

PERSONAL VALUES AND INTRINSIC SELF-ACTUALIZATION AS DETERMINANTS OF STUDENTS' ABILITY TO GENERATE CREATIVE IDEAS

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To prepare students for further learning and future employment, their personal values, intrinsic self-actualization, and creative thinking are the dominant factors, what educational institutions must consider as high priority. We investigate the relationship between personal values (e.g., Achievement, Power Resources, Conformity-Rules, Conformity-Interpersonal, Universalism-Concern, and Stimulation) and intrinsic self-actualization (ISA) concerning creative thinking (CT) of students. Using random sampling technique, 2956 students of 31 private and public sector universities were analyzed through structural equation models (SEM). Similarly, the PROCESS macro was administered for analyzing the mediating role of ISA in personal values and CT. Results show that Achievement, Power Resources, Conformity-Rules, Conformity-Interpersonal, and Stimulation values were discovered to be the powerful predictors of ISA and CT. Furthermore, CT and ISA had the strongest correlation. Similarly, research findings confirm the mediating role of the ISA in personal values and CT. However, the Universalism-Concern value could not establish a significant correlation between ISA and CT. By utilizing the findings of current study; the curriculum developers, policymakers, and teaching faculty can make effective and efficient utilization of the classroom settings and select appropriate pedagogy for promoting students' CT and their belief in CT.

Keywords: intrinsic self-actualization, creative thinking, personal values, public and private sector universities, university students

INTRODUCTION

Educational institutions' success widely depends upon the 'creative learners' (Fisher, 2017). Benet-Martinez et al. (2015) describe creativity as the combination of two factors i.e., the innovative thinking and its practical implementation in a context. At the same time, creative thinking is related to cognitive operations that are mainly responsible for the production of innovative ideas that are believed of creative (Biber et al., 2007; Biber et al., 2008). Similarly, Fisher (2017) describes the cognitive operations as a medium of producing creative thoughts while Guillaume et al. (2016) use the term 'creative thinking' for innovative ideas. Due to ever increasing importance of creative thinking in innovation, it is in high demand among learners at all levels (Biber et al., 2007). The empirical research indicate (Fischer, 2017; Guillaume et al., 2016; Hanel et al., 2018; Kesberg & Keller, 2018), this creative thinking is not common among the individuals, for example, some of them can exhibit their work creatively (Taylor & Kaufman, 2020) while the others cannot do the same. Now the question arises, why this happens as so? According to Kesberg and Keller (2018), suggest one possible justification, which is the

mismatch between students' personal values and their intrinsic self-actualization (Hanel et al., 2018). Consequently, curriculum developers and teaching faculty before investing their time and expertise in planning and developing the learning material, first they should investigate the personal values and intrinsic self-actualization constructs among other factors that have potentially effects on creative thinking (Fischer, 2017), besides the mechanism of its psychological process. There is a high need for further investigation to determine why some students come up with creative ideas more often than their peers. Both, intrinsic self-actualization (Hanel et al., 2018) and students' creative thinking are influenced by several factors, including human values and intrinsic self-actualization (Hanel et al., 2018; Taylor & Kaufman, 2020). Kesberg and Keller (2018) were of opinion that creativity has enormous explanations; whereas, creative thinking covers just a tiny part of it; however, creative thinking needs innovative ideas in its all forms (Taylor & Kaufman, 2020). Accordingly, the desired behavior and thinking disposition are compatible with creative thinking (CT); all of these possess the cognitive

capabilities, which in turn envisage a variety of creative ideas (Kesberg & Keller, 2018).

The literature review up to now, indicate an interesting and more important facet of CT, which is its correlation to human values. In 2017, Schwartz defined, human values as desired behaviors or ideal goals which adheres to conditions containing varied significance and play a leading role in human lives. Schwartz has postulated the Refined Theory of Basic Values, according to him; these human values are classified into 19 constructs and categorized in four sequential domains. Firstly, personal values such as; Self-direction Thought, Self-direction Action, Hedonism, and Stimulation are included in the openness to change domain. Secondly, values like Conformity-Rules, Conformity-Interpersonal, Security-Personal, Security-Societal, Tradition, and Humility are present in the conservation domain. Thirdly, values the universalism-nature, universalism-concern, universalism-tolerance, benevolence-care, and benevolence-dependability are incorporated in the self-transcendence domain. Finally, the Achievement, Power Resources, face, and power dominance are included in the self-enhancement domain (Schwartz, 2017). Schwartz (2017) pointed out that creative individuals show their inclination to Self-direction Action, Stimulation, Self-direction Thought, Achievement, Power Resources, Conformity-Rules, and Conformity-Interpersonal. Similarly, in two separate studies of Feather (1979) and Wasaf and Muhammad (2021) investigated the human values (e.g., Self-direction Action, Stimulation, Self-direction Thought, Achievement, Power Resources, Conformity-Rules, and Conformity-Interpersonal) and creative thinking, found a positive significant relationship between human values and creative thinking, in the employment context. Some empirical evidence is also available on investigation of a correlation between creative thinking and personal values in the university context (Fischer, 2017; Guillaume et al., 2016; Kesberg & Keller, 2018; Taylor & Kaufman, 2020). Even though the findings of these fewer empirical studies confirm a positive significant correlation between human values and creative thinking, this resolution was still deficient and was concluded on the data of a small sample size.

Self-actualization is another important consideration when it comes to creative thinking. Individuals believe in their abilities for catering to the creative fronts (Rauthmann et al., 2015a). Some of these influences include human values and individual differences for humanity (Rauthmann & Sherman, 2016). Intrinsic Self-actualization (ISA) is influenced by individual's human values (Bandura, 1997). Intrinsic self-actualization (ISA) and students' values in higher education have been the subject of relatively a few

studies (Puthyrom Tep et al., 2021; Rauthmann & Sherman, 2016; Roccas & Sagiv, 2010), which is surprising. Roccas and Sagiv (2010) determined that the Big Eleven humanity traits and the students' values were in correlation with each other. This led them to discover that human values such as tradition, stimulation, and achievement were positively correlated with openness to new experiences. According to Schwartz and Rubel (2005) strong belief in an individual's ability to think or solve problems on an intrinsic level, which would explain the Achievement, Power Resources, Conformity-Rules, Conformity-Interpersonal. It was also noted that "ISA may serve as a general conviction about one's abilities in creative thinking" (Schwartz & Rubel, 2005, p. 32). Students, who believe they will succeed in accomplishing the given task, tend to generate more ideas regularly. According to Maslow (1954), ISA predicts intrinsic motivational behavior in humans. The influence of other factors on creative thinking can also be mediated by ISA (Skimina et al., 2015; Taylor & Kaufman, 2020). According to Sortheix et al., (2013), individuals who are intrinsically motivated are more likely to come up with many ideas or solutions when they value their creative thinking and believe in their intrinsic abilities to achieve those (Sherman et al., 2013). Taylor and Kaufman (2020) posited, motivation that is based on personal values enhances intrinsic behavior. They argue that students' intrinsic self-actualization (ISA) and creative thinking (CT) are determined by their personal values. Waterman and Funder (2009a, 2009b) harmonized the five traits of personality to students' personal values. Thus, they confirmed the positive correlations prevail among Conservation, Self-Enhancement, and Openness to change and Self-direction Action, Stimulation, Self-direction Thought, Achievement, Power Resources, Conformity-Rules. Likewise, Zahra (2021) postulated that ISA has a strong positive correlation to openness to change, conservation, and self-enhancement. Consequently, this reason may enlighten that the Self-direction Action, Stimulation, Self-direction Thought, Achievement, Power Resources, Conformity-Rules, Conformity-Interpersonal would tend to be related to ISA. Furthermore, Benet-Martínez et al. (2015) posited that ISA would render as a dominant belief in students' abilities of their creative problem-solving or creative thinking (CT). The conclusion of empirical researches concerning creative thinking (CT) and ISA, confirm the ISA may also provide a strong base for students' confidence in their CT. Brown and Rauthmann in 2016 indicated that students perceive themselves as intrinsically successful and they typically show a range of generating ideas when they have a strong belief in their thinking to achieve their goals.

Finally, research on creative thinking suggests that the combination of intrinsic self-actualization and human values may be a particularly effective combination for generating creative ideas or maintaining the effort that underpins goal achievement. However, no research has been conducted to determine whether creativity is one of the behaviors that are aided by intrinsic self-actualization

Personal Values and Creative Thinking

Limited studies have found associated with the exploration of students' personal values and their creative thinking in higher education institutions, especially, in the context of a university and most of them are conducted in the regions of Europe and the United States (e.g., Dollinger et al., 2007; Judea et al., 2018; Schwartz & Rubel, 2017; Sherman et al., 2013; Taylor & Kaufman, 2020). Sherman and his colleagues (2013) examined the correlation between the factors, for example, creative thinking, and personal values of 278 students of a university. According to them, only 3 personal values (such as, tradition, universalism-Concern, and stimulation) were positively correlated to students' creative thinking. Taylor and Kaufman (2020) investigated the link between intrinsic motivation and creativity among 248 students, mostly female students, indicated a positive relationship between human values and creative thinking. Their findings were related to the results of Judea et al. (2018). In 2017, Schwartz and Rubel studied the relationship between individual's values and their attitudes towards creativity of Russian 445 students. They found a positive correlation between the human values, such as, tradition, stimulation, and attitudes toward creativity, while they could not find any positive connection with students' achievement. Similarly, Dollinger et al. (2007) recorded a positive significant link between creative thinking (CT) and the Self-Directed Action, stimulation, and achievement based on the investigation of a relationship between innovation and personal values among the students of media courses, $n = 426$, in Croatia, Bosnia-Herzegovina, and Serbia. Bussing et al. (2020) and Zahra (2021), both the most recent studies, investigated creative thinking and personal values, e.g., achievement, and self-actualization. Bussing et al. (2020) studied 163 university students, reported a positive significant relationship between the tradition and stimulation with CT. While, the study carried out by Zahra (2021) enrolled 492 students from a university who applied the option of an online survey. The findings of both empirical studies confirmed the presence of a positive correlation between creative thinking and Self-direction value, stimulation value,

and achievement value. They further added that creative thinking, integrated 3 high-value constructs, e.g., Power Resources, Conformity-Rules, Conformity-Interpersonal, within human values, the Conformity-Rules was significantly correlated with Power-Resources and stimulation, whereas, creative thinking was positively correlated with tradition and self-direction values. However, they could not find a positive relationship between CT and universalism-Concern value. Similarly, Serfass and Sherman (2015) investigated the relationship between personal values and creative thinking of a large random sample of students of the North Caucasus and Central Russia, a positive correlation was reported between the self-enhancement values and creative thinking. In another study, Todd and Funder (2012) examined the correlation between creative thinking and personal values of the sample consisted of 254 employs, at all levels of banks, they could not find a positive relationship between self-transcendence and creative thinking, however, openness to change values were positively associated with creative thinking (CT). In Turkey, Horstmann et al. (2017) studied the relationship between creative thinking and personal values of the sample of 370 industry workers; the authors postulated that creative thinking and personal values such as tradition, achievement, and self-direction were directly associated. Finally, previous studies have disclosed that there may be still contradictory conclusions regarding the correlation between creative thinking and personal values, conclusion were made on the small size of sample.

Intrinsic Self-actualization and Creative Thinking

Coelho et al. (2018) studied the effects of intrinsic self-actualization (ISA) on creative thinking (CT) among varied samples, for example, teachers, students, and multiple jobs holders, $N = 6543$, they found a positive significant correlation between intrinsic self-actualization (ISA) and creative thinking (CT). Likewise, Brown and Rauthmann (2016) analyzed the link between CT and ISA, among 175 learners; they concluded that CT and ISA were positively correlated. In 2007, Dollinger and his colleagues evaluated the relationship between the CT and ISA using different indices; they came up with a conclusion that CT established statistically significant relationship with ISA; however, the results were not consistent among varied samples and different contexts. Hanel et al. (2018) investigated a conceptual mechanism for creative behavior, concerning creative thinking and intrinsic self-actualization, they indicated creative

thinking converts into affected creative behavior, and is partly confirmed by intrinsic self-beliefs.

Mediating Effects of Intrinsic Self-actualization on Creative Thinking and Other Constructs

Based on the findings of previous research, the direct effect on CT, the ISA serves a mediating role between CT and other constructs (e.g., human values). Judea and Dana (2018) found, ISA was significantly mediating between students' CT and other constructs, such as the span of the research work, intrinsic self-actualization ISA, the behavior of their research supervisor, and academic complexity, in addition, ISA also served as statistically a significant predictor of CT. On summarizing the whole, self-actualization served a mediating role between the CT and students' academic responsibilities (Fischer & Boer, 2015), between the CT of learners and their leadership style (Guillaume et al., 2016), between CT and family socio-economic condition, and between CT and human values (Hanel et al., 2017), between CT and students' active performance (Kesberg & Keller, 2018), between intrinsic creativity and problem-solving skills (Wit & Kerr, 2002). It is clear from the literature review mentioned above; students' personal values exert influence on their intrinsic self-actualization (ISA). Similarly, the ISA and personal values are critical constructs causing positive effects upon students' CT (Fischer, 2017; Horstmann et al., 2017). The intrinsic

self-actualization (ISA) and personal values appear to be correlated, and ISA inclines to associate with CT. Accordingly, ISA plays the possible role of a mediator between CT and personal values. The ISA, CT, and personal values have been examined individually but endeavors to investigate multiple constructs associated with CT are incomplete. Moreover, a limited quantity of these studies was explored chiefly in individualistic societies, for example, Europe and North America. Administering an empirical study in a varied circumstance, for example, pluralistic cultures and Asia, among a larger number of participants, may add new data from a varied and broader point of view. This current study aims to examine the intercorrelation between the constructs such as, personal values (e.g., Self-direction Action, Stimulation, Self-direction Thought, Universalism-Concern, Achievement, Power Resources, Conformity-Rules, Conformity-Interpersonal) and intrinsic self-actualization (ISA), as they were believed to be associated with creative thinking (CT) among university students. And the possible mediating role of ISA, in the relationship between creative thinking and personal values, was also investigated in this study. The current research expelled other personal values such as; values in Self-Transcendence, a security-personal, security-societal, tradition in the conservation, hedonism in Openness to change, and power dominance in the domain of Self-enhancement on empirical grounds indicating either the relationship was weak or negative with ISA and CT. Consequently, the hypotheses were framed as follows:

Hypotheses

H₁ Between the multifold variables; by Self-direction Action, Stimulation, Self-direction Thought, Achievement, Power Resources, Conformity-Rules, Conformity-Interpersonal, Universalism-Concern, and ISA as well as the students' CT, there is a correlation.

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|-----------------|--|
| H ₂ | Self-direction Action and ISA are directly correlated. |
| H ₃ | Self-direction Thought and ISA are directly correlated. |
| H ₄ | The Conformity-Rules and ISA are directly correlated. |
| H ₅ | The Conformity-Interpersonal and ISA are directly correlated. |
| H ₆ | The Achievement and ISA are directly correlated. |
| H ₇ | The Power Resources and ISA are directly correlated. |
| H ₈ | The Universalism-Concern and ISA are directly correlated. |
| H ₉ | Stimulation and ISA are directly correlated. |
| H ₁₀ | Self-direction Action and creative thinking are directly correlated. |
| H ₁₁ | Self-direction Thought and creative thinking are directly correlated. |
| H ₁₂ | The Conformity-Rules and creative thinking are directly correlated. |
| H ₁₃ | The Conformity-Interpersonal and creative thinking are directly correlated. |
| H ₁₄ | Achievement and creative thinking are directly correlated. |
| H ₁₅ | The Power Resources and creative thinking are directly correlated. |
| H ₁₆ | The Universalism-Concern and creative thinking are directly correlated. |
| H ₁₇ | Stimulation and creative thinking are directly correlated. |
| H ₁₈ | The ISA and CT are directly correlated. |
| H ₁₉ | The Self-direction Action and creative thinking are indirectly correlated as ISA mediated. |
| H ₂₀ | The Self-direction Thought and CT are indirectly correlated as ISA mediated. |

H ₂₁	The Conformity-Rules Thought and CT are indirectly correlated as ISA mediated.
H ₂₂	The Conformity-Interpersonal and CT are indirectly correlated as ISA mediated.
H ₂₃	Achievement and creative thinking are indirectly correlated as ISA mediated.
H ₂₄	The Power-Resources and CT are indirectly correlated as ISA mediated.
H ₂₅	The Universalism-Concern and CT are indirectly correlated as ISA mediated.
H ₂₆	Stimulation and CT are indirectly correlated as ISA mediated.

METHOD

Participant

Because participants in this study were randomly selected, a high response rate was achieved. Data were collected from university students from 31 private and public universities in Pakistan who studied in a variety of departments. Due to multivariate outliers (Taylor's distance model, critical point = 61.45), 52 responses out of the total 3004, did not include in the data analysis. This sample consisted of 2956 university students (1973 women and 983 men), with a mean age of 22.13 and 2.36 standard deviation. Because of Pakistan's feminine culture, there were more women than men in the sample pool. There were 56 percent freshmen, 21 percent juniors, and 11 percent seniors participating in the study. Judea and Dana, (2018) Structural Equation Models (SEM) and The PROCESS macro (Hayes, 2019) were used to test the hypotheses, in this study. Judea and Dana, (2018) reported that it takes at least 700 samples to build SEM models with more than five constructs.

Procedure

Informed consent was provided by the *Advanced Research Study Board* (ARSB) University, data were collected following the guidelines and principles that apply to human subjects. Participants were given paper and pencil as part of a survey. Before the survey began, participants were informed that their responses would be kept anonymous and confidential. As a result of this

survey, any academic benevolence was not provided to the study group, such as relaxation in grading policy or extra credit hours. Survey respondents were asked to provide this information. When we sent out our surveys, they came back to us filled out in a blank envelope. On the most recent and refined version of the Portrait Value Questionnaire (PVQ-RR), Schwartz et al. (2017), a self-rating scale, students' perceptions about eight constructs were assessed, e.g., Self-Direction Action, Self-Direction Thought, Stimulation, Universalism-Concern, Conformity-Rules, Conformity-Interpersonal, Achievement, and Power Resources, they were evaluated on their abilities. Two sections, each with a different set of questions, were included in the questionnaire, as a first step, demographic information was collected (gender, age, grade year, grade level). In the second part of the questionnaire focused on Self-Direction Action, Self-Direction Thought, Stimulation, Conformity-Rules, Conformity-Interpersonal, Universalism-Concern, Achievement, and Power Resources, Table 1 indicates a total of 21 (out of 57 statements) adapted items of widely used self-perception scale was included (Schwartz, 2017). There were no changes needed after piloting the survey on 258 university students. Intrinsic self-actualization (ISA) construct, measured by using Zahra's Needs Hierarchy Scale (NHS) and creative thinking (CT) factor, assessed through Runco et al. (2001) the *Runco Ideational Behavior Scale* (RIBS).

Table 1.
Adapted Statements of PVQ-RR, the *Runco Ideational Behavior Scale* (RIBS), and Needs Hierarchy Scale questionnaires

Dimensions	Constructs	Statements	Adapted from	Cronbach's Alpha
Openness to Change	Self-direction Action	16,30,56	Schwartz et al. (2017)	.861
	Self-direction Thought	1,23,39		.913
	Stimulation	10,28,43		.784
Conservation	Conformity- Rules	15,31,42		.772
	Conformity- Interpersonal	4,22,51		.841
Self-Enhancement	Achievement	17,32,48		.884
	Power Resources	12,20,44		.895
Self-Transcendence	Universalism-Concern	8,21,45,5,37, 52,14,34,57		.750
Needs Hierarchy	Intrinsic Self-Actualization	5,10,15,20 ,25,30,35,	Zahra. B. (2021)	.936

		40,45,50		
Creation	Creative Thinking	1 to 23 items	Runco et al. (2001)	.921

We adapted the survey questionnaire of Schwartz et al. (2017), the most recent and refined version of the Portrait Value Questionnaire (PVQ-RR) for measuring the eight human values to estimate the value of Self-Direction Action, Self-Direction Thought, Universalism-Concern, Stimulation, Conformity-Rules, Conformity-Interpersonal, Achievement, and Power Resources. All the statements of the PVQ-RR questionnaire changed from third-person singular to objective personal pronoun, as an example, "For me, it's important to have my own opinions and creative thinking", instead of, "For him, it is important to have his own opinions and creative thinking". Otherwise, nothing made changed in the questionnaire. As a result of each of these questions, students were asked to rate how important they believed an exciting life to be, as in "I'm always looking for new things to do" and "I'm always willing to take on a new challenge." Intrinsic self-actualization was measured through a test developed by Zahra (2021); we adapted the *Needs Hierarchy Scale* (NHS) into ten items (out of 50 items). The main purpose of this scale is to measure students' perceptions regarding confidence in their creative capabilities of problem solving and creative thinking, e.g., "I can solve problems by my creative thinking, I am sure about it," and "I can efficiently solve even complicated problems, I know that." Their responses ranged from 1 to 6 i.e., "definitely not" ---"definitely yes."

To assess creative thinking, Runco et al. (2001) the *Runco Ideational Behavior Scale (RIBS)* was adapted, out of 24-items eighteen were adjusted under the local context. It emphasized individual's perception regarding creative ideas, assessed their capability to initiate creativity, and looked for varied and multiple ways in problem-solving, e.g., "My mind can generate a lot of solutions to problems and new ideas", e.g., "I can think of answers to the complex problems that were unknown before." A Likert-type scale from "never" to "always", with 1 through 5 scores was used to assess students' ability to come up with new ideas or solutions for problems. The doctoral committee evaluated the *RIBS* in the context of Pakistani university by examining the reliability and validity of this scale; the committee unanimously affirmed this scale as a self-assessment tool to be used for measuring students' creative thinking.

Data Analysis

To determine significance, missing values, skewness, kurtosis, and multi regression modality of scores, data were first screened. Adam, H. (2021) noted that in a regression model multicollinearity occurs when independent variables are correlated. When the level of bi-variation between independent variables is very high, this can create a problem in interpreting the results of the study, when we fit the model. To calculate the multicollinearity in a regression model, a variance of inflation factor (VIF) was measured. Wagerman & Funder (2009) used this test, to investigate the common method for bias; an unrotated exploratory factor analysis (EFA) was used to create this test, with all 24 items being loaded onto one factor. Exploratory factor analysis (EFA) is a multivariate statistical procedure that is used to test how well the measured variables represent the number of constructs (Marley, 2018). First, the EFA and Cronbach's alpha was used to assess the questionnaires' validity and reliability. Second, two measures of variance; construct reliability (CR) and the average variance extracted (AVE) estimated to assess the convergent validity by comparing the average variance estimation of the constructs with AVS and MSV (the average shared variance and the maximum shared variance respectively). In this study, structural equation modeling (SEM) is used for two reasons; first, it estimates linear causal relationships among variables, second, it measures measurement error. This study administered the structural equation modeling (SEM) to observe and analyze the relationships between independent variables (e.g., Self-Direction Action, Self-Direction Thought, Stimulation, Conformity-Rules, Conformity-Interpersonal, Universalism-Concern, Achievement, and Power Resources, and intrinsic self-actualization) and dependent variables (e.g., creative thinking and intrinsic self-actualization). The exploratory factor analysis (EFA) is essential to structural equation models (SEM), both the structure model fit assessment and the construct estimation depended upon the same scales, for example; the root-mean-square error of approximation (RMSEA), Tucker-Lewis index (TLI), goodness-of-fit index (GFI), comparative fit index (CFI), the standardized root-mean-square residual (SRMR), and the chi-square divided by the degrees of freedom (χ^2/df). According to Principles and Practice of Structural Equation

Modeling (PPSEM), less than two ratios of the χ^2/df established an excellent fit, while three to five demonstrated a sufficient fit (Kline, 2015). Hanel et al., (2018) propounded nearly eight essentials of a good model fit that: 1) a model containing a sample size greater than 300 participants (this study contains more than that: $N=2956$), 2) chi-square with a significant p -value, 3) the observed constructs between 10 and 25, 4) Tucker–Lewis index (TLI) or comparative fit index (CFI) above .95, 5) the standardized root-mean-square residual (SRMR) equal to .08 or less, 6) including the Comparative Fit Index higher than .94, 7) the root-mean-square error of approximation (RMSEA) less than .07, and 8) including the Comparative Fit Index (CFI) of .94 or higher. Hanel and his colleagues further recommended that 3 to 4 scales are required for confirming the model fit. At last, the PROCESS macro (Hayes, 2015) was tested for the significance of the mediating role of ISA. The PROCESS macro is the authentic and most vigorous technique of resampling performed to evaluate the effects of mediating constructs. The current study examined the samples of 2956 students in the university context, to study the significant direct as well as indirect correlating effects of independent variables at $< .05$ confidence level. This current study also qualifies all essentials for confirming the model fit, as earlier mentioned.

FINDINGS

Data screening showed no lost data, while the indices of the variables ranged from $-.32$ to 0.56 and -1.84 to 0.76 respectively; kurtosis and skewness, which were less than 1.5 (Kocjan & Avsec, 2017). Consequently, violation of the normality presumptions and missing data were excluded from the analysis of data. Thus, for handling the multicollinearity, Pearson's Correlation Coefficient was calculated of all statements, the average correlation between the results ranged from $.75$ to $-.07$, which was less than the average correlation of $.87$. Therefore, the data analysis did not make use of the assumption of multicollinearity. The results of the single-factor test (Harman's test) indicated a total variance value for a single factor accounted for 19 percent (which is less than 50%). Therefore, the common method bias did not affect this study. In Table 3, the variables of the study demonstrated significant positive relationships. The H_1 hypothesis resulted in a positive outcome. We found the highest correlations between students' intrinsic self-actualization (ISA) and their creative thinking ($r = .92$; $p < .01$), demonstrating a very large effect size. On the contrary, the result confirmed a very low correlation of Universalism-

Concern to ISA and creative thinking ($r = 0.11$, and $.16$, $p < .01$), presenting a very small effect size.

As the measures of construct validity and reliability, Cronbach's alpha and the exploratory factor analysis (EFA) were performed. Validity and reliability assessment showed that the values of all variables i.e., Self-Direction Action, Self-Direction Thought, Stimulation, Conformity-Rules, Conformity-Interpersonal, Universalism-Concern, Achievement, and Power Resources, intrinsic self-actualization (ISA), and creative thinking were: $.85$, $.86$, $.88$, $.94$, $.78$, $.61$, $.89$, $.94$, $.90$, and $.92$ respectively on the Cronbach's alpha scale. The construct reliability of universalism-concern (.61) was low because only a few items were loaded into it. Increasing the number of instrument items, according to Taylor & Kaufman (2020), would increase alpha value. Therefore, on performing exploratory factor analysis (EFA) four items, items 3 and 4 from Universalism-Concern, item 2 from Conformity-Rules, and item 2 from Power Resources were discarded on standardized factor loadings below $.50$, due to non-significant loading. All of the remaining measurement items had factor loadings ranging from $.60$ to $.94$. After modifying the model: chi-square, $\chi^2 (289, 2956) = 1482.72$, $p < .01$, comparative fit index (CFI) = $.98 > .93$, the Standardized Root Mean Squared Residual (SRMR) = $.05 < .08$, and the Root Mean Square Error of Approximation (RMSEA) = $.05 < .07$, therefore, the fit indices yielded satisfactory results. To assess the construct reliability, convergent and discriminate validity were used. Overall, the result from the EFA showed that construct reliability (CR) values ranged from 0.62 to 0.95 . According to Kesberg & Keller (2018), for convergent validity, all constructs would have average variance extracted (AVE) value range i.e., $.35$ to $.47$. The average variance extracted (AVE) values were lower than the values of construct reliability (CR), indicating adequate convergent validity (Taylor & Kaufman, 2020). Table 2 indicates the results from the EFA, about divergent validity (DV), indicated that the maximum shared variance (MSV) and average shared variance (ASV) values of all constructs were lesser than the AVE values; therefore, total variables were discrete or good discriminator validity was established (Taylor & Kaufman, 2020). The structural equation modeling (SEM), a set of statistical techniques used to measure and analyze the relationships was proposed in the hypotheses (H_2 to H_{18}); whereas the PROCESS macro was performed for mediation analysis to study the remaining hypotheses assuming for indirect relationships; H_{19} , H_{20} , H_{21} , H_{22} , H_{23} , H_{24} , H_{25} , and H_{26} .

Through SEM the total path coefficients, the significances of indirect and direct coefficients were assessed between seven value constructs (*Self-Direction Action, Self-Direction Thought, Conformity-Rules, Conformity-Interpersonal, Achievement, Power Resources, Universalism-Concern, and Stimulation*) and the ISA variable on creative thinking. The standardized path coefficient of the model is presented in Figure 1. Indicators of path model fit produced a good match, showed the true model for investigating the association amongst all factors: CFI = .98 > .93, RMSEA = .03 < .06, TLI = .98 > .94, χ^2 (288, 2956) = 1416.21, $p < .01$, normalized $\chi^2 = 3.57$, SRMR = .03 < .05, and GFI = .99. Hypotheses testing and effects in the model are shown in Table 4; the direct, indirect, and total effects. After performing the structural equation modeling (SEM), the Universalism-Concern did not exhibit a significant correlation with ISA ($p = .11$; $\beta = -.06$), while the Self-Direction Action, Self-Direction Thought, Conformity-Rules, Conformity-Interpersonal, Achievement, Power Resources, and Stimulation, demonstrated the significant correlations to ISA. Consequently, hypotheses: H₂, H₃, H₄, H₅, H₆, H₇, and H₉ were upheld, however, H₈ (universalism-concern) was not upheld. Students whom authorized Self-Direction Action ($p < .01$; $\beta = .53$), Self-Direction Thought ($p < .01$; $\beta = .52$), Conformity-Rules ($p < .01$; $\beta = .32$), Conformity-Interpersonal ($p < .01$; $\beta = .36$), Achievement ($p < .01$; $\beta = .42$), and Power Resources ($p < .01$; $\beta = .37$), had a tendency to believe in their own ability to think creatively; ISA. The Stimulation concluded in the strongest effect on ISA ($p < .01$; $\beta = .62$). The Self-Direction Action, Self-Direction Thought, and Stimulation explained 45% of the difference with ISA that established the large size effect. Universalism-Concern exhibited insignificant impact on the creative thinking ($p = .43$; $\beta = -.03$) that was similar to the Power Resources ($p = .51$; $\beta = -.35$), and the Conformity-Interpersonal ($p = .33$; $\beta = -.02$); whereas the Self-Direction Action ($p < .01$; $\beta = .35$), Self-Direction Thought ($p < .01$; $\beta = .36$), Conformity-Rule ($p < .01$; $\beta = .37$), Achievement ($p < .01$; $\beta = .34$),

, and Stimulation ($p < .01$; $\beta = .79$), were directly associated with creative thinking. Hence, hypotheses H₁₀, H₁₁, H₁₂, H₁₄, and H₁₇ were supported; however, the hypotheses H₁₃, H₁₅, and H₁₆ were not supported. The structural equation modeling (SEM) confirmed the strongest effect of Stimulation on ISA and creative thinking. Moreover, the SEM analysis confirmed the highest score of the ISA with the strongest total effect on creative thinking was: $\beta = .84$; $p < .01$. Hence, the hypothesis H₁₈ was upheld. The SEM calculations also exhibited a large effect size that the Stimulation, Self-direction Thought, Self-direction Action, and ISA responsible for 60% variation in the CT. The mediation analysis results using PROCESS with < .05 confidence intervals, presented in Table 5. First, the PROCESS <.05 confidence interval limits did not overlap with zero; (lower limit =.23, upper limit =.76); it demonstrated that the Self-direction Action ($p < .01$; $\beta = .49$), second, PROCESS <.5 confidence interval limits did not overlap with zero; (lower limit =.22, upper limit =.49), that exhibited the Self-direction Thought ($p < .01$; $\beta = .36$), third, PROCESS <.5 confidence interval limits did not overlap with zero; (lower limit =.24, upper limit =.46), Conformity-Rule ($p < .01$; $\beta = .41$), fourth, PROCESS <.5 confidence interval limits did not overlap with zero; (lower limit =.27, upper limit =.59), Achievement ($p < .01$; $\beta = .48$); and final, PROCESS <.5 confidence interval limits did not overlap with zero; (lower limit =.55, upper limit =.89), Stimulation ($p < .01$; $\beta = .79$); presented a significant indirect correlation with the CT via ISA as a mediating construct. Hence, hypotheses H₁₉, H₂₀, H₂₁, H₂₃, and H₂₆ were accepted. Conversely, firstly, PROCESS < .5 confidence interval limits did not overlap with zero; (lower limit = -.26, upper limit =.03), the Universalism-Concern ($p = .23$; $\beta = -.20$); secondly, PROCESS < .5 confidence interval limits did not overlap with zero; (lower limit = -.16, upper limit =.02), the Conformity-Interpersonal ($p = .25$; $\beta = -.30$); and finally, PROCESS < .5 confidence interval limits did not overlap with zero; (lower limit = -.22, upper limit =.02), and the Power-Resource ($p = .13$; $\beta = -.24$);

Table 2.
The CR, AVE, MSV and ASV values of all constructs

Dimensions	Construct	Reliability CR	Convergent Validity AVE	Divergent Validity	
				MSV	ASV
Openness to Change	Self-direction Action	.85	.43	.34	.21
	Self-direction Thought	.86	.44	.33	.22
	Stimulation	.88	.42	.34	.17
Conservation	Conformity- Rules	.94	.52	.35	.24
	Conformity- Interpersonal	.78	.46	.36	.26
Self-Enhancement	Achievement	.89	.48	.36	.19

	Power Resources	.94	.44	.34	.21
Self-Transcendence	Universalism-Concern	.61	.43	.32	.21
Needs Hierarchy	Intrinsic Self-Actualization	.90	.55	.39	.28
Creation	Creative Thinking	.92	.56	.43	.29

Note: CR = Construct Reliability; AVE = Average Variance Extracted; MSV = Maximum Shared Variance; ASV= Average Shared Variance.
Table 3.

Descriptive and Inferential Statistical manures of total variables (N = 2956)

Dimensions	Construct	1	2	3	4	5	6	7	8	9	10	Mean	SD
Openness to Change	Self-direction Action											4.04	.51
	Self-direction Thought	.55*										4.13	.62
	Stimulation	.45*	.38*									4.14	.67
Conservation	Conformity-Rules	.46*	.49*	.49*								3.25	.64
	Conformity- Interpersonal	.72*	.58*	.48*	.48*							4.26	.56
Self-Enhancement	Achievement	.56*	.33*	.43*	.43*	.43*						4.16	.59
	Power Resources	.44*	.46*	.46*	.46*	.46*	.46*					4.14	.41
Self-Transcendence	Universalism-Concern	.43*	.34*	.45*	.45*	.46*	.48*	.46*				4.32	.54
Needs Hierarchy	Intrinsic Self-Actualization	.53*	.57*	.47*	.37*	.47*	.47*	.47*	.11*			4.46	.68
Creation	Creative Thinking	.56*	.69*	.69*	.49*	.49*	.49*	.51*	.16*	.92**		4.59	.79

Notes: * $p < .01$; ** $p < .001$

hypotheses H_{22} , H_{24} , and H_{25} were not upheld, they did not exhibit a significant intercorrelation with creative thinking (CT) via intrinsic self-actualization (ISA).

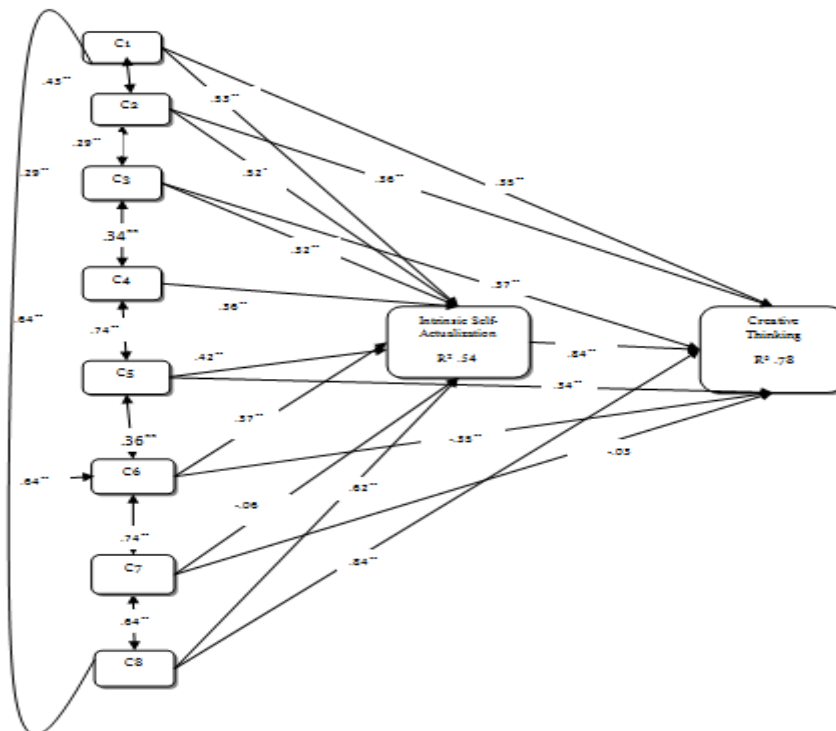


Figure 1. Standardized coefficients of the Self-direction Action, Self-direction Thought, Stimulation, Achievement, Power Resources, Conformity-Rules, Conformity-Interpersonal, and Universalism-Concern values, Intrinsic self-actualization and creative thinking (N = 2956); * $p < .01$; ** $p < .001$.

Note: Seven constructs out of nine were re-named as: Construct 1 = Self-Direction Action, Construct 2 = Self-Direction Thought, Construct 3 = Conformity-Rules, Construct 4 = Conformity-Interpersonal, Construct 5 = Achievement, Construct 6 = Power Resources Construct 7 = Universalism-Concern, and Construct 8 = Stimulation,

Table 4.
Hypotheses Testing, Standardized Indirect, Direct, and Total Effects

Independent Variable	Dependent Variable	Standardized Coefficient (β)	Remark
Self-direction Action	Intrinsic Self- Actualization	.53***	H ₂ Supported
Self-direction Thought	Intrinsic Self- Actualization	.52***	H ₃ Support
Conformity-Rules	Intrinsic Self- Actualization	.32**	H ₄ Supported
Conformity- Interpersonal	Intrinsic Self- Actualization	.36***	H ₅ Supported
Achievement	Intrinsic Self- Actualization	.42***	H ₆ Support
Power Resources	Intrinsic Self- Actualization	.37***	H ₇ Supported
Universalism-Concern	Intrinsic Self- Actualization	-.06	H ₈ Not Supported
Stimulation	Intrinsic Self- Actualization	.62**	H ₉ Supported
Self-direction Action	Creative Thinking	.35***	H ₁₀ Supported
Self-direction Thought	Creative Thinking	.36***	H ₁₁ Support
Conformity-Rules	Creative Thinking	.37***	H ₁₂ Supported
Conformity- Interpersonal	Creative Thinking	-.02	H ₁₃ Not Supported
Achievement	Creative Thinking	.34***	H ₁₄ Support
Power Resources	Creative Thinking	-.35	H ₁₅ Not Supported
Universalism-Concern	Creative Thinking	-.03	H ₁₆ Not Supported
Stimulation	Creative Thinking	.79***	H ₁₇ Supported
Intrinsic Self-Actualization	Creative Thinking	.84***	H ₁₈ Support

Notes: *** $p < .001$; ** $p < .01$

DISCUSSION

Based on the relationships' analyses, the current study demonstrated the significant intercorrelation among the personal values (e.g., Self-direction Action, Self-direction Thought, Conformity-Rules, Conformity-Interpersonal, Achievement, Power Resources, Universalism-Concern, and Stimulation), the intrinsic self-actualization (ISA), and critical thinking (CT) in the multicultural setting of administratively varied universities settings. The personal values such as Self-direction Action, Self-direction Thought, Conformity-Rules, Conformity-Interpersonal, Achievement, Power-Resources, and Stimulation exhibited a positive relationship with ISA. Conversely, an insignificant correlation was demonstrated between Universalism-Concern with ISA in the university settings. The findings revealed that when students were motivated by creativity/imagination, curiosity/interest, novelty, independent thought, independent actions, sense of achievement, performance motivation, achieving goals, competence, striving to do better, self-discipline,

politeness, honor, and power values, they scored higher on creativity and intrinsic self-actualization (ISA). So far, university students who endorsed the significance of personal values e.g., tolerance, a societal concern, dominance over people, control of material, protecting nature, justice for all, world beauty, were more likely to be less convinced of their potentials in creating novel thoughts contrasted to students who emphasized the Self-direction Thought, Self-direction Action, stimulation, achievement, and conformity-rules values. This result harmonized with authors reported by Taylor & Kaufman (2020) and Hanel et al., (2018), and Guillaume and colleagues (2016) found that Openness to change values (Self-direction Action, Stimulation, and Self-direction Thought were included in this domain) were significantly correlated to the intrinsic self-actualization (ISA). Likewise, according to Hanel et al. (2018) that the personal values of the self-enhancement domain (Achievement and Power Resources) as well indicated a significant positive relationship with intrinsic self-actualization (ISA).

Table 5.
Hypotheses Testing and Mediation Analysis (the PROCESS macro, $< .05$)

Parameter	(β)	Lower Limit	Upper Limit	Remark
Self-direction Action \rightarrow ISA \rightarrow CT	.49**	.23	.76	H ₁₉ Supported
Self-direction Thought \rightarrow ISA \rightarrow CT	.34**	.22	.49	H ₂₀ Supported
Conformity-Rules \rightarrow ISA \rightarrow CT	.41**	.24	.46	H ₂₁ Supported
Conformity- Interpersonal \rightarrow ISA \rightarrow CT	-.30	-.16	.02	H ₂₂ Not Supported
Achievement \rightarrow ISA \rightarrow CT	.48**	.27	.59	H ₂₃ Supported
Power Resources \rightarrow ISA \rightarrow CT	-.24	-.22	.02	H ₂₄ Not Supported
Universalism-Concern \rightarrow ISA \rightarrow CT	-.20	-.26	.03	H ₂₅ Not Supported
Stimulation \rightarrow ISA \rightarrow CT	.79***	.55	.89	H ₂₆ Supported

Notes: CT = Creative Thinking; ISA = Intrinsic Self-Actualization; *** $p < .001$; ** $p < .01$

Conversely, Fischer, R. (2017) measured intrinsic self-actualization in the employment context, while Brown & Rauthmann (2016) measured intrinsic self-actualization in the teaching context. Similarly, ISA demonstrated a strong correlation with creative thinking. Based on these findings, we demonstrated that a rise in ISA enhances the creative thinking (CT) of students. Zahra (2021) indicated that behavior of motivation increases with high expectations of positive outcomes. These results also concurred with previous studies (Benet-Martínez, et al., 2015; Biber, et al., 2008; Bussing et al., 2020). As aforementioned, those studies concerned with a relationship between the ISA construct and university students' value were entirely under-examined. Coelho et al. (2018) investigated the relationship between self-actualization and human values of 456 jobholders. The researchers exhibited that Openness to change and self-enhancement indicated a strong association with intrinsic self-actualization (ISA). Their study demonstrated that Self-direction Action, Self-direction Thought, and stimulation significantly influenced ISA with Stimulation was the leading of the predictors in the context of the university. This result recommended that students, who authorized Self-direction Action, Self-direction Thought, Stimulation, and Achievement, expected to experience more confidence in their problem-solving and CT skills. Equally, Hanel et al., (2017) posited that students reinforced the Self-enhancement and Openness to change domain possible to have a high level of confidence in their academic output abilities. But, Guillaume et al., (2016), who investigated the correlation between human values and ISA among 137 faculty members, exhibited that the relationship between the Conservation values and self-actualization of persons mixed due to the external pressures. In respect to the Universalism-Concern, the authors established no positive association with ISA. Demonstrating the conceived significance of tolerance, a societal concern, and protecting the nature of students probable demonstrated a very low effect on their motivation in creative potentials. In the study of Nakagawa and Schielzeth (Nakagawa & Schielzeth, 2013) and Tep et al.'s study (Tep et al., 2021), the Universalism-Concern was deleted on basis of the high level of abstractness. Consequently, the result of the current study is consistent more with the result of study Nakagawa & Schielzeth (2013), Tep et al. (2021), but did not consistent with those from Sharma (2020), who found that Universalism-Concern value significantly predicted ISA. Furthermore, Kesberg & Keller (2018) examined the impacts of personal values on the ISA and indicated that the self-direction, universalism-concern, and stimulation did not confirm the predicting role of ISA and creativity; the only achievement indicated a predicting role.

The results of the current study, surprisingly, the personal values e.g., Self-direction Thought, Self-direction Action, Stimulation, Conformity-Rules, and Achievement indicated the significant direct relationships towards creative thinking (CT). This result looked particularly motivating, due to its inconsistency with the enormous other studies. Based on the results, Biber et al. (2008), Bussing et al. (2018) Guillaume et al. (2016), Taylor & Kaufman (2020), Hanel et al. (2018), and Zahra (2020), confirmed a significant association with self-direction thought, self-direction action, stimulation and creative thinking (CT). This result may be illustrated by the impact of the pluralistic cultural settings of Pakistan on students. Bussing et al. (2020) posited that idiosyncratic cultures provide the independence of idea creation; however pluralistic cultures confirm a collective team-based environment of problem-solving or generation of ideas. Consequently, the higher the collectivist values of persons lower the creative thinking skills (Bussing et al., 2020; Fischer, R. 2017; Guillaume et al., 2016). Conversely, based on the results, the current study demonstrated that the personal values (e.g., self-direction thought, self-direction action, stimulation, achievement, and conformity rules) to affect creative thinking (CT) would require a mediating construct, i.e., intrinsic self-actualization (ISA). This finding indicated that the individual who confirmed autonomy of thought, action, and independence did not broaden their CT unless they were confident and highly motivated for their creative potentials. This contemporary study exhibited the central role of ISA in the interrelationship between Self-direction Thought, Self-direction Action, and creative thinking, with a large effect size. The significance of ISA was furthermore confirmed by the investigated correlation between Stimulation and creative thinking, due to available support for a positive indirect association through ISA. Moreover, the significance of ISA was further endorsed by the investigated correlation between the Achievement, Conformity-Rules and creative thinking, as there was support for an indirect relationship through ISA. Though, in this scenario, the Self-direction Thought, Self-direction Action, Stimulation, Conformity-Rules, and Achievement values also positively supported CT. This result was consistent with Schwartz's (2017), The Refined Theory of Human values. Students who supported challenge, self-directing life, excitement, self-discipline, and novelty were more liable to exhibit creative thinking.

Concerning the Universalism-Concern, the current study indicated an insignificant connection with CT. Students who obtained high scores that Universalism-Concern (*tolerance, a societal concern, and protecting*

nature) are less likely to execute well in creative thinking. Simply, students who are ambitious by tolerance, wisdom, equality for all, social justice, the world at peace, protect the environment, unity with nature, and world beauty, are liable to demonstrate less self-belief about their abilities in creating ideas. Perhaps, this result was illuminated from the difference of formation between the idiosyncratic nature of creative thinking and the varied and holistic nature of Universalism-Concern (Parks-Leduc et al., 2015). Furthermore, the present results were harmonious with the findings of Zahra (2021); she exhibited a non-significant relationship between self-perception, innovative thinking, and Conformity-Interpersonal. This finding was consistent with Marley (2018), and Morris and Jacob (2018); the authors exhibited that the Universalism-Concern had no sufficient impact on creativity. Finally and precisely, intrinsic self-actualization (ISA) was recorded as the most dominant factor of personally reported CT abilities. Students who had high scores on ISA are likely to generate excellent ideas due to a high level of confidence in their potentials of finding and managing circumstances for problem-solving (Kocjan & Avsec, 2017). Correspondingly, this current finding supported that stronger the confidence higher the creative potentials of students, therefore they retained stronger creative thinking. This finding concurred with previous research (Coelho et al., 2018; Hayes, 2019; Horstmann et al., 2017). As aforementioned, ISA performed the role of mediator between creative thinking and human values. Therefore, the CT was expected to be influenced by intrinsic self-actualization (ISA); conversely, human value constructs, affected by pluralistic cultural settings where students were associated, would also co-predict the effect of ISA on creative thinking. Moreover, these findings were affirmed by past studies too that confirmed the mediating role of ISA in creative thinking (Guillaume et al., 2016; Hanel et al., 2018; Zahra, 2021).

CONCLUSION

Enormous empirical research have also explored the correlation between ISA and CT (Brown & Rauthmann, 2016) and confirmed that ISA directly predicts students' behavior of creative thinking (Büssing et al., 2020; Coelho et al., 2018). Keeping in view these results we can conclude that, ISA does not only have likely to predict creative thinking but render the mediating effects on other constructs on CT too (Coelho et al., 2017; Taylor & Kaufman, 2020). If students believe CT as potentially affecting element in their learning and performance, with presenting a strong

belief in their creative capabilities of accomplishing it, they can build up several creative solutions or ideas (Coelho et al., 2017). Consequently, motivation is responsible for creative behavior, which is creating from students' personal values (Hanel et al., 2018). Finally, human personal values serve as a dominant factor of creative behavior (Guillaume et al., 2016). Educational institutions must develop students' intrinsic self-actualization (ISA) and critical thinking (CT) to be successful in their future careers. Knowing the factors that influence intrinsic self-actualization (ISA) and creative thinking (CT) allow curriculum and instructional designers, policymakers, and instructors to enhance students' ISA and creative thinking. In addition to their intrinsic self-actualization and values, students' creative abilities are heavily influenced by these factors. Self-confidence in intrinsic skills is high among recent students who are motivated by personal values. The creative thinking (CT) of students can be enhanced when instructional designers and instructors are aware of the importance of human values and intrinsic self-actualization.

IMPLICATIONS

The current study exhibited indispensable implications for faculty, students, policymakers, curriculum designers, and educational management. As aforementioned, creative thinking (CT) capabilities, intrinsic self-actualization, and creativity are vital academic capabilities that students should possess. And possibly can play an indispensable role for their upcoming employment and excellence; consequently, creative thinking is the prerequisite for it. A thoughtful investigation of the factors mediating creative thinking (CT) may help curriculum designers, policymakers, teaching faculty, educational management (e.g., at top and low level), and government to plan and design educational settings that would support and enhance the creative potentials of all level of students. Based on the findings of the current metadata, demonstrated that students with high motivation through Self-direction Thought, Self-direction Action, Achievement, and Power Resources are likely to be more confident in creative thinking, which would, in turn, promote their perceptions or problem-solving skills. The current findings demonstrated the predominant function of ISA that arbitrated for the interrelationship between creative thinking and individual values; which demonstrated the most dominant role of the predictor of creativity. Policymakers, curriculum designers, and educational management may utilize this data for the enhancement of students' creativity and their confidence in their creative abilities by designing classroom settings and

effective instruction; while understanding the significance of human values and ISA toward creative thinking. For example, instructors may foster students' ISA through innovative techniques and approaches, creative assignments (Zahra, 2021), use of chase (Bussing et al., 2020), and use gasification rules for changing the classroom setting from a traditional one to a more challenging, independent, open, curious, free and autonomous (Zahra, 2021).

ACKNOWLEDGEMENTS

We acknowledge the efforts of all facilitators and supporters of this study, especially, the administration of public and private universities remained understudy.

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