

# An Investigation Of Styles Of Learning For Openness Traits Of Personality: A Correlational Study

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## Abstract

The purpose behind this correlational study was to establish the relationship between students' learning styles and openness personality traits. For this research, the population consisted of all the public university students from province of the Punjab. Multi-stage sampling technique was used to select 1,000 students from 10 universities of Punjab. 'NEO-BFI' developed by Costa & McCrae in 2010 (having 44-items for measuring personality traits) and LSI developed in 2005 by Kolb & Kolb (consisting of 10 factors for measuring learning styles) were used simultaneously to collect the required data. Both these instruments were standardized. Pearson correlation was applied for analyzing the data to find out the relationship between styles of learning and openness trait of personality. The study concluded that, there was a significant relationship between openness (personality trait) and styles of learning (assimilating and accommodating). Hence, openness personality trait has strong positive correlation with the assimilating and positive correlation with accommodating styles of learning.

**Keywords:** personality traits, openness, learning styles, higher education.

## Introduction

Personality is defined as an inborn temperament, features arising in different situations and a combination of the characteristics of a person which separate him/her from other people (Zimmerman, 2000). There are so many theories as well as models of personality that attempt to explain different aspects of the human's personality accurately (Connor & Paunonen, 2007). In psychology, the term used to explain five personality traits of individuals is called 'Big Five'. In modern era, also known as 'five factor model'.

The understanding about big five personality traits will help the human beings to grasp better about the concept of traits of personality (Mehrad et al. 2015). In this study Researcher used big five personality traits as independent variable to identify the personality of individuals. These are big five traits of personality:

- Openness
- Conscientiousness
- Extraversion
- Agreeableness
- Neuroticism

The present study will be focus on the openness trait of personality and learning styles of students.

### **Openness**

Among the big five personality traits, this trait involves the highest cognitive aspects. In this respect, individuals with a high level of openness are imaginative, adventurous, original, creative, curious, self-reflecting, while individuals with a lower level of openness are traditional, conservative, and are regarded to be uncaring (Ytterstad & Olaisen, 2023).

Openness involves personality features such as scientific and artistic creativity, divergent thinking, imagination, originality, sophistication and a high sense of wonder.

### **Learning Styles**

Learning styles consist of strategies such as superficial or deep processing of information, holistic and serial processing of knowledge, detailed processing of knowledge, retention and systematic recalling (Chouhan et al., 2023).

Rollin (1990) also described that styles of learning show the differences in the students in the way students collect information, process them as well as understand the information. Rollin also stated that students have a tendency to keep themselves in the situations where they can learn and use their styles of learning more preferably.

Kolb (1984), has revealed that “learning styles are influenced by personality type, educational specialization, career choice, and current job role and tasks” (Kolb and Kolb, 2005, p. 9).

Kolb’s (1984) classified learning into four stages or types of learning in his LSI (Learning Styles Inventory).

Kolb’s (1984) used the following terms for styles of learning

- Assimilating (AC/RO)
- Diverging (CE/RO)
- Converging (AC/AE)
- Accommodating (CE/AE)

### **Assimilating**

Plan making and problem-solving skills are high in individuals who have divergent style of learning. However, they are insufficient in practical studies and learning behaviors concerning practical values and ideas. These individuals also choose to receive the information from experts and see teachers as the most important source of information. Since they usually tend to learn by listening and observing, they are better with the traditional learning approaches (Suliman, 2006).

### **Diverging**

Individuals with diverging learning style (concrete experience and reflective observation dimensions) are dominant. In a given situation, instead of taking actions immediately, they make observations at first. They have developed thinking skills and are aware of meanings and values (Schunk, 2008). These individuals take into account their own feelings and thoughts while configuring learning issues. They are also creative. They are quite successful at brainstorming activities when alternative ideas need to be created (Ibrahimoglu et al, 2013).

### **Converging**

Individuals with converging learning style use abstract conceptualization and active experiential learning paths. With these individuals, problem solving, logical analysis and deductive reasoning skills are higher. They prefer to reach the correct information by trial and error method, also by applying what they learn and they often require feedback from the teacher (McLeod, 2017).

### **Accommodating**

For individuals with accommodating learning style, capabilities of learning through concrete and active life are in the foreground. Their curiosity and research motivation are high and since they are sociable, they can easily communicate with other individuals (Nicolette et al, 2023).

The source of the relationship between personality and learning styles is based on the Theory of Personality Types (Jung, 1927). Personality traits and learning styles are so intertwined with each other that personality shapes an important aspect of learning style. Learning strategies do not work on their own but are directly dependent on the learner's learning style and other personality variables (Tan & Abdullah, 2012). According to Schmeck (1988), learning styles should be considered and evaluated in the context of the overall personality factors such as introversion-extraversion, mindfulness-thoughtlessness, self-esteem, self-competence, productivity, anxiety and motivation (Schmeck, 1988). Studies in the literature as Fallan, (2006) showed that personality types have effects on learning styles. Research on the role of personality in the learning process has increased rapidly especially in the last 20 years (Threeton & Walter, 2009).

### **Statement of the problem**

Keeping in view the above discussion, the importance of personality traits and its relationship with different learning styles among students, the researcher has designed a study to predict the learning styles of students with openness personality traits and investigating the relationships among openness trait of personality and the learning style preferences of students at Graduation level in Higher Education.

### **Objectives of the study**

The aim of the study is to examine the relationship among openness trait of personality and the learning style preferences of students at

Graduation level in Higher Education. Following are the objectives of the study.

- To identify the learning styles of the participants
- To find out relationship between openness personality trait and learning styles (converging, diverging, Assimilating, and Accommodating) of students at Higher Education

### **Significance of the study**

This study is significant in the following areas:

- This study will be helpful for teachers to identify the students with openness personality traits and learning styles.
- Higher education Organizations will be provided with comprehensive experience of personality types and learning styles.
- It will be useful for Curriculum developers to enrich educational activities and curriculum to increase effectiveness
- Policy makers will also consider the personality traits while making policies for students of higher education
- This study will help the stakeholders of education to meet the needs of the students with different personality traits and learning styles

### **Hypothesis**

Following null hypotheses are tested by the investigation:

- **Ho1:** Openness (personality trait) has no relationship with converging learning style so Openness (personality trait) is not a significant predictor of converging learning style.
- **Ho2:** Openness (personality trait) has no relationship with assimilating learning style so Openness (personality trait) is not a significant predictor of assimilating learning style.

- **Ho3:** Openness (personality trait) has no relationship with diverging learning style so Openness (personality trait) is not a significant predictor of diverging learning style.
- **Ho4:** Openness (personality trait) has no relationship with accommodating learning style so Openness (personality trait) is not a significant predictor of accommodating learning style.

### **Delimitations of the study**

The study was delimited to: Students of graduation level in higher education of Public Universities of Punjab Province.

### **Methodology**

#### **Design of the Research**

The research was quantitative by nature and correlational by type. Correlational research was used to find out the relationship of traits of personality (introvert/extrovert, agreeableness, conscientious, neuroticism) and demography (age, race, sex, economic status, level of education, income level and employment, parental education) and learning styles (diverging, converging, assimilating and accommodating) of students at graduation level in Higher Education as “correlational research involves collecting data to determine whether, and to what degree, are relationships exists between two or more quantifiable variables” (Gay, Mills and Airasian, 1976, p.196). Openness personality traits and demography of students were independent variables while the learning styles of the students were dependent variables in this research. Primary source of data was used in this study. All the data was collected by the researcher herself personally. A survey method was used as a quantitative method to gather numerical data from a representative sample of subjects.

#### **Predictor variable**

“In a prediction study or analysis of concurrent or predictive validity, the variable on which the prediction is based (that is used to predict) is called as the predictor” (Gay, Mills and Airasian, 1976, p.605) . The researcher is using openness personality trait of the students as a mean to predict another variable (their learning styles). In a non-experimental research, predictor variable is the presumed “cause”. Predictor variable is often referred as independent variable. Independent variables are systematically manipulated by the researcher during research but the predictor variables aren’t manipulated by the researcher. In this study the predictor variable was the personality traits as well as the demography of the students in Higher Education.

#### **Criterion variable**

In a prediction study or analysis of concurrent or predictive validity, the variable, that is predicted is a complex variable called the criterion variable. In a non-experimental research, criterion variable is the presumed “effect”. Dependent variable is another name for criterion variable. However, both terms aren’t exactly interchangeable (as criterion variable is used only in non-experimental research. Learning styles were the criterion variables in the study as the researcher used the personality traits (as predictor variable) to predict the learning styles of students.

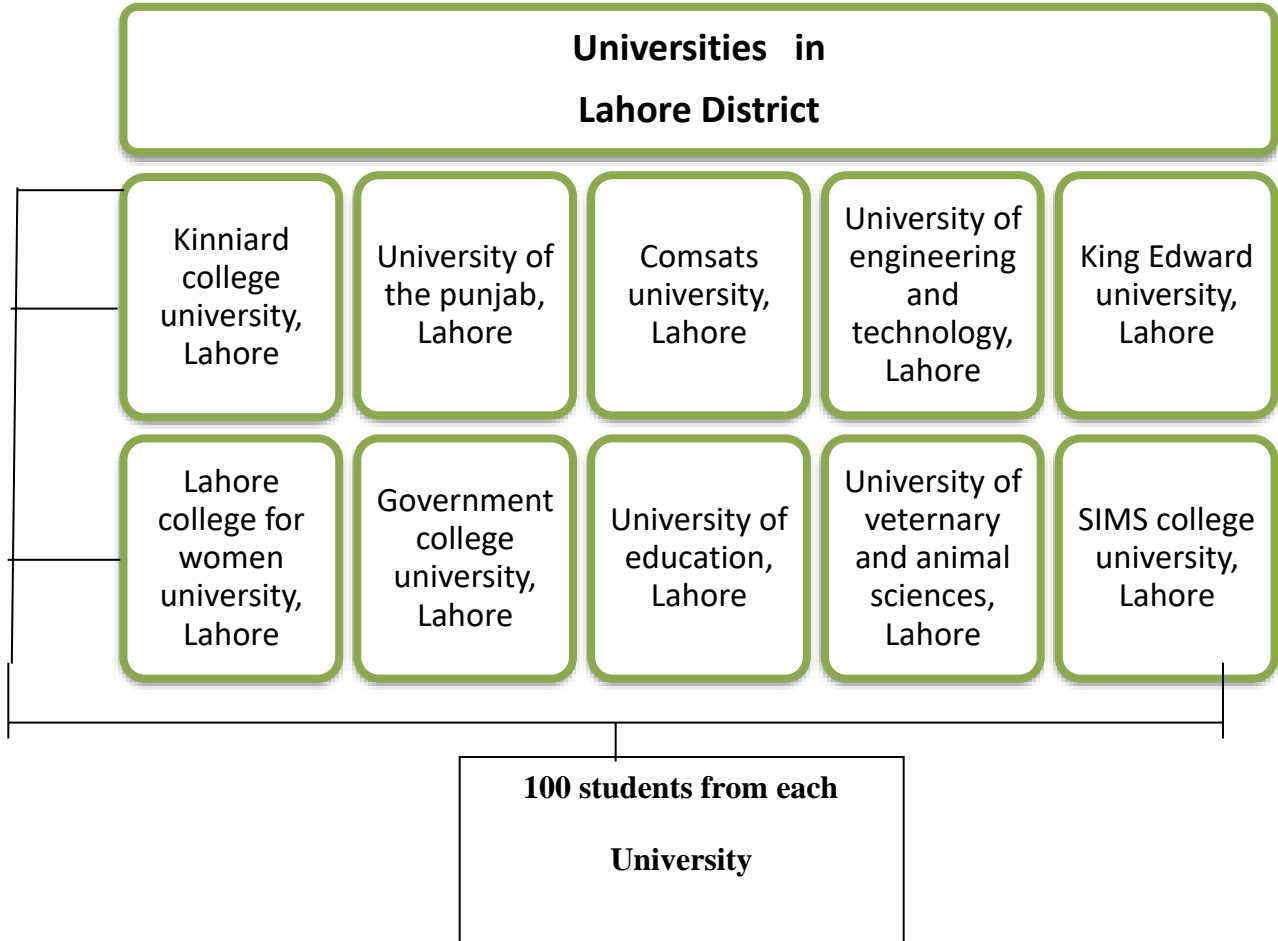
#### **Population and Sample of the study**

Students of Graduation level in Higher Education of government sector Universities in Province Punjab were the population of the study. Systematic random sampling technique was used to reduce the threats of internal validity of the research. The random sampling was used to select the sample from the target population of students of graduation level in Higher education. 10 universities were selected randomly because random sampling is the most useful method to get a representative and unbiased sample. 1000 students were selected randomly and were given

questionnaires to determine their openness traits of personality as well as demographical information and its relationship with learning styles. The researcher collected data about

openness personality traits and learning styles preferences from the students to find out their respective personality traits and their preferences in styles of learning.

**Flow chart for the distribution of sample**



**Tool of Investigation**

The researcher used standardized instruments to measure personality traits and learning styles. The standardized tool of the study for personality trait was (BFI) inventory by Costa & McCrae in 1983 and recreated by John & Srivastava in 1999, having 44-items of personality trait inventory that measures an individual on the Big Five Factors (dimensions) of personality – extroversion/introversion, agreeableness, openness, Conscientiousness and Neuroticism. In this Inventory, 5-point Likert-type questions are

valued, ranging from 1 to 5 (strongly agree, agree a little, neither agree nor disagree, disagree a little and strongly disagree). Researcher only selected the participants who have openness traits of personality and then collect data to identify their learning style preferences.

For measuring learning styles, Learning Style Inventory (LSI) inventory by Kolb & Kolb in 2003 was used having 10-items of learning style; converging, diverging, assimilating and accommodating. It consists of four dimensions, active experimentation (AE), reflective observation (RO), concrete experience (CE) and

abstract conceptualization (AC). There are 10 items in the scale and each item has four options (a, b, c, d) for ranking. In this scale, each option represents a single dimension. In the implementation of the survey, participants were asked to rank these provided four options from 1 to 4 (4 best and 1 least). Thus, lowest result score of this scale comes to be 10 while the highest result score appears to be 40. The Learning Style Inventory (LSI) describes the ways of learning and how to deal with ideas and day-to-day situations. The researcher was allowed to use these standardized tools accordingly copyright law of United States. "Under U.S. copyright law, every written work is automatically copyrighted at the moment of creation. The general rule is that any researcher may not copy and distribute a copyrighted work without permission. However, there are two major exceptions to this rule. The first exception is that if a copyright holder has declared a work to be public domain, then anybody can use it. The second exception is the so-called fair use doctrine. If any researcher is using intellectual property in a way that qualifies as fair use, researcher does not need to get permission to use it." (John & Srivastava, 1999, pp. 102-138).

### **Validity**

"Degree to which a test or instrument measures what it purports to measure" (Thomas & Nelson, 1996, p.57).

### **Reliability**

"The degree to which a test or measure produces the same scores when applied in the same circumstances" (Nelson, 1997, p. 64).

### **The Big five personality inventory's validity and reliability**

According to Elisabeth, Juliana & Frank (2012), "Cronbach's alpha for the five scales were as follows: Neuroticism = .66, Extraversion = .76, Openness = .58, Agreeableness = .44,

Conscientiousness = .60" (pp 355-359). The factors were determined to be ranging from .44 to .76 for the Cronbach's alpha reliability value, which meant that the scale was moderately reliable. This particular scale was used in the current study because it is brief and concise, which makes it suitable to be implemented in different cultures (Benet-Martinez & John, 1998).

### **The Learning Style inventory's validity and reliability**

According to "Conoley and Cramer (1989), "the internal consistency and test-retest reliability both showed high scores. The reliability testing for the revised edition included 982 graduate and undergraduate students. The four sections – Concrete Experience, Reflective Observation, Abstract Conceptualization, and Active Experimentation – had a Cronbach Alpha rating (internal reliability) of .82, .73, .83, and .78, respectively" (Kolb, 2016, p.1). In the current study, Kolb Learning Style Inventory (KLSI 3.0, Kolb, 1999), was used as a measuring tool, to determine the learning styles of the participant.

### **Procedure of data collection**

In the first phase, recreated version of BFI (The Big Five Inventory) by John & Srivastava (1999) was distributed in the randomly selected students of Graduation level in higher Education. Total 1000 questionnaires were distributed in the students of different Government universities in Lahore district. Each student spent thirty five to forty minutes to complete the questionnaire. Students were allowed to rank the characteristics of any personality trait in the questionnaire. The researcher analyzed the responses of the participants and determined their traits of personality by calculating the scores of their responses. From the obtained data, student's personality traits were divided in five types

(agreeableness, conscientious, neuroticism, openness and introvert/extrovert).

In the second phase, LSI (Learning Styles inventory) by Kolb (2003) was distributed randomly to the same sample of the students of graduation level in higher education. Total 1000 questionnaires were distributed in the students. Each student spent thirty to thirty five minutes for completing the questionnaire and the answers were coded according to the key prepared by the author of the tool.

The researcher herself personally distributed and collected the questionnaires from all the students. The return rate was around 87% and included more students to complete the target sample.

Participants from following universities were selected as the sample of the study:

1. Government College University, Lahore
2. Comsat University, Lahore
3. Kinnaird College for Women, Lahore

4. Lahore College for Women University, Lahore
5. University of Education, Lahore
6. University of Engineering & Technology, Lahore
7. SIMS college university, Lahore
8. University of the Punjab, Lahore
9. University of Veterinary & Animal Sciences, Lahore
10. University of King Edward, Lahore

#### Data analysis

Data was analysed by inferential statistics (Correlation). This study contained one predictor variable (openness traits of personality) and one dependent criterion variable (styles of learning) and their relationship. Researcher also described results in tabulated form for the better understanding of readers. The level of probability for CORRELATION was .05.

**Table 4.13 Correlation between Openness (personality trait) & diverging (learning Style)**

		Openness	Diverging
Openness	Pearson Correlation	1	-.019
	Sig. (2-tailed)		.556
	N	943	943

The above table 4.13 is showing the Pearson correlation test between Openness (personality trait) & diverging (learning style). The values were

$r(-.019)$  and the p-value ( $.000 > .556$ ). It showed insignificant relationship between openness

(personality trait) and diverging (learning style). Hence, openness personality trait has negative correlation with the diverging learning style. It depicts that diverging style of learning is not preferable style of learning for individuals who have openness traits of personality.

**Table 4.14 Correlation between Openness (personality trait) & assimilating (learning Style)**

		Openness	assimilating
Openness	Pearson Correlation	1	.581**
	Sig. (2-tailed)		.000
	N	943	943

The above table 4.14 is showing the Pearson correlation test between Openness (personality trait) & assimilating (learning style). The values were  $r (.581^{**})$  and the p-value ( $.000 = .000$ ). It showed significant relationship between openness

(personality trait) and assimilating (learning style). Hence, openness personality trait has strong positive correlation with the assimilating learning style. So, it is concluded that individuals with openness traits of personality prefer to learn through assimilating style of learning.

**Table 4.15 Correlation between Openness (personality trait) & converging (learning Style)**

		Openness	converging
Openness	Pearson Correlation	1	.024
	Sig. (2-tailed)		.468
	N	943	943

The above table 4.15 is showing the Pearson correlation test between Openness (personality trait) & converging (learning style). The values were  $r (.024)$  and the p-value ( $.000 > .468$ ). It showed insignificant relationship between openness

(personality trait) and converging (learning style). Hence, openness personality trait has negative correlation with the converging learning style. So, the individuals who have openness traits of personality do not prefer to learn through converging style of learning.

**Table 4.16 Correlation between Openness (personality trait) & accommodating (learning Style)**

		Openness	Accommodating
Openness	Pearson Correlation	1	.924**
	Sig. (2-tailed)		.000



N	943	943
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The above table 4.16 is showing the Pearson correlation test between Openness (personality trait) & accommodating (learning style). The values were

$r (.924^{**})$  and the p-value  $(.000=.000)$ . It showed significant relationship between openness (personality trait) and accommodating (learning style). Hence, openness personality trait has strong positive correlation with the accommodating learning style. So, it is concluded that individuals who have openness traits of personality love to learn through accommodating style of learning. It is most preferable style of learning for them.

### Conclusion

In the light of findings above, following conclusions have been extracted:

- There was an insignificant relationship between openness (personality trait) and diverging (learning style). Hence, openness personality trait has negative correlation with the diverging learning style
- There was a significant relationship between openness (personality trait) and assimilating (learning style). Hence, openness personality trait has strong positive correlation with the assimilating learning style.
- There was an insignificant relationship between openness (personality trait) and converging (learning style). Hence, openness personality trait has negative correlation with the converging learning style.
- There was a significant relationship between openness (personality trait) and accommodating (learning style). Hence, openness personality trait has strong

positive correlation with the accommodating learning style.

So, it was concluded that, there was a significant relationship between openness (personality trait) and styles of learning (assimilating and accommodating). Hence, openness personality trait has strong positive correlation with the assimilating and positive correlation with accommodating styles of learning.

### Discussion

Kilic, (2002) reported that learners with assimilating style of learning are found to be converging in their personality while the learners that have accommodating style of learning are found to be diverging in their personality.

(Elham, 2010) conducted a research based on traits of personality and learning styles at college level. The result of the study was found that majority of students preferred assimilating style of learning and dimensions of traits of personality including conscientiousness, extraversion, openness, agreeableness to experience and neuroticism were in middle level. For the traits of personality, a consistent positive relationship was found with different styles of learning except neuroticism.

The purpose of this study was to explore the relationship among openness trait of personality and learning styles preferences of students at Graduation level in higher education. Present study showed that people who have openness trait of personality preferably learn through abstract conceptualization, reflective observation, concrete experience and active experimentation. These type of people are curious, imaginative, excitable and artistic.

### Suggestions:

In this study, the relationship between openness personality traits and learning styles are addressed.

The study is limited with the students at public Universities. Similar studies, with larger samples of different groups and different statistical methods and variables can contribute to the further studies. Following recommendations are presented in the light of above conclusion:

- First, regardless of the relationship, a comprehensive educational approach that takes into account both learning styles and personality traits needs to be pursued in educational settings. Pre-service and in-service teachers should consider various learning styles and different traits of their students while preparing their lessons and designing their teaching and learning techniques.
- Second, this study was conducted in only public universities. A study including other private universities would yield more information about the role of learning styles in a university education. Further research could explain the nature of students' learning styles and the inter-relationship of learning styles with teaching strategies and academic achievement.
- Conduct research to identify and compare learning style and personality type of students at secondary level.
- Another area of further research would be to explore in depth the influences of other personality traits and ethnic background that effect the choice of learner strategies.

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