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Personal Values as Predictors of Creative and Productive Thinking among Adolescents of Kamrup Metro District, Assam

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Abstract: This paper has discussed the degree to which individual values which have been defined in the theory of basic human value of Schwartz are useful in predicting creative and productive thinking among teenagers. One hundred and fifty (150) secondary-school students (ages 13-17, M = 15.20, SD = 1.30) from six schools of Kamrup Metro district, Assam, were surveyed on values in conjunction with standardized tests concerning creative thinking and productive (problem-solving) thinking. Four dimensions of higher order values were obtained Openness to Change, Self-Transcendence, Conservation, and Self-Enhancement. Both Correlational and hierarchical multiple regression analyses revealed that Openness to Change was the most positive predictor of creative thinking ($\beta = .35$, $p < .001$) whereas Self-Transcendence was the most positive predictor of productive thinking ($\beta = .27$, $p < .001$). Both outcomes were negatively correlated with conservation values, the most significant of which was the creative thinking ($\beta = -.22$, $p < .001$). The value dimensions together explained 29 percent of the variance in creative thinking and 24 percent of the variance in productive thinking as well as age and gender. These results confirm value-congruence theories of cognitive functioning and propose that by promoting openness- and transcendence-based values in adolescence, it could be possible to develop creative and productive cognitive style. Discussed are implications to educational practice and value-based creativity interventions.

Keywords: personal values, creativity, productive thinking, adolescents, Schwartz values theory, Kamrup Metro.

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Introduction

Adolescence is a developmental stage whereby cognitive styles, motivational orientations and value systems become relatively stable individual differences which are carried into adulthood (Erikson, 1968). Creative thinking, generation of novel and useful ideas, productive thinking are among the cognitive competencies that are developing in this period, which are becoming central in academic achievement, career readiness and psychological well-being (Runco, 2014; Sternberg and Lubart, 1999). Although the cognitive-ability and personality correlates of the two thinking styles have attracted extensive research, relatively less research has been done on the motivational substrate of the two styles: personal values.

A parsimonious approach to explaining why some adolescents consistently engage in problem-solving with curiosity of novelty and others with caution and convention is through personal values which according to Schwartz (1992, 2012) refers to trans-situational goals that change in

importance and act as guiding principles in the life of a person. Since values determine what goals people aim to achieve, what risks they will accept and which information they will pay attention to, they plausibly determine not only what adolescents think about but also how they think, and whether their thinking is oriented toward divergent, exploration processes (creativity) or convergent, efficiency-oriented processes (productivity).

Although theoretically plausible, there is little evidence and empirical support to support the direct relationship between the value dimensions of Schwartz and either creative or productive thinking in a single adolescent sample. Past studies have discussed creativity and values among adult or university groups (Dollinger et al., 2007; Kasof et al., 2007), and there are gaps in the existing literature as to whether such trends can be found in earlier stages of development, when the value systems are still being established. Furthermore, productive thinking as a separate process of thought has seldom been considered an extension of personal values of any kind, even though Guilford's (1967) classic dichotomy between divergent (creative) and convergent (productive) production is two opposite poles of intellectual activity.

The current paper addresses these gaps by analyzing, on a sample of secondary-school adolescents of Kamrup Metro district, Assam, (a) the bivariate relations between four higher-order value dimensions (Openness to Change, Self-Transcendence, Conservation and Self-Enhancement) and measures of creative and productive thinking, and (b) the distinct predictive power of each value dimension beyond age and gender. The following hypotheses were formulated: (H1) Openness to Change would represent the best positive predictor of creative thinking; (H2) Self-transcendence would represent a significant positive predictor of productive thinking, based on its inclination toward intrinsic and prosocial goal-setting; and (H3) Conservation would be negatively correlated with both outcomes, due to its focus on tradition, conformity, and security rather than novelty and independent problem solving.

Objectives of the Study

Keeping the above gaps in view, the following objectives were framed for the present study conducted in Kamrup Metro district, Assam:

1. To study the level of personal values (Openness to Change, Self-Transcendence, Conservation and Self-Enhancement), creative thinking and productive thinking among secondary-school adolescents of Kamrup Metro district.
2. To examine the interrelationships among the four higher-order value dimensions, and between creative thinking and productive thinking.
3. To study the relationship between each personal value dimension and creative thinking of adolescents.
4. To study the relationship between each personal value dimension and productive thinking of adolescents.
5. To find out the extent to which the personal value dimensions predict creative thinking of adolescents, over and above age and gender.
6. To find out the extent to which the personal value dimensions predict productive thinking of adolescents, over and above age and gender.

Literature Review and Theoretical Framework

Schwartz's Theory of Basic Human Values

The circumplex model created by Schwartz (1992, 2012) places ten fundamental values on two orthogonal bipolar axes: Openness to Change vs. Conservation and Self-transcendence vs. Self-enhancement. Openness to Change (including self-direction, stimulation and hedonism) is a motivational focus on independent thinking, newness and excitement, and Conservation (tradition, conformity, and security) is a focus on order, predictability, and resistance to change. Self-

transcendence (universalism and benevolence) is an interest in the well-being of others and others in general, Self-Enhancement (achievement and power) is interest in personal success and position. The circumplex has been reproduced in dozens of cultures, including adolescent samples (Schwartz, 2012), and is thus a strong framework of individual-difference research based on values.

Values and Creative Thinking

The relationship between openness based constructs and creative performance is not new to creativity researchers. Openness to Experience is one of the most reliable predictors of creative achievement at the personality level (Silvia et al., 2009). At the values level, Dollinger et al. (2007) established that values of self-direction and stimulation were significant predictors of creative personality and product ratings in college students, and also, cross-nationally, Kasof et al. (2007) established that the values of self-transcendence and openness positively predicted creativity, but conservation values negatively predicted creativity. The componential theory, proposed by Amabile (1996), proposes further that intrinsic motivation, which is conceptually close to openness and self-direction values, is a proximal force in creative production, since it is the sustaining force which maintains the exploratory persistence necessary to produce truly novel ideas.

Values and Productive Thinking

In the Guilford (1967) structure-of-intellect model, productive thinking refers to convergent use of thought to arrive at an efficient, frequently unique, answer to a well- or ill-defined problem. Since productive thinking often serves collective or instrumental interests (e.g., doing a job right, assisting a group to a sustainable solution), it can be more influenced by self-transcendence values which guide individuals toward the good of others and toward socially productive accomplishment, and achievement-oriented self-enhancement values that drive task perseverance and goal achievement (Sagiv & Schwartz, 2000). Simultaneously, over-conservation, and its conformity/avoidance focus, can limit the adaptive thinking that problem-solving frequently needs, but this limitation should not be as great as in creative thinking, which is more directly dependent on the creation of novelty.

Combined, the previous theory and evidence suggest a pattern of increased value-cognition relationships: the values associated with openness ought to be associated with creative thinking the most, the values associated with transcendence and achievement with productive thinking the most, and the values associated with conservation with neither, but doing so with creativity. These predictions are directly tested in the present study in an adolescent sample.

Method

Participants

The sample population was a group of 150 adolescents (51.3% females, 48.7% males) aged 13 to 17 (M = 15.20, SD = 1.30) and recruited through stratified random sampling by grade level in six co-educational secondary schools of Kamrup Metro (Kamrup Metropolitan) district, Assam, India. Informed consent was obtained by use of written consent by the parents or guardians and the assent of the adolescents was taken before participation. The institutional research ethics committee reviewed and approved the study protocol.

Measures

Personal values. The values were measured with a Portrait Values Questionnaire that was adapted to adolescents (Schwartz, 2012) and included short verbal portraits of people and requested the respondents to rate the similarity of the picture to themselves on a 6-point scale. After ipsatization, item scores were aggregated into four higher-order composites, Openness to Change, Self-Transcendence, Conservation and Self-Enhancement. The internal consistency of the current sample was good to acceptable (Cronbach's α = .76-.84).

Creative thinking. The creative thinking was evaluated using a figural and verbal fluency-flexibility-originality composite based on the Torrance Tests of Creative Thinking (Torrance, 1974)

and rated by trained raters who were not aware of the value score of participants. The internal consistency of the composite (.88) and inter-rater reliability (ICC = .91) were high.

Productive thinking. Structured problem-solving productivity task battery assessed productive (convergent problem-solving) thinking in participants by asking them to come up with efficient, workable solutions to real-world scenario problems under time constraints, which were rated on accuracy, efficiency and feasibility of solutions (α = .85).

Procedure and Data Analysis

Measures were given sequentially (values questionnaire, followed by creative thinking task, followed by productive thinking task) in group sessions lasting about 45 minutes, which was proctored by trained research assistants. Before analysis, the data were filtered by outliers and missingness (Less than 3% addressed through multiple imputation). In line with the objectives, means and standard deviations were computed to describe the levels of the study variables (Objective 1); Pearson product-moment correlations were calculated among all the study variables (Objectives 2, 3 and 4); and hierarchical multiple regression analyses were done to predict creative thinking and productive thinking separately (Objectives 5 and 6). Step 1 was to enter age and gender to control demographic variance and step 2 to enter the four dimensions of value. All the analyses were done at a two-tailed alpha of 0.05.

Results

Objective 1: Level of Personal Values, Creative Thinking and Productive Thinking

The means and standard deviations in Table 1 describe the adolescents of Kamrup Metro district on the study variables. On the 6-point value scale, the adolescents gave the highest priority to Self-Transcendence (M = 4.35, SD = 0.68), followed by Openness to Change (M = 4.10, SD = 0.72), Conservation (M = 3.62, SD = 0.81) and Self-Enhancement (M = 3.48, SD = 0.77). The mean score on creative thinking was 68.40 (SD = 12.70) and on productive thinking was 71.20 (SD = 11.40).

Objective 2: Interrelationships among Value Dimensions and between the Two Thinking Styles

Table 1 also shows the zero-order correlations among the variables in the study. In agreement with the Schwartz circumplex, Openness to Change and Conservation were significantly negatively correlated (r = -.45, p <.01), as did Self-Transcendence and Self-Enhancement (r = -.38, p <.01), which meet the criterion of construct validity of the value composites in this adolescent sample. Creative and productive thinking were also moderately positively correlated (r = .53, p < .01) meaning that there is common variance, but they are nevertheless different enough to be treated independently.

Table 1. Descriptive Statistics and Intercorrelations Among Study Variables

Variable	M	SD	1	2	3	4	5	6
1. Openness to Change	4.10	0.72	—					
2. Self-Transcendence	4.35	0.68	.31**	—				
3. Conservation	3.62	0.81	-.45**	-.22**	—			
4. Self-Enhancement	3.48	0.77	.18**	-.38**	.15*	—		
5. Creative Thinking	68.40	12.70	.42**	.28**	-.33**	.11*	—	
6. Productive Thinking	71.20	11.40	.31**	.35**	-.19**	.24**	.53**	—

Note. N = 150. * p < .05. ** p < .01 (two-tailed).

Objective 3: Relationship between Personal Values and Creative Thinking

As shown in Table 1 and Figure 1, Openness to Change had the strongest positive correlation with creative thinking ($r = .42$, $p < .01$), followed by Self-Transcendence ($r = .28$, $p < .01$). Conservation was negatively correlated with creative thinking ($r = -.33$, $p < .01$), while Self-Enhancement showed only a small positive correlation ($r = .11$, $p < .05$).

Objective 4: Relationship between Personal Values and Productive Thinking

Self-Transcendence had the strongest positive correlation with productive thinking ($r = .35$, $p < .01$), followed by Openness to Change ($r = .31$, $p < .01$) and Self-Enhancement ($r = .24$, $p < .01$). Conservation was negatively correlated with productive thinking ($r = -.19$, $p < .01$), and this negative relationship was weaker than its relationship with creative thinking ($r = -.33$).

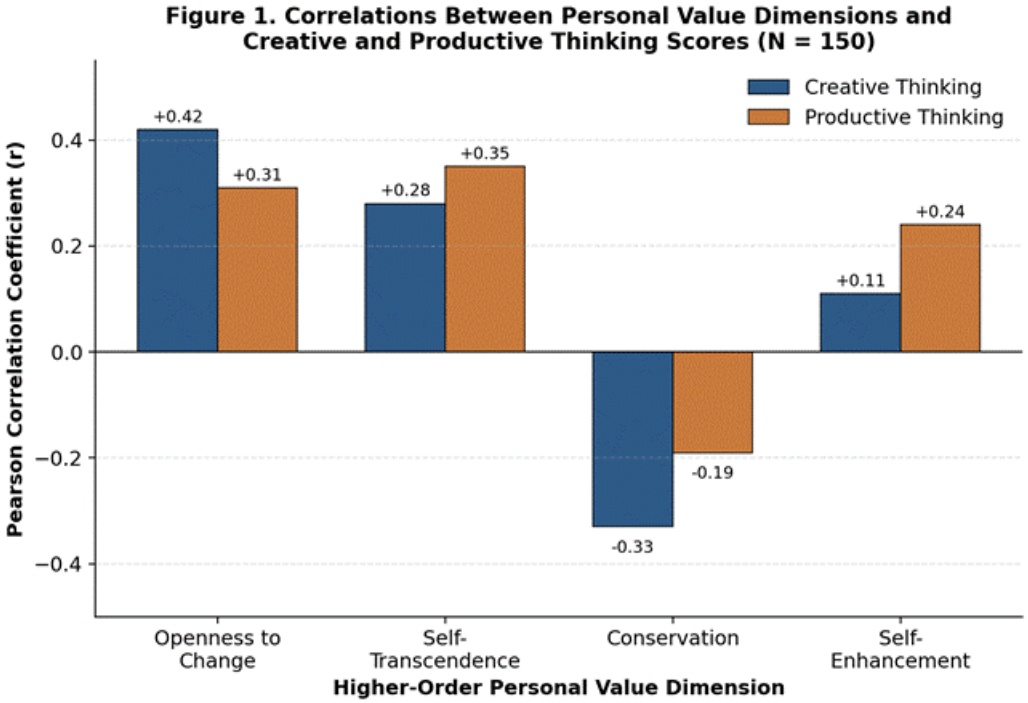


Figure 1. Correlations between personal value dimensions and creative and productive thinking scores.

Objective 5: Personal Values as Predictors of Creative Thinking

The results of the hierarchical multiple regression are presented in Table 2. In Step 1, age and gender together explained a non-significant 2% of the variance in creative thinking. Entering the four value dimensions in Step 2 added a significant 27% of variance ($\Delta R^2 = .27$, $p < .001$), and the final model explained 29% of the variance in creative thinking ($R^2 = .29$, $F(6, 143) = 27.86$, $p < .01$). In the final model, Openness to Change emerged as the strongest unique predictor of creative thinking ($\beta = .35$, $t = 7.92$, $p < .001$), followed by Conservation ($\beta = -.22$, $t = -4.98$, $p < .001$) and Self-Transcendence ($\beta = .19$, $t = 4.21$, $p < .001$); Self-Enhancement was not a significant unique predictor ($\beta = .06$, $p = .181$). Among the control variables, gender had a small significant effect ($\beta = .09$, $p = .045$), whereas age did not ($\beta = .05$, $p = .264$).

Objective 6: Personal Values as Predictors of Productive Thinking

For productive thinking, age and gender in Step 1 again explained a non-significant 2% of the variance. The four value dimensions in Step 2 added a significant 22% of variance ($\Delta R^2 = .22$, $p < .001$), and the final model explained 24% of the variance ($R^2 = .24$, $F(6, 143) = 21.53$, $p < .01$). Self-Transcendence was the strongest unique predictor of productive thinking ($\beta = .27$, $t = 5.87$, $p < .001$), followed by Openness to Change ($\beta = .21$, $t = 4.55$, $p < .001$) and Self-Enhancement ($\beta = .18$, $t = 3.92$, $p < .001$); Conservation was a weaker, though still significant, negative predictor ($\beta = -.09$,

t = -1.98, p = .048). Neither age (β = .08, p = .074) nor gender (β = .04, p = .375) significantly predicted productive thinking.

Table 2. Hierarchical Multiple Regression Predicting Creative and Productive Thinking

Predictor	Creative Thinking β	t	p	Productive Thinking β	t	p
Age	.05	1.12	.264	.08	1.79	.074
Gender (female = 1)	.09	2.01	.045	.04	0.89	.375
Openness to Change	.35	7.92	< .001	.21	4.55	< .001
Self-Transcendence	.19	4.21	< .001	.27	5.87	< .001
Conservation	-.22	-4.98	< .001	-.09	-1.98	.048
Self-Enhancement	.06	1.34	.181	.18	3.92	< .001
Model Summary	R^2 = .29			R^2 = .24		
	F(6, 143) = 27.86**		F(6, 143) = 21.53**			

Note. N = 150. β = standardized regression coefficient. Values entered in Step 2 after age and gender (Step 1). ** p < .01.

With reference to Objective 5, Figure 2 shows the relationship between Openness-to-Change scores and the scores on creative thinking at the individual level, and depicts, graphically, the positive linear relationship between the scores.

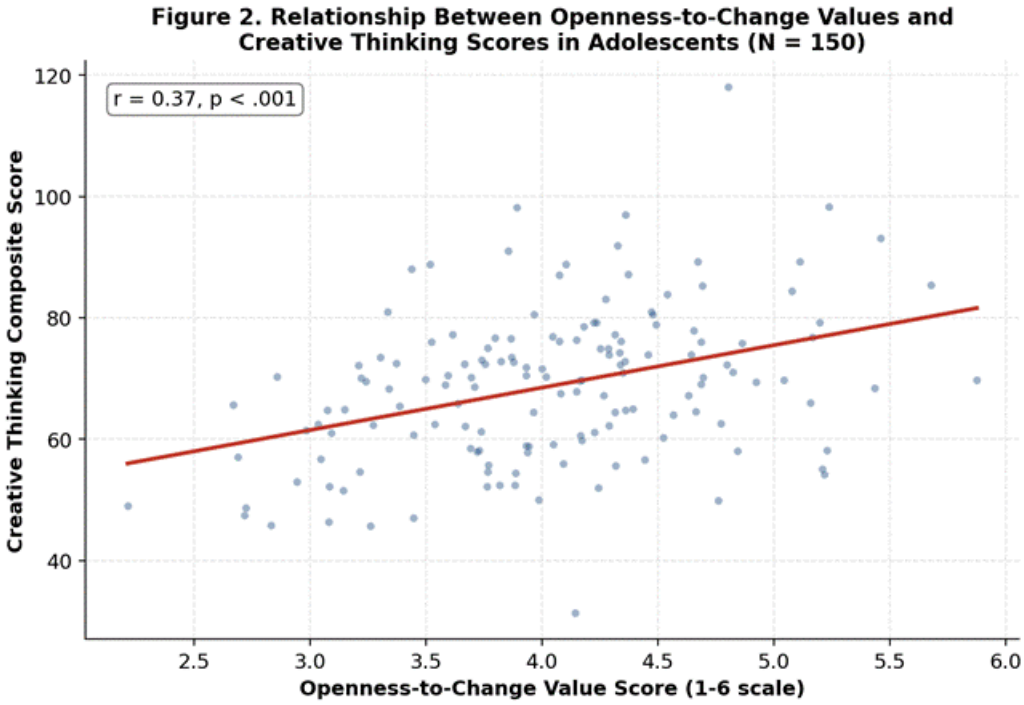


Figure 2. Scatterplot with fitted regression line depicting the relationship between Openness-to-Change values and creative thinking scores.

Summary of Hypothesis Testing

H1: Openness to Change would be the strongest positive predictor of creative thinking — Accepted (β = .35, p < .001).

H2: Self-Transcendence would be a significant positive predictor of productive thinking — Accepted ($\beta = .27$, $p < .001$).

H3: Conservation would be negatively related to both creative and productive thinking — Accepted ($r = -.33$ and $r = -.19$, both $p < .01$).

Discussion

The research investigated personal values as foretellers of creative and productive thought in a sample of 150 adolescents of Kamrup Metro district, Assam, and evaluated three hypotheses based on the values hypothesis of Schwartz (1992, 2012). As hypothesized in Hypothesis 1, Openness to Change proved to be the most significant unique predictor of creative thinking, which supports and generalizes results of adult and university samples (Dollinger et al., 2007; Silvia et al., 2009) into adolescence. This trend is in line with the perspective that values that focus on self-direction, stimulation, and novelty seeking give the motivational scaffolding that supports the exploratory, risk-taking cognitive mechanisms that support the generation of creative ideas (Amabile, 1996; Csikszentmihalyi, 1996).

In line with Hypothesis 2, Self-transcendence was the most powerful unique predictor of productive thinking. This result builds upon Sagiv and Schwartz (2000) study in which self-transcendence values were related to prosocial and cooperative task orientations by showing that self-transcendence values also relate to more effective and convergent problem-solving performance. One side of the coin is that, by focusing on benevolence and universalism, adolescents are more inclined to view structured problems as having a sense of purpose and social responsibility leading to more careful, efficient, and feasible solution generation, characteristic of productive rather than just creative thinking.

In line with Hypothesis 3, the Negative relationships were found between the Conservation values and both outcomes, and this relationship was significantly higher with creative thinking than productive thinking. This difference trend is consistent with the cross-national results of Kasof et al. (2007) and in favor of the theoretical argument that the emphasis of conservation on tradition, conformity, and security uniquely is antithetical to the novelty-seeking aspect of creative thought, and is less restrictive of task-oriented productive reasoning, which is still possible within traditional and rule-based systems.

Surprisingly, Self-Enhancement values, which represent achievement and power motives, were not a significant unique predictor of creative thinking, but an important, positive relationship between Self-Enhancement values and productive thinking. This counter-identification hints at achievement-oriented motivation as narrowing the goal-oriented, efficiency-oriented logic without once having to support the type of playful, exploratory thinking that creativity demands, reiterating the original distinction of convergent and divergent production as at least partially distinct cognitive-motivational systems proposed by Guilford (1967).

Educational Practice Implications

The implications of these findings on the education of adolescents are practical. Pedagogical practices and curricula that directly develop self-direction, intellectual challenge, and prosocial mission, such as project-based learning, student directed inquiry, and service-learning elements, can develop both creative and productive cognitive styles. On the other hand, instructional environments that are also highly conformity-oriented, although potentially effective in the development of procedural competence, can also unintentionally kill off the value orientations that underlie flexible generative thinking. A promising direction of applied research is value-based creativity interventions, explicitly priming the goals of openness and self-transcendence before problem-solving tasks (Kasof et al., 2007).

Limitations and Future Directions

A number of constraints should be taken into consideration when interpreting such results. First, cross sectional design does not allow any causal inference, it is possible that creative and

productive thinking influence value endorsement but not vice versa or both. Directionality requires longitudinal and experimental (value-priming) designs to explain. Second, every measure assumed at least some dependence on self-report or rater ratings, which may have shared-method error; future research could include behavioral or peer-report measures of values and thinking styles. Third, the sample was selected from one urban district only (Kamrup Metro, Assam), which does not allow generalization; it is reasonable to replicate it across cultures since existing cultural diversity in value structures is known (Schwartz, 2012). Lastly, although the study in question dwelled on the dimensions of higher-order values, the analysis of the ten more basic values in particular can possibly unveil finer details of correlation with certain aspects of creative and productive thinking.

Conclusion

The current research offers new evidence that personal values predictively and significantly differentially are related to creative and productive thinking among adolescents of Kamrup Metro district, Assam. Openness to Change was the strongest predictor of creative thinking, Self-Transcendence best predicted productive thinking, and Conservation negatively predicted them, especially creativity. These results not only extrapolate value-congruence frameworks of cognition into adolescence but also indicate that educational and developmental interventions that can develop openness- and transcendence-oriented values can be a promising, motivationally-based approach to enhancing creative and productive thinking in adolescents.

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