THREE LEARNING STYLES MODELS: RESEARCH AND RECOMMENDATIONS FOR DEVELOPMENTAL EDUCATION

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Abstract

The purpose of the present article is to describe psychometric issues associated with three different learning styles models and instruments designed to assess those models. Some background to the learning styles idea is presented along with suggestions for utilizing this information with developmental students. The learning styles concept has much potential for improving instruction, especially with under-prepared students. The learning styles instruments discussed in this article have acceptable levels of reliability and validity though much more research in this area is needed.

Learning styles or types are one aspect of the teaching-learning process with considerable educational potential, especially for academically under-prepared students. Yet, as has been discussed in other articles (Lemire, 1987; Lemire, 1996; Curry, 1990), the psychometrics of learning styles assessment leaves much to be desired. The purpose of the present article is to describe three learning styles models which can be used to enhance instruction with developmental students; to discuss validity and reliability issues associated with learning style instruments; and to present educational applications of the results gathered. The instruments discussed represent three different approaches to assessment of learning styles: Bandler and Grinder's (1975) neurolinguistic programming; a four-factor model based on thinking by Piaget, Gregorc, Butler, Kolb and Boyatzis, and Lemire; and a Jungian type model.

Background

The idea of learning types or styles goes back to the early Greeks (Santrock, 1997; Dunn, Sklar, Beaudry, & Bruno, 1990). "As early as 400 BCE, Hippocrates classified people's personalities according to their body type" (Santrock, 1997, p. 19). Dunn, et al. (1990) state:

> Much clinical and experimental evidence demonstrated differential processing in the left and right cerebral hemispheres of humans' intact brains. Their specific contributions to particular cognitive functions are still debated and continue to be the object of scientific investigations.(p. 284)

John Locke, in the 16th century, described three styles (what he called "modes") of perception: intuitive, demonstrative, and sensitive (Stumpf, 1993).

In the early part of this century, Pavlov (Windholz, 1997; Wolpe & Plaud, 1997) talked about personality types, as did Sheldon (Santrock, 1997). Probably the most well-known of the type models is Jungian (Enns, 1994; Reiff, 1992; ASTD, 1988). Alfred Adler (Lundin, 1989; Deeks, 1997) discussed four "types" identified "by their level of social interest and also the manner of functioning (in the) way that they choose . . . in striving toward perfection" (Deeks, 1997, p. 310). In the second half of the 20th century, the idea of types or styles is still popular, especially with regard to schooling, instruction, and education (Lemire, 1996).

While there is growing scientific data to support the concepts of learning styles, cognitive styles, and personal styles, they are still considerably under-studied. In reviewing the published research on this topic, it was found that there are three fundamental problems with learning styles instruments: (1) confusion in definitions, (2) weaknesses in reliability and validity, and (3) the identification of relevant characteristics in instructional settings (Lemire, 1996). For the professionals interested in learning styles, Dunn, Beaudry, and Klavas (1989) have summarized the research into this topic (p. 50-58). In research reported in 1983, Ferrell concluded:

> Those working with learning styles have proceeded with the development of an increasing number of learning-styles instruments without regard for a theoretical framework providing evidence for a learning-styles paradigm that is acceptable to all working in the field. Empirical evidence relating the instruments to each other and to the theory base surrounding the construct is needed. (p. 33)

For the purposes of this article, learning style is defined as one of a related group of constructs, including cognitive style and personal style, which reflect natural genetic inclinations representative of innate biological origins (de Waal, 1996; Garger, 1990). It is true that there are some learning and cultural influences which impact upon style, particularly social roles, but this is a relatively small influence (Phelps, Davis, & Schartz, 1997; Caine & Caine, 1990). Learning styles, cognitive styles, and personal styles are, at this point, functionally synonymous and refer to the characteristic ways in which we take in and process information about the learning environment. The semantics involved are going to have to be clarified, but this task is beyond the scope of the present article.

The Biological Basis for Learning Styles

Learning style is seen as an extension of personality and personal style or type. Several studies have suggested a biological basis for personality (Tellegen, 1987; Gallagher, 1994; Ellis, 1979; Thomas, Chess, & Birch, 1970; Rifkin, 1998; Plomin, 1997; Phelps, Davis, & Schartz, 1997). Holden (1987) has stated, "Biology may not be destiny, but genes apparently have a far greater influence on human behavior than is commonly thought" (p. 18). McCrae and Costa (1997) have gone so far as to suggest that "these data strongly suggest that personality trait structure is universal" (p. 509). While considerably more evidence is needed to define learning style as solely biologically-based, it does seem clear that we inherit certain

tendencies that impact on personality and learning, and one of these groups is learning styles. To be technically correct, it is accurate to say that an interaction of biological factors and social factors produce behavior and thinking as represented in the learning styles concept.

One of the most well-researched personality typologies is that of Holland (1996) (in Herr & Cramer, 1996). Holland's model matches six kinds of personalities or types to occupational interests and choice. His approach "gives explicit attention to behavioral style or personality as the major influence in career choice and development" (p. 219). In this sense, Holland's work is part of a long tradition of conceptualizations of individual differences in personality type encompassing such persons as Spranger (1928) and Murray (1938). In other research, York and Tinsley (1986) have related Witkin's cognitive styles model to Holland's model, focusing on the relationship between cognitive styles and Holland's personality types:

> The field dependence/field independence continuum represents differences in the way people perceive their environments. The perceptions of field-dependent persons are heavily influenced by the overall environmental context, whereas field-independent persons are better able to isolate a specific part of the environment and to perceive that part independently of the environment as a whole. (p. 535)

Three Approaches to Learning Styles

The purpose of this article, then, is to present and discuss three different approaches to the concept of learning styles and instruments that measure them. These models and instruments are:

1. Childers' modalities approach to primary representational systems is assessed with the Student Learning and Interpreting Modality Instrument (SLIMI) (Lemire, 1987), the Learning and Interpreting Modality Instrument (LIMI) (Lemire, 1998), and the Swassing Barbe Modality Kit (Swassing and Barbe, 1984). Each of these instruments measures three basic learning modalities: visual, auditory, and haptic (sometimes referred to as kinesthetic and tactile) learning preferences.

2. A multi-dimensional approach to learning or cognitive style associated with such people as Piaget, Kolb and Boyatzis, Gregorc, and Butler, and is assessed with the How I Learn Inventory (HILI) (Lemire, 1998). This instrument has four elements along two continua from abstract to concrete and general to specific.

3. An approach to personality type or learning style based upon a Jungian typology, most normally associated with the Myers-Briggs Type Indicator or MBTI, but assessed here using Lemire's (1988) Ego Inventory. The Ego Inventory measures

four approaches to learning or processing information: sensing, intuiting, feeling, and thinking (summarized as SIFT).

Three Basic Learning Modalities: Visual, Auditory, and Haptic and Associated Instruments

The modalities approach to learning styles can be traced back, at least, to Childers (1985) in an article entitled, "Neuro-Linguistic Programming: Enhancing Teacher-Student Communications." In his article, Childers cites a 1975 book by Bandler and Grinder called Structure of Magic I. The NLP approach is one that helps explain how people organize their experience. An important assumption associated with this approach is that people experience the world differently due to the ways in which we process information through our senses. In a 1985 article by Bradley and Biedermann, these two authors also give credit to Bandler and Grinder's early work which they then trace back to Husserl's phenomenological philosophy.

Earlier Research

The author has been studying and researching learning styles for the last 20 years. Over that period of time some descriptive data have been assembled regarding the percentages of learning style preferences for different groups. This information is presented below. The data were gathered by using the SLIMI and LIMI, which assess three major modalities: visual, auditory, and haptic learning preferences. The visual modality refers to learning best by seeing, looking, and observing, while the auditory modality refers to learning most effectively by hearing, talking, or interacting. The haptic modality, which involves kinesthetic and tactile elements, refers to a learning preference of doing, making, or practicing.

In 1987, the Student Learning and Interpreting Inventory (SLIMI) was administered to 27 college students at the University of Wyoming. Sixty-three percent of these students exhibited a clear preference for one of the three basic kinds of learning styles. Fifteen percent exhibited a preference for two of the modalities. Finally, 22% of these students indicated no clear preference for any of the three basic kinds of learning styles (visual, auditory, haptic). Of those showing a learning style preference, 52% of the students showed a preference for the visual modality, 17% showed a preference for the auditory modality, and 31% showed a preference for the haptic (kinesthetic-tactile) modality.

The Learning and Interpreting Modality Instrument (LIMI) was given to a large group of community college students (n=77) in the spring of 1995. These students were given a total of four instruments, all designed to measure the same learning style preferences. Of these students, there was about 75% congruence between the different instruments (if they scored high on one, they scored high on the other instruments). These students were asked how they saw their own learning styles. About 60% of the time their self-perception matched the

results of the tests that were given. Of these students, 75% were visual learners, 6% were auditory learners, and 18% were haptic learners.

In a different assessment, the Swassing Barbe Modality Index was given to a group of 33 adult college students in the spring of 1995. These results were consistent with those of Stensrud and Stensrud (1983) who studied a group of teachers and found that 84% preferred a visual style, 10% preferred an auditory style, and 5% preferred a haptic style.

More Results

In a recent survey of community college students in the spring of 1998, the Learning and Interpreting Modality Instrument (LIMI) was used to assess modality preferences. There were nine males and forty-one females (n=50) in this sample. The results were as follows: 62% visual, 5% auditory; and 36% haptic.

Also, in the spring of 1998, another group of college students (male = 23, female = 40, n = 63) were given the LIMI. These results were similar: 61% visual, 10% auditory, and 38% haptic.

In the spring of 1997, the LIMI was given to a group of high school seniors (male = 11, female = 6, n = 17). Those results were as follows: 41% visual, 18% auditory, and 47% haptic.

This earlier research by Lemire does seem to indicate that community college students have distinctive and consistent learning style preferences, the strongest being visual, followed by haptic, and then auditory. There appears to be congruence between instruments and these preferences and this congruence has implications for instruction.

Reliability

In the spring of 1995, the reliability of the LIMI was calculated on several groups of mostly white community college students. Both test-retest and split-half reliabilities were calculated.

These reliabilities are reported below:

Group 1:			Group 2:		
Visual	=	.76	Visual	=	.78
Auditory	=	.71	Auditory	=	.68
Haptic	=	.77	Haptic	=	.76

The corrected Spearman-Brown reliabilities for the three subscales are reported below:

Group 1:			Group 2:		
Visual	=	.46	Visual	=	.39
Auditory	=	.15	Auditory	=	.39
Haptic	=	.31	Haptic	=	.44

The Standard Error of Measurement for Group 1 was:

Visual	=	2.38
Auditory	=	1.74
Haptic	=	2.22

The Standard Error of Difference at .05 was:

Visual	=	3.98
Auditory	=	4.21
Haptic	=	3.90

These results meet acceptable standards and are consistent with data assembled on other similar instruments.

Implications for Learning

Figure 1 identifies instructional strategies and activities utilizing the three basic modalities: visual, auditory, and haptic. The suggestions are not exhaustive but are meant to provide instructional alternatives for teachers in real classrooms. These lists were developed by instructors as representative of things teachers can do to maximize effective teaching. These strategies, incorporating all three modalities, reflect the findings reported above verifying the multimodal ways in which developmental students learn. Effective instruction would involve elements of all three components.

Figure 1. Specific Strategies for Enhancing Instruction through Primary Modalities or Learning Styles

VISUAL (Seeing) Suggested Strategies	AUDITORY (Hearing) Suggested Strategies	HAPTIC (Doing) Suggested Strategies
graphic organizers	tape and read	skits
read and watch	listen and compare	presentations
show	tell	do
guided practice	lecture	board work
guided notes	singing back	guided notes
modeling	sing first	posters

VISUAL (Seeing) Suggested Strategies	AUDITORY (Hearing) Suggested Strategies	HAPTIC (Doing) Suggested Strategies
posters	talk and listen	projects
read instructions first	blindfold	salt and flour projects
work sheets	Socratic questionning	labs
chalkboard	audio tape	demonstrations
pictures	cooperative learning	open-ended
stick activities	active listening	investigations
video tapes	orally summarize	simulations
instructional TV	compare and contrast	educational games
body language	group work	walking
smile	dyads/triads	modules
charting		stations
collages		manipulatives
charts		group work
webbing		work sheets
advance organizers		
written notes		

To most effectively use these strategies, the teacher of developmental students is encouraged to assess learning and cognitive styles. Then the teacher can select from these lists the instructional activities which match student strengths. Students can also be asked to stretch their own style preferences into areas that may be weak. For example, male developmental students who have a haptic orientation should also be asked to listen carefully, as when instructions are given. Learning consolidation will be increased if all three of the modalities are used in teaching; visual will reinforce auditory and auditory will reinforce haptic.

A Multi-Dimensional Approach to Learning: The How I Learn Inventory (HILI)

Piaget, Gregorc, and Kolb have all identified learning preferences that occur on a continuum from abstract to concrete (Gregorc, 1982; Kolb & Boyatzis, 1993; Piaget in Santrock, 1997). In addition, there is an intersecting and interacting continuum which ranges from specific-singular to simultaneous processing (See Figure 2). Besides being intuitively sound, these

models have the added advantage of concurrent conceptual validity. Butler (1984, 1987, 1988) has done considerable work on the educational and instructional implications and practicalities of this kind of four-element model. Gregorc (1979) defines learning style as "distinctive behaviors which serve as indicators of how a person learns from and adapts to (the) environment. It also gives clues as to how a person's mind operates" (p. 234).

The HILI is an assessment of preferred learning style that is based around four dimensions which are presented in Figure 2. These four dimensions have been identified by at least four different authors, thus, lending credibility to the argument for concurrent validity of the basic concepts identified. Technical data for the HILI are available in a manual from Lemire (1998).

Figure 2. The Four Dimensions of the "How I Learn Inventory" (HILI)

	Type I Specific Sequential (Lemire) Concrete Sequential (Gregorc-Butler) Analytic	
Type IV Specific Simultaneous (Lemire) Concrete Random (Gregorc-Butler) Linear Concrete (Piaget) Concrete (Kolb & Boyatzis)		**Type II** General Sequential (Lemire) Abstract Sequential (Gregorc-Butler) Formal (Piaget) Abstract (Piaget) Abstract (Kolb & Boyatzis)
	Type III General Simultaneous (Lemire) Abstract Random (Gregorc-Butler) Global (Herr & Cramer, Wechsler)	

The four types of learners based on this model are:

Type I: Specific Sequential—needs tangible structure in learning.
Type II: General Sequential—needs to know the concept, purpose or rationale: The why?
Type III: General Simultaneous—needs to interact with others as part of the learning process.
Type IV: Specific Simultaneous—needs creative instruction and opportunities to be creative in learning.

See Figure 3 for specific examples, based on Butler's (1984) thinking of how these kinds of students learn best.

Figure 3. The Four Dimensions: How Students Learn Best

Type I Learners Work Best When They:	Type II Learners Work Best When They:
▸ have an orderly, quiet environment	▸ have reading reference and expert sources
▸ know the accepted way of doing things	▸ are sure of themselves
▸ have exact direction, example	▸ follow traditional procedures
▸ can be consistent and efficient	▸ have time to learn material thoroughly
▸ face limited change in predictable situation	▸ can work alone
▸ are given approval for specific work done	▸ are respected for intellectual ability
▸ can apply ideas in practical, hands-on ways	▸ ask "Why is this?"
▸ can answer, "How does this work?"	▸ write analytical essays
▸ trust others to follow through, organized person	▸ rely on lecture notes and written materials
	▸ do library research
	▸ understand the purpose of the instruction

Type III Learners Work Best When They:	Type IV Learners Work Best When They:
▸ can work and share with others	▸ can try new approaches and solve problems
▸ have assignments requiring interpretation	▸ are self-directed
▸ get personal attention and emotional support	▸ are competitive
▸ have social activities to balance work	▸ create their own answers
▸ can answer "How can we interpret this?"	▸ ask "How many different ways can I do this?"
▸ have freedom from control by others	
▸ have personally satisfying environment	▸ use trial-and-error approaches
▸ use personal, individual or artistic expression	▸ do brainstorming and open-ended activities
	▸ produce real, but imaginative, products
▸ have open communication with others	▸ have options to prove their way works
▸ have a noncompetitive atmosphere	▸ have hands-on experiences

Adapted from Butler, K. (1984). Styles summary chart. Maynard, MA: Gabriel Systems. Used with permission.

As has been indicated, individuals including Piaget, Kolb and Boyatzis, Gregorc, and Butler have discussed learning preferences ranging on a continuum from concrete to abstract. Butler, however, has done much work on the implementation of these styles for instruction. The reader is referred to the sources listed in the references. See Figure 4 for Lemire's results on the average distribution of scores for the How I Learn Inventory.

Figure 4. Calculated Average Distribution of Scores (Types I-IV) for HILI (Adult College)

Group	Type I	Type II	Type III	Type IV	#'s
1	44	36	4	32	25
2	37	32	23	15	47
3	32	5	37	37	16
4	50	25	13	13	16
5	50	11	28	11	23
6	48	32	4	32	25

Group	Type I	Type II	Type III	Type IV	#'s
7	34	36	26	15	47
8	39	35	17	21	(# 6 & 7 combined)
9	26	49	22	10	23
10	50	25	13	13	16
11	38	32	23	15	47
12	44	35	4	32	25
13	32	5	37	37	19
X GRPS	40%	28%	19%	22%	n = 329

The results of this initial research indicate distinctive learning preferences in college students; sequential learners (Types I and II) dominate these learning styles preferences by about 70% (±). It may be that sequential learners are drawn to school experiences because of the sequential nature of instruction and of teaching style. Type II and IV learners (global-general) may select other experiences outside of school which they find more rewarding and consistent with their dominant learning styles.

The Jungian Learning Style Model: The Ego Inventory

The Ego Inventory (Lemire, 1988) assesses four basic Jungian types: sensing, intuiting, feeling, and thinking (SIFT). The instrument most people are familiar with that represents a Jungian model is the Myers-Briggs Type Indicator (MBTI) (Kroeger & Thuesen, 1988). Research on the MBTI is extensive (Hammer, 1996). According to the most recent MBTI bibliography available from the Center for Psychological Type, about 2,500 articles have been published on this instrument since 1985.

The supporters of using the MBTI are quite enthusiastic about the instrument and report acceptable levels of reliability. Reported reliability scores range from about .80± to about .90±. A much longer discussion of these psychometric issues can be found in Hylton and Hartman (1997). However, not all reports on the MBTI are quite so supportive. Pittenger (1993) concluded, "A review of the available literature suggests that there is insufficient evidence to support the tenets and claims about the utility of the test" (p. 467). Based upon the author's experience with this instrument, the MBTI presents a model that is somewhat complicated. For example, the MBTI presents 16 forms of personality type. The Ego Inventory represents an alternative approach using the four basic personality types: sensing, intuiting, feeling and thinking, and the interaction of these types with each other and other

styles or factors. Reliability scores (Lemire, 1996) are consistent with those cited for the MBTI.

The Ego Inventory is composed of 32 questions that measure the four basic learning styles. It is simple to use and to score and works well with college students. In addition, the Ego Inventory offers the advantages of cost (only the price of the initial purchase and copies which can be made from them), availability (psychologists, counselors, teachers and professional educators can reproduce alternative instruments without written permission), and acceptable initial levels of reliability and validity. Statistical data for the Ego Inventory gathered over the past few years are presented in Figure 5.

Figure 5. The EGO Inventory Results

	Sensation	Intuition	Thinking	Feeling
College Group Mixed Gender n = 29				
Meanj	30.81	28.24	29.15	30.96
SD	4.77	5.55	5.15	4.02
r	.90	.89	.89	.84
College Female n = 14	43%	0%	7%	50%
College Male n = 10	50%	10%	30%	10%
College Male n = 20	65%	25%	0%	25%
College Female n = 32	28%	16%	38%	50%
College Male n = 12	75%	33%	8%	8%
College Mixed Gender				
X	29.7	27.1	28.8	29.1
SD	4.3	5.5	4.1	49.0
College Male Sp 97 n = 55	56%	25%	19%	31%
College Female Sp 97 n = 39	33%	8%	21%	54%
College Mixed Sp 97 n = 55	40%	13%	20%	47%

These initial results indicate clear preferences among community college students. The reader will note that, based on research to date, there is a distinction between male preferences (sensing) and female preferences (feeling). While these preferences indicate tendencies, they are not absolute. There is an interaction effect between style preferences which also influences behavior.

Both the Myers-Briggs Type Indicator (MBTI) and the Ego Inventory describe four basic personality types: sensing, intuition, feeling, and thinking (SIFT). Figure 6 presents the basic personality traits associated with each of these types. A more in-depth treatment is presented in Kroeger and Thuesen (1988).

Figure 6. Basic Character
Interaction

Sensors tend to be:

- practical
- realistic
- observant
- learn best from an
  details

Thinkers tend to be:

- fair
- analytical
- more interested in
  people
- low interest in har

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Figure 6. Basic Characteristics Associated with Four Jungian Types: Implications for Learning and Social Interaction

Sensors tend to be:

- practical
- realistic
- observant
- learn best from an orderly sequence of details

Intuitors tend to be:

- interested in new things
- imaginative
- can see possibilities
- interested in the big picture rather than details

Thinkers tend to be:

- fair
- analytical
- more interested in things and ideas than people
- low interest in harmony

Feelers tend to be:

- sympathetic
- accepting
- more interested in people than things
- interested in harmony

Reliability and Validity Issues

What conclusions can be drawn about validity and reliability issues associated with learning styles instruments? Based on the research completed by Lemire, the average approximate reliability for his instruments is about .85+, as compared to more well-known instruments. Validity issues are somewhat more difficult to assess, but there does appear to be adequate face, construct, and concurrent validity (at least with some of the instruments thus far developed). It is clear that much more scientific study is needed in this area. How can some of this variance be explained? There are at least twelve factors which may produce or interact to produce variance in scores. These twelve factors are:

1. arithmetic errors in scoring
2. low intelligence of the test taker
3. not understanding the questions
4. not understanding the concept of the questions
5. self-denial
6. self-confusion
7. lack of integration between real self and ideal self
8. faking
9. resistance to the concept
10. lack of self-knowledge
11. an interaction of more than one style preferences, and
12. some combination of these factors.

Summary

The purpose of this article has been to discuss three learning styles models which can be used with under-prepared or developmental students. Understanding student learning styles preferences can be used by instructors to match instruction to learning and by students who

gain greater understanding of their weaknesses and strengths related to learning. This author has found that reliability and validity, while needing much more study, are at least initially at acceptable levels. Psychometric data on three learning styles models have been presented along with specific suggestions about the task skills of students. Some potential sources of variance in scores are also discussed, an area which is not well addressed in other research. Based on the inconsistent results associated with learning styles or types, much more research is needed for professionals to have significant confidence in learning styles/types data and results.

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References

ASTD. (1988, April). Training and learning styles. Alexandria, VA: American Society for Training and Development.

Bandler, R., & Grinder, J. (1975). The structure of magic I. Palo Alto, CA: Science and Behavior Books.

Bradley, E. J., & Biedermann, H. J. (1985, Spring). Bandler and Grinder's neurolinguistic programming: It's historical context and contribution. Psychotherapy, 22(1), 59-62.

Butler, K. A. (1984). Styles summary chart. Maynard, MA: Gabriel Systems.

Butler, K. A. (1987). Learning and teaching style: In theory and practice. Columbia, CT: Learner's Dimension.

Butler, K. A. (1988). It's all in your mind. Columbia, CT: Learner's Dimension.

Caine, R. N., & Caine, G. (1990, October). Understanding a brain-based approach to learning and teaching. Educational Leadership, 66-70.

Childers, J. H. (1985, September). Neuro-linguistic programming: Enhancing teacher-student communications. Humanistic Education and Development, 32-39.

Curry, L. (1990, October). A critique of the research on learning styles. Educational Leadership, 32-39.

Deeks, L. (1997, September). Scarlett O'Hara: The classic 'getting type'. Individual Psychology, 53(3), 310-321.

deWaal, F.B.M. (1996, June). The biological basis of behavior. Chronicle of Higher Education, B1-B2.

Dunn, R., Beaudry, J. S., & Klavas, A. (1989, March). Survey of research on learning styles. Educational Leadership, 46(6), 50-58.

Dunn, R., Sklar, R. I., Beaudry, J. S., & Bruno, J. (1990, May/June). Effects of matching and mismatching minority developmental college students' hemispheric preferences on mathematics scores. Journal of

Educational Research, 83(5), 283-288.

Ellis, A. (1979, May). The biological basis of human irrationality. Journal of Individual Psychology, 35(1), 111-116.

Enns, C. R. (1994, November/December). Archetypes and gender: Goddesses, warriors and psychological health. Journal of Counseling and Development, 73, 127-133.

Ferrell, R. G. (1983). A factor analytic comparison of four learning-styles instruments. Journal of Educational Psychology, 75(1), 33-39.

Gallagher, W. (1994, September). How we become what we are. Atlantic Monthly, 39-56.

Garger, S. (1990, October). Is there a link between learning style and neurophysiology? Educational Leadership, 63.

Gregorc, A. F. (1979, January). Learning/teaching styles: Potent forces behind them. Educational Leadership, 234-236.

Hammer, A. L. (1996). MBTI Applications. Palo Alto, CA: Consulting Psychologists Press.

Herr, E. H., & Cramer, S. H. (1996). Career guidance and counseling through the life span. New York: Harper Collins College Publisher.

Holden, C. (1987, September). Genes and behavior: A twin legacy. Psychology Today, 18-19.

Holland, J. L. (1996, April). Exploring careers with a typology. American Psychologists, 51(4), 397-405.

Hylton, J., & Hartman, S. E. (1997, Spring). Personality, hemispheric dominance and cognitive style. Journal of College Reading and Learning, 28(3), 96-107.

Kolb, D. A., & Boyatzis, R. E. (1993). Learning skills profile. Boston, MA: McBer & Company.

Kroeger, O., & Thuesen, J. M. (1988). Type talk. New York: Bantam Doubleday Dell Publishing Group.

Lemire, D. S. (1987, February). The consulting school counselor and student learning style assessment. Guidance Clinic, 8-12.

Lemire, D. S. (1988). The Ego Inventory Manual. Reno, NV: Creative Therapeutics Press.

Lemire, D. S. (1996, Spring). Using learning styles in education: Research and problems. Journal of Alternative Learning and Teaching, 21 (1,2), 43-57.

Lemire, D. S. (1998). Technical data for five learning styles instruments with instructional applications. Reno, NV: Creative Therapeutics Publishers.

Lundin, R. W. (1989). Alfred Adler's basic concepts and implications. Muncie, IN: Accelerated Development.

McCrae, R. R., & Costa, P. T. (1997, May). Personality trait structure as a human universal. American Psychologist, 509-515.

Murray, H. (1938) in Herr and Cramer (1996). Career guidance and counseling through the life span. NY: Harper Collins College Publishing.

Phelps, J. A., Davis, J. O., & Schartz, K. M. (1997, October). Nature, nurture, and twin research strategies. Current Developments in Psychological Science, 6(5), 117-121.

Pittenger, D. J. (1993, Winter). The utility of the Myers-Briggs type indicator. Review of Educational Research, 63(4), 117-121.

Plomin, R. (1997, August). Current directions in behavioral genetics: Moving into the mainstream. Journal of the American Psychological Society, 6(4), 85.

Reiff, J. C. (1992). Learning style: What research says to teachers. Washington, DC: National Education Association.

Rifkin, J. (1998, May). The sociology of the gene. Phi Delta Kappan, 648-654.

Santrock, J. W. (1997). Psychology. New York: McGraw Hill.

Spranger, E. (1928) in Herr and Cramer (1996). Career guidance and counseling through the life span. NY: Harper Collins Publishers.

Stensrud, R., & Stensrud, K. (1983). Teaching styles and learning styles of public school teachers. Perceptual and Motor Skills, 56, 414.

Stumpf, S. E. (1993). Socrates to Sartre: A history of philosophy. New York: McGraw Hill.

Swassing, R. H., & Barbe, W. B (1984). Teaching through modality strengths. Columbus, OH: Zaner-Bloser Publishers.

Tellegen, A. (1987, March). Personality traits mostly inherited. Gifted Children Monthly, 6-7.

Thomas, A., Chess, S., & Birch, H. G. (1970, August). The origin of personality. Scientific American, 223(1), 102-109.

Windholz, G. (1997, September). Ivan P. Pavlov: An overview of his life and psychological work. American Psychologist, 52(9), 941-946.

Wolpe, J., & Plaud, J. J. (1997, September). Pavlov's contribution to behavior therapy. American Psychologist, 966-972.

York, D. C., & Tinsley, H.E.A. (1986, November). The relationship between cognitive styles and Holland's personality types. Journal of College Student Personnel, 535-541.

JOIN THE CONVERSATION

A NATIONAL CERTIFICATION PROGRAM FOR THE DEVELOPMENTAL EDUCATOR: WHAT DO WE THINK?

By Shevawn B. Eaton, Northern Illinois University and
Kim Folstein, Alverno College

Currently, there is a movement within our profession to create a national certification program for individuals in developmental education and learning assistance. Different from professional standards or institutional recognition, this program would certify individuals based on criteria established by leaders in the field. Individuals could fulfill the requirements for certification by participating in professional opportunities such as MCLCA's conferences and Summer Institutes.

This individual certification movement has stirred the interest (to say the least) and the passion (to say the most) of many in our field. We have heard opposition to the certification program over the past year at conferences and assorted meetings with professionals in our field. We have also had the opportunity to discuss with those who initiated the program their rationale for individual certification. As the President and the Communication Chair of MCLCA, we felt it imperative to discuss the concept of national certification with MCLCA members and to offer you an opportunity to provide feedback on this emerging issue. What should MCLCA's position on individual certification be?

A Brief History of Standards and Certification in Our Field

As far back as 1986, the National Association of Developmental Education (NADE) was examining the need for standards for individuals in developmental education. The president at that time, Nancy Rabianski, established the Standards and Ethics Committee and charged it with a responsibility to provide standards for the profession. The discussion has been around ever since, in one form or another. Recent movement on this issue came about when the Council for the Advancement of Standards in Higher Education (CAS), an independent body which promotes standards for higher education programs and services, turned to NADE to help establish standards for developmental programs. This prompted much

thinking by the leaders in our profession about certification systems for developmental education for both programs and for individuals.

Many leaders in developmental education felt that it was time for our profession to take control of the standardization and certification process rather than turn this responsibility over to CAS by default. The College Reading and Learning Association (CRLA) has established certification standards for tutor training and mentor program training. Through NADE, Self-Study Guides have been developed as a means for those who work with developmental programs and courses to institute a thorough evaluation process on their own campuses. Further, NADE is developing and piloting a certification process for the same programs.

Along with that work, others, including Hunter Boylan, Director of the Center for Developmental Education, and David Arendale, Past President of NADE and the National Project Director for Supplemental Instruction, have been working to determine how best to recognize the professional expertise of individuals in our field. To address certification and other issues, the American Council of Developmental Education Associations (ACDEA) was established and has been meeting for the past two years at the NADE and CRLA conferences.

ACDEA is composed of representatives (for the most part, presidents) from most of the professional organizations associated with the fields of learning assistance and developmental education. They include the College Reading Association, CRLA, Commission XVI of the American College Personnel Association, NADE, the National Center for Developmental Education, the National College Equal Opportunity Association, the National Tutoring Association, MCLCA and several others. At present, the primary task of this organization is to coordinate the efforts of all of these organizations to more comprehensively serve our profession. To date, perhaps the seminal mission of the group has been to develop a national certification program for developmental educators.

At the request of NADE, Hunter Boylan drafted a very tentative proposal for individual certification which was shared with the ACDEA in 1997 at the Denver NADE conference. This draft was shared with organizational leaders and directors of graduate programs in developmental education for review. In a summary document presented to the ACDEA at the NADE conference in Atlanta earlier this year, a sketch of how the program might work was provided. Representatives of professional organizations, directors of graduate programs in developmental education and other experts in the field of developmental education would help develop a list of "competencies" that developmental educators should achieve as professionals. From the competencies, a list of experiential opportunities would be developed meet competency goals. Professional associations like MCLCA could provide training activities such as pre- or post-conference workshops, summer institutes, seminars or other professional developmental programs to assist individuals in achieving the

competencies they desire. In addition, graduate programs and other professional agencies might also provide activities that could help build certification.

Individual Certification: Boylan and Arendale's Perspective

Recently, we had the opportunity to interview Hunter Boylan about the rationale for individual certification in developmental education. In Boylan's opinion, there are several very positive reasons to develop a national certification program for individuals. First, certification will allow us to professionalize our field through a credentialing program. This enables us to demonstrate professional credibility within our profession as well as on our campuses in a way that high level administrators can recognize. In addition, credentialing can highlight the expertise each of us has gained within our time in the profession. Certification can encourage and reward professional development and hopefully improve the services we deliver to students. Boylan stated that certification can also send the message to those institutions and departments at the weak end of the program delivery continuum that individuals who work in a developmental setting must have special expertise and training in order to be effective with students. This will hopefully move administrators to improve hiring and training practices.

Further, Boylan noted that initially, because so many developmental educators find themselves in the profession rather than specifically training for it, certification could provide direction to young educators in their quest to become strong professional leaders. He further stated that the goal of certification for individuals would not be to serve as gatekeeper, but as a recognition system for good professional development. In sum, certification can serve to strengthen the image of developmental education on all campuses and help us as professionals demonstrate that we have the expertise we need in order to deliver viable, quality campus services.

In an interview with David Arendale, he added that now is a good time to develop systems for certification that allow developmental education professionals to demonstrate professional integrity on our campuses. He felt that it is time for our field to professionalize itself before outside agents such as CAS establish professional standards for us. He generally feels that certification is a good and timely idea that can only help to strengthen our profession.

Boylan recognized that the development of competencies is going to be a complex but important part of the certification process. Developmental educators take on a variety of responsibilities within their work from administration to teaching to counseling and more. That is why he feels it is essential that organizations like MCLCA offer their members an opportunity to provide input about the direction of this process.

Individual Certification: What Do We Think?

In our thinking and talking about the certification process over the course of writing this "Conversation" piece, a number of questions have come to light. While certification may demonstrate merit with regard to providing professional opportunities and recognition within the field of learning assistance and developmental education, is this the direction our profession should move? We open this conversation to the readers of this article and invite you to respond to the Board of MCLCA via letter or e-mail at mclca@execpc.com. We also offer you a number of questions to consider with regard to this issue.

*Individual certification in higher education...*Is individual certification needed in higher education when the requirements for most positions already necessitate a high level of post-secondary education? Should we call for standards (not certification) that speak to educational requirements for certain positions instead? Will individual certification create a wider gap between developmental educators and other faculty by possibly creating a double standard of expertise and training? Would certification only manufacture yet another series of hoops for our profession to negotiate to build credibility? Would *program* rather than *individual certification* be a better choice?

Recognition and professional credibility... While it does seem natural that institutions may acknowledge credentialing within our field, will *your* institution be interested if your own profession certifies you as an expert? In other areas, where individual certification may exist for post-secondary professionals, such as in the field of counseling, for example, has that certification impacted the hiring/training practices of campus level administrators? Will your institution demonstrate that such certification is valued by funding professional development, increasing salaries or offering released time to pursue certification?

Competencies... How will a field as diverse as developmental education and learning assistance effectively establish measurable competencies? To account for the diversity of our profession, must the competencies be so broad that they diminish the standards they seek to establish, or might they define us via smaller and smaller niches of competence? Isn't the diversity of our field, especially our broad educational background, a collective strength when it comes to meeting student needs in the first place? We look to you, our members, to help determine the appropriate balance.

Will there be various levels of competency so the beginning professional has opportunity for recognition as well as the veteran? Can competencies realistically be created which can certify both Martha Maxwell and a first year basic math instructor? In your department, how would you quantify and/or qualify the expertise of your staff? Who will verify that a measured competence has been met? What is a reasonable cost to pay to be certified?

*Your own involvement...*Would you invest your resources (budget, time, etc.) in such a certification process? What factors about the process might encourage or inhibit you from

pursuing certification? What do you feel, in your current role, are the most important qualities, skills, and responsibilities you possess? Are there ways, other than certification, that can offer professional credibility and integrity to our field?

These are just some of the questions that we feel merit answers before certification becomes a reality in developmental education and learning assistance. In theory, individual certification is neither good nor bad. But any policy implementation is made more effective when the voices of those targeted are empowered. Please take the time to let your voice be heard with respect to this issue. Write or e-mail the MCLCA Board with your opinion. We look forward to hearing from you and will take your input to heart and represent it in our future meetings on this important issue within our profession.

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Library Subscription
for
The Learning Assistance Review

The Learning Assistance Review is a publication of the Midwest College Learning Association (MCLCA). It is published twice a year, in the fall and spring.

The journal seeks to expand and disseminate knowledge about learning centers and to foster communication among learning center professionals. Its audience includes learning center administrators, teaching staff, and tutors as well as other faculty and administrators across the curriculum who are interested in improving the learning skills of postsecondary students.

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BOOK REVIEW

RE-THINKING AD/HD: A GUIDE TO FOSTERING SUCCESS IN STUDENTS WITH AD/HD AT THE COLLEGE LEVEL

Reviewed By Anne McCormick and Lisa D'Adamo-Weinstein, American University
Advantage Books, Bethesda, MD, 1998

Whether you have had years of experience or are a novice to the field of learning disabilities and post-secondary education, you will be sure to find some articles of interest in Patricia Quinn and Anne McCormick's new book, Re-Thinking AD/HD.

Re-Thinking AD/HD is an edited compilation of articles written for the college learning service provider for students with AD/HD (Attention Deficit/Hyperactivity Deficit). It has come at a time when young adults with AD/HD are attending college in increasing numbers. Hence, educational programming for these students must include medical, psychological, and academic interventions to address the many facets of this complex disorder. The articles in the book address all of these educational programming needs, and the discussions and models presented are from a wide range of professionals from the medical, psychological, legal, and educational communities. The depth, breadth, and scope of the book allow the reader to develop a comprehensive overview of current issues, research, and practice for college students with AD/HD.

Re-Thinking AD/HD not only discusses the issues related to the unique needs of college students with AD/HD, but offers a model for colleges involved in adapting, designing, and implementing appropriate programming for students with AD/HD. It includes perspectives on gender, medication, learning strategies, and health care needs among college students with AD/HD. It also offers programming models with and without collaboration with other student service providers.

In-depth analysis of current issues in the field of serving students with AD/HD include: guidelines for diagnosis and documentation , medication options, and comorbidity factors from the service provider's perspective. Such analysis offers service providers a professional review of the questions we face each day.

Finally, Re-Thinking AD/HD affirms the belief that students with AD/HD can succeed in spite of the challenges of the college experience and offers a model to foster this success. The book is a much needed and excellent resource for all professionals who work with these college students.

Lisa D'Adamo-Weinstein *is a Learning Services Counselor and Coordinator of the Student-Athlete Academic Support Program at American University.*

PUBLICATION GUIDELINES

As an official publication of the Midwest College Learning Center Association, The Learning Assistance Review seeks to expand and disseminate knowledge about learning centers and to foster communication among learning center professionals. Its audience includes learning center administrators, teaching staff and tutors as well as other faculty and administrators across the curriculum who are interested in improving the learning skills of postsecondary students.

The journal aims to publish scholarly articles and reviews that address issues of interest to a broad range of learning center professionals. Primary consideration will be given to articles about program design and evaluation, classroom-based research, the application of theory and research to practice, innovative teaching strategies, student assessment, and other topics that bridge gaps within our diverse discipline.

1. Prepare a manuscript that is approximately 12 to 15 pages in length and includes an introduction, bibliography, and subheadings throughout the text.

2. Include an abstract of 100 words or less that clearly describes the focus of your paper and summarizes its contents.

3. Type the text with double spacing and number the pages. Follow APA style (Publication Manual of the American Psychological Association, 4th edition, 1994).

4. Include your name, title, address, institutional affiliation and telephone number along with the title of the article on a separate cover sheet; the manuscript pages should include a running title at the top of each page with no additional identifying information.

5. Submit all tables or charts camera ready on separate pages.

6. Do not send manuscripts that are under consideration or have been published elsewhere.

7. Send three copies of your manuscript to the following address: Dr. Nancy Bornstein, Co-Editor, The Learning Assistance Review, Alverno College, P.O. Box 343922, Milwaukee, WI 53234-3922.

You will receive a letter of acknowledgment that your manuscript has been received. The review process will then take approximately three to six weeks at which time you will receive further notification related to your work. If your manuscript is accepted for publication, a computer disk will be requested.

MCLCA MEMBERSHIP INFORMATION

What is MCLCA?

The Midwest College Learning Center Association (MCLCA) is a regional organization dedicated to promoting excellence among learning center personnel in 12 midwestern states: Illinois, Indiana, Iowa, Kansas, Michigan, Minnesota, Missouri, Nebraska, North Dakota, Ohio, South Dakota, and Wisconsin. MCLCA defines a learning center as a place where all students, from entering freshmen to graduate and professional school students, can be taught to become more efficient and effective learners.

What Does MCLCA Do?

The MCLCA Constitution identifies the following objectives for the organization:

- To promote professional standards for learning centers through education, curriculum design, research, and evaluation.
- To promote support for learning centers by acting on issues affecting learning assistance programs.
- To assist in the development of new learning centers.
- To assist in the professional development of personnel in learning assistance programs by providing opportunities for sharing professional methods, techniques, and strategies.
- To provide an annual conference for the exchange of ideas, methods, and expertise in learning assistance programs.
- To publish educational information and research in the field.
- To develop and expand a communications network among learning assistance professionals.
- To coordinate efforts with similar professional groups.

How Can I Participate?

The MCLCA Executive Board is anxious to involve as many learning center professionals as possible in achieving its objectives and meeting our mutual needs. Therefore, we invite you to become a member of the Midwest College Learning Center Association. The membership year extends from October 1 through September 30, and annual dues are $40.00. Membership includes the MCLCA Newsletter and The Learning Assistance Review, discounted registration for the annual MCLCA Conference, workshops, in-service events, and announcements regarding upcoming MCLCA activities. We look forward to having you as an active member of our growing organization.

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MCLCA Membership Application

(Journal subscription included)

Name: _____

Institution: _____

Address: _____

Phone: (_____) _____

Fax: (_____) _____

E-mail address: _____

Send application form and a check made out to MCLCA for $40.00* to:

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MCLCA Membership Secretary
Lake Superior State University
650 E. Yesterday Avenue
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