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THE LEARNING STYLE INVENTORY DEBATE REVISITED; AN EMPIRICAL ASESSSMENT OF THE CONSTRUCT VALIDITY ISSUE RELATED TO EXPERIENTIAL LEARNING THEORY

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ABSTRACT

Literature review indicates that a debate is currently going on as to the soundness of Kolb's experiential learning theory and the usefulness of its operational measurements, as performed by the Learning Style Inventory (LSI) instrument. In view of the growing importance of experiential learning/teaching processes in the business disciplines and the consequent pervasive utilization of Kolb's LST for clinical assessment and diagnosis, it is most crucial that an acceptable resolution of the debate be reached. This paper empirically evaluates the construct validity dimensions of experiential learning theory against Jungian theory of personality types to which Kolb's theory is conceptually linked.

INTRODUCTI ON

The phenomenal growth and refinement efforts in the utilization of experiential and simulation based learning/teaching methods have spawned the inevitable debates and arguments regarding the validity and effectiveness of these methods. These debates and arguments, strident though they nay be at times, are useful and needed if the field is to reach an appropriate level of academic maturity.

Literature review indicates that a debate is currently going on as to the soundness of Kolb's experiential learning theory and the usefulness of its operational measurements, as performed by the Learning Style Inventory (LSI) instrument, in explaining the experiential learning process [3, 5, 6, 17, 18, 20, 21, 221. In a recent article, Freedman and Stumpf [6] concluded that the experiential learning theory, as postulated by Kolb, is basically invalid because the LSI instrument's internal characteristics of reliability are suspect. Kolb [141, in his rebuttal to these charges, argues that a theory's validity can neither be proven nor disproven on the basis of a single operational measure. What is required, adds Kolb, is an overall review of the different operational measures and the respective construct validities.

An acceptable resolution of the debate is necessary if the theoretical and methodological bases of experiential learning theory is to be placed on a firmer ground. It is obvious that such a resolution can be brought about only through a thorough investigation of the assumptions and operational definitions of the theory's dimensions. This paper examines the fundamental assumptions of the experiential learning theory and identifies the elements that relate to the Jungian concepts of personality theory. Additionally, the experiential learning dimensions, as measured by Kolb's LSI and the Jungian dimensions of personality preferences, as measured by the Myers-Briggs Type Indicator, are statistically treated to determine the nature of the relationship, if any. The purpose of this paper is to provide additional information, empirically generated, about the LSI and the overall usefulness of experiential learning theory.

THEORETICAL FOUNDATIONS

Experiential Learning Theory

Learning can be viewed in many ways. In the experiential learning theory, learning has been viewed as a process by which persons recognize elements of their environment as forms of knowledge and choose to exploit the environment through appropriate adaptation mechanism [7]. Thus, a person viewing a picture and recognizing the aesthetic dimensions may respond with emotional feeling while another viewing the same picture and recognizing a symbolic representation of an idea may respond by categorizing that idea within a conceptual framework.

Kolb's experiential learning theory is based on structural analysis of this learning process that identifies two basic underlying dialectic dimensions: concrete experience and abstract conceptualization; and active experimentation and reflective observation [10]. These two dimensions, according to Kolb, identify four genotypic adaptive abilities or learning styles in a cyclical pattern that suggests a sequence of learning. In the concrete experience (CE) phase, the learner is able to involve himself fully, openly and without bias in new experiences from many perspectives. This leads the individual to the next phase of reflective observation (R0) where he is able to observe and reflect the experience from many perspectives. From such reflections, the learner moves to abstract conceptualization (AC) where he is able to create concepts that integrate observations into logically sound theories. Finally, through the phase of active experimentation (AE), the learner is able to use these theories to make decisions and solve problems. The process of experiential learning is thus conceptualized as a four stage cycle as depicted in Figure 1 below.

FIGURE 1
EXPERIENTIAL LEARNING CYCLE

Kolb, in describing this four stage model, further hypothesized that learning requires abilities that are polar opposites that force the learner to continually choose the specific set of learning abilities that he will bring to bear in any specific learning situation [10] . The figure above represents two primary dimensions to the learning process. The first dimension represents the concrete experience of events at one end and abstract conceptualization at the other. The other dimension has active experimentation at one extreme and reflective observation at the other. Thus, in the process of learning, one moves in varying degrees from action to observation, from specific involvement to general analytic detachment.

Experiential Learning and the Development Process

Kolb, in rebutting Stumpf and Freedman, argues that LSI's low reliability is not justification enough for discrediting the experiential learning theory. The theory, claims Kolb, has its foundation rooted in sound psychological theories of learning and growth. The theory is intended to provide an appropriate framework for understanding and explaining the adult growth and development process. Kolb [16] states:

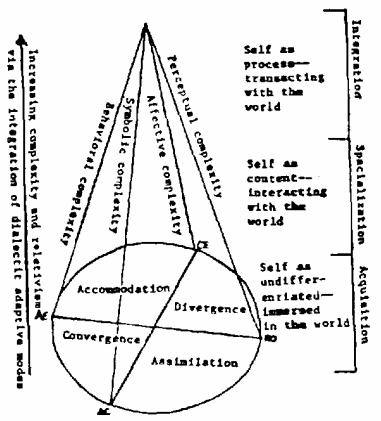
> "From this broader perspective, learning becomes a central life task, and how one learns becomes a major determinant of the course of his personal development. The experiential learning model provides a means of mapping these different developmental paths and a normative adaptive ideal-- a learning process wherein the individual has highly developed abilities to experience, observe, conceptualize, and experiment."

He conceptualizes the human growth and development to be consisting of three broad stages. The first stage, acquisition, marks the acquisition of basic learning abilities and cognitive structures. In the second stage, specialization, development primarily follows paths that accentuate a particular learning style. Individuals shaped by social, educational and organizational socialization forces develop increased competence in a specialized mode of adaptation that enables them to master the particular tasks. The third stage, integration, is marked by the reassertion and expression of the non dominant adaptive modes or learning styles.

Through these three stages, development (according to Kolb) is marked by increasing complexity and relativism in dealing with the world and one's experience, and by high level integration of the dialectic conflicts between the four primary genotypic adaptive modes of CE, RO, AC, and AE. He further postulates that, with each of these four modes, a major dimension of personal growth is associated. Development in CE adaptive mode is characterized by increases in affective complexity. Development in the RO mode is characterized by increases in perceptual complexity. Development in the AC and AX nodes are characterized by increases in symbolic complexity and behavioral complexity, respectively. Kolb [16] develops a model depicting these relationships as shown in Figure 2 below.

He states that, in the early stages of development, progress along any of these dimensions can occur with relative independence from the other. At the highest stages of development, however, the adaptive commitment to learning and creativity requires integration of these four adaptive modes (CE, RO, AC, AX). Thus, the early stages of growth are depicted by the base of the cone that are separated from each other. At the later

FIGURE 2
MODEL OF GROWTH AND DEVELOPMENT
THROUGH EXPERIENTIAL LEARNING
stages of development, the four dimensions of development



come together representing the integration process. Any individual learning style would be represented on this cone by four data points on the four vertical dimensions of development. A converger in development stage two (specialization) would be characterized by high complexity in the symbolic and behavioral modes and lower in the affective and perceptual modes. As he moves into stage three of development, his complexity scores in the affective and perceptual modes would increase.

Experiential Learning and the Jungian Framework of Development

The validity of the experiential theory, argues Kolb [14], is, to a large extent, dependent upon operational definitions and measures drawn from other well established psychological theories. Therefore, it is necessary to critically evaluate the nature of such operational definitions and their theoretical foundations if one has to assess the strengths or weaknesses of the constructs.

Jung's conceptualization of learning and development process figures prominently in the experiential theory. In discussing the common bases, Kolb [16] states:

> "Experiential learning is not a molecular educational concept, but rather is a molar concept describing the central process of human adaptation to the social and physical environment. It, like Jungian theory, is a holistic concept that seeks to describe the emergence of basic life orientations as a function of dialectic tensions between basic modes of relating to the world."

In this paper, an attempt has been made to determine statistical relationship between the operational measures of Kolb's experiential learning theory and Jung's personality dimensions as measured by the LSI and the Myers-Briggs Type Indicator (MBTI), respectively. It is therefore necessary to identify the similarities between the two theories.

Jung [8] viewed development as a continuous process of adaption with a stream of new and recurring issues that call for attention and attempts at resolution. In the

Jungian personality theory, the apparent random variation in human adaptation behavior is seen to be quite orderly and consistent, being caused by certain basic differences in mental functioning. These basic differences concern the way people prefer to use their mental faculties, specifically the way they use perception and judgment. According to the theory, there are two major modes of perceiving and comprehending the world: (1) via the senses (S) and (2) via intuition (N). Additionally, there are two modes of judging or evaluating what has been perceived: (1) thinking, or rational inference abilities (T) and (2) feeling, or value oriented discriminations (F). The individual develops a preference for one mode of perceiving and one mode of judging. Either kind of judgment can be matched with either kind of perception. Any of the four combinations are possible: (1) Sensing-Thinking (ST), (2) Sensing-Feeling (SF), (3) Intuition- Thinking (NT), and (4) Intuition-Feeling (NE). Although all of the four functions are present in people and are considered to be inherent capacities, each individual has a constitutional propensity towards the utilization and development of one or another perception judgment pairing. This constitutional determinant in combination with environmental opportunities and demands is responsible for shaping the individual's "superior functions."

However, individuals are potentially capable of two "auxiliary" perception-judgment combinations and one "inferior" pairing. These are usually dormant and lie undeveloped in the individual. The Jungian model assumes that each individual establishes a preferred superior functional mode of perceiving and a preferred mode of judging. The alternate auxiliary and inferior modes remain underdeveloped or tend to be distrusted. However, in development and growth, the individual possesses the capacity to adapt the alternate functions. The similarity of Kolb's conceptualization of the process of development to Jung's version is obvious.

In addition to the basic perceptual and judgmental dimensions, Jung formulated two other mutually valuable orientations to life. These are: (1) extraversion (E) and (2) introversion (I). The extrovert's main interests are in the outer world of people and things, while the introvert's main interests are in the inner world of concepts and ideas. When circumstances permit, the introvert directs both perception and judgment upon ideas, while the extrovert likes to direct both upon his outside environment.

Finally, Jungian framework postulates a remaining preference between judgment (J) and perception (P) as a way of life, a method of dealing with the surrounding world. Both must be used, but both cannot be used at the same time. Individuals alternate between the perceptive attitude and the judging attitude. There is a fundamental difference between the two attitudes. In the judging attitude, in order to come to a conclusion, perception must be shut off for the time being. Conversely, in the perceptive attitude, one shuts off judgment for the time being.

Thus, using Jung's theoretical framework for personality types, we arrive at four basic preferences with regard to the use of perception and judgment; the choice between two rival ways of perceiving (S-N), the choice between two rival ways of judging (T-F), the choice between two rival fields for their use (E-I), and the choice between two methods for dealing with the surrounding world (J-P).

From the discussions above, the similarities of the underlying concepts, especially as these relate to the development process, are striking. The experiential learning theory was developed by synthesizing a number of psychological constructs among which Jung's framework has a prominent place.

METHOD

An operational goal of this paper is the critical review of the nature of the construct validity claimed on behalf of the experiential learning theory. Kolb [14] seems to demand such review when he states:

> "Freedman and Stumpf concentrate primarily on the internal characteristics of the LSI and hence can draw conclusions about the utility of the instrument but not about the validity of the theory on which it is based. That requires a review of the construct validity of the LSI and other operational measures of the variables in experiential learning theory."

According to the APA standards [1] , construct validity studies attempt to answer two significant questions. These are (a) what is the psychological construct that is being measured by the test? and (b) how well does the test measure this construct? According to Cronbach and Meehl [4] , the constructs are not defined by isolated events, but by a nomalogical network or system of interrelated concepts, propositions, and laws that relate observation to other observations, observations to theoretical constructs, and one theoretical set of constructs to another. The methodological framework utilized in this study is congruent with the accepted standards stated above. The LSI was chosen as the operational measure of Kolb's experiential learning theory while the Myers-Briggs Type Indicator (MBTI) was chosen as the operational measure of Jung's theory of personality type.

Subjects

The sample consisted of 117 2nd semester seniors in the College of Business Administration at a North Central State University. The subjects were enrolled in five sections of Business Policy course which was a college core requirement. Three of the sections were taught by one instructor, while the remaining two were taught by a second instructor. 35% of the subjects were Management majors, 25% were Accounting majors, 20% were Marketing majors, 10% were Economics majors, and 10% were other majors. 56% of the subjects were male and 44% female. The median age of the sample was 21.3 years.

Procedure

Both the LSI and the MBTI instruments were administered on the same day about halfway through the Spring, 1981 semester in all of the five sections. The LSI was administered during the first 15 minutes of the class period followed by the MBTI for the remaining 45 minutes.

Hypotheses

Based on the analysis of the operational measures of the constructs in the experiential learning theory and the theory of personality types, the following relationships were hypothesized in the present study:

1. a. A significant negative correlation exists between CE and Introversion (I)
   b. A significant positive correlation exists between RU and Introversion (I)
   c. A significant positive correlation exists between AC and Introversion (I)

d. A significant negative correlation exists between Al and Introversion (I)

2. a. A significant negative correlation exists between CE and Intuition (N)
   b. A significant negative correlation exists between RO and Intuition (N)
   c. A significant positive correlation exists between AC and Intuition (N)
   d. A significant positive correlation exists between AE and Intuition (N)

3. a. A significant positive correlation exists between CE and Feeling (F)
   b. A significant negative correlation exists between RO and Feeling (F)
   c. A significant negative correlation exists between AC and Feeling (F)
   d. A significant positive correlation exists between AE and Feeling (F)

4. a. A significant positive correlation exists between CE and Perceptual mode (P)
   b. A significant positive correlation exists between RU and Perceptual mode (P)
   c. A significant negative correlation exists between AC and Perceptual mode (P)
   d. A significant positive correlation exists between Al and Perceptual mode (P)

Analysis

The SPSS statistical package analysis was performed on the data and Pearson Correlation coefficients were computed. The results of the analysis are presented in Table 1 below:

TABLE 1
PEARSON CORRELATION COEFFICIENTS BETWEEN
LSI AND MYERS-BRIGGS TYPE INDICATOR

	CE	RO	AC	AE
EI*	-0.1591 (117) P=0.043	0.2133 (117) P=0.010	0.0587 (117) P=0.265	-0.2767 (117) P=0.001
SN*	0.0446 (117) P=0.317	-0.2362 (117) P=0.005	0.0114 (117) P=0.452	0.0875 (117) P=0.174
TF*	0.1102 (117) P=0.119	-0.0058 (117) P=0.475	-0.0416 (117) P=0.328	0.0695 (117) P=0.228
JP*	0.0565 (117) P=0.273	0.0354 (117) P=0.352	-0.0233 (117) P=0.401	0.0206 (117) P=0.413

*The four MBTI dimensions indicate continuous scores obtained from raw scores with I, N, F, P, representing values in excess of 100 and E, S, T, J representing values less than 99.

RESULTS

With the exception of item ld and 2b, none of the hypothesized relationships were found to be statistically significant. However, it is interesting to note that with the exception of 2a, the results of the analysis indicate that the relationships are all in the direction hypothesized.

DISCUSSION

The most obvious conclusion that can be drawn from the sample results obtained is that, with minor exception, whatever relationships exist between the operational dimensions of Kolb's experiential learning theory and Jung's personality theory of types, are all due to chance. In turn, we may conclude that, as instruments designed to be operational measures of the respective theories, LSI, or MBTI, or both, are unreliable. Hence, a comparison of the reliability measures of both instruments are in order.

Literature review indicates that LSI has been criticized by a number of researchers for its low reliability [3, 5, 6, 17, 18, 20, 21, 22]. The median reliability coefficient of the £SI from two studies has been reported to be .52 [21] . On the other hand, the reliability coefficients of the four dimensions of the MBTI (El, SN, TF, JP) for college students have been reported to be .81, .87, .86, and .80, respectively [19]. Since the MBTI is the more reliable of the two instruments, the absence of statistically significant correlations between these operational measures can logically be attributed to the unreliability of the LSI.

Based on the theoretical and empirical evidence presented in this paper, two significant conclusions can be put forward. First, the results of the statistical analysis indicate that LSI is, in fact, an unreliable instrument. The four dimensions of the LSI did exhibit the hypothesized directionality obtained by analysis of the two theories. Thus, it may be summarized that the four dimensions of the LSI (CE, RU, AC, AE) are possibly measuring the same things that the respective dimensions of the MBTI (El, SN, TF, JP) are measuring. But, since the relationships are not statistically significant, whatever the LSI dimensions are measuring are being measured by chance. This is an indirect confirmation of the earlier findings about the unreliable nature of the LSI instrument. Second, the chance relationship between the dimensions of LSI to statistically more reliable and valid dimensions of the MBTI undermines claims as to the internal consistency of the experiential learning theory. Since the operational measures of the experiential learning theory, as represented by LSI, are only related by chance to other reliable and valid measures of similar constructs (MBTI), one can reasonably conclude that classification of a learner in one of the four operational categories may be due to personal characteristics, situational factors, or measurement errors. This, in turn, prevents estimates being made about the components of variance for measurements made by the instrument. Since reliability of such estimates is essential to construct validity, the experiential learning theory as a framework for organizing and explaining data is highly suspect.

In view of the growing importance of experiential learning/teaching processes in the business disciplines, the cumulative effects of the past and present negative findings about the LSI are quite sobering. The influences of such less-than-adequate theory construction and instrumentation activities need to be methodically evaluated and preventive measures developed if the discipline is to move towards academic maturity.

REFERENCES

[1] American Psychological Association, Standards for Educational and Psychological Tests (Revised Ed.). Washington, D.C.: American Psychological Association, 1974.

[2] Certo, Samuel C. and Steven W. Lamb, 'Identification and Measurement of Instrument Bias Within the Learning Styles Inventory Through a Monte Carlo Technique" in Ray, Dennis F. and Thad B. Green (eds.) Proceedings of Southern Management Association, 1979.

[3] Certo, Samuel C. and Steven W. Lamb, "An Investigation of Bias Within the Learning Styles Inventory Through Factor Analysis" Journal of Experiential Learning and Simulation, Vol. 2, No. 1, 1980, pp. 1-7.

[4] Cronbach, L. J. and P. E. Meehl, "Construct Validity in Psychological Tests," Psychological Bulletin, 1955, No. 52, pp. 281-302.

[5] Freedman, Richard D. and Stephen A, Stumpf, "What Can One Learn From the Learning Styles Inventory?" Academy of Management Journal, Vol. 21, No. 2, 1978, pp. 275-282.

[6] Freedman, Richard D. and Stephen A. Stumpf, "Learning Style Theory: Less Than Meets the Eye," Academy of Management Review, Vol. 5, No. 3, 1980, pp. 445-447.

[7] Gish, Glen L. "Experiential Learning Theory: Explicating the Process," in Kolb, David A. and Donald M. Wolfe (eds.) Professional Education and Career Development: A Cross Sectional Study of Adaptive Competencies in Experiential Learning: Final Report. NIE Grant No. NIE G-77-0053. 1981.

[8] Jung, C. G. Psychological Types (Princeton, New Jersey: Princeton University Press, 1971).

[9] Jung, C. G. The Structure and Dynamics of the Psyche (New York: Panthena, 1960).

[10] Kolb, David A., "On Management and the Learning Process," in Kolb, David A., Irwin N. Rubin, and James M. McIntyre (eds.) Organizational Psychology A Book of Readings (Englewood Cliffs, N.J.: Prentice-Hall, 1974, 2nd ed. , pp. 27-41.).

[11] Kolb, David A., Individual Learning Styles and the Learning Process, Working paper No. 1636-71, Sloan School of Management, MIT, 1971.

[12] Kolb, David A. Learning Style Inventory: Self- Scoring Test, Interpretation Booklet and Technical Manual (Boston: McBer and Company) 1979 edition.

[13] Kolb, David A., "Disciplinary Inquiry Norms and Student Learning Styles, Diverse Pathways for Growth," in Chickering, A. (ed.), The Modern American College (San Francisco: Jossey-Bass) 1981.

[14]Kolb, David A., "Experiential Learning and the Learning Style Inventory: A Reply to Freedman and Stumpf," The Academy of Management Review, Vol. 6, No. 2, April, 1981, pp. 289-296.

[15] Kolb, David A., Irwin M. McIntyre (eds.) Organizational Psychology: An Experiential Approach (Englewood Cliffs: Prentice-Hall, 3rd ed., 1979).

[16] Kolb, David A. and Donald M. Wolfe, Professional Education and Career Development: A Cross Sectional Study of Adaptive Competencies in Experiential Learning: Final Report, NIE Grant No. NIE-G-77-0053 (Cleveland, Ohio: Weatherhead School of Management, Case Western Reserve University), 1981.

[17] Lamb, Steven W. and Samuel C. Certo, "The Learning Styles Inventory and Instrument Bias," Academy of Management Proceedings, 1978, pp. 28-32.

[18] Lamb, Steven W. and Samuel C. Certo, "An Instrument for the Assessment of Learning Dimensions: A Progress Report on the Learning Dimension Scale (LDS)" in Biggs, William D. and David J. Fritzsche (eds.) The Proceedings of the Eighth Annual Conference of the Association for Business Simulation and Experiential Learning, 1981, pp. 122-125.

[19] Myers-Briggs, I. The Myers-Briggs Type Indicator (Palo Alto, California: Consulting Psychologist Press, 1962).

[20] Plovnick, M. S., "Primary-Care Career Choices and Medical Student Learning Styles," Journal of Medical Education, 1975, No. 50, pp. 549-855.

[21]Stumpf, Stephen A., and Richard D. Freedman, "The Learning Style Inventory: Still Lees Then Meets the Eye," Academy of Management Review, Vol. 6, No. 2, April, 1981, pp. 297-299.

[22] Wunderlich, R. and C. L. Gjerde, "Another Look at the Learning Style Inventory and Medical Career Choice," Journal of Medical Education, 1978, No. 53, pp. 45-54.