Personality & Learning Styles - Lessons for Indian Corporate Trainers

Prageetha G Raju & Murale Venugopal

The study exhibits and establishes the link between Personality and Learning to help trainers improve their training effectiveness by comparing the personality types of trainees using Myers-Briggs Type Indicators (MBTI) with Felder and Silverman's Index of Learning Styles(ILS); Goley's Learning Pattern (LP) assessment and Kiersey Temperament sorter (temperament) are used as a follow-up. Results obtained did indicate a relation between personality and learning.

Prageetha G Raju is Associate Professor of HR & Organizational Behavior at IBS Hyderabad 501203. E-mail: prageeta@ibsindia.org. ***Murale Venugopal*** is Assistant Professor of HR and Organizational Behavior at Amrita School of Business, Kochi, 682041. E-mail: mailmurale@gmail.com

Introduction

Learning involves the integrated functioning of the total organism- thinking, feeling, perceiving, and behaving (Kolb, 1984). While the relation between personality and learning is apparent, corporate trainers have not recognized it as a vital factor in corporate training programs. Dubois & Rothwell (2004) indicated the importance of using personality in developing corporate training modules. There is a need to recognize how personality affects learning, particularly in the corporate training. Dubois & Rothwell (2004) indicated that corporate trainers need to address differences in employee personalities and learning styles in order to conduct training with effective outcomes because the nature of jobs is getting complex with the advent of technology and competition. Also, organizations need new ways to renew and revitalize them to forestall obsolescence for the organization and the people in it. Learning is no longer for kids but a central lifelong task essential for personal development and career success (Kolb, 1984) because to improve the performance of our employees we need to know how they learn. Broadly, learning

style refers to the dissimilar approaches to learning. The rationale for identifying and understanding these styles is that each style involves training methods that are presumed to allow each individual to learn best. A study was conducted to determine if MBTI has distinct learning styles associated with them and to recommend the same to corporate trainers.

Problem Background

The current corporate training does not take into account the effect of personality and learning on training effectiveness. Also, trainers seek practical solution to improve the effectiveness of training outcomes. The literature bears evidence to the effect that those with different MBTI scores/results had different learning styles (Myers et al, 1998); however, most of the research solely reported patterns of correlation between a single dichotomy and other variables. In addition, Goley (1982) established learning preferences, which separated individuals into four personality groups, which originated from Keirsey's four temperaments (Keirsey & Bates, 1984). There is no research that focused on sixteen personality combinations of MBTI related to various learning styles. Also, just reporting a learning style for a single dichotomy might not address the individual's learning style (Myers et al, 1998).

Felder and Silverman's ILS (1988) is comprehensive and easy to use by corporate trainers because it takes into account research from experiential learning theories, personality type theories, behaviorist theories and cognitive learning studies (Felder &Spurlin, 2005). Not many studies appeared on MBTI that specifically used Felder & Silverman's ILS (1998) except for a study in a school in Portugal in 2012 by João Negreiros, Zelia Baptista & Leanda Lee to evaluate how the choice of teaching method can be assisted by the knowledge of a student's personality type and learning style. A study by Komos & Holgard conducted MBTI and Kolb's Learning Style Inventory (LSI) together with the ILS on engineering students to assess learning style vis-à-vis personality. Another study is a class assignment by J J Cohen in 2008. The present study, adopts the methodology of the above three, but, is conducted on corporate trainees in India. Trainers need to believe that "to improve the performance of our employees we need to know how they learn".

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Research Question

Do ILS learning styles correlate with each of the sixteen MBTI personality types and do MBTI dichotomies measure against the ILS? The objective is to establish links between different MBTI scores having learning styles associated with them and suggest corporate trainers the same.

Methodology

The authors observed: (a) training methods- lectures are predominantly used

followed by discussions and debates, and some physical/mental activities; (b) training material- consisted of text with diagrams, tables and questions of descriptive nature at the end of each chapter. The study is conducted in two segments:

Segment 1 is administration of MBTI and ILS instruments on trainees.

Segment 2 is administration of validated and adjusted LP assessment (1982) and Temperament sorter as a follow-up on three respondents who obtained strong scores in each personality type of MBTI and the assessment format is of Likert type.

130 people were chosen but only 104 responses were usable and thus the sample size is 104 participants in training programs from the authors' networks as well as friends of friends. The sampling is purely judgemental and snow-balling, though care has been taken to cover as many industrial sectors.

Information generated by comparing the 16 MBTI personality types with their learning styles vis-à-vis comparing the four temperaments with their learning styles, are analyzed using scatter diagrams to illustrate different coefficient correlation of the 16 personality types and their ILS scores. The scores of Segment 2 are added to Segment 1 results for analysis through a table comparing temperaments with the LP score.

Limitations of the Study

- The number of respondents in this study is not only not large enough to draw convincing results but also limited to the authors' network thus does not satisfactorily represent all 16 personality types. Also follow-up LP assessment is limited to three from each of the MBTI categories which may not be reliable.
- Some trainers who give technical training in the area of Engineering, Accounting, Finance, etc felt that this type of questionnaires are not required for them as it is their knowledge that matters and thus the authors failed to get the instrument completed.
- This study only wants to establish correlation between MBTI and ILS assessments so that it can suggest trainers to utilize these findings but it does not assert that using ILS based on MBTI would increase training effectiveness.
- Since the study adopted methodological aspects from three different studies, there may be similarities in some calculations; demographic information has not been provided to validate it.

MBTI

Myers Briggs Type Indicator is a validated assessment tool used at workplace, developed to place individuals in the best jobs for their personality temperament (Myers & Myers, 1995). It has four dichotomies that indicate an individual's personality preference. These four dichotomies demonstrate how individuals acquire energy, gather information, make decisions, and time

their decisions. Each area has two opposite poles and each individual has a personality preference towards one of these extremes (Myers, et al 1998). Myers and Briggs adapted Jung's theory (1990) for workplace setting based on his book, "Psychological Types" which describes consistent differences between psychological function and the affect of introvert/extravert attitude on those functions. He explained individual personality is different based on opposing dichotomies in function and attitude.

In MBTI, the first focus is *function*, i.e., how an individual perceives the world and how he gathers information. An individual with a sensing personality (S) prefers to have information presented in a literal and chronological manner. A person with an intuitive (N) personality prefers to translate literal information into possibilities, implications, and associations. Individuals with intuitive personalities look at the big picture and often ignore specific details (Kroeger &Thuesen, 1988) and they can easily progress to what is implied, and to that which may have potential implications (Quenk, 2000). Another function, thinking (T) tends to use analytical logic to come to a decision (Kroeger &Thuesen, 1988) and likes to keep emotions from clouding the judgement until the decision is made. The next function is feeling (F), which involves making subjective decisions based on personally held values and are concerned about the personal impact of the decision on the people around (Keirsey & Bates, 1984). These two dichotomies are based on functions of information gathering and decision making and each play a role in an individual's preferred teaching/learning style.

The next dichotomy is focused on preferred *attitude* i.e., how an individual obtains energy and what attitude he shows towards functions. Individuals with an extravert personality (E) preference would receive energy from the outside world of people, things, and actions while individuals with an introvert personality (I) would receive energy from reflection, introspection and solitude (Quenk, 2000). But, long periods of solitude would exhaust someone with an extravert personality while constant social interaction could exhaust an individual with an introverted personality (Kroeger &Thuesen, 1988).

The second attitude dichotomy is perceiving (P) through gathering information or judging (J) for making decisions (Kroeger &Thuesen, 1988) which shows an individual's attitude towards deadlines, organization, and decision making. A person with judging preference prefers their decision-making to be dominant; they like to plan their work and work their plan. A person with perceiving personality preference continues to collect information, rather than to come to a decision; they enjoy spontaneity and flexibility in their lives.

Since each person has four personality preferences, sixteen unique personality type codes emerged as typified below. Each combination makes each specific preference a little different from

when it is part of a different combination. These personality variations, as described by Rutledge and Kroeger (2005), are:

Table 1 MBTI Personality Type Codes

IDEALIST	INFJ	INFP	ISTJ	ISFJ	**GUARDIAN**
	ENFJ	ENFP	ESTJ	ESFJ	
	INTJ	INTP	ISTP	ISFP	
RATIONAL	ENTJ	ENTP	ESTP	ESFP	**ARTISAN**

Source: Adapted from Isachsen and Berens (1988)

1. INFJ-Reflective (introverted), see life as full of possibilities (intuitive); make subjective decisions (feeling), implement in an orderly, scheduled manner (judging).
2. INFP - Ggentle personality that enjoys contemplation (introverted) integrated with imagination (intuitive); use personal values to make decisions (feeling), enjoy keeping things flexible (perceiving).
3. ISTJ- Natural organizers, see the world in terms of tangible facts (sensing), which they handle objectively (thinking) through structure (judging), aloof and cool (introverted).
4. ISFJ-Committed to getting the job done, comfortable working quietly (introverted) in a structured environment (judging); have realistic view of the world (sensing), decisions based on interpersonal factors (feeling)
5. INTJ- Independent thinkers, reflect on ideas (introverted), see the world in endless possibilities (intuitive); translate these ideas and possibilities into objective decisions (thinking), implement through a structured order (judging)
6. ISTP - Known for their ability to get things done; live in the present, perceive the world in tangible terms (sensing), objective decisions (thinking) impulsive (perceiving)
7. ISFP- Think that individual's actions speak louder than words, believe that plans and actions should be thought out in an orderly manner (introverted), see the world as tangible (sensing) but make subjective decisions (feeling); keep options open (perceiving).
8. INTP - Resolve problems by reflecting (introverted) on the possibilities (intuitive), objective decisions (thinking); easygoing and adaptable (perceiving)

9. ESTP- Make the most by scanning the external environment (extraverted); look at it in a factual and grounded fashion (sensing); use information to make objective decisions (thinking) for whatever happens in the immediate moment (perceiving).

10. ESFP- Enjoy through an outgoing nature (extraverted); realistic outlook (sensing); make subjective decisions (feeling) in a spontaneous manner (perceiving), very flexible.

11. ENFP-People oriented, enjoy social interactions (extraverted); search for endless possibilities (intuitive); make decisions based on their interpersonal interactions (feeling), while keeping their options open (perceiving).

12. ENTP- Enjoy the external world of people (extraverted) and the endless possibilities of theoretical connections (intuitive), which in turn are objectively filtered (thinking) but not binding; consider new options (perceiving).

13. ESTJ- Natural administrators, outgoing and direct manner (extraverted); see the world in a practical and realistic way (sensing); use information to make impersonal, analytical decisions (thinking), implement them in a structured manner (judging).

14. ESFJ - Trusted friends, interact with others easily (extraverted), pay close attention to personal details (sensing), use information in an interpersonal way (feeling) through a scheduled order (judging).

15. ENFJ-Natural persuaders, socially oriented (extraverted), consider the possibilities (intuitive), make subjective decisions (feeling); use these attributes in a structured manner (judging) excellent at networking.

16. ENTJ - Natural leaders with people oriented skills (extraverted); see connections and possibilities (intuitive), analyze objectively (thinking), implement in an organized fashion (judging).

The most dominant function in these 16 types is that individual who has the most confidence in using (Myers et al, 1998) and is followed in descending order by the auxiliary, tertiary, and the inferior function.

The first step in determining the dominance of functions is to look at the Judging-Perceiving dichotomy (Myers et al, 1998), if a person has a judging indicator, then his thinking-feeling dichotomy might be extravert and intuitive-sensing indicator would be introvert. Likewise, if an individual has a perceiving indicator, then the process reverses and their intuitive-sensing indicator would be extraverted and their thinking-feeling dichotomy would be introvert (Quenk, 2000).

Myers (1998) conducted research on type indicator preferences and education and concluded that type theory not only is a means for human understanding but also a catalyst for the realization of human potential. Keirsey (1988) integrated different personality indicators into what he described as temperament styles. Goley (1982) developed the LP assessment using the four temperament styles to help teachers determine student-learning preferences.

Table 2 Connection Between MBTI, Temperament & LP Styles

MBTI types	Temperaments/Myers Jungian types	Goley's LP styles
ISTJ, ISFJ, ESTJ, ESFJ	Guardian/Sensing-Judging (SJ)	Actual-Routine Learner (ARL)
ISTP, ISFP, ESTP ESFP	Artisan/Sensing Perceiving (SP)	Actual –Spontaneous Learner (ASL)
INT, INTP, ENTJ, ENTP	Idealist/ Intuitive-Thinking (NT)	Conceptual –Specific Learner (CSL)
INFJ, INFP, ENFJ, ENFP	Rational/Intuitive-Feeling (NF)	Conceptual-Global Learner (CGL)

Learning Theories & ILS

Each style involves training methods that are presumed to allow each individual to learn best.

The rationale for identifying and understanding these styles is that each style involves training methods that are presumed to allow each individual to learn best. Advanogy (2012) supports this perspective confirming that everyone has a mix of learning styles and there is no right or wrong combination. Kolb (1984) expanded the experiential learning theory by integrating aspects of personality type theory.

ILS is a self-report forced choice instrument created by Felder and Solomon (1988) which classifies the learning preferences of the respondent on four continuous scales; active/reflective, sensing/intuition, visual/verbal, and sequential/global**.** They developed ILS as a comprehensive learning style indicator, using Kolb's expanded theory on experiential learning and Jung's personality type theory and it also included modality theory originated with the cognitive theory of information process (Felder & Spurlin, 2005) which considered visual, auditory, and kinaesthetic learning. ILS has four dimensions using bi-polar scales and students' preference towards one extreme or other could be strong, moderate, or mild (Felder & Spurlin, 2005). MBTI looks at an individual's whole personality while Felder and Silverman's ILS attempts to encompass the various dimensions of an individual's learning style. Learning style assessment indicators identify individual learning style and therefore enhance a student's learning ability (Bacon, 2004). By focusing on personality and behavior, learning style theory confirms educators' awareness of the relationship between personality and learning style. Yet, learning style assessment is difficult to validate. Bacon (2004) compared student achievement to two learning style assessment and found student achievement could not validate either assessments because student grades and achievement are often affected by other factors, thus achievement is difficult to be correlated with learning style. Furnham, Moutafi & Paltier (2005) investigated the MBTI relationship to mental ability, and their results showed certain correlations. An-

other study by Folger, Kaitz, Knudsen & McHenry (2003) analysed MBTI personality types in college students and determined only one unrepresented dichotomy in gifted students. Sak (2004) did a similar study and found a different representation among gifted adolescents. All these studies resulted in inconsistent findings and demonstrated the difficulty in correlating intelligence with MBTI. There is a good deal of research on how MBTI personalizes learning styles and help educators with student success. Hall & Moosely (2005) are pioneers in this area wherein they included many assessments that incorporated personality into learning such as MBTI, Learning styles questionnaire, Kolb, etc. ILS correlates more closely with MBTI because it includes modality theory based on cognitive theory (Felder & Spurling 2005).

Table 3 ILS Dimensions of Learning & Teaching Styles

Preferred Learning Style		Corresponding Teaching Style	
SensoryIntuitive	Perception	ConcreteAbstract	Content
Visual Verbal	Input	Visual Verbal	Presentation
ActiveReflective	Processing	ActivePassive	Student Participation
SequentialGlobal	Understanding	SequentialGlobal	Perspective

The first learning dimension is perception which is related to Jung's (1990) personality type theory wherein a person can perceive information either through sensory or intuitive learning. A sensory learner likes concrete facts, figures, data and experimentation; prefer to solve problems through standardized and tested methods. In contrast, an intuitive learner prefers theory and principles, solves problems through innovation, quick in solving problem and could be somewhat careless. The teaching style for this dimension uses concrete content for a sensory learner and abstract theory for an intuitive learner to teach both styles of learning, (Felder & Silverman, 1988).

The second learning dimension is how a learner receives input of content. It could be visual, auditory, and kinaesthetic means. Felder and Silverman (1988) focused on verbal and visual input as they addressed kinaesthetic learning through the learning dimensions of perception and processing of information. Visual learners remember pictures, diagrams, and flowcharts while verbal learners remember spoken information that they hear and discuss. To teach to these styles, lectures need to include discussion points, visual materials, and illustration of complex problems.

The third learning dimension is the way people process information. This dimension closely relates to Jung's extravert and introvert personality indicators. An active learner likes to learn through hands-on experience or through discussion of the information. A reflective learner needs time to think about what they were learning, and understand theory. To teach these styles, hands-on activities, lectures, discussions are needed (Felder & Silverman, 1988).

The fourth dimension considers the way a student understands information. Sequential learners prefer a logically ordered progression like most curricula are designed. Global learners gain knowledge by connecting individual aspects to the big picture rather than learning the individual parts. Global views need to be presented by instructors using scenarios.

Corporate Training

Corporate training is intended to have a direct and specific impact on employee performance. Dubois & Rothwell (2004) said that training is a short-term learning intervention intended to build on knowledge, skills, and attitudes to meet present or future work requirements. In order to achieve prescribed work outcomes, organizations focus on employee competencies in knowledge, skills, and attitudes (KSA) (Kirkpatrick, 1998). When developing formal training programs to address KSA, organizations used instruction system design (ISD) model (Dubois & Rothwell, 2004) which consists of analyzing performance problems and identify the causes if it occurred due to lack of KSA, conduct training need assessment, determine instructional objectives, determine training materials, decide the delivery of training, test the training through pilot session, deliver the training and evaluate the training. Dubois & Rothwell (2004) modified ISD to a more comprehensive design called strategic systems model (SSM) which aims at how workers think, feel, and act to perform successfully besides KSA. Through SSM, Dubois & Rothwell (2004) illustrated the importance of personality in corporate training.

Table 4 Total Number of respondents by MBTI, ILS, & predominant ILS

MBTI types (total respondents)	Number of different ILS types	Predominant ILS based on frequency of distribution (total respondents)*
ISTJ(7)	2	R(7), S(7), V(4), Q(7)
ISFJ(4)	2	R(4), S(3), B/V(2), Q(3)
ISTP(3)	3	R(2),S(2), V(2), Q(2)
ISFP(0)	N/A	N/A
INFJ(5)	5	R(3), N(3), V(3), G(3)
INTJ(6)	5	R(5), N(4), V(5), Q(4)
INFP(15)	7	R(11), N(12), V(11), G(12)
INTP(6)	4	R(5), N(5), V(4), G(5)
ESTP(0)	N/A	N/A
ESFP(3)	2	A(3), S(3), B(2), G(3)
ESTJ(6)	4	A(5), S(6), V(4), (4)
ESFJ(8)	4	A(5), S(7), V(5), Q(7)
ENFP(11)	6	A(9), N(10), V(9), G(7)
ENTP(7)	5	A(6), N(4), V(4), G(5)
ENFJ(14)	6	A(10), N(13), V(10), Q(8)
ENTJ(9)	5	A(7), N(6), V(7), Q(6)

*Sensory (S), Intuitive (N), Visual (V), Verbal (B), Active (A), Reflective (R), Sequential (Q), Global (G)

Findings

There is no direct relationship between individual MBTI types or temperaments with ILS types.

On comparing the distribution of responses, the findings indicated some correlation between specific dichotomies of MBTI, ILS, and LP. However, there is no direct relationship between individual MBTI types or temperaments with ILS types.

Findings show that there is a predominant ILS type for each of the MBTI types based on the frequency distribution of the ILS dichotomies. Respondents with MBTI introvert personality scored high as reflective learners in ILS; respondents with MBTI extravert personality scored high as active learners in ILS. Furthermore, respondents with MBTI sensing personality are predominantly sensory learners in ILS and those with MBTI intuitive personality are predominantly intuitive learners in ILS.

Regarding the correlations between the extroverted/introverted personality characteristic of MBTI and the learning styles (active/reflective, sensing/intuitive, visual/ verbal, sequential/global), the chi-square values are 0.24, 0.44 and 1.34, 1.01 respectively.

Only one of the MBTI personalities scored predominantly as a verbal learner and another split between verbal and visual as per ILS. All the other MBTI personality types surveyed scored predominantly as visual learners in ILS. All but one of the surveyed MBTI types with judging personality scored high on Sequential learning of ILS. Likewise, all but one of the MBTI types with perceiving personality scored high as global learners. There appears to be no connection between MBTI thinking and feeling dichotomy to any of the ILS dichotomies.

For the personality types of intuitive/ sensing of MBTI and the associated learning styles from ILS, the chi-square values are: active/passive 0.471; sensitive/intuitive 0.49; visual/verbal 3.98 and sequential/global 4.73

Segment1: Correlation between Temperaments & ILS Types

When comparing temperaments with their associated ILS types, there appears not much of direct correlation. Multiple ILS types appeared for each of the four temperaments. However, the SJ temperaments appeared to have a different predominant ILS type than the other temperaments. Specifically, this difference is noted in the high frequency of sensory and sequential ILS dichotomies. In fact, both the sensory and sequential dichotomies have a higher percentage frequency of distribution for the SJ temperament compared to any of the other three temperaments (Table **5**).

There appears some correlation between specific dichotomies. The temperaments of NF and NT that include

Table 5 Number of Respondents by Temperament & Predominant ILS

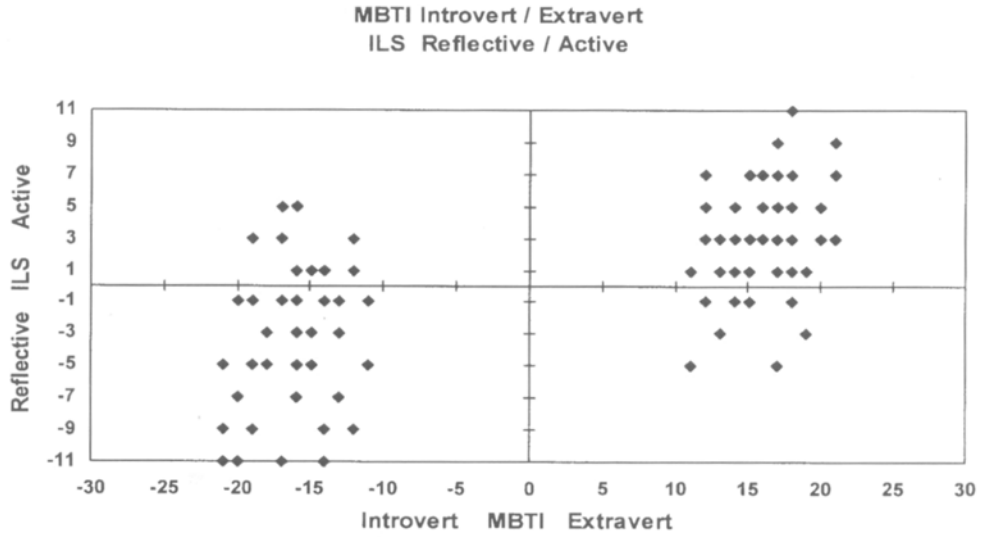
Temperament (total respondents)*	Number of different ILS types	Predominant ILS style based on frequency of distribution (total respondents)
NT(28)	14	A/R(14), N(18), V(20), G/Q(14)
NF(45)	12	A(25), N(35), V(33), G(29)
SJ(25)	8	R(13), S(23), V(14), Q(21)
SP(6)	4	A(4), N5), V(3)/B(3), G(4)

* NT→Intuitive thinking; NF→Intuitive feelings; SJ→Sensing judging; SP→ Sensing perceiving

the intuitive dichotomy also have a predominantly intuitive ILS dichotomy. Similarly, the temperament of SJ that includes the sensing dichotomy also appears predominantly sensory in the ILS dichotomy. The Temperament of SP that includes the sensing dichotomy has a predominantly intuitive ILS dichotomy.

There are three correlations when comparing the specific dichotomies of MBTI and ILS as well as an overall preference towards the ILS visual dichotomy. Fig.1 demonstrates connection between the extravert and introvert dichotomy of MBTI and the active and reflective dichotomy of ILS.

Fig.1 Correlation between MBTI – Extravert and Introvert with ILS Active and Reflective Dichotomies.



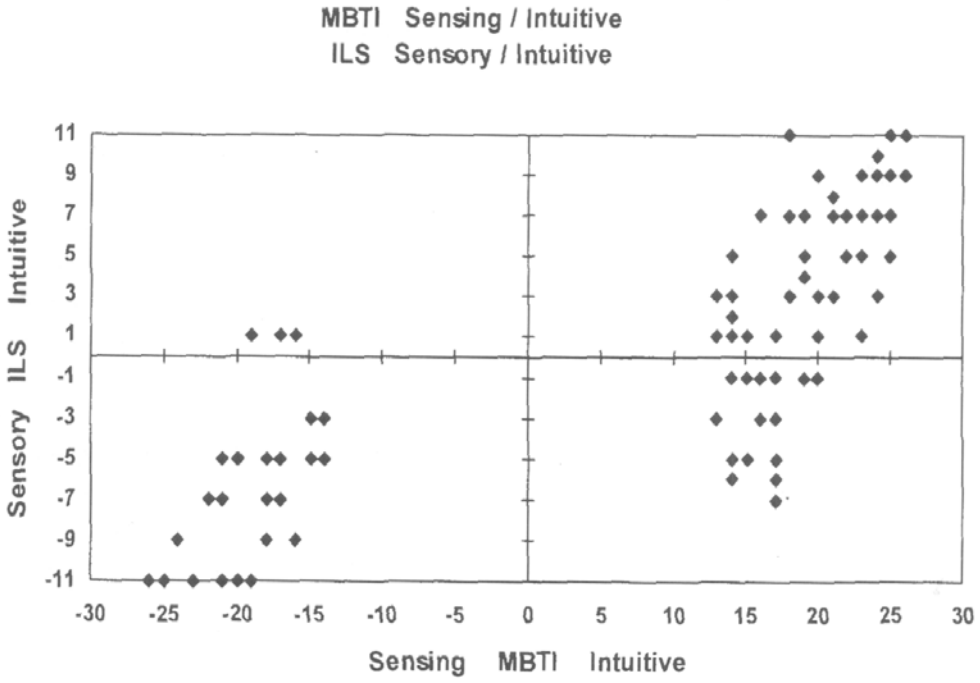
Extraverts prefer active learning while introverts prefer reflective learning. There appears no correlation between MBTI extravert and introvert personality types with any of the other three ILS dichotomies.

Extraverts prefer active learning while introverts prefer reflective learning.

There is some correlation between the sensing and intuitive dichotomies of MBTI and the sensory and intuitive dichotomies in ILS. According to Felder &Silverman (1988), sensory learners like concrete facts, figures, data, and experimentation; prefer to solve problems slowly and steadily through standardized tested methods. Intuitive learners prefer theory and principles and like solving problems quickly through novel methods.

A stronger correlation appears between the MBTI sensing dichotomy and the ILS sensory dichotomy than between MBTI and ILS intuitive dichotomies (Fig. 2). Perhaps, the difference between these two MBTI dichotomies is that individuals who preferred to gather information intuitively are also able to gather information through concrete facts, whereas individuals who preferred to gather information through their five senses are less inclined to learn through theory and principles.

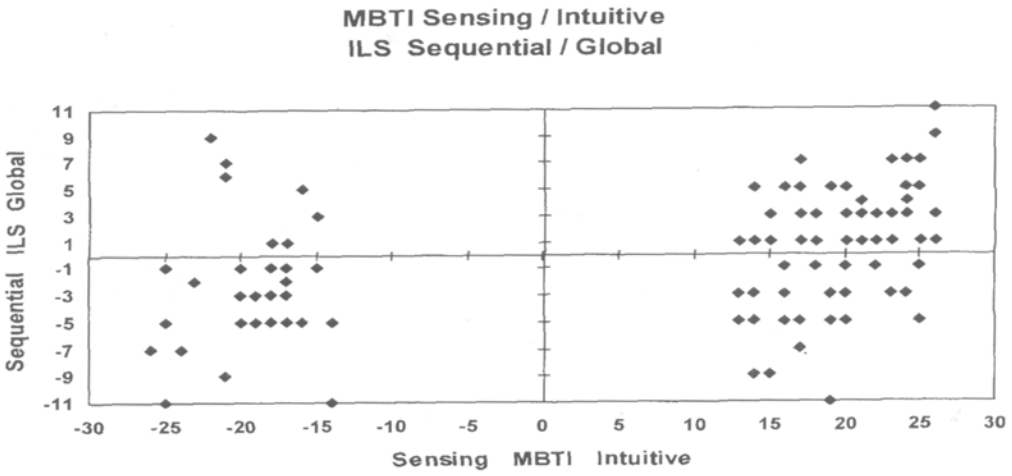
Fig. 2 Correlation between MBTI Sensing and Intuitive with ILS Sensing and Intuitive dichotomies



According to Felder & Silverman (1988), sequential learners prefer a logically ordered progression of information, and global learners need to understand the whole picture before connecting the individual details. Fig. 3 shows that respondents who prefer sensing dichotomy of the MBTI generally prefer sequential learning. There appears little or no correlation between respondents with an MBTI intuitive dichotomy preferring global learning. It appears that individuals who have an intuitive personality type as per MBTI could be either se-

quential or global as per ILS. As most curricula are created using a sequential pattern, intuitive MBTI personalities may have developed this learning style and consider it their preferred learning style.

Fig. 3 Correlation between MBTI Sensing-Intuitive and ILS Sequential-Global Dichotomies



The visual and verbal dichotomy in ILS did not have any correlation with any of the MBTI dichotomies. According to Felder & Silverman (1988), people gathered information kinaesthetically through visual and verbal inputs. Visual learners remember pictures, diagrams and flowcharts while verbal learners remember spoken information which they hear or discuss.

Table 6 Percentage of Respondents in Each of the ILS Dichotomies

Percentage of Respondents	ILS DichoRomy	Percentage of Respondents
52	Active/Reflective	48
48	Sensory/Intuitive	52
70	Visual/Verbal	30
51	Global/Sequential	49

From the above, it is interesting to note that 70% of the respondents are visual learners and only 30% are verbal learners. All the other learning dichotomies are closer to 50% suggesting that most individuals, regardless of their MBTI personality type, prefer to learn through pictures, diagrams, and flowcharts.

Most individuals, regardless of their MBTI personality type, prefer to learn through pictures, diagrams, and flowcharts.

Segment 2 Correlation between Temperaments & LP Types

Segment 2 compares the temperaments with the LP assessment to see

the correlation between them. Most individuals who either have NF temperament or SJ temperament are generally linked with their associated LP learning style. Those individuals who have the NT or SP temperaments don't generally show a relationship with their associated LP learning style. Some respondents scored equally high in two of the LP learning styles in Table **7** below:

Table 7 Number of Respondents by Temperament and Their LP Assessment

		LP ASSESSMENT RATING*			
Temperament	Total respondents	CGL(NF)	CSL(NT)	ARL(SJ)	ASL(SP)
NF	12	10	1	1	0
NT	12	7	2.5	0.5	2
SJ	10	2	1.5	5.5	1
SP	3	1.5	1.5	0	0
TOTAL	37	20.5	6.5	7	3

* Expansions in Table 2

A majority of the NF, NT, and half of the SP temperaments show preference for the CGL (NF) style of learning while the SJ temperament prefers the ARL (SJ) learning style. A similar distinction also appears in Table 5 wherein the SJ temperament appears to have a different predominant ILS type compared to the other temperaments offering further support to the idea that individuals who showed a preference for the SJ temperament have specific learning traits that are different from other temperaments.

Discussion

Study confirms correlation between specific MBTI and ILS dichotomies. No direct relationship appeared between the 16 distinct MBTI types or the four temperaments with the ILS types. The researchers followed up with LP assessment and it helped define learning styles and their application for trainers. Although, the number of respondents is too small to draw any clear-cut evidence, it offered findings that warrant further exploration. First correlation is between the MBTI extravert and introvert dichotomies and the ILS active and reflective learners. According to Felder & Silverman (1988), active learners preferred to convert information into knowledge through active experimentation and enjoyed working in groups. They indicated that active experimentation involved discussing, explaining, or testing information. Conversely, individuals with an introvert MBTI dichotomy are reflective learners in ILS. Reflective learners preferred to convert information into knowledge through reflective observation by "examining and manipulating the information introspectively" and preferred to work by themselves or work with one other person. Since the temperament did not utilize this dichotomy, segment two did not support or contradict this correlation. This finding suggested that trainers should use active experimentation/activity based learning for extraverts to use in a group, but at the same time provide

time and instances to reflect such as case studies or scenario planning activities to introverts.

Sensory learners preferred "facts, data, and experimentation".

Second correlation is between MBTI sensing dichotomy and ILS sensory learner and the ARL (SJ) learning style. In Fig. 2 individuals with a sensing MBTI dichotomy are sensory learners in ILS. According to Felder & Silverman (1988), sensory learners preferred "facts, data, and experimentation." Sensory learners tend to be slow and methodical, enjoyed details but not complications, and were good at memorizing facts. Table **7** shows that individuals with the SJ temperament generally have an ARL (SJ) LP learning style. According to Goley (1982), ARL (SJ) learners needed structure with lessons that were "presented sequentially and in increments that make sense" and enjoyed "completing workbooks, programmed learning materials, work sheets and the like".

Third correlation is between the MBTI intuitive dichotomy, the ILS intuitive learner, and the CGL (NF) learning style. Fig. 3 shows that most respondents with the MBTI intuitive dichotomy are also ILS intuitive learners, although, some scored as sensory learners. According to Felder & Silverman (1988), those who preferred to learn intuitively preferred principles and theory. Intuitive learners liked innovation; were bored by details, and enjoyed complications. Working quickly, intuitive learners are sometimes casual in their work. Table 7 indicates that both the NF and NT temperaments prefer to learn through the CGL (NF) learning style. According to Goley (1982), the CGL (NF) learning style like emotionally moving presentations and wanted the trainer to be enthusiastic; enjoyed small group discussions that provided an opportunity for personal interaction; wanted to gain skills and knowledge about how to inspire others to be more considerate and useful.

Fourth correlation is between the MBTI sensing dichotomy and the ILS sequential learner, as in fig. 3. Felder & Silverman (1988) found that sequential learners solved problems by following a linear reasoning process and generally are "strong in convergent thinking and analysis." Most curricula and course materials are developed for sequential learners. Fig. **3** shows that there is no connection between the MBTI intuitive dichotomy and the ILS global learner. Felder & Silverman (1988) showed that teaching is traditionally leaned towards sequential learning, and this could explain why many respondents with the MBTI intuitive dichotomy preferred ILS sequential learning. Global learners may have become skilled at how to learn sequentially. Table 6 shows that there are more visual learners compared to verbal learners in the ILS assessment. Felder & Silverman (1988) indicated that "visual learners remember best what they see picture, diagrams, flow charts, time lines, films, demonstrations" and will often times forget what was said to them. This finding suggested that trainers should include visual materials to il-

lustrate key points to encourage learning.

The study indicates that trainers need not be certified as a MBTI administrator. However, knowledge of the behaviors of different personalities and the different learning styles would enable them to use different learning methodologies, a variety of resources, to individualize learning.

Conclusion

Findings indicate personality does affect learning style. If trainers are cognizant of each trainee's personality type, they can use a mixture of all learning styles in training methodologies to increase employee learning effectiveness. Study also throws questions like, "If active learner wants high instructor presence and a passive learner wants low instructor presence; how could this issue be handled"?

Internet makes it difficult to generalize human behavior especially with respect to learning. Studies which demonstrate link between personality and learning helps identify some hidden patterns which can determine some rules to learning. Factors that propel candidates to learn different subjects are a matter of context and a host of related variables which have not been considered in this study.

Further research merited larger sample to provide a broader view of the correlations between certain dichotomies in MBTI and ILS. Demographic information has not been considered which may have had a significant impact on the study. Also, LP assessment did not show any differences between the MBTI thinking-feeling dichotomies. Correspondingly, the MBTI assessment did not show any correlation with the LP visual-verbal dichotomy. It is quite possible that any other learning style, if used, may show certain evidences. Study of this kind with the above mentioned modification may provide some interesting insights.

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