Cognitive Styles Vis-A-Vis Proficiency in Productive Skills

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Abstract - This study was conducted to determine the relationship between the cognitive styles and the English proficiency (EP) scores in the productive skills of the Western Mindanao State University college students with other variables of age and area of specialization. To carry out its objective, the study employed the descriptive method, specifically the correlation technique. First, the respondents' cognitive styles in information processing were determined through the use of the standardized Hemispheric Dominance Test (HDT). Then, the proficiency levels in the productive skills and global English were measured by the use of the Speaking Skill Test, the Writing Skill Test and the Cloze Test; all had been validated and reliability-tested. Lastly, the data were analyzed using mainly the Pearson r. Having a sample of 240 selected through purposive, stratified, and random sampling from the 5,096 students of the three colleges of Western Mindanao State University, Zamboanga City, results revealed that: that most of the students of the Colleges of Arts and Sciences, Engineering and

Education of Western Mindanao State University were left-brained; that the students were "good" in speaking, "fair" in writing but "poor" in global English; that there was no significant relationship between the cognitive styles and their EP scores in speaking, writing and global English tests; and 4) that a significant relationship was shown between cognitive styles and EP scores in speaking, writing and global English when respondents were grouped according to age and area of specialization.

Keywords - Cognitive styles, English proficiency, productive skills

INTRODUCTION

One of the current trends in language teaching is matching teachers' strategies with their learners' cognitive styles to maximize learning among students. One step to do this is to determine what these cognitive styles are. Several studies, conducted on cognitive styles, used the field dependence-field independence orientation model and correlated these with language proficiency and other variables or vice versa (Hall 1988, Martin 1992, and Sicat 1992). However, only two researches (Breien-Pierson's 1988 and Waltz's 1991) were conducted on cognitive styles based on the Sperry's (1977) Split-Brain Model of Intelligence, the anchor theory of the present study.

In Sperry's Split-Brain Model of Intelligence, cognitive styles are viewed in terms of which brain hemisphere an individual uses in processing information. Sperry said that when a person uses his left-brain hemisphere in processing information, he is called a left-brained individual who is good in mathematical formulae, logic, numbers, sequence, linearity, analysis and can easily memorize words of a song. On the other hand, if he uses his right-brain hemisphere, he is considered a right-brained individual who is good in forms and patterns, spatial manipulation, rhythm and musical appreciation, images/pictures, imagination, dimension and can easily get the tune of a song. Indeed,

as Ellis (1985) favorably asserted in his Neurofunctional Theory, there is a connection between neural anatomy and language function.

Going back to the two studies conducted on brain dominance with language proficiency, only the one by Breien-Pierson (1988) covered a productive skill of writing. It determined the role of hemisphericity in the area of student composition process, and it revealed that free writing is the function of the right-brain hemisphere while doing research papers and book reports are the roles of the left-brain hemisphere. Although the writing skill was covered, the other productive skill which is speaking and the variables of age and area of specialization were never included. So, the need to have one is imperative.

FRAMEWORK

Steinberg (1993) explained that the brain is divided into two halves, each having different functions. The left hemisphere (LH) controls the right side of the body, the right arm and the right side of the face while the right hemisphere (RH) controls the left side of the body.

Even though the hemispheres of the brain divide the labor of the body, they do not do it evenly. In a sense, the body cannot serve two masters: one side must take charge. This phenomenon, where one hemisphere is the major or controlling one is called dominance, thus the term hemispheric dominance.

As what Sperry (1977) did, Munzert (1980) contrasted the functions of the two hemispheres by the types of mental activities which are processed in each half of the brain. The left hemisphere, he said, is the control center of such intellectual functions as memory, language, logic, computation, seriation, classification, writing, analysis and convergent thinking. The right hemisphere is the control center for the mental functions involved in intuition, extrasensory perception, attitudes and emotions, visual and spatial relationships, music, rhythm, dance physical coordination and activity, synthesis, and divergent thinking processes. Left brain thinking is the essence of academic success and intelligence as it is, presently measured; right-brain thinking is the essence of creativity.

In contradiction to Steinberg and Munzert, the idea of two hemispheres' balanced and wholesome functioning was first postulated

by Rene Descartes. As reported by Levy (1985), in the 7th century, Rene Descartes came up with the notable and influential notion that the brain must act as a unified whole to yield a unified mental world. He said that this notion remained dominant until the later half of the 19th century when discoveries then reduced humankind to a half-brained species.

In the 20th century, the studies of Obler and Bogert showed the revival of Descartes' notion of two hemispheres' balanced and wholesome functioning. Obler (1981), in her neurolinguistic research, noted that in second language learning there is significant right-hemisphere participation, and this participation which is "particularly active during the early stages of learning the second language" consists of strategies of acquisition like guessing at meanings, and of formulaic utterances. Bogert's experimental study (1990) on the effectiveness of right-brain stimulation on children and their creativity in writing revealed, among others, that while both right and left-brain hemisphere preference groups demonstrated an increase in creativity, there was no significant difference found between the creative expression of those children with a left-hemispheric preference and creative expression of those children with a right hemispheric preference.

In summary, the concepts of Steinberg (1993), Munzert (1980) and Levy (1985) and the researches conducted by Obler (1981) and Bogert (1990) became the basis of the categorization of the respondents in the present study and of its main concern of determining significant relationship between the respondents' cognitive styles (left-brain, right-brain and whole-brain dominance) and their proficiency in the productive skills.

OBJECTIVES OF THE STUDY

The study sought to determine the relationship between cognitive styles and English proficiency scores in the productive skill tests of speaking and writing taking into consideration the variables of age and area of specialization of students. Specifically, it included the following objectives:

1. to determine which category of cognitive styles the students belong (right-brain, left-brain, or whole brain dominance)

2. to assess their proficiency in English speaking and writing

3. to relate the respondents' cognitive styles and English proficiency

4. to relate the respondents' cognitive styles and English proficiency when grouped according to age and area of specialization

MATERIALS AND METHODS

This study employed the descriptive method, specifically the correlation technique. First, the respondents' cognitive styles in information processing were determined through the use of Hemispheric Dominance Test (HDT). Then, their English proficiency (EP) in the productive skills was measured by the use of the Speaking Skill Test (SST) and the Writing Skill Test (WST); the Cloze Test (CT) was to measure their global English proficiency in addition to the scores in SST and WST. After that, the respondents' scores in HDT and in the productive skill tests and the global level were correlated. In addition, the respondents were also classified according to their age and area of specialization. Lastly, these learner variables were again correlated with the relationship between cognitive styles and English proficiency.

In the actual gathering of data, a plan was devised and employed. The instruments were administrated by two's – i.e. the HDT and the CT were given in the first session; the SST and the WST, in the second one. Likewise, the 240 respondents were divided into small groups of 20 members each, by year level and area of specialization. In short, each of the 12 subgroups was made to take the 4 tests in two separate meetings which totaled to 24 meetings.

For the standardized Hemispheric Dominance Test, the respondents were asked to answer the 40-Multiple Choice- type of items, each was followed by three options lettered a, b c. All "a" answers described the attitude of the left-brained learners, all the b's spoke of the behavior of the right-brained while the all the c's were on characteristics of the whole-brained or bilateral learners. After that, the respondents were instructed to answer the validated 30-minute Cloze Test which consisted of an incomplete passage about "Asia" by meaningfully filling in the 35 blanks with appropriate words.

During the second session, in the Speaking Skill Test, each respondent was given 3 minutes to mentally organize a story based on the three pictures provided and another 3 minutes to deliver his story. For the Writing Skill Test that followed, each respondent was asked to write his story about the same three pictures used in the Speaking Skill Test.

RESULTS AND DISCUSSION

Students' Cognitive Styles

As shown in Table 1, 179 (74.6%) of the 240 respondents belonged to the left-brain dominance, 52 (21.3%) belonged to the right-brain dominance and 9 (3.8%) belonged to the whole-brain dominance. These findings provided a strong indication that majority of the students of the three colleges were left-brained individuals and few were right-brained and whole-brained.

Table 1. Percentage distribution of respondents
by cognitive styles

Students' Cognitive Styles							
Left-brain		Whole-brain		Right-brain		Total	
No.	%	No.	%	No.	%	No.	%
179	74.6%	9	3.8%	52	21.2%	240	100%

According to Sperry (1977), the left-brained people tend to be verbal, to respond to word meaning, to be sequential, to process information linearly, to respond to logic, to plan ahead, to recall people's name, to speak with few gestures, to be punctual, to prefer formal study design and bright light while studying. The right-brained people, on the contrary, tend to be visual, tactual, kinesthetic; to respond to word pitch and feeling; to be random; to process information in chunks; to respond to emotion; to be spontaneous; to recall peoples' faces; to use gestures when speaking; to be less punctual and to prefer sound/

music background and frequent mobility while studying (Internet and Sperry, 1977). The whole-brained individuals are the "middle of the road,"_ those who tend to balance using the left and the right brain in processing information and data for comprehension.

Students' English Proficiency Scores in the Two Productive Skills and Global Level

Productive Skills. The data revealed that in the Speaking Skill Test, the students obtained an average score of 16.65 with a grade of 2.25 which meant "good". In the Writing Skill Test, they obtained an average score of 14.04 with a grade of 2.75 which was only "fair" (Table 2).

This result indicates that regardless of their cognitive styles, the students' proficiency level in the productive skills was generally low although the students showed a bit better performance in the Speaking Skill Test. This test used pictures as stimulus materials for the narrative task which in effect helped the students to verbally articulate their thoughts step by step.

Global English Proficiency. The data revealed that out of the global English proficiency score of 85, the students got an average score of 41.69 which had an equivalent grade of 3.0 meaning "passing". It implies that students' proficiency level in the global test of the English language was also low.

Table 2. Descriptive levels of the students' proficiency scores in the two productive skills and global level

English Proficiency	n	HPS	Mean	sd	Grade	Interpretation
A. Productive Skills						
Speaking	240	25	16.65	3.79	2.25	Good
Writing	240	25	14.04	3.36	2.75	Fair
B. Global level	240	85	41.69	9.88	3	Passing

This result has somehow strengthened Vegare's (1993) finding that the overall language proficiency of the college students particularly

the student teachers of Western Mindanao State University was poor.

Correlation between Respondents' Cognitive Style and English Proficiency in Two Productive Skills

As shown in Table 3, correlation analysis revealed that students' cognitive styles were negatively but not significantly correlated with their speaking skill (-0.1316) at 0.05 level of significance. The result implies that if a student has left-brain dominance, it is more likely that he will obtain higher score in speaking skill test; whereas, if a student has a right-brain or whole-brain dominance, there is a great tendency that he will get lower score in the same test.

Moreover, the data revealed that the students' cognitive styles were positively but not significantly correlated with their writing skill (0.0663) at 0.05 level of significance. The result indicates that students with right-brain or whole-brain-dominance will likely get higher score in writing skill test, while those with left-brain dominance will likely get lower score in the same test.

Table 3. Correlation results between the respondents' cognitive styles and english proficiency in the two productive skills

English Proficiency Macro Skill	n	df	Computed Value of r	Critical value of r at 0.05	Interpretation
Speaking	240	238	-0.1316	0.164	Not Significant
Writing	240	238	0.0663	0.164	Not Significant

Correlation between the Respondents' Cognitive Styles and Global English Proficiency

As presented in Table 4, the data disclose that students' cognitive style was negatively correlated with their global English proficiency (-0.0593). Although the degree of correlation was not statistically significant at 0.05 level of significance, the result implies that if a student is left-brained, it is more likely that he will get higher scores in the global English; if a student is whole-brained or right-brained, it is more likely that he will get lower scores in the global English.

Table 4. Correlation results between the respondents' cognitive styles
and global english proficiency

English Proficiency	N	df	Computed Value of r	Critical value of r at 0.05	Interpretation
Global	240	238	-0.0593	0.164	Not Significant

Cognitive Styles and Speaking Skill by Age Group

Results revealed that of the four age groups, the cognitive style of the "16 years old and below" and that of the "19 and 20 years old" students had a significant relationship with their speaking skills. This implies that the "16 years old and below" and the "19 and 20 years old" students with left-brain dominance tended to get higher scores in the speaking skill test; whereas, those with right-brain or whole-brain dominance tended to get lower in the same test. For the rest of the age groups, their cognitive styles did not influence their speaking skills (Table 5).

Cognitive Styles and Writing Skill by Age Group

For all the four age groups, their cognitive styles were not significantly correlated with their writing skills.

Cognitive Styles and Global Proficiency by Age Group

Among the four age groups, the cognitive styles of the "19 and 20 years old" students only had a significant negative correlation with their global English Proficiency. This means that the left-brained "19 and 20-years old" students tended to get higher scores in the global test of English proficiency; whereas, the right-brained or whole-brained tended to get lower in the same test. For the rest of the age groups, their cognitive styles had nothing to do with their global English proficiency (See Table 5).

Table 5. Correlation results between the
respondents' cognitive styles and each of the two
productive skills and global English proficiency when respondents
were categorized according to age group

Age Group	n	Computed Value of r			Critical Value of r at 0.05 level	Interpretation
		Speaking	Writing	Global		
16 Years old & Below	28	-0.3474*	0.2281	-0.0763	0.317	*Significant
17 & 18 Years old	96	-0.0964	0.0312	0.0019	0.164	Not significant
19 & 20 Years old	98	-0.208*	0.0471	-0.1717*	0.164	*Significant
21 Years old & Above	18	0.3852	0.3379	0.1019	0.4	Not Significant

Cognitive Styles and Speaking Skill by Area of Specialization

When the cognitive styles of the students from the three colleges were correlated with their speaking skill, results revealed that for the "Engineering" respondents, there was a negative and significant relationship between their cognitive styles and their speaking proficiency. This means that the left-brained Engineering students tended to become better speakers; whereas, the right-brained or whole-brained, poorer speakers (Table 7).

Cognitive Styles and Writing Skill by Area of Specialization

When the cognitive styles and the writing skill of the respondents by area of specialization were correlated, there was a positive significant relationship among the "Engineering" students. It can be inferred that cognitive styles of the "Engineering" students affected their writing skill. It means that the right-brained or whole-brained "Engineering" students tended to be better writers; whereas, the left-brained tended to be poorer writers (Table 7).

Cognitive Styles and Global English Proficiency by Area of Specialization

When respondents were grouped according to area of specialization, the results of the correlation analysis between cognitive styles and global English proficiency revealed significant relationship only among the "Education" students. This is evidenced by the computed value of r of -0.1891 against the critical value of r of 0.183 at 0.05 level of significance.

This finding is somehow a confirmation of Brown's (1988) study, in Brown (1994), on the relationship between background, sex, and cognitive profile with success in computer programming among college freshmen which revealed, among others, a strong correlation between Type I cognitive profile (analytic ability or alternatively field independence which is similar with left-brained dominance) and success in computer programming.

Table 7. Correlation results between the respondents' cognitive styles and English proficiency in each of the two productive skills and global level when respondents were categorized according to area of specialization

Area of Specialization	n	Computed Value of r			Critical Value of r at 0.05 level	Interpretation
		Speaking	Writing	Global		
CAS	80	-0.1268	0.1534	0.046	0.183	Not Significant
Engineering	80	-0.2448*	0.1907*	-0.0747	0.183	*Significant
Education	80	-0.05	-0.0943	-0.1891*	0.183	*Significant

CONCLUSIONS

Based on the findings of the study, the following conclusions were drawn: Most of the students of the Colleges of Arts and Sciences, Engineering and Education of Western Mindanao State University were left-brained. Only few of them were right-brained and whole-brained.

As part of the limitation of the study the assumption at the beginning of the study that "the Arts and Sciences students were left-brained, the Engineering students were right-brained and the Education students were whole-brained" did not come out true in this study.

The respondents were qualitatively "good" in their speaking ability, "fair" in their writing skill but poor in their global English proficiency. The respondents' cognitive styles had no significant correlation with their speaking skill, writing skill and global English global proficiency.

There was a significant correlation between the respondents' cognitive styles and English proficiency scores when respondents' were grouped according to age and area of specialization.

RECOMMENDATIONS

In the light of the findings and conclusions, the following recommendations were forwarded:

It was recommended: a) that the English Department, language faculty and all stakeholders of the English Language Teaching conduct continuous in-service trainings for English instructors and professors to be oriented on students' cognitive/learning styles and multiple intelligences to guide them in their choice of teaching strategies, b) that the English Department may schedule a plethora of language activities to enhance students' language skills.

To the language researchers, the study recommended that they expand the number of respondents to realistically profile the hemispheric dominance of students, say, of one college or of the entire university or that they replicate the study with "equated number" of respondents in terms of brain dominance.

To the material developers/producers, it recommended that in producing textbooks, they consider the text types and tasks which should match the students' hemisphericity.

To test preparation centers, it recommended that they continuously develop the Test Item Bank and reformulate items to keep their congruency and compatibility with skills and knowledge tested.

To the administration, the study recommended: a) that it support the academic efforts of colleges for the language enrichment of students in terms of financial assistance for material production, faculty remuneration and facilities upgrading, b) that it make a policy pronouncement for all incoming freshmen to undergo the English Proficiency Test and organize English Plus classes for low performers.

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