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<th>Investigating Language Proficiency and Learning Style Preference</th>
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<tr>
<td>Authors</td>
<td>Lee, Bradford, Pirotto, Christopher</td>
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福井県地域共同リポジトリ
Investigating Language Proficiency and Learning Style Preference

Bradford LEE*1 and Christopher PIROTTO*1

*1 Organization for Fundamental Education

Individual differences (ID) among language learners (e.g. language aptitude or motivation), are variables that are theorized to affect the degree of success one will have in acquiring a second language (L2). This study sought to add to the body of literature on learning style. 225 first year students (divided into two groups based on English proficiency) at a private Japanese university were surveyed to determine their preferred learning style(s). The data obtained were then examined in relationship to the two groups’ English proficiency to search for any statistically significant differences between the groups. It was found that the highest- and lowest-ranked learning styles (auditory learning and individual learning) were the same for both Group A (higher proficiency) and Group B (lower proficiency), but to a statistically significant degree of difference.

Key Words: TESOL, Second Language Acquisition (SLA), Learner Style, Individual Differences

1. Introduction

While much of the research in the fields of TESOL and applied linguistics has focused on improving pedagogy or developing the next, best methodology, a key factor that will always play a role in the degree of success a learner experiences in the classroom does not lie with the instructor, but rather within the learners themselves. Surely every teacher has had the experience of having the same lesson plan, taught in exactly the same manner, go magnificently with one set of students only to fail miserably with another. Even students of the same class will inevitably achieve different results even though they received the same treatment. If the variables of instructor, treatment, time, and place are all accounted for, this difference in learner performance is usually attributed to individual differences (ID) in the language learners.

Research into the ID of language learners has identified several factors which are believed to come into play: personality, anxiety, motivation, language aptitude, and learning style, among others. The first three in this list are affective factors (dealing with one’s emotions), while the last two are considered cognitive factors (how the mind functions). This study sought to explore the variable of learning style and how it relates to language proficiency for a large group of students enrolled in a small private university in rural Japan. Learning style was selected for investigation due in large part to its relevance to classroom methodology, i.e., if the students indicated a strong preference for silent reading, this would be valuable information to a teacher whose lesson plans had previously been based on intensive group discussion, etc. In addition, if a strong correlation could be found between a specific learner style and L2 proficiency, this could provide support for the selection of one TESOL methodology over another as Willing notes, “research shows that an effort to accommodate learning styles by choosing suitable teaching styles, methodologies and course organization can result in improved learner satisfaction and attainment” (Willing, 1987, p.1). In addition, the idea of ‘learner training’ (Holec, 1987) argues that while an individual’s learning style is relatively fixed by the time one matures, it is still possible that with awareness, adult learners can be helped to shape their approach to maximize results on particular tasks. A further understanding of the relationship between learning style and L2 proficiency can potentially help learners be more effective in their studies. This study therefore aimed to answer the following questions:

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* 基盤教育機構
E-mail: bradford-lee@fukui-ut.ac.jp
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1. Is there a difference in the favorability of learning styles for high and low proficiency groups, and if so to what degree?
2. Can any trends in preferred learning style be identified among the participants of this study?

2. Review of the Literature

Learning style itself is not an easily measurable construct, but has been defined as “cognitive, affective, and physiological traits that are relatively stable indicators of how learners perceive, interact with, and respond to the learning environment” (Keele, 1979, p.4). In other words, the study of learning style reflects “the totality of psychological functioning” (Willing, 1987, p.6). Some of the early research into learning style identified two general styles, that of field dependence (FD) versus field independence (FI) (Witkin, 1976). An FD learner tends to perceive things holistically, where the overall structure is highly dominant. These learners tend to favor informal learning environments and find social interaction easy and enjoyable. An FI learner, on the other hand, tends to perceive each part of the field as individual, discrete units. These learners prefer analytical study and individual study in formal situations. To use a common analogy, an FD learner would look at a forest and first appreciate the forest overall, while an FI learner’s attention would be primarily drawn to the individual trees. The Group Embedded Figures Test (GEFT) was developed by Witkin et al. (1971) and has been widely used to measure learners’ field dependence / independence; however, the validity of this method has come under criticism (Cronbach, 1970) as being overly dependent on visual interpretation of style and as being a disguised surrogate measure of intelligence (Griffiths and Sheen, 1992) with a cultural bias.

The concept of field dependence/independence, while still widely discussed, is only one of the constructs of learning style that researchers have proposed. Furthering the idea that differences in perception lay the foundation for learning style, Dunn and Dunn (1972), R. Dunn (1983, 1984), and Reid (1987) identified four basic modalities of perception: visual learning, auditory learning, kinesthetic learning, and tactile learning. Studies on these modalities have resulted in interesting findings with several implications to the language classroom. Good readers tend to prefer to learn visually and auditorily (Carbo, 1983). Price, Dunn, and Sanders’ (1980) study on elementary school students found that children only begin to develop auditory learning skills at around fifth or sixth grade, relying mostly on tactile or kinesthetic methods for most of their childhood. These findings are important because other research has found that students taught in their preferred learning styles outperform students who were not, in both cognitive (knowledge, test scores) and affective (attitude, efficiency) aspects (Domino, 1979).

Most of the research to date on learner style has been done quantitatively via some form of self-reporting Likert-scale questionnaire, or the aforementioned GEFT, which requires learners to identify geometric shapes embedded in larger figures. While this reliance on self-reporting may at first seem to be an unreliable source of information, follow-up research has shown that most students do respond to questionnaires in ways that accurately reflect strengths and weaknesses in their learning, particularly when they respond strongly agree/disagree (Dunn, 1984).

3. Study Design

3.1 Participants

This study was conducted at a small private university in rural Japan. Upon matriculation, all incoming students take a written proficiency test in order to get a baseline score for class placement. It should be noted that this placement exam only contains listening comprehension and multiple choice answers of reading and grammar sections, and is therefore not able to assess oral proficiency. English classes at the university are generally restricted to about 20 students or less, resulting in 4 or 5 class levels per course major. In order to obtain a sufficiently large sample population, students from five course majors (three engineering and two science disciplines) were approached during their free periods and asked to participate on an anonymous, voluntary basis. The participants were drawn from the pool of first-year students who scored highest on the placement test (Group A) of each department, along with those who scored the lowest (Group B). In total, 225 students volunteered to take part in the study (Group A: n = 118, Group B: n = 107).
3.2 Materials and Methodology

The material used to measure learning style in this study was the Perceptual Learning Style Preference Questionnaire (PLSPQ). This instrument was designed by Reid (1987) to investigate ESL (English as a second language) students at the university level, making it an ideal choice for this study. The PLSPQ seeks to measure the six aspects of learning style (the modalities of visual, auditory, kinesthetic, and tactile, along with group or individual orientations) by asking students to respond to five statements on each topic. The resulting 30 statements are ordered randomly, and participants are asked to respond to each on a 5-point Likert scale, from strongly agree to strongly disagree. The PLSPQ and its instructions, originally created by Reid in English, was translated into Japanese by the lead researcher, and then back-translated by an L1 Japanese speaker to check for accuracy (please see the appendix of this paper for the Japanese version of the questionnaire used). In order to elicit the most honest responses, volunteers who agreed to participate were not required to provide their names or other identifying features, except for identifying which class they were enrolled in. Participants were also encouraged to read the statements carefully and respond as truthfully as possible, and no time limits were set for the completion of the questionnaire.

4. Results

Of the 225 collected surveys, three were discarded from the study because it was evident that the participants did not answer the survey truthfully. The evidence supporting this claim is that the three participants answered all 30 questions with the same response. Due to the nature of the PLSPQ, which has several items which are polar opposites, it is not reasonable that a participant answering truthfully would respond “strongly agree” to both items such as “I prefer working in groups” and “I prefer working alone”. This built-in safeguard in the design of the questionnaire allowed such hostile participants to be quickly identified and thus maintain the internal validity of the study.

Table 1 shows the division of the remaining 222 valid survey responses. Of those 222 participants, 118 were from the Group A, and 104 from Group B. The sample sizes of these two populations is large enough that it will be possible to look for significant differences between the populations and their preferred learning styles. All survey results were entered into a dataset using the Statistical Package for the Social Sciences (SPSS), a statistical program created by IBM. With SPSS it was possible to run all the necessary statistical tests to get the results obtained in this section.

<table>
<thead>
<tr>
<th>Class Level</th>
<th>Number of surveys (n)</th>
<th>Percent of total</th>
</tr>
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<tbody>
<tr>
<td>Group A</td>
<td>118</td>
<td>53.2%</td>
</tr>
<tr>
<td>Group B</td>
<td>104</td>
<td>46.8%</td>
</tr>
<tr>
<td>Total</td>
<td>222</td>
<td>100%</td>
</tr>
</tbody>
</table>

As explained in the Methodology section of this paper, each of the PLSPQ questions are related to a specific type of learning style preference. Each of the six learning styles were represented with five questions each, resulting in the 30-item questionnaire. The five questions of each given learning type were combined to create an index. Since the design of the PLSPQ has a response of “1” meaning strongly agree and “5” meaning strongly disagree, the variables were reverse-coded in the dataset. (“1” then represented strongly disagree and “5” represented strongly agree). This resulted in a possible index range of 5 - 25 per learning style, where a higher score represented a higher favorability.

While the total number of surveys entered into the dataset was 222, nine individuals did not respond to one question, leaving their surveys incomplete. For those nine individuals, only data for five of their six learning style preferences were added to avoid unfairly offsetting the data. This can be seen when comparing the n values of Table 1 with the n values in Table 2.

As seen in Table 2 some of the indices (i.e. group learning) returned similar mean values between the groups, while others (i.e. individual learning) had mean scores which were further apart. In order to determine if these differences were statistically
significantly, a 2-independent samples t-test was run using SPSS. The large sample size and the robustness of the t-test negated the need to confirm normality. A Levene’s test for equality of variances confirmed that we can assume equal variances. The results of the t-test are also found below in Table 2.

The results of the t-test found that when testing at the 0.05 level there were no statistically significant results in the difference of favorability of four of the six learning styles between Groups A and B (visual learning, kinesthetic learning, tactile learning, and group learning). However, the t-test did reveal a statistically significant difference in favorability of auditory learning and individual learning. Auditory learning was more favored by Group A (mean = 19.26, SD = 2.55, n = 118) than the lower proficient Group B (mean = 18.48, SD = 2.96, n = 103). Both groups showed a likeability towards auditory learning, but the more proficient group reported to a larger degree. The 95% confidence interval (CI) for auditory learning was [0.15, 1.61], which has both values on the same side of zero, confirming the statistical significance of .019. When calculating the effect size with the SD of Group A, a Cohen’s d value of d = 0.34 is observed. This is considered a small effect (Cohen, 1988). Therefore, it was possible to conclude that the higher proficiency group had a small but statistically significant difference in favorability towards auditory learning, by close to one point on our auditory learning index, when compared to the lower proficiency group.

Table 2: Output of 2-independent samples t-test

<table>
<thead>
<tr>
<th>Variable</th>
<th>A:</th>
<th>B:</th>
<th>A:</th>
<th>B:</th>
<th>Significance</th>
<th>CI</th>
</tr>
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<tbody>
<tr>
<td><strong>Visual Learning</strong></td>
<td>117</td>
<td>102</td>
<td>17.29</td>
<td>16.69</td>
<td>.133</td>
<td>-0.18, 1.39</td>
</tr>
<tr>
<td><strong>Auditory Learning</strong></td>
<td>118</td>
<td>103</td>
<td>19.36</td>
<td>18.48</td>
<td>.019</td>
<td>0.15, 1.61</td>
</tr>
<tr>
<td><strong>Kinesthetic Learning</strong></td>
<td>118</td>
<td>103</td>
<td>18.58</td>
<td>18.04</td>
<td>.222</td>
<td>-0.33, 1.40</td>
</tr>
<tr>
<td><strong>Tactile Learning</strong></td>
<td>118</td>
<td>104</td>
<td>18.00</td>
<td>17.35</td>
<td>.129</td>
<td>-0.19, 1.50</td>
</tr>
<tr>
<td><strong>Group Learning</strong></td>
<td>118</td>
<td>102</td>
<td>17.22</td>
<td>17.69</td>
<td>.426</td>
<td>-1.62, 0.69</td>
</tr>
<tr>
<td><strong>Individual Learning</strong></td>
<td>116</td>
<td>103</td>
<td>15.42</td>
<td>13.96</td>
<td>.005</td>
<td>0.46, 2.47</td>
</tr>
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</table>

Individual learning was more favored by Group A (mean = 15.42, SD = 3.82, n = 116) than by Group B (mean = 13.96, SD = 3.72, n = 103). With a neutral (neither like nor dislike) score on the index being 15, Group A showed to be fairly neutral about individual learning. However, Group B actually responded that they slightly dislike individual learning. Both of the values in the 95% CI [0.45, 2.47] were greater than zero, which confirms the statistical significance result of .005. The effect size, when calculated with Group B’s SD, was d = 0.39, which according to Cohen (1988) is a small effect size. The t-test results for individual learning allowed for the conclusion that the lower proficiency group, when compared to the higher proficiency group, had more of an unfavorable attitude towards individual learning by somewhere as little as half a point but possibly as much as two and a half points on our individual learning index, which is statistically significant.

In answer to Research Question #1, *Is there a difference in the favorability of certain learning styles for high and low proficiency groups, and if so to what degree?*, it was found that there is no statistical difference in the favorability of visual learning, kinesthetic learning, tactile learning, or group learning between the high proficiency group and the low proficiency groups. However, there was a statistical difference in the favorability of auditory learning and individual learning. The data showed that the higher proficiency group favored auditory learning a small degree more than the lower proficiency group. The data also indicated that both groups did not look favorably on individual learning on the whole, but the lower proficiency group had (to a small degree) a lower favorability of individual learning than the higher proficiency group.
The second research question, *Can any trends in preferred learning style be identified among the participants of this study?*, was addressed by ranking the preferred learning styles of the two proficiency groups, as found in Table 3. Within this sample population, proficiency did not seem to have an impact on the most preferred learning style, as both high and low proficiency groups were found to view auditory and kinesthetic learning styles as the most favorable. Group learning was the third highest ranked learning style for the lower proficiency group whereas it was ranked fifth for the higher proficiency group. While for both groups the least liked learning style was individual learning. Group B group’s mean of 13.96 falls below the neutral value of 15, indicating that is slightly disliked. Of all the learning styles surveyed, this is the only one to return a negative value. To summarize, the general trends discovered was that both groups seemed to like auditory and kinesthetic learning styles the most, and individual learning the least.

<table>
<thead>
<tr>
<th>Table 3: Preferred learning styles ranked from highest to lowest</th>
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<tr>
<td><strong>Group A</strong></td>
</tr>
<tr>
<td>Auditory (19.36)</td>
</tr>
<tr>
<td>Kinesthetic (18.58)</td>
</tr>
<tr>
<td>Tactile (18.00)</td>
</tr>
<tr>
<td>Visual (17.29)</td>
</tr>
<tr>
<td>Group (17.22)</td>
</tr>
<tr>
<td>Individual (15.42)</td>
</tr>
</tbody>
</table>

* represents a mean below the neutral score, i.e. dislike of the feature

5. Discussion

The results that both proficiency groups chose auditory learning as their preferred learning style was an expected result. As mentioned in the literature review, auditory learning ability (learning by listening to verbal instruction, like a lecture) is one of the last to develop in children (Price, Dunn, and Sanders, 1980). However, the English education system in Japan is highly reliant on teaching methodologies that minimize student production in favor of rote-memorization and listening to unilateral explanations by the instructor (e.g. Grammar-Translation method) from secondary education onwards (Gorsuch, 1998). As the sample population of this study were all Japanese university students, who ostensibly had received over six years of English instruction in this style, it was conceivable that they would be ‘primed’ to this style of learning.

The finding that kinesthetic learning style (learning by moving, doing, touching) was ranked the second highest behind auditory style was also in line with expectations. The institution at which the participants were all enrolled in was a private industrial engineering university. As such, the sample population was comprised of students studying various forms of engineering, traditionally very ‘hands-on’ professions. This finding is particularly salient for ESL instructors, however, as kinesthetic forms of English education, while often used with younger learners, are not often seen in university classrooms. Bearing in mind the findings of this research study, it may be beneficial to explore the inclusion of some forms of kinesthetic activities into the curriculum to match the students’ learner-type profile. This can also be said of the finding that both groups rated individual learning as the least preferable learning style. In terms of salience to ESL methodology, group activities such as pair-work, task-based learning (TBL), or project-based learning (PBL) would potentially be more effective for this particular population of EFL students than individual tasks such as grammar translation and writing.

6. Limitations and Further Research

This study was an attempt to probe the inner motivational variables of this particular set of learners. As such, it was conducted in a quasi-experimental style, using set groups of individuals (entire classes) instead of a fully random group of participants. In addition, all the participants were students enrolled in the same university, and so results may not be reflective of the entire English language learner population of Japan. Of course, there are various limitations of questionnaire-based research that are always present. For one, it cannot be guaranteed that participants will respond truthfully, i.e. some may feel
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pressure to respond in a way believed to be pleasing to the researcher, or some may not take the time to consider their answers carefully. Additionally, although much care is taken in the creation of the question items, some participants may misinterpret their meaning and thus respond inappropriately. This factor is usually overcome by including multiple questions, reworded to elicit responses on the same feature. Utilizing mixed-method research designs in the future and incorporating qualitative data collection (e.g. interviews) would also allow for fuller exploration.

Learner style is an extremely complex construct that has yet to be fully researched. This is due to the psychological nature of the construct, and the fact that style is a “complexus of related characteristics in which the whole is greater than its parts” (Keefe & Ferrell, 1990, p.16). Nevertheless, it is an area which shows great potential for researchers and language teachers who wish to understand their students’ thought processes. A deeper understanding of how students approach a task would only help to improve the quality and effectiveness of classroom activities. Indeed, as analysis of IDs have been used as “predictors” of eventual language acquisition success (Dörnyei & Skehan, 2003), it is important not only that teachers, but also students, be aware of their own tendencies. Holec’s (1987) argument that learners with cognizance of their own particular learning style can in fact alter their consciousness to accommodate specific tasks, suggests that IDs are an area where research on theory can translate to immediate and direct real-world benefits for the ESL learner.

7. References

8. Appendix

(強く思うと思うどちらもない・強く思わない・全く思わない)

1. 先生の説明を聞いたほうが分かりやすい。
2. レクチャーを聞くより実験のほうが好き。
3. 個人よりグループで勉強したほうが進む。
4. グループで勉強したほうが覚えやすい。
5. 授業ではベアやグループワークのほうが好き。
6. 先生が黒板に書いたほうがわかりやすい。
7. 授業で指示を言われたほうがわかりやすい。
8. 授業で実際に体を動かした方がわかりやすい。
9. 読むより聞くほうが覚えやすい。
10. 読んだほうが覚えやすい。
11. モデルや模型を作ったほうが覚えやすい。
12. 説明書を読んだほうが分かりやすい。
13. 個人で勉強したほうが覚えやすい。
14. 授業でプロジェクトやものづくりをしたほうが覚えやすい。
15. 授業で実験を行うことが楽しい。
16. 勉強しながら絵を描いたほうが覚えやすい。
17. 先生のレクチャーを聞いたほうが覚えやすい。
18. 個人で課題を取り組むほうが覚えやすい。
19. 授業で学んだことをロールプレインしたほうが分かりやすい。
20. 授業で人の話を聞いたほうが分かりやすい。
21. 課題は2人、3人で取り組むほうが好き。
22. 自分でものを作った時のほうが覚えやすい。
23. 他の人と一緒に勉強することが好き。
24. 話を聞くより読むほうが分かりやすい。
25. プロジェクトでもののづくりは楽しい。
26. 授業と関連している活動に参加すると更に分かりやすい。
27. 授業では一人での勉強するほうが好き。
28. プロジェクトは一人でやった方が好き。
29. レクチャーを開くより教科書を読んだほうが勉強になる。
30. 一人で行動するほうが好き。

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