of Dollinger et al. (2007) and Kasof et al. (2007) confirmed an earlier theoretical notion of the three values, i.e., SDV, STV and UNV, that maintained a significant positive link with creativity. Limited studies have also been undertaken to assess the relationship among values and creativity in higher education (Dollinger et al., 2007; Kasof et al., 2007; Taylor & Kaufman, 2020). Although the results from these limited studies indicated that undergraduate students’ values promoted their creativity, this demonstration was still insufficient and was partially obtained from a small student sample.

Another key aspect to consider in terms of creative ideation is self-efficacy. Creative self-efficacy (CSE) refers to human confidence or the firm belief in one’s competence to cope with creative challenges (Bandura, 1997; Beghetto et al., 2011; Karwowski et al., 2018; Tierney & Farmer, 2002). This belief is influenced by many factors; for instance, values (Sousa et al., 2012) and personality traits (Barni et al., 2019). Theoretically, values promote and guide individual goals, whereas this goal influences one’s self-efficacy (Bandura, 1997). Surprisingly, there have been limited studies conducted pertaining to students’ values and CSE in higher education. Roccas et al. (2002) matched the Big Five...
personality traits to students' values. Consequently, they discovered that a positive association exists between openness to experience and the UNV, SDV and STV. Correspondingly, Karwowski et al. (2013) indicated that CSE has a positive correlation linked to openness to experience. Therefore, this logic may explain that the SDV, STV and UNV would tend to be related to CSE.

In addition, Karwowski et al. (2018) posited that CSE might serve as a strong belief in individuals' capabilities regarding their creative thinking or creative problem-solving. Based on a theoretical understanding regarding CSE and creative ideation, the authors stated that “CSE may also serve as an overall conviction as to one's own abilities in creative thinking or creative problem solving” (p. 46). Students are more likely to show a typical frequency of generating ideas if they believe they can achieve it and perceive themselves as potentially successful. Many studies have also investigated the relationship between CSE and creativity (see Hoase et al., 2018) and found that CSE directly predicts creative behavior (Beghetto et al., 2011; Jaiswal & Dhar, 2016). Based on the empirical results from these studies, CSE does not only serve a direct role in predicting creativity, but also serves as the mediator of effects on other factors on creative ideation (Liu et al., 2017; Tierney & Farmer, 2002). When individuals consider creative ideation as being of value, by providing high confidence in their creative abilities to achieve it, they are likely to develop many creative ideas or solutions (Beghetto & Karwowski, 2017). Hence, creative behavior is enhanced by motivation, which is generated from individuals' values (Kasof et al., 2007). As such, human values act as a driving force behind creative behavior (Dollinger et al., 2007).

1.1. Values and creativity
There are very few studies related to the investigation of students' values and creativity in the university context, and all were carried out in the US and Europe. Dollinger et al. (2007) investigated the association between the creative achievements and products and individual values among 278 university students. They found that only three values (SDV, STV and UNV) were positively related to undergraduate students' creative achievements and products. Kasof et al. (2007) also studied the relationship between identified motivation (obtained from personal values) and creative performance using 248, mostly female, undergraduate students. Their results were similar to those of Dollinger et al. (2007). In another line of research, Lebedeva and Schmidt (2012) investigated the association between personal values and attitudes toward innovation among 444 Russian, Canadian and Chinese college students. The authors found a link between the SDV, STV and attitudes toward innovation, whereas there was no association with UNV. Likewise, Arsenijević et al. (2012) reported a positive relationship between creativity and the SDV, STV and UNV after examining the relationship between values and innovations among 426 media students in Serbia, Croatia and Bosnia-Herzegovina.

Most recently, Taylor and Kaufman (2020) conducted two studies related to values and creative ability, self-perception and achievement. The first study performed with 163 university students revealed that only SDV and STV were significantly correlated with creative performance. The second study carried out with 492 individuals from the same university used an online survey. They found that there was a link between creative self-perception in the artistic domain and the SDV, STV and UNV; in the everyday/self-domain, it was related to SDV and benevolence; in the science and performance domain, it was positively associated with STV and power, and in the scholarly domain, it was related to SDV only. The authors further reported that creative achievement incorporated three higher-order factors, e.g., expression, performance and scientific. Expression was positively associated with SDV and STV. Scientific was positively related to SDV and benevolence. Nevertheless, no positive association was found between the values and performance.

Aside from the investigation with students, drawing on a large random sample of adults in Central Russia and the North Caucasus, Lebedeva et al. (2019) investigated the relationships between individuals' values and their innovative behavior: only the self-enhancement values were correlated with innovative behavior. Sousa and Coelho (2011) examined the relationship between personal values and creativity among 266 bank employees and found that the openness to change values were correlated with creativity, whereas self-transcendence was negative.
Similarly, Kurt and Yohagil (2015) assessed the association between personal values and creative behavior among 370 employees in Turkey; they indicated that the SDV, achievement and UNV were related to creative behavior. In sum, it is likely that there are still conflicting results regarding the association between the values and creativity of previous studies.

1.2. Self-efficacy and creativity
Mathisen and Bronnick (2009) explored the impact of creativity training on CSE among different samples, e.g., students, teachers and employees, and pointed out the positive relationship between creative performance and CSE. Richter et al. (2012) investigated the relationship between CSE and individual creativity among 176 employees; they also found that individual creativity was positively correlated with CSE. Haase et al. (2018) conducted a meta-analysis of the association between CSE and various creativity measurements; they found that self-reports or individuals’ own assessment of creativity demonstrated a strong association with self-efficacy, whereas creativity measured using performance tasks had a low correlation with self-efficacy. Recently, Karwowski and Beghetto (2019) explored a theoretical model of creative behavior as agentic action. The authors found that creative potential transforms into creative behavior that is affected and, in part, determined by creative self-beliefs.

In addition to the direct effect on creativity, CSE takes on a moderating role between creativity and other factors. Tierney and Farmer (2002) found CSE was successfully moderated between employees’ creative performance and their job tenure, job self-efficacy, supervisor behavior and job complexity, whereas CSE also provided a significant positive prediction of creative performance. Similarly, self-efficacy served as a moderating role between the students’ process of study and creativity (Chuang et al., 2010), the creativity of employees and transformational leadership (Jaiswal & Dhar, 2016), active procrastination and creative ideation (Liu et al., 2017), creative mindsets and creative problem-solving (Royston & Reiter-Palmon, 2019), and family socio-economic status and creativity (Yang et al., 2020).

1.3. Current study
Based on the above literature review, individual values and CSE are crucial factors influencing students’ creativity. An individual’s values seem to be associated with CSE, and CSE tends to correlate with creative ideation. Thus, CSE is a likely mediator between an individual’s values and creative ideation. Values, CSE and creative ideation have been investigated separately but attempts to assess multiple factors related to creative ideation are limited. Furthermore, a small number of these studies were conducted primarily in individualistic societies, e.g., North America. Conducting an investigation in another context, e.g., Asia and collectivistic cultures, with a larger sample size, may contribute more knowledge from a broader perspective. The current study aimed to investigate the relationship between the multiple variables of values (SDV, STV and UNV) and CSE, as they were considered to be related to creative ideation among undergraduate students, and further examined the potential mediator role of CSE in the association between human values and creative ideation. The present study excluded other individual values in the conservation, self-transcendence and self-enhancement dimensions due to the empirical evidence that demonstrated a negative or weak relationship with CSE and creative ideation. Therefore, the hypotheses were formulated as follows:

H1: There is a relationship between the SDV, STV and UNV and CSE, and the creative ideation of the undergraduate students.

H2: The SDV has a direct effect on CSE.

H3: The STV has a direct effect on CSE.
H4: The UNV has a direct effect on CSE.

H5: The SDV has a direct effect on creative ideation.

H6: The STV has a direct effect on creative ideation.

H7: The UNV has a direct effect on creative ideation.

H8: CSE has a direct effect on creative ideation.

H9: The SDV has an indirect effect on creative ideation as mediated by CSE.

H10: The STV has an indirect effect on creative ideation as mediated by CSE.

H11: The UNV has an indirect effect on creative ideation as mediated by CSE.

2. Method

2.1. Participants
To gain the maximum benefit from professional networks and ensure a high response rate from the data collection, this study used a convenience sampling method in which the participants were volunteers. The data were collected from undergraduate students, studying in different departments, enrolled in five public universities in Thailand. A total of 865 responses were completed; 34 out of the 865 original responses were excluded from the data analysis due to the multivariate outliers (using a critical point of 54.05 with the Mahalanobis' distance method). The final sample for the data analysis comprised 831 students: 673 (81%) females and 158 (19%) males, with a mean age of 19.37 years and a standard deviation of 1.34. The number of female samples was higher than males due to the feminine culture of Thailand. In the current study sample, 56% of the participants were freshmen, 21% were sophomores, 12% were juniors, and 11% were seniors. To examine the hypotheses, the current study mainly relied on structural equation modeling (SEM) and mediation analysis (bootstrapping technique). Hair et al. (2019) recommended sample sizes of at least 500 to estimate the complexity of the SEM model with a number of constructs higher than seven.

2.2. Measures
This study was built upon a self-rating assessment by measuring students' perceptions regarding five constructs: SDV, STV, UNV, CSE and creative ideation. The survey was divided into two sections. The first part collected demographic information consisting of gender, age, year levels, majors and grade point averages (GPAs). The second part focused on the SDV, STV, UNV, CSE, and creative ideation, and consisted of 26 items adapted from widely used self-reporting measures (Table 1). All 26 items were first written in the English language, then translated into the Thai language using the translation-back-translation procedure of Brislin (1980) to validate. Finally, the survey was piloted with 58 students and no changes were required.

2.2.1. Values (self-direction, stimulation and universalism)
All items measuring the SDV, STV and UNV were adapted from the PVQ5X Value Survey of Schwartz et al. (2012). However, one item assessing STV was adapted from the PVQ-40 Value Survey of Schwartz et al. (2001). All items were changed from the third person to singular person, e.g., “Being creative is important to him” to “Being creative is important to me.” The rating scale was also changed from a six-point Likert scale (in the original survey) to a five-point Likert scale (the current study) ranging from “1” being “Strongly disagree” and “5” being “Strongly agree.”

The SDV was measured through five items assessing the students' perception regarding how they value autonomy of thought, e.g., “It is important to me to form my own opinions and have original ideas,” and action, e.g., “It is important to me to make my own decisions about my life.”
Table 1. List of adapted survey questionnaires

|                         | No. of Items | Adapted from                        | Cronbach’s Alpha |
|-------------------------|--------------|-------------------------------------|------------------|
| Self-direction value    | 5            | Schwartz et al. (2012)              | .68              |
| Universalism value      |              |                                     | .77              |
| Stimulation value       | 4            | Schwartz et al. (2012); Schwartz et al. (2001) | .72              |
| Creative self-efficacy  | 5            | Karwowski et al. (2018)             | .83              |
| Creative ideation       | 7            | Runco et al. (2001)                 | .87              |

Four items assessed STV. Three items were adapted from the Portrait Values Questionnaire version PVQ5X, whereas one item, e.g., “I like to take risks. I am always looking for adventures” was adapted from the Portrait Values Questionnaire version PVQ-40. All items assessed the students’ perceptions on how they placed importance on an exciting life, e.g., “Excitement in life is important to me,” novelty and change, e.g., “I am always looking for different kinds of new things to do,” and daring or seeking adventure.

The UNV was measured through five items evaluating the students’ perceptions regarding how they value tolerance, e.g., “It is important to me to listen to people who are different from me,” societal concern, e.g., “I want everyone to be treated justly, even people I don’t know,” and protecting nature, e.g., “I strongly believe that I should care for nature.”

2.2.2. Creative self-efficacy (CSE)
The CSE was evaluated by five items adapted from the Short Scale of Creative Self (SSCS) of Karwowski et al. (2018). This scale measured how students perceived confidence in their creative thinking abilities, e.g., “I am sure I can deal with problems requiring creative thinking,” and creative problem solving, e.g., “I know I can efficiently solve even complicated problems.” Students responded from “1” being “definitely not to” to “5” being “definitely yes.”

2.2.3. Creative ideation
Creative ideation was measured by seven items adapted from a 23-item version of the Runco Ideational Behavior Scale (RIBS) of Runco et al. (2001). It emphasized only self-perception regarding ideas and measured the individual’s ability to generate ideas, e.g., “I come up with a lot of ideas or solutions to problems,” and looked for distinctive ways in solving problems, e.g., “I am able to think up answers to problems that haven’t already been figured out.” Students responded to a five-point Likert-type scale ranging from “1” being “never” and “5” being “always”. Tep et al. (2021) evaluated the RIBS in the context of the Thai language by examining scale reliability and validity; they confirmed that this scale can be used as a self-assessment tool for measuring students’ creative ideation.

2.3. Procedure
Approval and informed consent were granted by the University Institute Research Board (IRB) to carry out the study. The data collection was in accordance with the human subjects’ guidelines and principles. A paper-and-pencil survey questionnaire was distributed to the participants. Before beginning the questionnaire, the researchers informed all the participants that their answers in the questionnaire survey would be anonymous and confidential. Participation for this survey was regarded as voluntary; participants did not gain any educational benefit, e.g., extra credit, course requirement fulfillment, etc. This information was also written on the survey. All surveys were distributed and returned in blank envelopes. In accordance with the prospective participants’ discretion, they were able to complete the questionnaire or put the blank or partially completed question sheet into the envelopes.
2.4. Data analysis
First, the data were screened for missing values, skewness, kurtosis and multicollinearity. According to Gana and Broc (2019), multicollinearity occurs when one or more observed variables show a wide relationship (r > .80). The common method of bias was also investigated using Harman's single-factor test (Podsakoff et al., 2003). To perform this test, unrotated exploratory factor analysis was carried out using all 26 items loaded on one factor. Second, the validity and reliability were measured using confirmatory factor analysis (CFA) and Cronbach’s alpha (α). In CFA, the maximum likelihood estimation approach was applied. Then, the convergent validity was assessed by the average variance extracted (AVE) and construct reliability (CR); the discriminant validity was assessed by comparing the AVE with the maximum shared variance (MSV) and average shared variance (ASV) of the constructs.

Third, the data set was analyzed using the SEM technique. The SEM technique was carried out using the maximum likelihood estimation to examine the strength of the relationship between the independent variables, e.g., SDV, STV and UNV, and the dependent variables, e.g., CSE and creative ideation. Because CFA is fundamental to SEM, both the construct measurement and structure model fit assessment relied on the same indices, i.e., the chi-square divided by the degrees of freedom (χ2/df), goodness-of-fit index (GFI), comparative fit index (CFI), Tucker–Lewis index (TLI), the standardized root-mean-square residual (SRMR) and the root-mean-square error of approximation (RMSEA). According to Kline (2015), the ratio of the χ2 to the degrees of freedom less than 2 demonstrated an excellent fit, whereas 3 to 5 indicated an adequate fit. Hair et al. (2019) postulated that regarding the models consisting of observed variables between 12 and 30 (as presented in this study), a number of samples higher than 250, chi-square with a significant p-value, CFI or TLI higher than .94, SRMR equal to .08 or less (with CFI above .94), and RMSEA less than .07 with CFI of .94 or higher were considered the basis of a good model fit. They further suggested that using three to four indices would be enough to prove the model fit. Finally, the significance of the mediating role of CSE was tested by using bootstrapping. Bootstrapping is a most vigorous and authentic resampling technique used to analyze the effect of mediating variables (Williams & Mackinnon, 2008). This study bootstrapped 3,000 samples, with a 95 percent confidence interval, to observe the significance of indirect effects.

3. Results
The results from screening the data showed that there were no missing values. The skewness index of the variables ranged from −1.28 to .43, and the kurtosis index varied between −1.20 and .73, which was smaller than 1.5 (Hahs-Vaughn & Lomax, 2013). Therefore, missing data and violation of the normality assumption did not appear in the analysis. Regarding multicollinearity, Pearson’s correlation coefficient was performed among all items. The results presented the correlation varying from .63 to −.06, which was smaller than .80. Thus, the multicollinearity assumption did not appear in the analysis. After conducting Harman’s single-factor test, the result showed that the total variance value for a single factor accounted for 26%, i.e., less than 50%. Thus, common method bias also did not violate the study. All the constructs had a positive correlation with each other (see Table 3). This result supported H1. The students’ perception of CSE presented the highest correlation with creative ideation (r = .72; p < .001), representing a large effect size. However, the UNV likely presented a low correlation with CSE and creative ideation (r = .14; and .19, p < .001), demonstrating a small effect size.

Measurements of the constructed validity and reliability were performed by CFA and Cronbach’s alpha. The assessment of reliability indicated that Cronbach’s alpha values for SDV, STV, UNV, CSE and creative ideation were .68, .72, .77, .83 and .87, respectively, which presented the reliability of the items. The SDV presented a low reliability, which was likely related to a few items loaded in the construct. Taber (2018) suggested that the number of increased instrument items would result in an increased alpha value. However, after running CFA six items, items four and five of SDV, item three of STV, item five of UNV, item five of CSE and item one of IB were eliminated due to the non-significant loading (standardized factor loadings below .50). All remaining measurement items indicated the standardized factor loadings that varied between .60 and .80. The model was modified, and the fit
indices yielded satisfactory results: χ² (159, 831) = 470.70, p < .001, CFI = .95 > .94, SRMR = .05 < .08, and RMSEA = .05 < .07. The construct reliabilities were assessed by examining the convergent and discriminant validity. Regarding the CR, the result from the CFA showed that the CR value of all constructs varied from .68 to .87. Convergent validity established that the AVE value of all constructs ranged from .41 to .54. All the CR values were higher than the AVE value, which indicated sufficient convergent validity (Hair et al., 2019). In terms of divergent validity, the result from the CFA also indicated that the MSV and ASV values of all constructs were lower than the AVE scores (see Table 2); therefore, good discriminant validity was established, or all constructs were discrete (Hair et al., 2019).

The SEM approach was used in order to examine the hypotheses H2, H3, H4, H5, H6, H7 and H8, whereas mediation analysis using the bootstrapping technique was conducted in order to examine the hypotheses H9, H10 and H11. This assessed the significances of the direct, indirect and total path coefficients between three value constructs (SDV, STV and UNV) and the CSE variable on creative ideation. Figure 1 presents the standardized path coefficient of the model. The path model fit indices yielded a good fit: χ² (158, 831) = 409.91, p < .001, normed χ² = 2.59, GFI = .99, CFI = .96 > .94, TLI = .95 > .94, SRMR = .04 < .08, and RMSEA = .04 < .07, which demonstrated an accurate model for examining the relationship among all constructs. Table 4 presents direct, indirect, total effects in the model and hypothesis testing.

Based on the SEM, the UNV was not significantly associated with CSE (β = −.08; p = .13), whereas the SDV and STV had a positive relationship with CSE. Thus, hypotheses H2 and H3 were supported, but H4 was not supported. The students who endorsed the SDV (β = .03; p < .001) and STV (β = .43; p < .001) tended to perceive themselves as confident in their creative abilities. The STV resulted in the strongest effect on CSE. The SDV and STV explained 33% of the variance in CSE, which demonstrated a medium effect size. The SDV presented no significant effect on creative ideation (β = −.02; p = .63), which was the same for the UNV (β = −.02; p = .69); only the STV was directly associated with creative ideation (β = .19; p < .001). Thus, hypotheses H5 and H7 were not supported, but H6 was supported. The SEM indicated that the STV showed the strongest effect on CSE and creative ideation. Further, the SEM also confirmed that the strongest total effect on creative ideation was CSE (β = .64; p < .001). Therefore, hypothesis H8 was supported. This model also pointed out that the STV and CSE accounted for 56% of the variance in creative ideation, indicating a large effect size.

Table 5 presents the mediation analysis results using bootstrap with 95% confidence intervals. It reveals that the SDV (β = .31; p < .001; bootstrap 95% confidence interval limits did not overlap with zero; lower limit = .16, upper limit = .48) and STV (β = .26; p < .001; bootstrap 95% confidence interval limits did not overlap with zero; lower limit = .19, upper limit = .35) demonstrated an indirect relationship with creative ideation via CSE as an intervening variable. Therefore, hypotheses H9 and H10 were supported. However, the UNV (β = −.10; p = .15; bootstrap 95% confidence interval limits

| Table 2. The CR, AVE, MSV and ASV values of all constructs |
|-----------------------------------------------|
| Construct          | Reliability | Convergent Validity | Divergent Validity |
|--------------------|-------------|---------------------|-------------------|
|                    | CR          | AVE                 | MSV               | ASV               |
| Self-direction value| .68         | .42                 | .34               | .20               |
| Stimulation value  | .70         | .44                 | .32               | .23               |
| Universalism value | .76         | .42                 | .34               | .12               |
| Creative self- efficacy | .82     | .54                 | .52               | .26               |
| Creative ideation  | .87         | .53                 | .52               | .24               |

Notes: CR = Construct Reliability; AVE = Average Variance Extracted; MSV = Maximum Shared Variance; ASV = Average Shared Variance
Table 3. The mean, standard deviations and correlation among all constructs (N = 831)

|                  | 1     | 2     | 3     | 4     | 5     | Mean | SD  |
|------------------|-------|-------|-------|-------|-------|------|-----|
| 1. Self-direction|       |       |       |       |       | 4.48 | .41 |
| value            |       |       |       |       |       |      |     |
| 2. Stimulation   |       | .45** |       |       |       | 3.81 | .63 |
| value            |       |       |       |       |       |      |     |
| 3. Universalism  |       |       | .27** |       |       | 4.57 | .60 |
| value            |       |       |       |       |       |      |     |
| 4. Creative self-| .41** | .57** | .19** |       |       | 3.48 | .60 |
| efficacy         |       |       |       |       |       |      |     |
| 5. Creative      | .31** | .55** | .14*  | .72** |       | 3.14 | .64 |
| ideation         |       |       |       |       |       |      |     |

Notes: * p < .01; ** p < .001
did not overlap with zero; lower limit = −.24, upper limit = .02) presented no indirect relationship with creative ideation via CSE. Hence, hypothesis H11 was not supported.

4. Discussion
The results from the correlation analyses in this study showed a positive interrelationship between the SDV, STV and UNV, CSE and creative ideation in the university context. The SDV, STV and UNV presented a positive relationship with CSE. However, UNV had a low correlation with CSE and creative ideation in the students’ context. The results indicated that students’ CSE and creativity were increased primarily when they were driven by the desire for novelty, independent thought and action. Students who emphasized the importance of values such as tolerance and world beauty were more likely to be less confident about their capabilities in generating ideas compared to those who endorsed the openness to change value. This finding concurred with the those reported by Sousa et al. (2012), Barni et al. (2019), and Sousa et al. (2012) found that openness to change values (SDV and STV were incorporated within this value) were positively associated with self-efficacy. Correspondingly, Barni et al. (2019) posited that self-transcendence values (UNV was included in this domain) also presented a positive association with self-efficacy. However, Sousa et al. (2012) considered self-efficacy in the context of employment, whereas Barni et al. (2019) considered self-efficacy in the context of teaching activity. Moreover, CSE exhibited a positive association with creative
ideation. These findings illustrated that an increase in CSE increases the creative ideation of students. Haase et al. (2018) posited that “The motivation for a behavior is high when one expects a positive outcome” (p. 2). These findings were also consistent with past studies (Mathisen & Bronnick, 2009; Richter et al., 2012).

As mentioned above, studies related to the association between the students’ value and CSE were completely under investigated. Sousa et al. (2012), explored the correlation between personal values and self-efficacy among 266 employees in a career context. The authors revealed that openness to change and self-enhancement maintained a positive relationship with self-efficacy. This study illustrated that SDV and STV positively influenced CSE with STV being the strongest of the predictors in the students’ context. This finding suggested that students who endorsed novelty, freedom of thought, and action, were likely to feel more confident in their creative thinking and problem-solving skills. Similarly, Sousa et al. (2012) indicated that individuals who obtained a high score on openness to change domains tended to be confident about their work performance abilities. However, Barni et al. (2019), who explored the association between personal values and self-efficacy among 227 teachers, revealed that the association between the openness to change values and self-efficacy of individuals varied according to the external conditions or pressures. Regarding the UNV, the result in this study demonstrated no significant relationship with CSE. Emphasizing the perceived importance of caring for the well-being of people and the nature of students likely exhibited no effect on their confidence in creative abilities. In Sousa et al.’s study (Sousa et al., 2012), the UNV was excluded due to it having the highest level of abstractness. Thus, the current study’s findings concurred more with this result and contrasted with those from Barni et al. (2019), who found that self-transcendence values effectively predicted self-efficacy. However, Öztürk and Dilmac (2009) investigated the effects of the values on the self-efficacy perception among biology teacher candidates and found that the SDV, STV and UNV did not predict self-efficacy; only achievement was found predicted.

In the current study, surprisingly, SDV represented a non-significant direct relationship toward creative ideation. This finding seemed doubly interesting, as it was inconsistent with most of the other studies. A case in point, Dollinger et al. (2007), Lebedeva et al. (2019), Kasof et al. (2007), and Taylor and Kaufman (2020) all affirmed a positive relationship between SDV and creativity. This finding may be explained by the effect of the collectivistic culture of Thailand toward students. According to Dollinger et al. (2007), individualistic cultures endorse independence in idea generation, whereas collectivistic cultures endorse a team base in producing ideas or solutions to problems. Individuals with high collectivist values had lower creativity (Dollinger et al., 2007; Kasof et al., 2007). However, the current findings revealed that for the SDV to influence creative ideation, it might need an intervening variable, i.e., CSE. This result implied that the students who endorsed independence and freedom did not increase their creative ideation unless they had high confidence in their creative abilities. The current study highlighted the pivotal role of CSE in the association between the SDV and creative ideation. The importance of CSE was further reinforced by the observed relationship between the STV and creative ideation, as there was support for an indirect relationship through CSE. Though, in this case, the STV also directly

| Parameter                  | β   | Lower limit | Upper limit | Remark            |
|----------------------------|-----|-------------|-------------|-------------------|
| Self-direction → CSE → CI  | .31*** | .16         | .48         | H9 Supported      |
| Stimulation → CSE → CI     | .26*** | .19         | .35         | H10 Supported     |
| Universalism → CSE → CI    | −.10 | −.24        | .02         | H11 Not Supported |

Notes: CI = Creative Ideation; CSE = Creative Self-Efficacy; **p < .001

Table 5. Mediation analysis (bootstrap 95% confidence intervals) and hypothesis testing
predicted creative ideation. This finding agreed with Schwartz's values theory as aforementioned. Students who endorsed an exciting life, novelty and challenge were more likely to show creative ideation.

In terms of the UNV, this study showed a non-significant relationship with creative ideation. Students, scoring high on the UNV are more unlikely to perform well in creative ideation. In other words, students who are driven by the desire for equality, protection of the welfare of humanity and nature as well as world peace are likely to exhibit less confidence about their capabilities in generating ideas. This finding perhaps was explicated in the notion of the contrast in the individualistic nature of creativity and the holistic nature of universalism (Kurt & Yahyagil, 2015). Moreover, the current findings were congruent with those of Taylor and Kaufman (2020), who reported a non-significant association between creative performance, self-perception, and achievement, with the exception of creative self-perception in the artistic domain. This result was in accordance with Lebedeva and Schmidt (2012) and Purc and Laguna (2019), who reported that the UNV had no significant effect on innovativeness.

For the final distribution of the findings, CSE was the strongest predictor of self-reported creative ideation. Individuals with high self-efficacy tended to produce good results as a consequence of having stronger confidence in their capability in dealing with problems and obtaining and managing circumstances (Cervone & Peake, 1986). This result implied that students with stronger confidence believed in their creative capabilities, so they possessed increased creative ideation. This result also supported past studies (Carmeli & Schaubroeck, 2007; Haase et al., 2018; Tierney & Farmer, 2002). As noted above, CSE served a mediating role between personal values and creative ideation. Creative ideation was likely to be inspired by CSE; however, value factors, affected by a collectivistic society where students were embedded, might also codetermine the effect of CSE on ideational behavior. Furthermore, these results were consistent with previous studies that asserted the mediating function of CSE in creativity (Chuang et al., 2010; Jaiswal & Dhar, 2016; Liu et al., 2017; Royston & Reiter-Palmon, 2019; Tierney & Farmer, 2004; Yang et al., 2020).

5. Limitations
In this study, the results were limited due to several considerations. First, the data collection relied on a self-report, which was considered a descriptive survey methodology rather than explanatory. For self-rated reports, although the surveys were anonymous, students may have wanted to appear more confident or creative than they really were, and they may have not provided accurate, honest answers that reflected what they felt. Future research should use an alternative research design, such as, qualitative, mixed-methods, or observation of the third party. Second, the convenience sample solely came from one country (Thailand); thus, it could be likely that the findings were limited to the collectivistic Thai culture, which prevents making any further generalized inferences about other cultures. In addition, the number of female samples was more than the males; however, this was due to Thailand’s feminine dominant culture. Hence, cross-cultural research should be conducted in both individualistic and collectivistic countries and in masculine cultures. Finally, this study incorporated only three values to investigate CSE and creative ideation due to the theoretical and empirical grounding. Future studies should consider including all 19 refined values of Schwartz et al. (2012).

6. Implications
This study highlighted essential implications for education. As mentioned above, creative skills and innovation are essential educational competencies for all students and play a vital role in their future employment; nevertheless, this requires creative ideation. Understanding the factors influencing creative ideation may help instructional designers and instructors to design educational settings that would enrich students’ creativity. The findings in the current study highlighted that students who were motivated by the SDV and STV tended to have high confidence in their creative skills, which would lead to the promotion of their ideas or solutions generation. The result emphasized the role of CSE, which mediated the association between personal values and creative ideation and was the strongest predictor of creative ideation. Perceiving the importance of
personal values and CSE toward creative ideation, instructional designers and instructors may apply this knowledge to designing classroom settings and effective instruction to promote students’ creativity as well as beliefs in their creative capabilities. For instance, instructors may use gamification principles in their teaching to offer students a more autonomous, challenging, open and free classroom setting (Emel’yanenko et al., 2016) and foster their CSE with various methods, e.g., design thinking (Yang & Hsu, 2020), and verbal persuasion (Mathisen & Bronnick, 2009).

Compliance with Ethical Standards
Ethical Approval All procedures performed in studies involving human participants were in accordance with the ethical standards of the institutional and/or national research committee and with the 1964 Helsinki declaration and its later amendments or comparable ethical standards.

Informed Consent
Informed consent was obtained from all individual participants included in the study.

Conflict of Interest
The authors declare that they have no conflict of interest.

Data Availability
The datasets generated during and/or analyzed during the current study are available from the corresponding author on reasonable request.

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