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Learning Style Preferences and Academic Achievement Within the Basic Communication Course

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> *"It seems quite logical that students learn differently in different situations, and it is obvious that different students learn differently"* (Schliessmann, 1987, p. 2).

Schliessmann's (1987) quote outlines the overall logic behind the importance of individual student characteristics in the study of instruction. While the concept is simple, studying it has proven to be a great deal more difficult.

It is clear that individual students will learn differently in different settings. However, it is not clear how specific students characteristics interact with the Personalized System of Instruction (PSI) method of instruction. This method allows students to complete the course at their own pace under the guidance of undergraduate "teachers". Some students appear to thrive in the PSI method of instruction while others have great difficulty with it. Since most PSI courses are highly structured, the answer to the differences between those students who thrive and those who have difficulty may be their preferred styles of learning.

The research problem addressed in this study is: Do student learning style preferences affect academic achievement in a PSI-taught, basic communication course? The literature indicates that students' learning styles may be the single most important factor in their academic achieve-

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ment (Enochs, Handley, & Wollenberg, 1986). Learning styles influence academic achievement for the student and represent a challenge for the educator.

REVIEW OF LITERATURE

The theoretical foundation underlying learning style is located within the statement that every individual is unique. Thus, "there never was and never will be 'one best way' of doing anything in education because people are different!" (Frymier, 1977, p. 47). Each of us has ". . . an identifiable and preferred learning style" (James & Galbraith, 1985, p. 20) that is as individual as our signature (Dunn, Beaudry & Klavas, 1989, p. 50). These passages note the "individual" nature of education. Since the PSI method is designed to individualize instruction, it would seem that learning style would be an important variable to study.

Definition of Learning Style

Bonham (1988a, 1988b), argued that one of the problems with the use of learning style is that there has been no consensus definition. In the past, some researchers have used the terms "learning style" and "cognitive style" interchangeably (Bonham, 1988b; Korhonen & McCall, 1986). This investigation is concerned with learning style and not cognitive style, so it is important to delineate the differences between these two concepts. Bonham (1988b) reviewed the learning style literature and provides the key differences between learning and cognitive styles. The younger concept of learning style generally has a practical research focus on the classroom. The self-report measures normally associated with learning style attempt to measure an individual's preferences in terms of a variety of elements in the education process. "Most learning styles are bipolar; generally, no greater value is placed on either ex-

treme. One may, for example, be a kinesthetic or an audio-visual learner and require structured or non-structured learning environments" (Pettigrew & Buell, 1989, p. 187). However, the learning style instrument chosen for this investigation avoids the bipolar trap. Scores on the various elements included on the instrument are not based on two choices, and the values for each element can range from six to thirty.

Arguments for Studying Learning Style

Three areas of argument support learning style as an important student characteristic: (1) its effect on academic achievement; (2) its effect on student's perceptual preferences; and (3) the problems it creates for educators.

The importance of learning styles in education is most notable when the role learning style plays in academic achievement is explained. Enochs, Handley and Wollenberg (1986) provide initial insight into the role of learning style and academic achievement in the following passage:

> Many authorities believe that how students learn is perhaps the single most important factor in their academic achievement . . . . Proponents of the learning style movement (Barbe & Swassing, 1979) further propose that variability in student performance results not so much from discrepancies in intelligence but that such deviations are due to different styles of learning. In support of this view, according to Clements (1976), investigations have demonstrated increased academic achievement among students taught as a function of their individual learning styles (p. 136).

McDermott (1984) studied 100 Kindergartners in traditional classroom settings and found that learning styles predicted statistically significant portions of a student's later academic achievement. If learning style has such strong predictive power at this early age, it seems reasonable to assume that its influence on academic achievement

continues throughout life. Soroko (1988) found that the relationship did continue through to post-secondary education. He reported that earlier research concerning accounting students by Gregorc and Ward (1977) found that the learning process is hindered when the teaching style does not meet the needs of a particular learning style. Learning style preferences have been correlated with grades in college courses concerning computer applications in education (Davidson, 1992) and composition (Emanuel & Potter, 1992).

Researchers have argued that learning styles are especially important for specific portions of the college population, namely, nontraditional students (Schroeder, 1993), re-entering students (Riechmann-Hruska, 1989), external degree students (Willett & Adams, 1985), academically under-prepared students (Williams, et al., 1989) and adult learners (Holtzclaw, 1985).

Miller, Alway and McKinley (1987) reviewed the literature relating learning style and academic achievement and found strong correlational support for the connection between learning style and GPA. They reported, ". . . that some learning styles have had consistently positive and moderate relationships with GPA (r's ranging from .20 to .40), whereas other learning styles have had a negative relationship (r's ranging from -.20 to -.40) with GPA" (400).

A second argument for studying student learning styles is found in the student's perceptual preferences. James and Galbraith (1985) note that learning styles can be viewed as the student's preferred mode of using the information that surrounds him or her. They argued that, "The perceptual modality is comprised of seven elements which are as follows: Print, Aural, Interactive, Visual, Haptic, Kinesthetic, and Olfactory" (p. 20). Each perceptual preference influences what information is taken in, how it is taken in, etc., resulting in an affect on learning.

In a comprehensive review of research relating to learning styles, Dunn, Beaudry and Klavas (1989) reviewed eight studies published from 1977 to 1986 related to perceptual preferences. They concluded:

> . . . when youngsters were taught with instructional resources that both matched and mismatched their preferred modalities, they achieved statistically higher test scores in modality-matched, rather than mismatched, treatments . . . . In addition, when children were taught with multisensory resources, but initially through their most preferred modality and then were reinforced through their secondary or tertiary modality, their scores increased even more.

However, the effects on perceptions are not limited to perceptions of course content. Armstrong (1981) found a .87 correlation between whether instructors taught according to student perceptions of good teaching and student ratings of teaching effectiveness. Thus, learning styles influence a student's perceptual preferences and ultimately affect their academic achievement.

The final argument for investigating learning styles is the problem they create for educators. Snow (1986) notes that the vast differences in individual students' learning styles causes real problems for educators (for example, modifying instructional materials, varying instructional techniques, etc). Educators realize the need for recognition of learning styles, however adapting to these needs has been difficult. Some educators have argued that the goal of education should be to determine the students' learning styles and match instructional materials to the style (Corbett & Smith, 1984), while others see the need to teach the student to ". . . manage and monitor their selection and use of various learning styles . . ." (Miller, Alway & McKinley, 1987, p. 399). The undeniable conclusion one reaches is that the role a student's learning style plays on her or his academic achievement requires educators to discover methods for meeting the individual differences.

Learning Style and PSI

How students' learning styles affect academic achievement in, and satisfaction with, a PSI taught course has not been extensively examined in the existing literature. The PSI course under investigation does not use computer assisted instruction so common to research related to individualized or mastery approaches. Rather, this course relies on undergraduate proctors and extensive use of written materials.

The premise that education should be individualized seems obvious for a system called the Personalized System of Instruction (PSI). The notion that learning style influences how much students learn (Meighan, 1985) is even more significant when one notes that Schliessmann (1987) found little research focusing on learning style in specific learning situations such as the basic communication course. The lack of research related to learning styles in the basic communication course is surprising since studies of the influence of learning styles in other disciplines are very common. A brief review of research finds examples of investigations of learning styles in agriculture (Torres & Cano, 1994), business (Campbell, 1991), physical education (Pettigrew & Buell 1989), science (Melear & Pitchford, 1991), math (Clariana & Smith, 1988), English (Carrell & Monroe, 1993), psychology (Enns, 1993), and education (Skipper, 1992).

While previous research has outlined the importance learning styles in a large number of academic disciplines, these investigations have focused on classrooms using more traditional methods of instruction. There is a lack of research which indicates which learning styles are most appropriate for individualized instruction within the PSI taught course. Andrews (1981) provided one of the few examples of research which indicates those learning styles which are appropriate for individualized instruction. An-

drews found that in an introductory chemistry course the peer-centered method of instruction was most beneficial for collaboratively oriented students, while competitive students reported greater learning with instructor-centered instruction. Andrews argued that these results support, ". . . the study's core hypothesis: that students learn best in settings that meet their social-emotional needs and are attuned to their predominant patters of behavior" (p. 176).

A second study in this area was conducted by Jacobs (1982). Gorham (1986) says in her review of learning style literature that, "Jacobs (ED 223 223) found a significantly greater tendency for FD [Field Dependent] students to initiate social contact with proctors as a means of obtaining course information in a PSI lab" (p. 413). This result implies that field-dependent students have a different interaction pattern than the field-independent students in the PSI taught course.

The above research is important because it offers some initial evidence that particular learning styles are more appropriate for PSI taught courses. However, there is a major weakness in the previous research in that both studies (Andrews, 1981; Jacobs, 1982) used the Kolb LSI as their measure of learning style. The Kolb instrument measures cognitive style (see, for example, O'Brien, 1994) rather than learning style, and it only provides scores on four scales.

METHODOLOGY

Subjects

The subjects in this investigation were students enrolled in the PSI-format basic speech communication course at a large state university in the Midwest. All the students in the course (approximately 540) were asked to participate in the project.

Independent Variable:
Learning Style Instrument (CLSI)

A large number of instruments currently exist to measure learning style. Cornett (1983), for example, provides a selected bibliography of thirty different learning style instruments. While a large number of instruments currently exist, not all are compatible or appropriate for the present investigation. Because it is a true measure of learning style preferences, the Canfield Learning Styles Inventory (CLSI) is superior to the commonly used Kolb Learning Styles Inventory (LSI) which is more often characterized as a measure of cognitive learning styles (see, for example, O'Brien, 1994).

Description of the CLSI

The S-A version of the Canfield (1980) Learning Styles Inventory (CLSI) was chosen for use in this investigation. The S-A form has thirty items that provide scores for the twenty measures. Because it is a true measure of learning style (as defined earlier), the CLSI is superior to the commonly used Kolb Learning Styles Inventory (LSI) which is more often characterized as a cognitive measure. The CLSI consists of four dimensions or subscales. Table 1 presents labels and descriptions for the dimensions and subscales as well as the subjects' mean score for each subscale.

The first dimension is *Conditions*. Approximately two-fifths of the items in the inventory are designed to elicit information regarding student motivation for learning within certain classroom conditions. The conditions dimension is important because the "scores reflect concerns for the dynamics of the situation in which learning occurs" (Canfield, 1980, 22). Since the learning situation in a PSI taught course is different from the traditional classroom, it seems important to include the "Conditions" measures.

Table 1
Descriptions and means for Learning Style Measures*

CONDITIONS: The first eight scores reflect concerns for the dynamics of the situation in which learning occurs. They cover eight score areas:		
P.	PEER: Working in student teams; good relations with other students; having student friends; etc.	14.92
O	ORGANIZATION: Course work logically and clearly organized; meaningful assignments and sequence of activities.	11.47
G.	GOAL SETTING; Setting one's own objectives; using feedback to modify goals or procedures; making one's own decisions on objectives	15.51
C.	COMPETITION: Desiring comparison with others; needing to know how one is doing in relation to others.	18.06
N.	INSTRUCTOR: Knowing the instructor personally; having a mutual understanding; liking one another.	12.02
D.	DETAIL: Specific information on assignments; requirements, rules, etc.	12.82
I.	INDEPENDENCE: Working alone and independently; determining one's own study plan; doing things for oneself.	17.69
A.	AUTHORITY: Desiring classroom discipline and maintenance of order; having informed and knowledgeable instructors.	17.53
CONTENT: Major areas of interest:		
N.	NUMERIC: Working with numbers and logic; computing; solving mathematical problems, etc.	17.62
Q.	QUALITATIVE: Working with words or language; writing; editing; talking.	13.87
I.	INANIMATE: Working with things; building; repairing; designing; operating.	16.28

P.   PEOPLE: Working with People, interviewing,   12.25
       counseling, selling, helping.

MODE: General modality through which learning is preferred

L.   LISTENING: Hearing information; lectures,   13.56
       tapes, speeches, etc.

R.   READING: Examining the written work; reading   18.79
       texts, pamphlets, etc.

I.   ICONIC: Viewing illustrations, movies, slides,   13.70
       pictures, graphs, etc.

D.   DIRECT EXPERIENCE: Handling or performing: 13.92
       shop, laboratory, field trips, practice exercises,
       etc.

EXPECTATION: The level of performance anticipated.

A.   An outstanding or superior level.   14.17
B.   An above average or good level.   9.54
C.   An average or satisfactory level.   14.48
D.   A below average or unsatisfactory level   21.87

*Brief description of the Dimensions are taken from Canfield (1980)

The second dimension, *Content*, measures student comparative levels of interest in different types of course content. Six items in the inventory gather information on four major areas of interest in course material: number or mathematical, qualitative or verbal, inanimate or manipulative, and people or interactive.

The third dimension, *Mode,* measures student preference for four different learning modes: listening or auditory, reading, iconics, and direct experiences with subject matter. Questions gathering data for this dimension focus on the student's preferences in the way in they learn the course content. Since the PSI approach relies heavily on the written word, student attitudes toward the "Reading" and "Listening" modes of learning would seem to be very

important for satisfaction and success within the PSI format. Additionally, speeches presented in class represent an example of the "Direct Experience" mode of learning. Preferences for this method of learning would logically seem to influence both academic performance and attitudes toward the course. Information concerning the subjects preferences for the four modes of instruction should provide useful information.

The final dimension, *Expectations,* measures the level of performance the students expect of themselves. This dimension consists of four measures, each of which corresponds to a level of performance: an outstanding or superior level; an above average or good level; an average or satisfactory level; and a below average or unsatisfactory level.

Reliability and Validity of the CLSI

Measures of the reliability for the CLSI currently exist. Research by Omen and Brainard (as reported in Canfield, 1980) found split half reliabilities ranging from .97 to .99 for first half versus second half and ranging from .96 to .99 in the odd number vs. even number comparisons. Conti and Fellenz's (1986) reassessment of the Canfield instrument found it to be reliable. They used Cronback's alpha to determine reliability coefficients and found that while their numbers were not as strong as those reported earlier, most of the measures were either at, above or very near the commonly used criterion level of .70.

According to Merritt (1985), "Canfield (1980) described the validity by presenting findings from various studies that demonstrated statistically significant differences ($p <$ .05 or .01) between groups of students enrolled in various majors in collegiate settings" (p. 369). Conti and Fellenz's (1986) investigation of the Canfield instrument confirmed the content validity, supporting the notion that the in-

strument does, indeed, measure what it purports to measure. They did find some weakness in the area of construct validity, noting that their analysis found a variety of constructs somewhat different from those labelled in existing scales. They concluded that, "Despite the criticisms [presented in their investigation], the CLSI remains a very useable instrument for rationalistic studies" (p. 75). Additionally, Gruber and Carriuolo (1991) conducted three studies of the construction and validity of both the student and instructor version of the CLSI and found support for both forms.

Dependent Measures—Academic Performance

Three measures of academic achievement were used to determine both cognitive and behavioral performance. The academic performance information was retrieved from the student's class file. The student's file is updated throughout the semester and includes their performance on every element of the course. From the file the following information was retrieved:

(1) *Score on the final exam*—Each student is allowed to take the final exam two times. The 48-item multiple choice examination contains questions from all the units covered over the course of the term. The tests are randomly created by the computer using the question pool available. However, for the purposes of this investigation, each student took the same test the first time, and only the score from the first test was used in the data analysis. Computer analysis of the items on the exam on the first exam was conducted, and those items with poor discrimination were not considered in determining the students score.

(2) *Scores on the required speeches*—The scores on the speeches is a phenomenon that is very unique to the use of PSI in speech communication. Students have the opportunity to do each of the three required speeches two times.

The first time they can receive a grade of "E" (excellent), "A" (acceptable), or "U" (unacceptable). If students choose to give their speech a second time, they can receive the same three grades as above or a fourth grade, "A+" (acceptable plus), which falls between an "E" and an "A". The best grade achieved is recorded in the students' folders and the following points are assigned for each of the grades: E = 20 points; A+ = 15 points; A = 10 points; U = 0 points. This investigation used a composite score for the three presentations. These scores range from a low of 0 to a high of 60.

(3) *Final Course Grade*—The final course grades were coded using the following scale: A+=1, A=2, B+=3, B=4, C+=5, C=6, D+=7, D=8, and F=9. The grading scale at the university offering the course under analysis does not allow the instructor to assign a "minus" grade.

PROCEDURES

The Canfield Learning Style Inventory (CLSI), a brief questionnaire collecting demographic and descriptive information, and appropriate answer/coding sheets were included in the course syllabus given to each student at the beginning of the term. The students completed the demographic and descriptive data during the first week of class. Their responses on the CLSI were completed during the third week of the term. Information on the measures of academic achievement were collected at the end of the term.

ANALYSIS OF DATA

Stepwise, multiple regression was chosen for statistical analysis. Pedhazur (1982, p. 6) notes that multiple regression analysis "is eminently suited for analyzing the collective and separate effect of two or more independent variables on a dependent variable." The twenty measures of the

CLSI (independent variables) were regressed by each of the three dependent measures of academic achievement.

Pedhazur (1982) noted that ANOVA can be treated as a special case of multiple regression. However, multiple regression ". . . is applicable to designs in which the variables are continuous, categorical, or combinations of both, thereby eschewing the inappropriate or undesirable practice of categorizing continuous variables . . . in order to fit them in what is considered, often erroneously, an ANOVA design" (p. 7). Since the variables under analysis were continuous in nature, regression is a more appropriate measure because there is no need to develop artificial categories. Multivariate analysis was rejected because the dependent measures were so interrelated.

While all 521 subjects provided a majority of the information necessary for the investigation, occasionally subjects would not provide information concerning specific variables. Those subjects missing any information were not included in the regression run. The actual number of subjects (number of cases) for each regression run is reported in the tables.

RESULTS

Description of Subject Demographics

Subjects were asked to provide demographic information (sex, age, GPA, and grade level) to help generate an accurate profile. The demographic characteristics of the 521 respondents correspond to those of "traditional" college students. For example, the gender balance between the men (N=245, 47%) and women (N=276, 53%) was nearly equal.

As expected for a freshman-level introductory speech communication course, the subjects in this study were far from even in terms of their current grade level. The vast

majority of the subjects were freshman (N=307, 58.9%) and sophomores (N= 129, 24.8%); with the remaining juniors (N=54, 10.4%) and seniors (N=31, 6.0%) comprising a much smaller percentage.

Since so many of the subjects were at the freshman or sophomore level, it's not surprising that the vast majority of the subjects reported being eighteen (N=168, 32.2%), nineteen (N=180, 34.5%), twenty (N=84, 16.1%) or twenty-one (N=31, 6.0%). Of the remaining subjects, 55 (10.6%) were 22 or older and three people (0.6%) did not provide an age.

Subjects were asked to provide their college GPA on the 4.0 scale. Those subjects in their first semester of college were instructed to use their high school GPA. The subjects' self-reported GPA ranged from a low of .5 to a high of 4.0. The mean (2.94), median (3.0) and mode (3.0), are all around 3.0 on the 4.0 scale.

Description of Subject Scores on CLSI

An additional way of describing the subjects is to delineate their scores on the learning style preference instrument. Table 1 (presented earlier) provides the mean score for each of the twenty measures. The scoring of the scales is such that the lower the score the more important the measure is to the student. Thus, CLSI items 18, 2 and 5 are the most important items for the students in the subject sample. Item 18 is one of the expectancy measures. According to these results, most students expect to be in the above average category. Students expressed a desire for the course to be clearly organized (item 2), as well as a desire to know and understand their instructor (item 5). These results are significant because the PSI format requires extensive structure and organization, and this organization is clearly outlined for the students. In addition, the "personalized" system of instruction is rooted in the

notion that the students develop a "personal" relationship with their undergraduate peer teacher.

The highest mean scores (thus those considered least important by the subjects) were for items 20 (below average expectation), 14 (reading) and 4 (competition). These are also significant in the PSI format because they indicate that students do not desire competition with other students in the class (CLSI-4), and that students do not wish to learn through reading (CLSI-14). It is not surprising that few students expressed an expectation to be below average.

In the PSI format the students are graded on a point scale; there is no inherent competition among the students. Thus, the PSI format supports the student's desire to avoid such competition. However, the rejection of reading as a mode of learning is important because the PSI system is developed around the concept of learning through reading at an individualized pace. The fact that the learning style measure of reading preferences received the highest mean score indicates that the subjects do not prefer using reading to learn, and this is the primary method of learning used in the PSI format.

Academic Achievement

Three dependent measures were used to determine the affect of the independent variables upon academic achievement: final exam score, composite speech score and final course grade.

Final Exam Score—Table 2 presents the results of the regression run with the final exam score as the dependent measure. Five of the twenty learning style preferences were significant for this equation, and they explained approximately 15% of the variance.

Table 2
Stepwise Regression for Final Exam Score - Dependent

Step	Variable	MULTR	R2	ADJ R2	F	SIGF	Beta In	Correl
					VARIABLES ENTERED INTO THE EQUATION			
1	CLSI-17 (Outstanding)	.2297	.0898	.0879	45.113	.000	-.2997	-.2997
2	CLSI-2 (Organization)	.3345	.1119	.1080	28.726	.000	-.1485	-.1509
3	CLSI-9 (Numeric)	.3534	.1249	.1191	21.639	.000	-.1171	-.1844
4	CLSI-10 (Qualitative)	.3705	.1373	.1297	18.057	.000	-.1268	-.0445
5	CLSI-18 (Above Ave.)	.3856	.1487	.1393	15.824	.000	-.1110	-.1246

N = 458

The correlations are all negative. Since the coding of the learning style measures was the opposite of that for the final exam, those students who expressed a stronger preference for the five significant learning style preferences, would be expected to receive higher scores on the final examination. Thus, those students with expectations of superior (CLSI-17) or above average (CLSI-18) performance in the course did better on the exam. The students scoring higher on the exam also expressed greater preference for clear organization (CLSI-2) and numeric (CLSI-9) or qualitative (CLSI-10) course content. Since qualitative course content includes material on communication, it is not surprising that it correlates with success on the final exam.

Composite Speech Score—In the introduction to speech communication course under investigation an important element of academic achievement centers on the understanding of public speaking as evidenced by speech performance. Table 3 presents the frequency counts for the

Table 3
Frequencies and Percentages for Composite Speech Scores

Score	Frequency	Percentage
20	−7	1.3%
25	−6	1.2%
30	24	4.6%
35	21	4.0%
40	62	11.9%
45	42	8.1%
50	109	20.9%
55	80	15.4%
60	124	23.8%
Missing	46	8.8%
	521	100.0%

composite speech scores. The grading system used in this course is such that the composite scores could be zero or between ten and sixty (inclusive) in increments of five. The results indicate that 60.1% of the students fell into the top three values.

Table 4 presents the summary information for the stepwise regression using the dependent variable of composite speech grade. Four of the learning style preference measures were significant when regressed with the composite speech score. Again, all of the correlations were negative. Since the scoring of the of learning style preferences is in the opposite direction of the composite speech score, the negative correlations actually indicate a positive relationship.

Those students expressing expectations of superior performance (CLSI-17) in the course were more likely to have a high composite speech grade. Additionally, expressing a desire to know the instructor (CLSI-5) and have a clear class organization (CLSI-2) were more likely to do well on the speeches. Finally, those individuals expressing a desire for course content which focused on people (CLSI-12) were more likely to have a higher composite speech score.

Final Course Grade—The previously conducted analysis used two measures of academic achievement; one was the final test score and the other was the composite speech score. However, there was no overall measure of success. Thus, the final grade was incorporated as an all-encompassing measure of achievement.

Table 5 presents the results for the stepwise regression with the final course grade as the dependent variable. The coding of learning style preferences and final course grade were in the same direction. Three variables were significant in this regression. Two of the measures deal with the student's expectations. Thus, students expressing expectations of superior performance in the class (CLSI-17) were more likely to receive a higher final course grade. And, not

Table 4

Stepwise Regression for Composite Speech Score - Dependent

						VARIABLES ENTERED INTO THE EQUATION		
Step	Variable	MULTR	R2	ADJ R2	F	SIGF	Beta In	Correl
1	CLSI-17 (Outstanding)	.2736	.0749	.0729	37.461	.000	-.2736	-.2736
2	CLSI-2 (Instructor)	.3061	.0937	.0898	23.888	.000	-.1374	-.1342
3	CLSI-2 (Organization)	.3269	.1069	.1011	18.391	.000	-.1177	-.0834
4	CLSI-12 (People)	.3395	.1153	.1076	14.984	.000	-.0937	-.1230

N = 464

Table 5

Stepwise Regression for Final Course Grade - Dependent

						VARIABLES ENTERED INTO THE EQUATION		
Step	Variable	MULTR	R2	ADJ R2	F	SIGF	Beta In	Correl
1	CLSI-17 (Outstanding)	.3461	.1198	.1179	63.025	.000	.3461	.3461
2	CLSI-2 (Instructor)	.3813	.1454	.1417	39.287	.000	.1598	.1623
3	CLSI-20 (Below Ave.)	.4002	.1602	.1547	29.305	.000	-.1490	-.3191

N = 464

surprisingly, those students who expected to have a below average performance in the course received lower final course grades. The desire for clear organization of course materials (CLSI-2) again showed up as a significant correlate with academic performance. Those students expressing a greater desire for such organization, were more likely to receive higher course grades.

DISCUSSION

Twenty measures of learning style preferences were regressed with each of three measures of academic achievement. Table 6 has been created to facilitate discussion of the results for the three regression runs which used measures of academic achievement as the dependent variable. The table summarizes the results for Tables 2, 4 and 5 presented earlier. The summary is helpful because it provides a quick visual reference to the results.

Two measures clearly have the greatest correlation with a student's academic achievement: a preference for strong organization of class materials (CLSI-2) and an expectation of superior performance (CLSI-17). Both of these measures were found in the regression equations for all three measures of academic achievement in the course. Both measures have a positive correlation with the measures of academic success. Thus, those students expressing a desire for clear classroom organization and expressing an expectation of superior performance are more likely to do better on the final exam, the speeches, and the entire course.

Another conclusion one can draw from Table 6 is that the entire mode dimension had no significant connection with student achievement in the course under investigation. Thus, it appears that preferences for the method of information dissemination had no significant effect on the students' academic achievement. This is significant be

Table 6

Summary of Significant Relationships in Regression Runs

CSLI #	Measure	Dependent Variable (Table	Direction[a]
CONDITIONS DIMENSION			
1.	Peer	—	—
2.	Organization	Final Exam Score (2)	Positive
		Composite Speech Score (4)	Positive
		Final Course Grade (5)	Positive
3.	Goal Setting	—	—
4.	Competition	—	—
5.	Instructor	Composite Speech Score (4)	Positive
6.	Detail	—	—
7.	Independence	—	—
8.	Authority	—	—
CONTENT DIMENSION			
9.	Numeric	Final Exam Score (2)	Positive
10.	Qualitative	Final Exam Score (2)	Positive
11.	Inanimate	—	—
12.	People	Composite Speech Score (4)	Positive
MODE DIMENSION			
13.	Listening	—	—
14.	Reading	—	—
15.	Iconic	—	—
16.	Direct Experience	—	—
EXPECTATION DIMENSION			
17.	Outstanding	Final Exam Score (2)	Positive
		Composite Speech Score (4)	Positive
		Final Course Grade (5)	Positive
18.	Above Average	Final Exam Score (2)	Positive
19.	Average	—	—
20.	Below Average	Final Course Grade (5)	Negative

a The direction is the true direction of the relationship. It was not taken from the tables. Thus, the coding scheme of the variables has been taken into account.

cause it means that individual instructors should feel less pressure to change the method of information presentation in order to meet the students' desires. The failure of mode dimension measures to show up as significantly related to performance is especially interesting since earlier research found that students did not like to read (CLSI-14) from textbooks but they did like listening (CLSI-13) to the ideas of other students (Hinton, 1992).

Finally, the expectation dimension appears to be significantly correlated with the students' academic achievement in the course. In fact, of the twelve instances where a measure of learning style was significant in a regression equation, five were from the four measures of expectancy. This is not surprising in light of past academic performance. Some may argue that student expectations are based on the reality of their past performance. Others might argue that the expectations are creating a self-fulfilling prophecy, which guides the student's performance in the course. Future investigations may focus more closely on the role of expectations in academic achievement.

Limitations of the Study

This investigation has two limitations related to the use of speech scores as a dependent measure. The first limitation concerns the lack of differentiation in the composite speech scores. While the scores fell into nine categories, nearly two-thirds of the valid scores were in the top three categories. There is no statistical evidence that this effected the results. However, a method of speech scoring which allows for greater diversity, might encourage more independent variables to enter the regression equations.

The second limitation also deals with the speech rating system. The course under investigation uses the undergraduate instructors (IA's) to evaluate the speeches. This means that there are approximately fifty different individ-

uals doing the rating of the speeches. Fewer raters might have increased the reliability of the scores. However, the course under investigation has several built in mechanisms to increase reliability. First, all the undergraduate instructors receive extensive training for the evaluation process. Secondly, the rating sheets have specific categories for the evaluation of the speaker, and the categories allow extremely limited flexibility for the rater. Analytic rating forms such as the ones used in this investigation have been shown to be reliable by previous researchers (Goulden, 1994). Goulden, for example, reports an inter-rater reliability score of .8535 for fifteen raters using an analytic evaluation form.

Practical Applications for Instructors

The results of the current investigation offer instructors some insight into the importance of learning style preferences. Additionally, the results offer the following two practical applications for basic communication instructors.

Identification of Learning Style Preferences Influencing Success

Speech communication instructors tend to focus on variables like communication apprehension because they are specific or more unique to the communication course. However, broader education issues, such as learning style, can impact student success in all courses, including communication courses. Previous research has demonstrated the importance of learning style preferences on the academic performance of student at all age levels and in a wide variety of subjects (Enochs, Handley & Wollenberg, 1986; McDermott, 1984; Miller, Alway & McKinley, 1987).

The results of this investigation demonstrate that basic course instructors need to consider learning style preferences in their classes. In this investigation, eight of the twenty preferences were significant in regression equations with measures of academic success (see Table 6). Instructors should pay particular attention to these eight variables. For example, student expectations are positively connected with success in the course. The higher the expectation, the better the student does in the course. It may be possible for instructors to indicate that success in the basic communication course is not dependent on past academic experience because its "unique" content. Additionally, student preference for organization was significant with all three measures of course success. Thus, it is important for the instructor to be extremely organized and for the student to be aware of use that organization.

Identification of Learning Style Preferences Important to Basic Communication Course Students

The Mean scores for the 20 learning style measures (presented on Table 1) pinpoint those measures which are more important to the students in the current investigation. Instructors may wish to modify their teaching styles so that teaching styles are more in line with the student learning styles. Clearly the students in the current investigation can not be representative of students everywhere, so some instructors may wish to use learning style measures to assess the preferences of their own students.

The students in this investigation expressed the greatest desire for a logical and clear organization of the course, knowing the instructor on a personal basis and being given specific information on assignments, requirements, etc. Basic communication course structures providing the organization, personal contact and detail, will likely be

viewed much more favorably than those that do not. Instructors who can not alter the course to match the preferences of students may attempt to teach students how to manage their selection of the various learning styles available to them (Miller, Alway & McKinley, 1987).

Student preferences for the learning environment are not simply a matter of comfort. They influence academic success and perceptions of the course. As an area of academic research, learning styles has received the attention of many education scholars, but has been virtually ignored in the speech communication discipline. A few papers and research articles (for example, Bourhis & Berquist, 1990; Bourhis & Stubbs, 1991; and Schliessmann, 1987) have discussed the importance of learning styles in the basic speech communication course, but they pale in comparison to the plethora of articles on communication apprehension. This investigation offers an initial effort to determine the role of learning style preferences in the basic communication course. Future investigation may study the influence of learning style preferences in basic courses using a different structure.

REFERENCES

Andrews, J.D.W. (1981). Teaching format and student style: Their interactive effects on learning. *Research in Higher Education, 14,* 161-178.

Armstrong, N. (1981). The relationship between learning preference style and student evaluation of teaching. *Journal of the Association for the Study of Perception, 16,* 27-30.

Barbe, W. & Swassing, R.H. (1979). *Teaching through modality strengths: Concepts and practices.* Columbus, OH: Zaner-Bloser.

Bonham, L.A. (1988a). Learning style instruments: Let the buyer beware. *Lifelong Learning, 11,* 12-16.

Bonham, L.. (1988b). Learning style use: In need of perspective. *Lifelong Learning, 11,* 14-17.

Bourhis, J. & Berquist, C. (1990). Communication apprehension in the basic course: Learning styles and preferred instructional strategies of high and low apprehensive students. *Basic Communication Course Annual, 3,* 27-46.

Bourhis, J. & Stubbs, J. (1991). *Communication apprehension, learning styles, and academic achievement.* Paper presented at the meeting of the Central States Speech Association, Chicago.

Campbell, B.J. (1991). Planning for a student learning style. *Journal of Education for Business, 66,* 356-359.

Canfield, A.A. (1980). *Learning styles inventory manual.* Ann Arbor, MI: Humanics Inc.

Carrell, P.L. & Monroe, L.B. (1993). Learning styles and composition. Modern Language Journal, 77, 148-162.

Clariana, R.B. & Smith, L. (1988). *Learning style shifts in computer-assisted instructional settings.* A Paper presented at the Annual Meeting of the International Educational Research Association, New Orleans, LA.

Clements, Z.J. (1976). Taking all students from where they really are. *NASSP Bulletin, 60,* 104-108.

Conti, G.J. & Fellenz, R.A. (1986). Reassessing the Canfield learning style inventory. In Keneston Landers (Ed.), *Exchanging at the crossroads ... research and practice. Program and Proceedings for the annual adult education research conference* (pp. 72-76). Syracuse, NY.

Corbett, S.S. & Smith, W.F. (1984). Identifying student learning styles: Proceed with caution! *The Modern Language Journal, 68,* 212-221.

Cornett, C.E. (1983). *What you should know about teaching and learning styles.* Bloomington, IN: Phi Delta Kappa Educational Foundation.

Davidson, G.V. (1992). How do learning styles relate to performance in a computer applications course? *Journal of Research on Computing in Education, 24,* 384-358.

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

Enns, C.Z. (1993). Integrating separate and connected knowing: The experiential learning model. *Teaching of Psychology, 20,* 7-13.

Enochs, J.R., Handley, H.M. & Wollenberg, J.P. (1986). Relating learning styles, reading vocabulary, reading comprehension, and aptitude for learning to achievement in self-paced and computer assisted instructional modes. *Journal of Experimental Education, 54,* 135-139.

Frymier, J. (1977). *Annehurst curriculum classification system.* West Lafayette, IN: Kappa Delta Pi.

Gorham, J. (1986). Assessment, clarification and implycations of learning styles in instructional interactions. *Communication Education, 35,* 411-417.

Goulden, N.R. (1994). Relationship of analytic and holistic methods to raters' scores for speeches. *The Journal of Research and Development in Education, 27,* 73-82.

Gruber, C.P. & Carriuolo, N. (1991). Construction and preliminary validation of a learner typology for the Can-

field learning styles inventory. *Educational and Psychological Measurement, 51,* 839-855.

Hinton, S. (1992). *The learning style preferences of students in graduate school.* Paper presented at the annual meeting of the Mid-South Educational Research Association, Knoxville, TN.

Holtzclaw, L.R. (1985). Adult learners' preferred learning styles, choice of courses, and subject areas for prior experiential learning credit. *Lifelong Learning, 8,* 23-27.

Jacobs, R.L. (1982). *The relationship of cognitive style to the frequency of proctor/student interactions and achievement in a PSI course.* 8 p. ED 223 223.

James, W.B. & Galbraith, M. W. (1985). Perceptual learning styles: Implications and techniques for the practitioner. *Lifelong Learning, 8,* 20-23.

Korhonen, L.J. & McCall, R.J. (1986). The interaction of learning style and learning environment on adult achievement. *Lifelong Learning, 10,* 21-23.

McDermott, P.A. (1984). Comparative functions of preschool learning style and IQ in predicting future academic performance. *Contemporary Educational Psychology, 9,* 38-47.

Meighan, S. (1985). We put learning styles to work in our school, and you can too. *The American School Board Journal, 172,* 30-31,39.

Melear, C.T. & Pitchford, F. (1991). African-American science student learning style. In *Proceedings of the International Conference of the Association for Psychological Type.* Richmond, VA.

Merritt, S.L. (1985). Learning style preferences of baccalaureate nursing students. *Nursing Research, 32,* 367-372.

Miller, C.D., Alway, M. & McKinley, D.L. (1987). Effects of learning styles and strategies on academic success. *Journal of College Student Personnel, 28,* 399-404.

O'Brien, T.P. (1994). Cognitive learning styles and academic achievement in secondary education. *Journal of Research and Development in Education, 28,* 11-21.

Pedhazur, E.J. (1982). *Multiple regression in behavioral research: Explanation and prediction.* 2nd ed. New York: Holt, Rinehart and Winston.

Pettigrew, F.E. & Buell, C. (1989). Preservice and experienced teachers' ability to diagnose learning styles. *Journal of Educational Research, 82,* 187-189.

Riechmann-Hruska, S. (1989). Learning styles and individual differences in learning. *Equity & Excellence, 24,* 25-27.

Schliessmann, M.R. (1987). *Cultural differences and learning style in the basic course.* Paper presented at the 1987 basic course directors conference, Detroit.

Schroeder, C.C. (1993). New students—New learning styles. *Change, 25,* 21-26.

Skipper, C.E. (1992). *Five instructors—A study of instructional preferences of preservice teachers.* A paper presented at the Annual Meeting of the Mid-Western Educational Research Association, Chicago.

Snow, R.E. (1986). Individual differences and the design of educational programs. *American Psychologist, 41,* 1029-1039.

Soroko, M.P. (1988). Student learning styles: A teaching consideration in principles of accounting courses. *Journal of Education for Business, 63,* 248-250.

Torres, R.M. & Cano, J. (1994). Learning styles of students in a college of agriculture. *Journal of Agricultural Education, 35,* 61-66.

Willett, L.H. & Adams, F.G. (1985). Learning style preferences of external degree students. Innovative Higher Education, 10, 55-65.

Williams, E.H., Morris, N.T., Newman, P.P., Williams, A.A. & Wesley, A.L. (1989). What can we learn from the learning styles of developmental students? *Reading Improvement, 26,* 281-289.