

## The Effect of Basic Psychological Needs and Attachment Styles on Creative Personality Traits

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**Abstract:** This study aims to test the effect of basic psychological needs and attachment styles on creative personality traits. The sample of this descriptive study consists of 507 people. For data collection, Creative Personality Traits Scale (Şahin and Danisman, 2017), Basic Psychological Needs Scale (Gagne, 2003), and Relationship Scales Questionnaire (Griffin and Bartholomew, 1994) were used and the data were analysed with structural equation modelling. The research revealed that attachment styles significantly determine creative personality traits. Approximately two-thirds of creative personality traits can be explained by attachment styles. Secure attachment has a positive significant effect, and insecure attachment has a negative significant effect on creative personality traits. The other independent variable of the research is basic psychological needs. The research suggests that two thirds (66%) of creative personality traits are determined by the satisfaction level of basic psychological needs. The present study revealed that the basic psychological needs most strongly account for the internal motivation dimension of creative personality traits. The study revealed the effect of basic psychological needs and attachment styles on creative personality traits.

**Keywords:** Creative Personality Traits, Attachment Styles; Psychological Needs

### 1. Introduction

Creativity is a concept that does not have a definition accepted by all relevant scientists since it can be observed through very different behavior and thinking styles (Glück, Ernst and Unger, 2002). Creativity is handled and defined by different disciplines within the conceptual framework of each discipline. When the definitions are examined, the terms most frequently used to define creativity include the ability to find something new and original, design power, curiosity, imagination, discovery, innovation, invention, and difference (Runco and Jaeger, 2012). Based on common terms, creativity can be defined as being sensitive to the aesthetic features of details, ideas, and objects in terms of their qualities, being open to experience, change, and innovation, and fluency, flexibility, and originality in thought. The previous studies found that people with creative personality traits were curious people (Ivcevic, 2007) having flexible thinking ability, superior problem-solving capability, advanced imagination (Ahmetoglu, Harding, Akhtar and Chamorro-Premuzic, 2015), the motivation to act promptly in the case of deficiencies, and farsightedness (Prabhu, Sutton and Sauser, 2008), potential to offer unusual suggestions by different thinking methods, and perspective of presenting alternative suggestions (Puryear, Kettler and Rinn, 2019). Although it seems to be a feature attributed to more intelligent and gifted people in the society, there are many examples of creativity traits in people who are less intelligent and have pathological problems (Plucker, Esping, Kaufman and Avitia, 2015). When considered independently of intelligence and personality traits, the common feature of creative people is to think differently from others. Because of this common feature, they have been the pioneers of innovations and inventions in science, art, society, and culture in a community and throughout human history in general (Plucker et al., 2015). Since creativity is a feature that can be improved (Plucker, Beghetto and Dow, 2004), many societies tried to include practices for discovering creativity and enabling trainees to gain creativity while preparing educational policies and programs.

When the studies on creativity are examined, it is seen that several studies seek its relationship with many individual, social, cultural, and psychological concepts and variables. These concepts and variables include but not limited to personality (Karwowski, Lebeda, Wisniewska and Gralewski, 2013; Puryear, Kettler, and Rinn, 2019), questioning (Corbalán, J., et al., 2013; Elisondo, Donolo and Limiñana-Gras, 2018), cognitive factors (Kaufman et al., 2016; Woodman et al., 1993), motivation (Conner and Silvia, 2015; Prabhu, Sutton and Sauser, 2008), psychopathology (Furnham, 2015;

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Jankowska, Omelańczuk, Czerwonka, and Karwowski, 2019), environmental conditions and demographic variables (Ahmetoglu, Harding, Akhtar and Chamorro-Premuzic, 2015; Baer and Kaufman, 2008), conscientiousness, openness, and emotional instability (Ortiz, López-Martínez and Corbalán Berná, 2020). However, no study investigating the relationship between creative personality traits and the variables of basic psychological needs and attachment styles was found in the literature. The research aims to reveal the relationship between the creative personality trait and the need for autonomy, self-efficacy and relationship, which are conceptualized as basic psychological needs, thus contributing to the literature. It is thought that knowing which psychological need is associated with creative personality traits and the proportions of them will contribute to educational efforts for improving such personality traits.

Basic psychological needs are included in the Self Determination Theory (SDT), which is a motivation theory (Deci and Ryan, 2000; Ryan and Deci, 2000). Deci and Ryan (1995) state that just as a plant needs sun and water to grow, the basic psychological needs that are characterized as the main nutrient for development, integration, and health of the individual should be met. Just as, any one of water, air, and some minerals needed by the plant are missing, there would be disruptions in the development and health of the plant, development of the individual would also be disturbed if any one of these needs is not met (Deci and Ryan, 2000; Maralani, Shalbaf and Lavasani, 2018 ). In other words, all of these three needs must be met for healthy development. The satisfaction of these needs is also an important determinant of social development and well-being (Costa, S., Gugliandolo, M. C., Barberis, N., Cuzzocrea, F. and Liga, F. 2018; Prentice et al., 2018; Ryan and Deci, 2000). From this theoretical framework, it can be expected that there is a relationship between creative personality traits and basic psychological needs. This research aims to find out the direction and extent of this relationship.

The research also aims to determine the relationship between creative personality traits and attachment styles. It is known that attachment styles have important effects on individuals' performance, way of thinking, and human relations throughout their adult life. However, no study, which investigates the relationship between attachment styles and creative personality traits, was found in the literature.

Attachment styles refer to a concept introduced by Bowlby (1988) to explain the strong and deep emotional bond that the baby establishes with his/her caregiver, typically his/her mother, as from the moment of birth. Later, many researchers extended the attachment theory to explain the strong-emotional bonds in one's relationship throughout his/her adult life (Fearon, 2011).

Attachment theory suggests that the reactions of the mother and father to the child in the early stages of life constitute the mental schemas of the child regarding "himself" and "others", and these mental schemas affect close interpersonal relationships and psychological health in the subsequent years of life (Chen, Hewitt and Flett, 2015). According to the theory, individuals with the style of secure attachment (positive self and positive others) see themselves as worthy of loving and perceive others as reliable and supportive (Schmoeger et al., 2018). Furthermore, individuals with secure attachment styles have higher levels of self-esteem and autonomy. Such people do not feel uncomfortable with close interpersonal relationships, nor do they have any fear of being abandoned (Bartholomew and Horowitz, 1991). In case of any problem, they are more successful in solving and coping with it (Lopez et al., 2001). On the other hand, insecure attachment is associated with psychopathological conditions (Nakash-Eisikovits, Dutra and Westen, 2000); it is also reported to have negative relationships with variables such as self-efficacy, success, self-confidence, and risk-taking (Widom, Czaja, Kozakowski and Chauhan, 2018).

This information obtained from the literature on attachment styles suggests that the variable in question may have a relationship with creative personality traits. It is expected that the research will contribute to the literature by revealing to what extent the attachment styles can explain the creative personality traits.

### 1.1. The Aim of Research

The aim of the research conducted in line with the above described theoretical framework is to reveal the effect of basic psychological needs on creative personality traits. Within the scope of this general-purpose, answers to the following questions were sought:

1. What is the direction and extent of creative personality traits' correlation with basic psychological needs and attachment styles?
2. To what extent do secure attachment and insecure attachment explain creative personality traits in general?

3. To what extent do secure attachment and insecure attachment explain the goal-orientedness, internal motivation, risk-taking, and self-confidence aspects of creative personality traits?
4. What is the effect of basic psychological needs on creative personality traits in general?

## 1.2. Limitations and Recommendations

The study was limited to a sample of 18-24 age groups. Conducting studies on young adulthood and adulthood will provide a better understanding of creative personality traits. Descriptive survey method was administered in the study. The research that will be conducted in the experimental and quasi-experimental design with individuals will provide findings of high internal consistency. The results of this study can be used in both preventive and curative psychological support studies.

## 2. Method

This section contains information about the research method.

### 2.1. Study Group

The study was conducted on 507 participants aged between 17 and 24. Data collection tools were applied to all students who were willing to participate in the study in accordance with the principle of volunteering and 27 of the 534 participants were excluded from the assessment due to their lack of scales. Demographic characteristics of the participants are shown in Table 1.

**Table 1.** Demographic characteristics of study group

Gender	N	%	Age	N	%
Female	303	59.8	17-18	124	24.5
Male	204	40.2	19-20	145	28.6
Total	507	100.0	21-22	136	26.8
			23- 24	102	20.1

### 2.2. Data Collection Tools

**Creative Personality Traits Scale:** Creative Personality Traits Scale was developed by Şahin and Danisman (2017). The scale has a four-factor structure consisting of 17 items. Sub-dimensions of the scale; It has been named as purpose orientation, internal motivation, self-confidence, risk-taking. The internal consistency coefficients of the scale are .65 for task oriented, .60 for internal motivation, .64 for self-confidence, and .64 for risk-taking. High scores for sub-dimensions and overall scale indicate high creative personality traits.

**Basic Psychological Needs Scale:** Basic Psychological Needs Scale (TPRS) developed by Gagne (2003); It consists of 21 items related to autonomy ( $\alpha = 0.69$ ), proficiency ( $\alpha = 0.71$ ) and relationship ( $\alpha = 0.71$ ). The scale, which is rated as 7-point Likert type, was adapted to Turkish culture by Kesici, Ure, Bozgeyikli and sunbul (2003). In this study, internal consistency coefficients for autonomy, proficiency and relationship need sub-dimensions are as follows; 0.73, 0.73 and 0.60; it was calculated as 0.76 for the overall scale. As the score increases, the individual feels more psychological needs are met, and as the score decreases, it is understood that he is psychologically disabled.

**Relationship Scales Questionnaire:** The Attachment Styles Scale is intended to measure four adult attachment styles, by Griffin and Bartholomew (1994), secure, fearful, preoccupied, and dismissing.. The scale, adapted to Turkish culture by Sümer and Güngör (1999), consists of 17 items. Scale; it has secure, fearful, preoccupied, and dismissing attachment dimensions. However, it can be evaluated in two dimensions as secure attachment and insecure attachment. Internal consistency coefficient of the scale was reported as .67. The increase in points in each dimension indicates the dominance of that attachment style.

Before testing the models of the research, first-level confirmatory factor analysis was applied to all three scale tools, and internal consistency coefficients were calculated. The results obtained from this analysis are shown in Table 2.

**Table 2.** First Level Confirmatory Factor Analysis and Internal Consistency Results of Scales

Scale Model	$\Delta X^2/sd$	GFI	CFI	RMSEA	Factor Loads	Internal Consistency ( $\alpha$ )	Kendall's W
<b>Attachment Styles</b>	3.415	.914	.863	.073	.30 - .69	.703	.095, p=.000
<b>Basic psychological needs</b>	1.372	.977	.974	.032	.32 - .56	.785	.026, p=.000
<b>Creative personality traits</b>	2.947	.911	.876	.074	.27 - .66	.756	.119, p=.000

According to the results, the first-level confirmatory factor analysis conducted to test the validity of the scales used in the research, three items of the attachment styles (AS15, AS16, and AS17) with low factor loads and item-total correlations, and six items (PN4, PN15, PN17, PN18, PN19, and PN20) of the basic psychological needs were excluded from the analysis. After this procedure, the goodness of fit values of all three scales were found to be within acceptable limits, and their internal consistency coefficients were found to be high. The structures tested according to the obtained values and internal consistency findings were verified (Bayram, 2013:78; Meydan and Sesen, 2015:37; Karagoz, 2016:975). In addition to these analyses, descriptive statistical values were calculated to control the distribution of the collected data. The results obtained from this analysis are shown in Table 3.

**Table 3.** Descriptive Statistics

	Attachment		Basic psychological needs					Creative personality traits			
	Secure	Insecure	autonomy	proficiency	relationship need	Scale Overall	purpose orientation	internal motivation	confidence self-	risk-taking	Scale Overall
<b>N</b>	<b>804</b>	<b>804</b>	<b>804</b>	<b>804</b>	<b>804</b>	<b>804</b>	<b>804</b>	<b>804</b>	<b>804</b>	<b>804</b>	<b>804</b>
<b>Lost value</b>	0	0	0	0	0	0	0	0	0	0	0
<b>Mean</b>	19,1	50,2	27,0	24,4	31,6	83,1	14,9	16,2	12,4	8,3	51,8
<b>Median</b>	19,00	50,00	27,00	24,5	33,0	84,00	15,0	16,0	12,0	8,0	52,0
<b>Mode</b>	19,00	52,00	27,00	24,0	34,0	87,0	14,0	17,0	14,0	9,00	48,0
<b>Std. Deviation</b>	5,60	11,07	3,83	3,66	5,11	10,57	3,67	4,39	3,41	2,7	10,8
<b>Skewness</b>	0,05	0,04	-0,40	-0,32	-0,64	-0,75	-0,10	0,02	0,00	0,02	-0,04
<b>Std. Error of Skewness</b>	0,09	0,09	0,09	0,09	0,09	0,09	0,09	0,09	0,09	0,09	0,09
<b>Kurtosis</b>	-0,21	0,05	0,68	0,21	0,23	1,35	-0,08	-0,70	-0,45	-0,45	-0,05
<b>Std. Error of Kurtosis</b>	0,17	0,17	0,17	0,17	0,17	0,17	0,17	0,17	0,17	0,17	0,17

As seen in Table 3, the collected data is normally distributed. This shows that the data is suitable for analysis.

### 2.3. Data Analysis

The data obtained from the study were analyzed by using SPSS (Statistical Package for Social Sciences) for Windows 22.0 and Amos 22.0 program. Descriptive statistical values, skewness and kurtosis values were used to test the suitability of the data for normal distribution and internal consistency coefficients were calculated to test the reliability of the scales. 19 extreme values determined by the Boxplot method were excluded from the analysis. In order to determine the effect of basic psychological needs and attachment styles on creative personality traits, three models were created and theoretical models were tested using structural equation modeling. RMSEA, CFI, IFI, GFI, AGFI and CMIN/DF scores were calculated to determine the goodness of fit of the models established in this respect and then the results were interpreted through the Standardized  $\beta$ , standard error and  $R^2$  values.

### 3. Findings

In the research, firstly, the measurement model was tested. To this end, a model including secure and insecure attachment, basic psychological needs, and creative personality characteristics, which are the variables of the research, was established, and the relationship among these variables was shown. The results of the measurement model are shown in Figure 1.

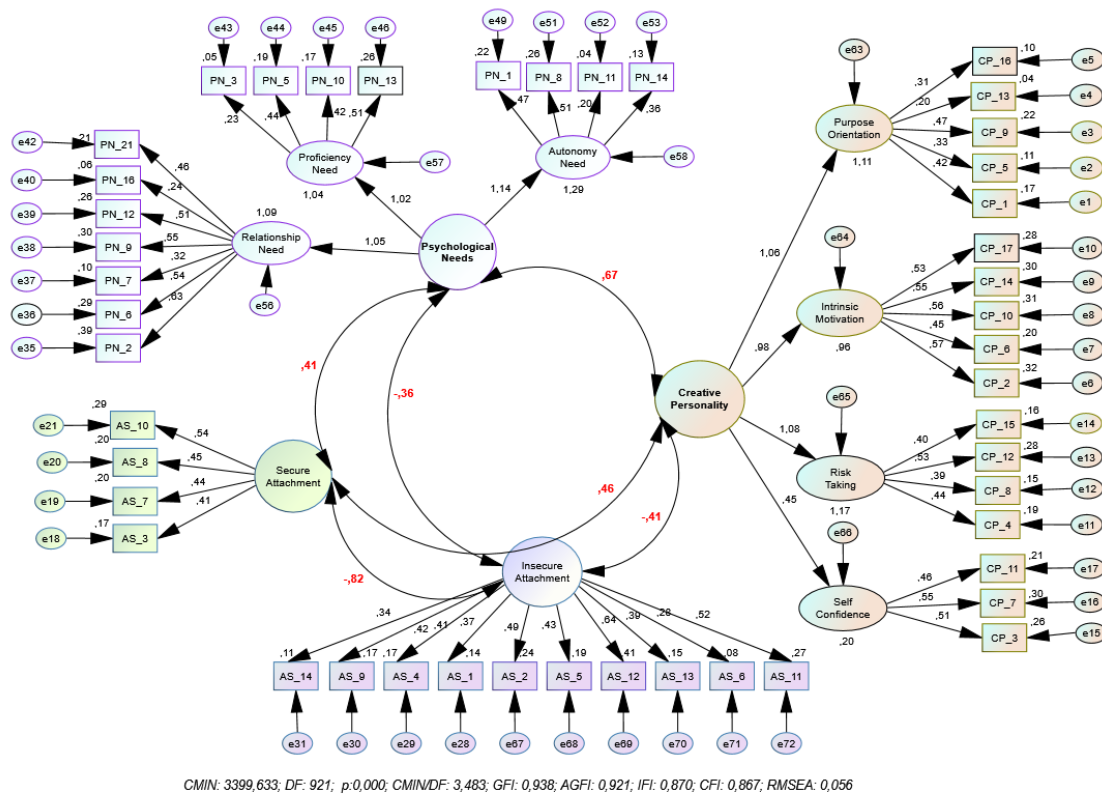
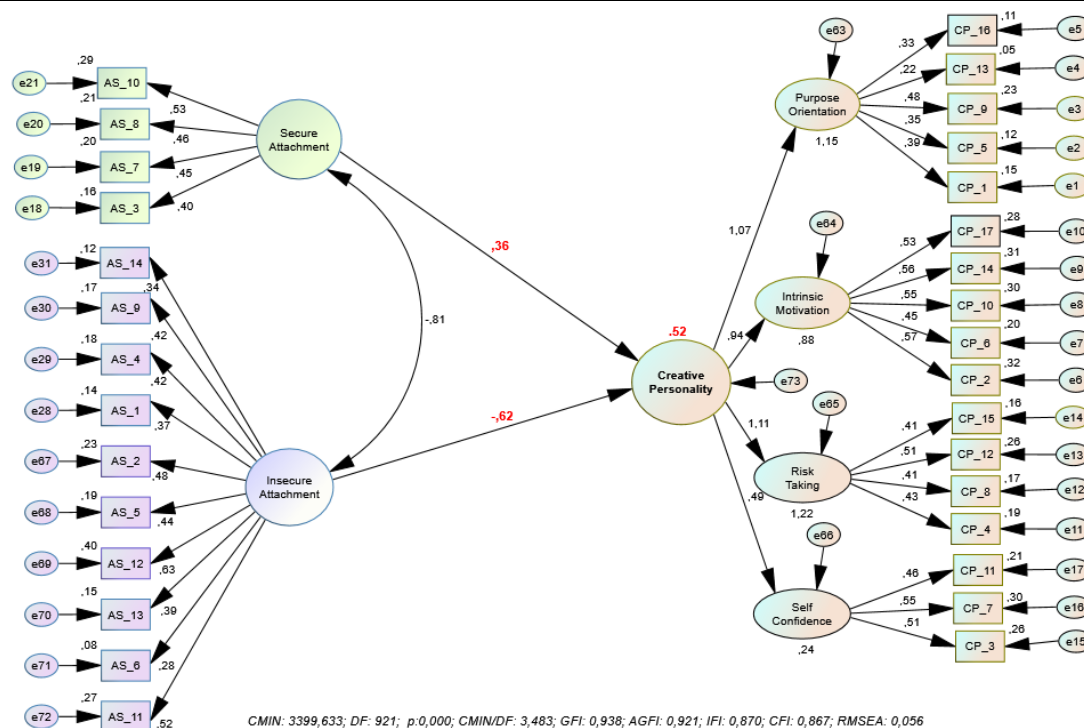


Figure 1. Measurement Model.

The goodness of fit values of the measurement model were calculated as follows:  $\chi^2/df = 3.483$ ,  $GFI = .938$ ,  $AGFI = .921$ ,  $IFI = .870$ ,  $CFI = .867$  and  $RMSEA = .056$ , and the results were found to be within acceptable limits. As seen in Figure 1, the creative personality traits have a highly positive significant relationship with the basic psychological needs ( $r = .669$ ,  $p < .05$ ), a moderately negative significant relationship with insecure attachment ( $r = -.408$ ,  $p < .05$ ), and a moderately positive significant relationship with secure attachment ( $r = .456$ ,  $p < .05$ ). A moderately positive significant relationship ( $r = .412$ ,  $p < .05$ ), was calculated between the basic psychological needs and secure attachment, and a moderately negative significant relationship ( $r = -.356$ ,  $p < .05$ ) was found between the basic psychological needs and insecure attachment. A high level of negative significant relationship was found between secure attachment and insecure attachment ( $r = -.820$ ,  $p < .05$ ). These values show that the measurement model has been validated.

After validation of the measurement model, the overall effect of secure and insecure attachment on the creative personality traits was tested. The model established for this purpose and the results obtained are shown in Figure 2.



**Figure 2.** The Effect of Secure and Insecure Attachment on Creative Personality Traits.

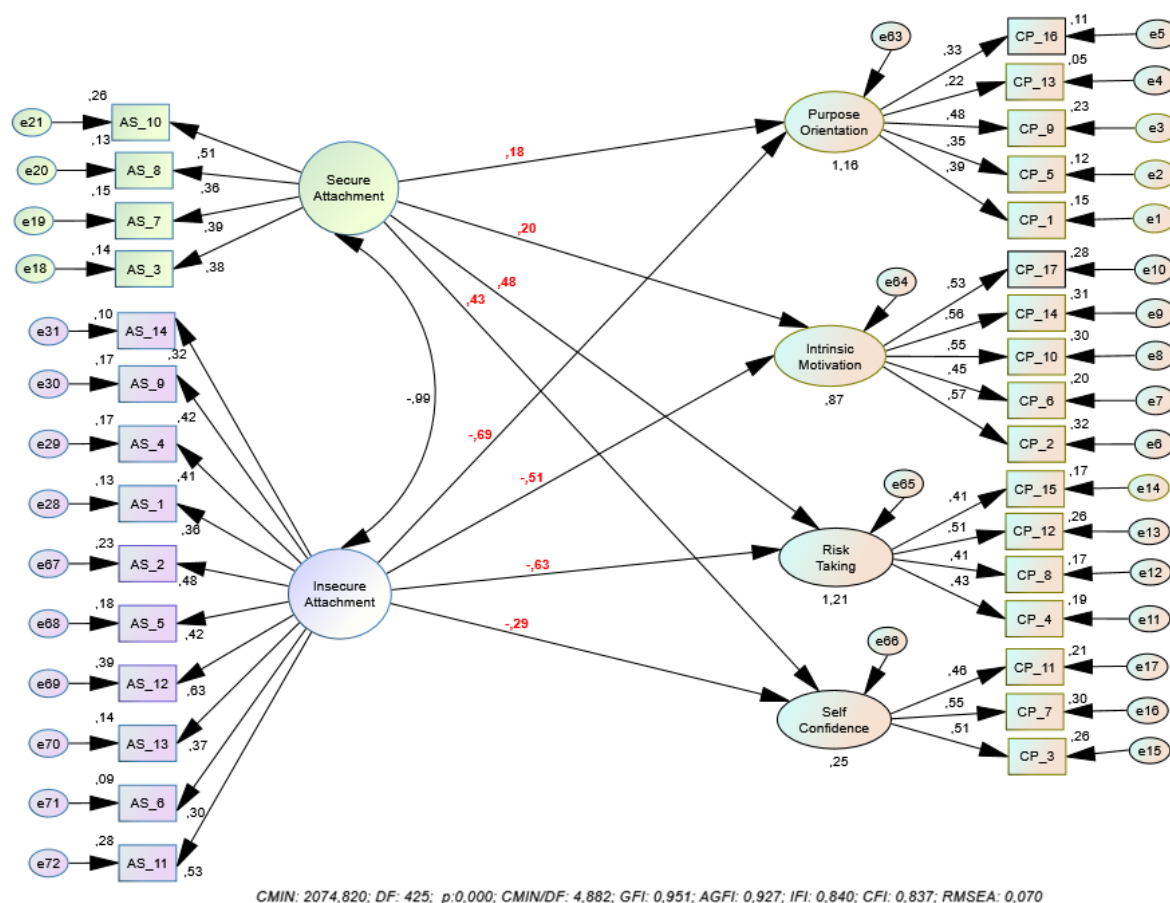
The goodness values of the model, which was established to test the impact of secure and insecure attachment on the creative personality traits in general were calculated as follows;  $\chi^2/Df = 3.483$ ,  $GFI=.938$ ,  $AGFI=.921$ ,  $IFI=.870$ ,  $CFI=.867$  and  $RMSEA=.056$ , and the results were found to be within acceptable limits. Standardized beta, standard error, and significance values of the relationship lines from secure and insecure attachment styles to creative personality traits are shown in Table 4.

**Table 4.** The Effect of Safe and Insecure Attachment Styles on Creative Personality Traits

Hypothesis Relationships	Standard $\beta$	Standard Error	$p$	Acceptance/Rejection
Secure attachment → creative personality traits	.362	.062	.00	Accept
Insecure → creative personality traits	-.624	.086	.00	Accept

As seen in Table 6, secure attachment has a significant positive effect on creative personality traits ( $\beta=.362$ ,  $p<.05$ ). On the other hand, insecure attachment has a significant negative effect on creative personality traits ( $\beta=-.624$ ,  $p<.05$ ). Both attachment styles are significant predictors of creative personality traits. However, according to the standardized regression coefficients, insecure attachment appears to have a relatively greater effect on creative personality compared to the effect of the secure attachment. Both attachment styles together account for 52% of the change in creative personality traits scores.

The scale of creative personality traits used in the research have sub-dimensions of goal orientation, internal motivation, self-confidence, and risk-taking. In order to test the impact of secure and insecure attachment on each of these sub-dimensions, the third model of the research was created and analyzed. This model and its results are shown in Figure 3.



**Figure 3.** The Effect of Secure and Insecure Attachment on Sub-Dimensions of Creative Personality Traits

The goodness values of the model, which was established to test the effect of secure and insecure attachment on the creative personality traits in general were calculated as follows:  $\chi^2/df = 4.882$ ,  $GFI=.951$ ,  $AGFI=.927$ ,  $IFI=.840$ ,  $CFI=.837$  and  $RMSEA=.070$ , and the results were found to be within acceptable limits. Table 6 shows the standardized beta, standard error, and significance values of the relationship lines from secure and insecure attachment styles to the sub-dimensions of creative personality traits.

**Table 5.** The Effect of Secure and Insecure Attachment on Sub-Dimensions of Creative Personality Traits

Hypothesis Relationships	Standard $\beta$	Standard Error	$p$	Acceptance/Rejection
Secure attachment $\rightarrow$ purpose orientation	.181	,091	.210	Reject
Secure attachment $\rightarrow$ internal motivation	.202	,093	.222	Reject
Secure attachment $\rightarrow$ risk-taking	.484	,085	.003	Accept
Secure attachment $\rightarrow$ self-confidence	.433	,097	.005	Accept
Insecure attachment $\rightarrow$ purpose orientation	-.692	,070	.000	Accept
Insecure attachment $\rightarrow$ internal motivation	-.514	,093	.000	Accept
Insecure attachment $\rightarrow$ risk-taking	-.632	,071	.000	Accept
Insecure attachment $\rightarrow$ self-confidence	-.294	.094	.026	Accept

As seen in Table 5, secure attachment has a significant positive effect on risk-taking, which is one of the creative personality traits ( $\beta=.484$ ,  $p<.05$ ) and self-confidence ( $\beta=.433$ ,  $p<.05$ ). On the other hand, it was seen that secure attachment is not a significant predictor of purpose orientation ( $\beta=.181$ ,  $p>.05$ ) or internal motivation ( $\beta=.202$ ,  $p>.05$ ). It was found that insecure attachment has significant negative relationships with four sub-dimensions of creative personality traits, so it is a significant predictor of those four sub-dimensions. The order of effect of insecure attachment



on the creative personality traits is relatively as follows: purpose orientation ( $\beta=-.692$ ,  $p<.05$ ), risk-taking ( $\beta=-.638$ ,  $p<.05$ ), internal motivation ( $\beta=-.514$ ,  $p<.05$ ) and self-confidence ( $\beta=-.294$ ,  $p<.05$ ).

Figure 4 shows the model established to test the general effect of basic psychological needs, which is another independent variable of the research, on creative personality traits.

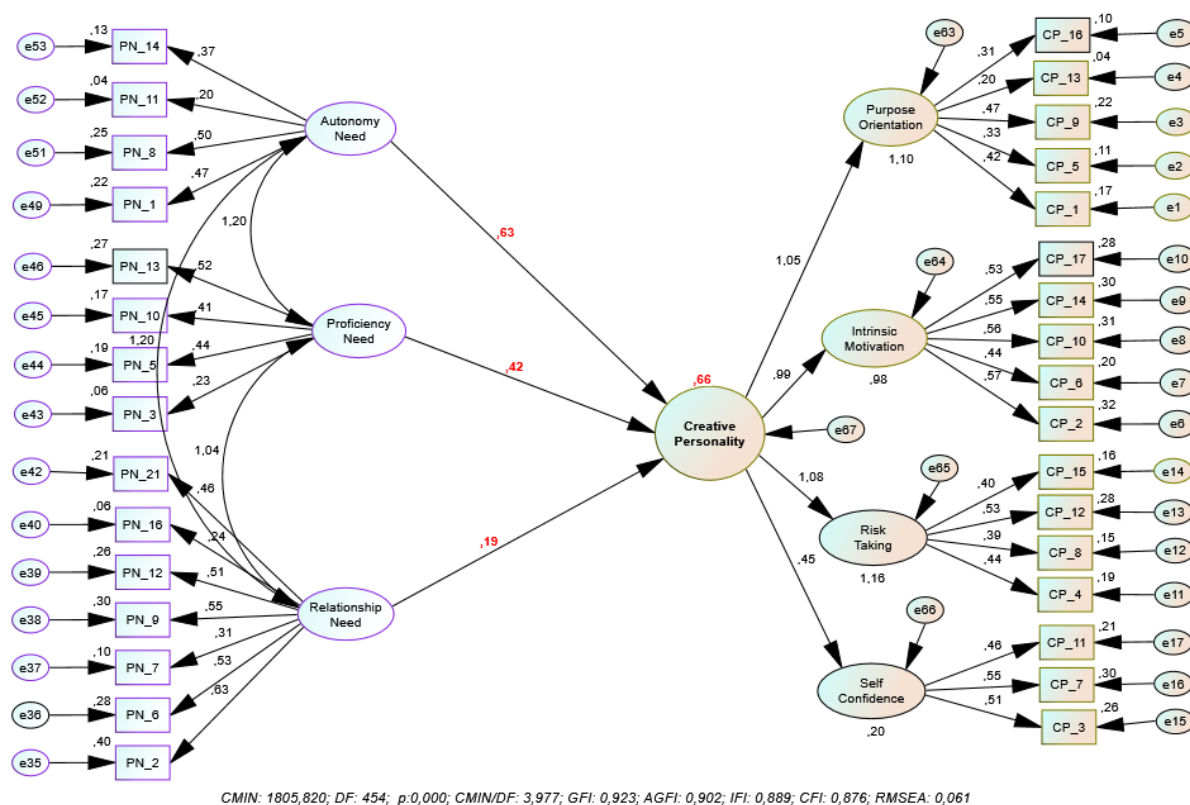


Figure 4. Effect of Basic Psychological Needs on Creative Personality Traits

The goodness values of the model, which was established in order to test the effect of the need for autonomy, self-efficacy, and relationship on creative personality traits in general are as follows:  $X^2/Df = 3.977$ ,  $GFI=.923$ ,  $AGFI=.902$ ,  $IFI=.889$ ,  $CFI=.876$  and  $RMSEA=.061$ , and the results were found to be within acceptable limits. Table 6 shows the standardized beta, standard error, and significance values of the relationship line from basic psychological needs to creative personality traits.

Table 6. Analysis Results of Basic Psychological Needs and Creative Personality Traits Model

Hypothesis Relationships	Standard $\beta$	Standard Error	$p$	Acceptance/Rejection
Autonomy $\rightarrow$ Creative Personality Traits	.632	.048	.000	Accept
Proficiency $\rightarrow$ Creative Personality Traits	.422	.065	.000	Accept
Relationship $\rightarrow$ Creative Personality Traits	.191	.080	.057	Reject

As seen in Table 6, autonomy ( $\beta=.632$ ,  $p<.05$ ) and proficiency ( $\beta=.422$ ,  $p<.05$ ), which are among the basic psychological needs, are significant predictors of creative personality traits. On the other hand, the correlation between the need for relationship and creative personality traits was not found significant ( $\beta=.191$ ,  $p>.05$ ). The three dimensions of basic psychological needs together explain 66% of the change in creative personality traits scores.

In order to further see the effect of basic psychological needs on creative personality traits, Model 5 was established. This model was used to test the impact of autonomy, proficiency and relationship needs on the sub-dimensions of creative personality traits (purpose orientation, intrinsic motivation, risk-taking, and self-confidence).



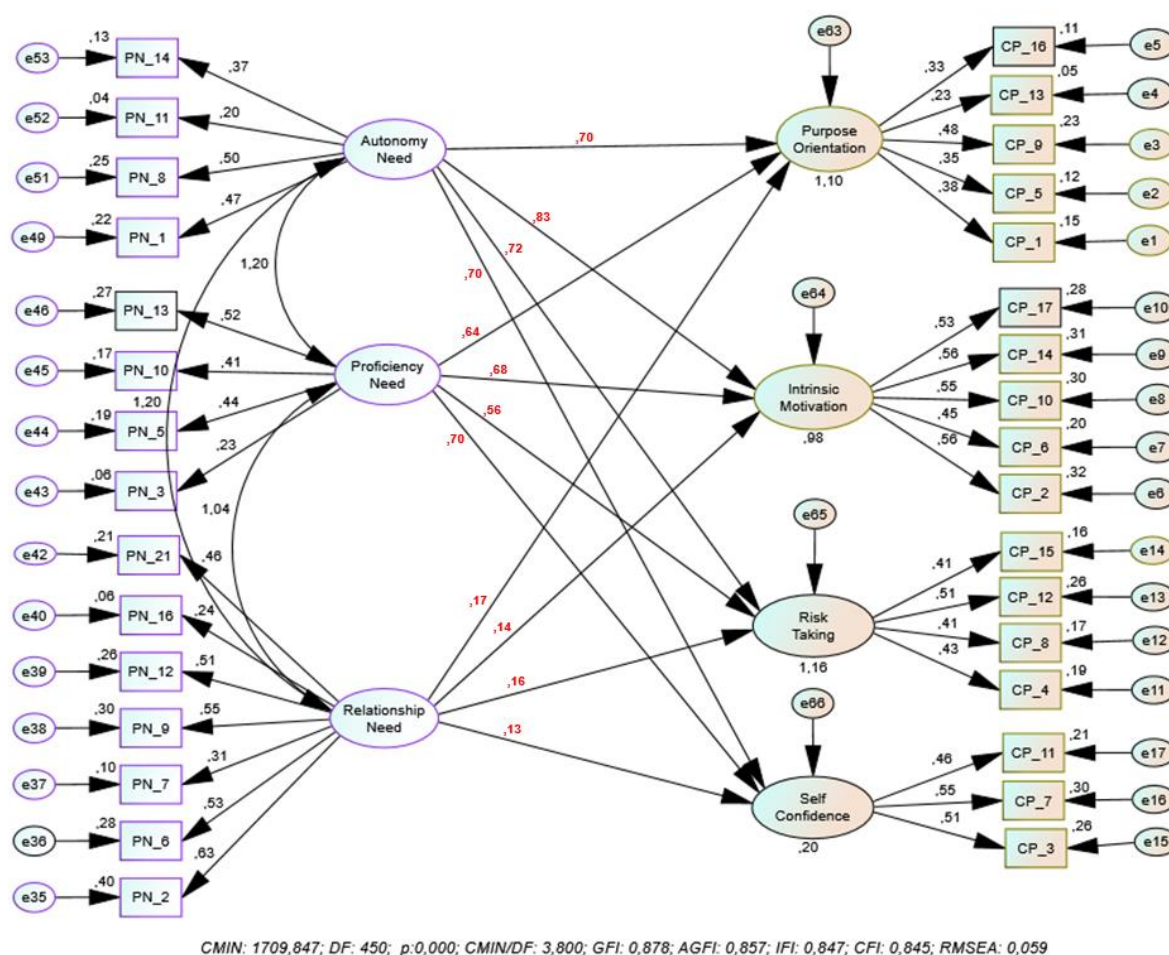


Figure 5. The Effect of Sub-Dimensions of Basic Psychological Needs on Creative Personality Traits

The goodness of fit values of the Model 5 were calculated as follows;  $\chi^2/Df = 3.800$ ,  $GFI=.878$ ,  $AGFI=.857$ ,  $IFI=.847$ ,  $CFI=.845$  and  $RMSEA=.059$ , and the results were found to be within acceptable limits. Table 7 shows the standardized beta, standard error, and significance values of the relationship line from basic psychological needs to creative personality traits.

Table 7. Analysis Results of the Model Between the Relationship between the Sub-Dimensions of Basic Psychological Needs and Creative Personality Traits

Hypothesis Relationships	Standard $\beta$	Standard Error	p	Acceptance /Rejection
Autonomy <sup>1</sup> → purpose orientation	.702	.032	.000	Accept
Autonomy → internal motivation	.834	.064	.000	Accept
Autonomy → risk-taking	.723	.059	.000	Accept
Autonomy → self-confidence	.700	.051	.000	Accept
Proficiency → purpose orientation	.564	.044	.000	Accept
Proficiency → internal motivation	.682	.061	.000	Accept
Proficiency → risk-taking	.564	.043	.000	Accept
Proficiency → self-confidence	.704	.087	.000	Accept
Relationship → purpose orientation	.172	.231	.149	Reject
Relationship → internal motivation	.141	.092	.577	Reject
Relationship → risk-taking	.163	.188	.158	Reject
Relationship → self-confidence	.132	.114	.609	Reject

When Table 7 is reviewed in general, it can be said that autonomy and self-efficacy, which are among the basic psychological needs, significantly predict all four sub-dimensions of creative personality traits. It was seen that the autonomy need mostly affect internal motivation ( $\beta=.834$ ,  $p<.05$ ), and the need for self-efficacy mostly affect self-confidence. On the other hand, the effect of the relationship need on the four sub-dimensions of creative personality traits was not found statistically significant.

### 3. Results and Discussion

Children who do something in a different way from the usual method were being scolded for "making invention" in Turkey 40-45 years ago. Pursuant to the "World Intellectual Property Indicators 2018 Overview and Assessment Report (WIPO)" prepared according to the data of 2016, Turkey ranked 23th out of 26 countries evaluated in world patent ranking (Schmoch, 2018). Explaining the presence and proportion of individuals with creative personality traits in a country with the annual patent acquisitions in that country may not be a scientific finding. However, when the personality traits of creative individuals are examined, it can be said that societies, where these personality traits are encountered in a small number, will not take place near the top in terms of invention and innovation.

Creative personality can develop only in favorable environments (Jauk et al., 2019). Many studies on creativity show that creative personality traits are greatly affected by environmental factors (Hennessey and Amabile, 2010; Glăveanu, 2010; Chua, Roth, and Lemoine, 2015). Among these environmental and cultural factors, the roles of the school (Beghetto, 2007; 2010) and the family (Kwaśniewska, Gralewski, Witkowska, Kostrzewska and Lebuda, 2018) environments are especially important.

The research revealed that attachment styles significantly determine creative personality traits. Approximately two-thirds of creative personality traits can be explained by attachment styles. Secure attachment has a positive significant effect, and insecure attachment has a negative significant effect on creative personality traits. The beta value of the relationship between insecure attachment and creative personality traits is three times greater than that calculated between secure attachment and creative personality traits. This shows that the insecure attachment style has a stronger effect on creative personality traits compared to secure attachment. The study also revealed that both secure attachment and insecure attachment are mostly effective on internal motivation and risk-taking among the creative personality traits.

Considering that attachment styles, which are rooted in babyhood and known to retain their structure in adulthood, are shaped in the family environment, the finding related to the effect of secure attachment on the raising individuals with creative personality traits seems to be understandable and reasonable. The finding that attachment styles mostly account for internal motivation and risk-taking among the creative personality traits has special importance in this respect. The studies on creativity report that the creative individuals have strong internal motivation (Zhang and Bartol, 2010; Zhu, Gardner and Chen, 2018) and high risk-taking traits (Shen, Hommel, Yuan, Chang and Zhang, 2018; Tyagi, Hanoch, Choma and Denham, 2018). Findings of this and similar studies support this result obtained in the present research.

Although there is no study that directly tests the relationship between attachment styles and creative personality traits, it is seen that the results of various studies on attachment styles also support the findings of the research. A study conducted on individuals observed from childhood to adulthood found that individuals who are securely attached to their parents have higher academic performance, social and emotional functionality. Researchers emphasize that any effort to prevent insecure attachment to parents will support success, functionality, and psycho-social development (Holt, Mattanah and Long, 2018). A similar study reports that neglect and abuse experiences in childhood have negative effects on attachment styles, and this has a negative effect on mental health even after 30 years (Widom, Czaja, Kozakowski and Chauhan, 2018). Schmoeger et al. (2018) emphasize that individual differences in the secure attachment between the child and parents form the basis of self-confidence or insecurity toward subsequent developments. Considering that the aspects of creative personality traits are purpose orientation, internal motivation, self-confidence, and risk-taking, the relationship between attachment styles and creative personality traits is consistent with the literature summarized above.

The other independent variable of the research is basic psychological needs. The research suggests that two thirds (66%) of creative personality traits are determined by the satisfaction level of basic psychological needs. Self-determination theory states that three universal psychological needs (autonomy, self-efficacy, and attachment) affect all aspects of

human function (Filak and Nicolini, 2018) and people's performance and psychological well-being depend on the satisfaction level of these needs (Deci, Vallerand, Pelletier, and Ryan, 1991). It is emphasized that basic psychological needs can be explained with people's tangible assets and income levels only to some extent, whereas variables such as learning, autonomy, and finding an opportunity to use one's skills are directly related to the satisfaction level of the psychological needs (Diener, Ng, Harter and Arora, 2010). Considering that creative personality traits develop depending on the appropriate psycho-social environment conditions (Hancox, Quested, Ntoumanis and Duda, 2017), and satisfaction of basic psychological needs also has a key role among the psycho-social environment conditions (Freer and Evans, 2018), the high relationship between the basic psychological needs and the creative personality traits is understandable and reasonable. In a study conducted with university students, it was observed that variables belonging to both in-school and out-of-school psychological environments have an impact on the creativity of the students, and particularly, internal motivation is affected more by out-of-school variables (Agnoli, Runco, Kirsch and Corazza, 2019). Saliceti (2015) emphasizes that creativity cannot develop in the traditional social structure and its schools, and educational environments that take into account and meet the psycho-social needs of students are needed to get the students to gain creativity and critical thinking.

Although the autonomy and proficiency which are among the basic psychological needs, significantly explain the four sub-dimensions of the creative personality traits, the effect of the relationship need on the four sub-dimensions of the creative personality traits was not found statistically significant. This can be interpreted as that the relationship need is not as important as the need for autonomy and self-efficacy for individuals with creative personality traits. Several studies in the literature also support this finding. In a study examining the relationship between creativity and loneliness among gifted secondary school students, loneliness was found to be a preferred situation by gifted students (Ogurlu, Yalin, and Birben, 2018). Another study's findings indicate that shyness is related to creativity (Bowker, Stotsky and Etkin, 2017). Based on the results of this study, Bowker et al. (2017) state that social withdrawal has a beneficial aspect such as improving creativity, and young people who like to spend time on their own should not be considered asocial, and such individuals are more successful in creative thinking and developing new ideas.

The high relationship between the creative personality traits and the autonomy and proficiency needs, which was observed in the present research is consistent with the Self-Determination Theorists opinions that the need for autonomy is determinant of will, willingness, choices, and competence to dominate the environment (Gagné & Deci, 2014); and that the sense of self-efficacy of the individuals whose autonomy need is not satisfied adequately decreases (Deci and Ryan, 2014). According to the representatives of the same theory, internal motivation is the strongest determinant of creative success (Ryan and Deci, 2017). The present study revealed that the basic psychological needs most strongly account for the internal motivation dimension of creative personality traits.

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#### Conflict of Interest

it has been reported by the authors that there is no conflict of interest.

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