

Does Personality Type Affects the Learning Style: A Study of Introverts and Extroverts

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Abstract

This study is an attempt to explore relationship between employee's personality types and his learning styles. Literature is rich in learning styles inventory and many researchers are focusing on developing the relationship of those styles with reference to the industry and profession of employees. Though serious efforts have been made to develop relationship between personality and learning styles and certain other variables are known as moderating and mediating. This study undertakes age, gender and area as moderators and explores how these variables moderate the old established relationship between personality type and learning style. The study uses multiple regression as a statistical method to predict relationship between different variables i.e. personality type, gender, age, country and learning style. The findings challenge the established relationship that introverts are theorists and reflectors while extroverts are pragmatists and activists, when gender, age and geographical location are analysed as moderators.

Keywords: introvert, extrovert, learning style

Introduction & Background:

One of the most important factors in determining training and learning effectiveness is related to the dominant learning style of the participant. Literature is evident that every human being has different learning style (Bice, 1973) and learning takes place at its best when knowledge is imparted using the preferred learning style of learner. Hence, learning style is one of the important yet missing components from the training design.

It is to enable the trainer to get an idea about the preferred learning style of the individuals and design training accordingly (Mangtani, 2024). As each one has different style (Crozier, 2013), it is quite impossible for a trainer to design the training according to the suitable style of each and every trainee. There will be varying styles and accommodating one trainee will lead to negligence for the other.

In addition, another important aspect is related to the learning style of the trainer as well. Even if the preferred learning style of the trainee audience is conformed to the single style, that particular style maybe quite different from the one preferred by the trainer. Hence, the probability of training effectiveness will reduce even more. Keeping in view the two paradoxes, it is important to devise the solution (Gitman and McDaniel, 2008). It is quite

possible that the trainer selection is also on the basis of the preferred learning style of the audience. However, it is not possible and feasible in all the cases. However, it is quite possible that expertise of trainer is catered for in the light of feedback provided by the trainees (Goodman, 2009). Hence, it is not discussed in detail in this paper and the focus remains on the learning style of the trainee only.

Another important point to be considered during training design is related to personality type of the trainees, which is an important variable of this study. However, the fact is that many individuals are left behind their learning targets regardless they themselves have set them (Roberson, 2006). There are people who are informed of every latest event happening across the globe and they usually stand first in breaking the news to others (Haris, 2024). Their social circle is wide, and they are often busy in meeting people, interacting with them and performing the related social activities (Cortes *et al*, 2012).

In literary terms, they are known as *extroverts*. There is another type of individuals who prefer listening to talking generally and rarely have some news to share with people (Richardson and Mancabelli, 2011). Even if they have something new in their mind which others do not know, they generally do not take initiative to break the news. If the discussion is going on around them, they are silent listeners (Qi, 2005). In literary terms, they are referred to as *introverts*.

Extroversion and introversion are the two characteristics of individual personality. People are either extroverts or introverts. It is quite possible that they lie in the middle of quantum. However, there are many psychological tests which are conducted to identify an individual either as extrovert or true introvert. So consideration of personality type as either extrovert or introvert, while designing training is important.

In addition to the personality type, training methods and styles, another important point is related to activities included in the training (Fernandes, 2024). As activities are included in the training to ensure and increase its effectiveness, it is important to evaluate whether they serve the desired purpose or not.

The research revolves around personality type and how introversion and extroversion are associated with various learning styles; constitutes the broad problem area for this research study. The research question of this study is *whether personality type has an impact over the learning style*.

Literature Review:

Individual learning is one of the areas inviting attention of researchers in the past as well as modern era. It has been explored from various perspectives and its relationship is validated with variety of other factors (Pagano, 2007). There have been instances when learning is used as independent variable affecting variety of other variables like organisational learning and

organisational performance (Mohamed and Lashine, 2003). Barker & Neailey (1999) state that individual learning is the major trigger for team learning and organizational learning at later stages when teams share their knowledge with other teams and organizations arrange to share this knowledge for future use as well. Donoghue and Maguire (2005) also support the view that organisational success is dependent upon individual's learning hence organisational hiring system should inculcate this very feature in itself so that employability can be achieved to the desired level. Establishing relationship between level of education acquired by the employees, the transfer of knowledge at workplace and level of organisational achievement, they have concluded that there are many factors which play role in organisational learning (Kalkan, 2008). The most important factors include organisational environment, the environment external to the organisation and the knowledge repositories which are available to the learner (Donoghue and Maguire, 2005).

With increased focus on learning and its perceived benefits for an individual and the organisation, it has become crucial that level of learning attained by an individual is measured (Harris, 2004). Measuring learning is a difficult task even for the learner himself. As there are different types of learning i.e. self directed learning (Akers, 2009), self regulated learning (Akers, 2009), controlled learning (Akers, 2009) etc, the true measurement of learning becomes difficult. In self regulated learning, the learner is often careless about measuring what and how much he learnt (Song, 2002, p.74). Lehesvirta (2004) identifies another related factor which he names as *relationship between individual and environment* in which learning takes place. There are researchers and scholars who have associated individuals with organisational environment which constitutes its culture and provides the opportunities for an individual to use his talent (Billett, 2001). In the perspective of this research study, it is important to mention here that organisational culture is considered responsible for employee learning provided the culture promotes learning either by encouraging employees to share their knowledge and ideas or dedicating resources for formal training. Despite the measures taken by learning organisations to enhance employee learning so that it can be transformed into organisational learning (Wheelen & Hunger, 2012), the desired results are often not achieved. Researchers have identified various possible causes for ineffectiveness of trainings. It is important to mention that organisations generally do not specify the training objectives in quantifiable terms and trainees are not sure about their possible evaluations. Generally, trainings are conducted without any quantifiable targets and general organizational problems are expected to be resolved after training, which is not possible all the time. Billett (2001) specifies that guidelines provided by the workplace are crucial to achieve learning objectives. He further states that organisational support is also important to enhance organisational learning (Billett, 2001). He concludes that when employees participate in learning activities and share their experiences with

each other, the probability of learning is high. He names it as readiness which is required on both organisational and individual's part to boost learning. Lehesvirta (2004) stated that learning is function of duration of work at particular job as well as the educational background.

Collin (2006) did not analyse the relationship between age and learning and how growing experiences affect one's learning style. Gray and Williams (2011) conducted research on learning approaches with the help of staff members of National Health Service UK. They focused on the probability of learning through committing mistakes when employees actually tend to perform something practically and fail to do so; the level of learning they achieve through corrective measures in their performance is one of the highest among all methods of learning. During this research, they totally ignored the factor of personality type and kept their focus on learning either through routine activities or coming across bad experiences.

As mentioned by Webster and Sudweeks (2007), group cohesion is an important factor to direct individual's learning approach. Additionally, metacognition plays an important role. However, explaining the concept of cognitive profiles, Webster and Sudweeks (2007) took into consideration the elements of personality types and learning styles. The personality type was mentioned in the context of personal learning attributes both individually and in group as well as community. The paper concludes that learners want to become independent in their learning approaches and adopt learning behaviour accordingly.

Tight (2010) regarded learning style as one of the characteristics of individual's personality hence it may differ from person to person and it is influenced by other personality traits as well. Using learning style as mediating variable, the factors of age and personality were studied as independent variables in combination with other as well. The dependent variable included proficiency errors. The research was conducted in the perspective of language learners hence focus was on linguistic proficiency. Zacharis (2011) conducted research on the relationship between learning style and method of learning. With specific focus on the face to face learning method and that of online, Zacharis (2011) compared learning styles and achievement level of two groups learning using the two methods.

Gilfilen (2012) conducted research on learning styles and explored their relationship with thinking styles of learners. The performance of interior designers was linked with their thinking styles, which in turn were explored to have any possible relationship with learning style. Gilfilen (2012) established the fact that learning styles should not be directly associated with performance and accomplishment of learners.

It is important to clarify at this stage that the learning styles studied by Gilfilen (2012) included accommodating, assimilating, converging and diverging styles. Gilfilen (2012) did not study reflective, activist, pragmatist and theorist learning styles.

Sandman (2009) conducted research on the learning style of telecommunication students and analysed much literature on the relationship between academic performance and learning style of the student. It is important to mention that Sandman (2009) did not analyse the learning styles of reflectors, activists, pragmatist and theorist. He did not take into consideration the factor of personality type and focused on exploring the learning style of business telecommunication students.

However, Sandman (2014) went up to the extent of finding relationship between learning style and the particular course of study instead of complete majors.

In order to assess whether learning style changes with the course taught, Sandman (2014) collected data from the business students in two courses. The statistical tests confirmed the relationship between learning style and the course taught. Hence, Sandman (2014) through his research concluded that one may have different learning styles at various points in time depending upon what is being taught to him.

However, it is important to mention that the key to transform individual learning into group and eventually organisational learning is; sharing it (Lumsden, Lumsden and Wiethoff, 2009). Hence, the factor of extroversion is somehow discussed in literature and its relationship is implicitly established with ability to transform formal knowledge into practical learning (Hellriegel and Slocum, 2007). However, introversion is ignored and there is no significant research about ability of introverts to transform their formal knowledge into practical knowledge.

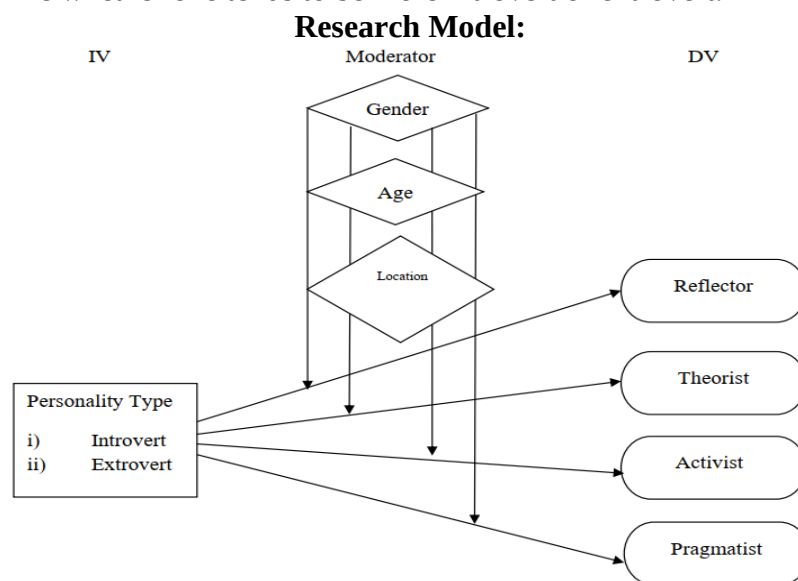
The modern post Covid world has serious implications about personality types and the preferred working environment (Nag, 2021). The study shows that both introvert and extrovert thrive in different environments hence their preference while designing work environment must be considered. Few researchers also explored the learning styles i.e. VARK (Visual, Aural, Read/write, and Kinesthetic) (Brockband, McGill and Beech, 2002), VAK (Visual, Auditory and Kinesthetic) (Mohd Yunus & Husin, 2021), however, relationship between personality types and various other learning styles has not been explored so far. The combination of VAK learning styles has also been studied with respect to learning social sciences (Soomro & Abdelwahed, 2021).

A research study is conducted to determine the preferred learning style of student in a Malaysian University using the same learning styles. The study recommended that the instructors may devise their teaching strategies accordingly to achieve better results (Libasin, Mazeni & Idris, 2024), however, the research did not include the elements of personality type in it.

Learning Styles: Activist is the learning style in which learning takes place through practically performing the steps which are actually required in the job role. Activists are the one who enjoy performing things rather than reading material and learning it. For them, learning by doing is the most prominent method of learning. Pragmatist Learning Style

Second one is the pragmatist, as the word reflects, denotes practical personality. It too, is the learning style in which the employee tends to practically perform things to learn them. In other words, the employee believes in learning by doing rather than learning first and doing at later stages. The third is the theorist learning style in which people learn through all the methods of training in which theory is involved. In their view, theory is the first step of learning. Theorists not only confine themselves to reading, but all the methods in which knowledge is imparted in theoretical manner are suited to their learning styles. Examples include lectures, demonstrations, discussions and computer based trainings (Brockband, McGill and Beech, 2002). The last one is the reflector learning style in which people are deep thinkers and their thought process unveils many things to them which are hidden from the followers of other learning styles.

Personality Types: Introvert and Extrovert: It is important to mention that it is extremely difficult to rank a person as completely extrovert or completely introvert. Most of the people lie in between adopting few characteristics of extroverts and enjoying certain others possessed in introversion. It is also apparent from the literature that many introverts are considered as low extraverts (Blevins, Stackhouse & Dionne, 2022). There are psychological tests to determine about one's personality. These tests determine whether one tends to be more introvert or extrovert.



Study Variables

- i. Personality Type (Extroversion/Introversion) – Independent Variable
- ii. Learning Style – Dependent Variable
- iii. Gender – Moderating Variable
- iv. Age – Moderating Variable
- v. Geographical Location– Moderating Variable

The questionnaire is used for data collection. The first section consists of a psychology test of personality type. The test determines whether the respondent is introvert or extrovert. In the second section, questions about learning style are asked.

The questionnaire is adapted from three sources.

- i. Personality test developed by Susan Cain, a psychologist, trainer and lawyer in USA (Cain, 2012)
- ii. Learning style questionnaire developed by Honey and Mumford (Honey and Mumford, 1982)

The research is based on non-probabilistic, convenient sampling. The population is divided into two strata; extroverts and introverts. The sample size was 287 and responses were received through online questionnaire developed using Google Forms.

Results and Findings:

Table 1: Personality and Learning Style (N=287)

Personality and Learning Style		
		Frequency
Personality	Extrovert	81
	Introvert	206
Learning Style	Theorist	189
	Pragmatist	156
	Activist	96
	Reflectors	219

Total respondents were 287, out of which 81 were found out to be extroverts while 206 inclined towards introversion. Out of 287 respondents, 65.9% preferred theorist learning style. Out of 287 respondents, 54.4% preferred pragmatist learning style. Out of 287 respondents, 33.4% preferred activists learning style. Out of 287 respondents, 76.3% preferred reflector learning style.

Table 2: Association Test between Personality Type and Learning Styles

Association Test						
Pearson Chi Square			Phi		Cramer's V	
Learning Style	Value	Asymp. Sig. (2-sided)	Value	Approx. Sig.	Value	Approx. Sig.
Theorist	6.675	.010*	.153	.010*	.153	.010*
Pragmatist	.073	.787	.016	.787	.016	.787
Activist	1.179	.278	-.064	.278	.064	.278
Reflector	4.410	.036*	.124	.036*	.124	.036*

Table 3: Correlation Coefficients of Learning Styles

	Pearson Correlation Coefficient				
	Personality Type	Theorist	Pragmatist	Activist	Reflector
Personality Type	1				
Theorist	.236**	1			
Pragmatist	.058	.384**	1		
Activist	-.094	.025	.319**	1	
Reflector	.196**	.529**	.356**	.179**	1

** . Correlation is significant at the 0.01 level (2-tailed).

Table 0: Regression Analysis of Learning Styles without Moderator

		Constant	Standardized Coefficients (beta)	Sig. Value	R ²	Adjusted R ²	F
Model 1	D V: Theorist	57.549	.236	.000*	.056	.053	16.867
Model 2	DV: Reflector	64.699	.196	.001*	.038	.035	11.344
Model 3	DV: Pragmatist	68.432	.058	.330	.003	.000	.952
Model 4	DV: Activist	72.159	-.094	.112	.009	.005	2.548

Table 5: Regression Analysis of Learning Styles with Moderator

		Constant	Standardized Coefficients (beta)	Sig. Value	R ²	Adjusted R ²	F
Model 1	DV: Theorist	61.590	1.757	.000*	.170	.124	13.142
Model 2	DV: Reflector	69.934	1.553	.005*	.128	.080	7.855
Model 3	DV: Pragmatist	78.076	.346	.501	.088	.037	.455
Model 4	DV: Activist	78.568	-1.100	.030*	.046	-.007	4.742

Table 5 shows the degree and direction of relationship between personality type and various learning styles. For this computation, the score of personality type based on the tendency of introversion and extroversion is considered rather than the nominal values of both personality types. The higher values in personality type show more inclination towards introversion while lesser score on this scale depicts extroversion.

Table 6: Effect of Moderators on Learning Styles

		Sig. Value	F
Model 1	DV: Theorist		
	Gender	.996	.000
	Age	.021*	2.412
	G. Location	.004*	3.283
Model 2	DV: Reflector		
	Gender	.096	2.785
	Age	.018*	2.463
	G. Location	.375	1.079
Model 3	DV: Pragmatist		
	Gender	.115	2.501
	Age	.326	1.160
	G. Location	.080	1.906
Model 4	DV: Activist		
	Gender	.109	2.581
	Age	.899	.405
	G. Location	.431	.992

- 1) There is positive relationship between introversion and theorist learning style. The value of beta is positive and p value is .000. The introduction of moderators has further strengthened the relationship between dependent and independent variable since beta has increased from 0.236 to 1.757.
 - a. Gender does not moderate the original relationship i.e. p-value is 0.996.
 - b. Age moderates the original relationship significantly i.e. p-value is 0.021.
 - c. Geographical location moderates the original relationship very significantly i.e. p-value is 0.004.
- 2) There is positive relationship between introversion and reflector learning style. The value of beta is positive and p value is .005. The introduction of moderators has further strengthened the relationship between dependent and independent variable since beta has increased from 0.196 to 1.553.
 - a. Gender does not significantly moderate the original relationship i.e. p-value is 0.096.
 - b. Age significantly moderates the original relationship significantly i.e. p-value is 0.018.
 - c. Geographical location does not moderate the original relationship significantly i.e. p-value is 0.375.
- 3) There is no relationship between extroversion and pragmatist learning style since p-value is .501. The introduction of moderators has not

changed the original relationship significantly between dependent and independent variables though the value of beta has increased from 0.058 to 0.346. Neither there was any significant relationship without moderator nor there any with moderators.

- a. Gender does not significantly moderate the original relationship i.e. p-value is 0.115.
 - b. Age does not moderate the original relationship i.e. p-value is 0.326.
 - c. Geographical location does not moderate the original relationship i.e. p-value is 0.080.
- 4) There is no relationship between extroversion and activist learning style. The value of beta is negative and p value is .030 (shown in Table 4.7). The introduction of moderators has not changed the relationship between dependent and independent variable though absolute value of beta has increased from 0.094 to 1.1.
- a. Gender does not moderate the original relationship significantly i.e. p-value is 0.109.
 - b. Age does not moderate the original relationship significantly i.e. p-value is 0.899.
 - c. Geographical location does not moderate the original relationship i.e.-value is 0.431.

Table 7: Summary of Hypotheses Testing

Hypothesis	Result
Theorist Learning Style	
i. Introverts follow theorist learning style.	Positive relationship. Accepted
ii. Gender moderates the relationship between introversion and theorist learning style.	Rejected
iii. Age moderates the relationship between introversion and theorist learning style.	Strong Moderator. Accepted
iv. Geographical location of the individual moderates the relationship between introversion and theorist learning style.	Strong Moderator. Accepted
Reflector Learning Style	
i. Introverts follow reflector learning style.	Positive relationship. Accepted
v. Gender moderates the relationship between introversion and reflector learning style.	Weak Moderator. Accepted

vi.	Age moderates the relationship between introversion and reflector learning style.	Strong Moderator.
vii.	Geographical location of the individual moderates the relationship between introversion and reflector learning style.	Accepted Rejected
Pragmatist Learning Style		
viii.	Extroverts follow pragmatist learning style.	Rejected
ix.	Gender moderates the relationship between extroversion and pragmatist learning style.	Rejected
x.	Age moderates the relationship between extroversion and pragmatist learning style.	Rejected
xi.	Geographical location of the individual moderates the relationship between extroversion and pragmatist learning style.	Rejected
Activist Learning Style		
xii.	Extroverts follow activist learning style.	Rejected
xiii.	Gender moderates the relationship between extroversion and activist learning style.	Weak Moderator.
xiv.	Age moderates the relationship between extroversion and activist learning style.	Accepted Rejected
xv.	Geographical location of the individual moderates the relationship between extroversion and activist learning style.	Rejected

Conclusion:

The research study concluded with multiple interesting findings. Few of them are quite different from the ones explored during the literature review. As previously the relationship of learning style was established with the age, however, there is scarcity of knowledge on the variable of gender in his regard (Smith, 2001). Additionally, the previous research studies show that learning style varies from situation to situation while the study on its relationship with personality was also scarce (Lin, Lu and Liu, 2013). This research study analysed the relationship of personality with learning style and proved the old perceptions that introverts are generally reflectors and theorists. Different age groups were tested for their possible impact on the relationship between personality type and the four learning styles. Age acted as moderator in certain cases aligning itself to the findings of literature while in certain other cases, it showed entirely contrary results.

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