Language attrition is described as the phenomenon that learners’ ability of using an acquired language regresses with time due to cease or reduction of use. Ni [8] explored eight factors namely, Proficiency level prior to attrition (PLPA), Time length since onset of attrition (TOA), exposure to target language, age at onset of language attrition, foreign language instruction, affective factors, literacy and gender affecting foreign language attrition based on a large body of review of relevant literature. Among them, TOA has been found to influence the process and rate of language attrition and to be a determinant factor. However, how will TOA pose its influence on English syntactic structures? It is of great significance and convenience to explore the interrogation of participants with different TOAs, and thus make clear how TOA functions in the attrition process of English interrogations.

Before such an investigation is made, however, at least two issues should be taken into consideration. First, how long a period is the valid spectrum for language attrition? Second, how do we plot the valid spectrum into several intervals when assessing different degrees of attrition for participants with different intervals of language attrition?

The valid spectrums and intervals that the previous studies adopted varied with research designs. Generally speaking, the TOAs that the previous studies involved cover four kinds of periods including 3 months, 1 to 2 years, 4 years, 25 to 35 years and 50 years [7]. Cohen [3] set ‘3 months’ as the valid spectrum for attrition when assessing different degrees of attrition for participants with different intervals of language attrition.

The valid spectrums and intervals that the previous empirical studies adopted varied with research designs. Generally speaking, the TOAs that the previous studies involved cover four kinds of periods including 3 months, 1 to 4 years, 25 to 35 years and 50 years [7]. Cohen [3] set ‘3 months’ as the valid spectrum for attrition when assessing different degrees of attrition for participants with different intervals of language attrition. Allendorff [1] set ‘18 months’ as valid spectrum when investigating three children’s attrition, and found their language proficiency were attrited after 18-month attrition.
Weltens et al. [10] set ‘4 years’ as the valid spectrum, with ‘2 year’ and ‘4 years’ as intervals respectively. However, there were also some empirical studies with attrition spectrum being above 5 years. Hansen [4] adopted ‘35 years’ as the valid spectrum with ‘5 years’ and ‘25 years’ as intervals while Bahrick (1984) adopted ‘50 years’, also with ‘5 years’ and ‘25 years’ as boundaries. Ni [8], however, divided the ‘30 years’ valid spectrum into three intervals with the adoption of the model of decision tree. Exactly put, interval one covers 1 to 4 years; interval two ranges from 4 to 8 years and interval three is above 8 years. Just following this kind of division, the present study assorted 243 participants into three groups with ‘4 years’ and ‘8 years’ as boundaries. To be exact, the first group consisted of 149 participants whose TOAs range from 2 to 4 years. The TOAs of second group ranged from 5 to 8 years and those of the third group were all above 8 years.

The research questions of this study are proposed as shown below.

What are the differences of attrition on people with different TOAs? How about the correlation between TOAs and interrogation attrition? Can significant difference be detected in the attrition of English interrogations for subjects with different TOAs?

2. Research Method

A cross-sectional paradigm and the technique-accuracy order were involved in the present study.

2.1 Questionnaire

In the questionnaire, a grammaticality judgment task was involved. The task included 40 sentences altogether, grammatically correct or incorrect. Among the 40 items, there were 4 groups of items involving 10 interrogations with "be" verbs, 10 with auxiliary or Modal verbs, 10 with negative words and 10 with embedded subjects. In order to minimize the interference and maximize the reliability of the research, these 40 items were randomly arranged in the questionnaire. Besides, a five-scale Likert assessing system was adopted so that the participants’ attrition can be examined more precisely.

2.2 Participants

The target participants of this study were those who had graduated from non-English majors of a college or a university and have worked at least for more than 2 years. They hardly used English in their work and never received any English training or master program study after graduations. What’s more, we consulted Chinese National English Teaching Syllabus and found that the target participants had been taught all the interrogative structures involved in the questionnaire even in their junior middle schools.

2.3 Reliability and validity of the study

31 sophomore college students majoring in laws in Jiangsu Police College were chosen as the participants of the pilot study. According to the pilot study, the Cronbach’s alpha coefficients of the items in every group range from 0.70 to 0.81, indicating there is strong consistency of results across items in every groups of the questionnaire.

3. Result

3.1 Comparison of the attrition of participants with different TOAs

Table 1 – Mean Scores of 3 Groups in terms of TOA in Final Survey

<table>
<thead>
<tr>
<th>Group</th>
<th>N</th>
<th>Mean</th>
<th>Std. Deviation</th>
<th>Std. Error</th>
<th>Minimum</th>
<th>Maximum</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>149</td>
<td>3.91</td>
<td>0.33</td>
<td>0.03</td>
<td>2.98</td>
<td>4.70</td>
</tr>
<tr>
<td>2</td>
<td>65</td>
<td>3.89</td>
<td>0.31</td>
<td>0.04</td>
<td>3.15</td>
<td>4.55</td>
</tr>
<tr>
<td>3</td>
<td>29</td>
<td>3.83</td>
<td>0.36</td>
<td>0.07</td>
<td>3.08</td>
<td>4.35</td>
</tr>
<tr>
<td>Total</td>
<td>243</td>
<td>3.89</td>
<td>0.33</td>
<td>0.02</td>
<td>2.98</td>
<td>4.70</td>
</tr>
</tbody>
</table>

Note: Group 1: 2 years<TOAs of Participants≤4 years  
Group 2: 4 years<TOAs of Participants≤8 years  
Group 3: TOAs of Participants>8 years

Table 2 – One-way ANOVA for 3 Groups in terms of TOA in Final Survey

<table>
<thead>
<tr>
<th></th>
<th>Sum of Squares</th>
<th>df</th>
<th>Mean Square</th>
<th>F</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Between Groups</td>
<td>0.14</td>
<td>2</td>
<td>0.07</td>
<td>0.65</td>
<td>0.522</td>
</tr>
<tr>
<td>Within Groups</td>
<td>25.91</td>
<td>240</td>
<td>.11</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>26.05</td>
<td>242</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Table 3 – Multiple Comparisons between Groups in terms of TOA in Final Survey

<table>
<thead>
<tr>
<th>Between Stages</th>
<th>Mean Difference</th>
<th>Std. Error</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Group 1—Group 2</td>
<td>0.02</td>
<td>0.05</td>
<td>.667</td>
</tr>
<tr>
<td>Group 1—Group 3</td>
<td>0.08</td>
<td>0.07</td>
<td>.261</td>
</tr>
<tr>
<td>Group 2—Group 3</td>
<td>0.05</td>
<td>0.07</td>
<td>.462</td>
</tr>
</tbody>
</table>

In table 3-1, the mean scores and other descriptive statistics of the three groups are exhibited. The mean score of group 1 (participants whose TOAs range from 2 to 4 years) is 3.91. The mean score of group 2 (participants whose TOAs range from 5 to 8 years) is 3.89, and that of group 3 (participants whose TOAs are more than 8 years) is 3.83. It manifests the participants’ performance on interrogative structures declines with increasing TOAs, or, lengths of disuse.

With a one-way ANOVA, it is found in table 3-2 above, sig. value is 0.522, which is higher than 0.05. It leads to the conclusion that there is no significance difference among the three groups in a general sense. To put it in another way, participants with different TOAs have roughly enough
mastery of the interrogation items in the survey. Meanwhile, as indicated in table 3-3, the differences between group 1 and group 2, group 1 and group 3 as well as group 2 and group 3 are not significant in a statistical sense (p=0.667>0.05, p=0.261>0.05 p=0.462>0.05). Roughly speaking, participants with TOAs being longer than 8 years still own the same mastery of the interrogative structures as the participants with TOAs being shorter than 4 years.

According to the observed data above, there were no significant differences among groups with different TOAs while participants’ performance on interrogative structures declined with increasing years after graduation, i.e., TOAs.

Whereas, how, and to which extent do participants’ TOAs and their attrition relate to each other? A Correlation Analysis is thus run to figure out this issue.

### 3.2 Correlation between participants’ TOAs and their attrition

It was worth noting that only 169 participants who passed CET-4 or/and CET-6 were taken into the analysis in order to minimize the interference caused by the variable, i.e., different PLPAs.

#### Table 4 – The Distribution of Participants and Their TOAs

<table>
<thead>
<tr>
<th>Participants’ TOAs (Year)</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
<th>9</th>
<th>10</th>
<th>11</th>
<th>12</th>
<th>13</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number</td>
<td>46</td>
<td>43</td>
<td>18</td>
<td>11</td>
<td>18</td>
<td>11</td>
<td>4</td>
<td>6</td>
<td>2</td>
<td>2</td>
<td>6</td>
<td>2</td>
</tr>
<tr>
<td>Their Mean Scores</td>
<td>4.15</td>
<td>4.09</td>
<td>3.95</td>
<td>3.97</td>
<td>3.96</td>
<td>3.93</td>
<td>3.89</td>
<td>3.87</td>
<td>3.96</td>
<td>3.84</td>
<td>3.94</td>
<td>3.83</td>
</tr>
</tbody>
</table>

In table 3-4, the distribution of the 169 participants, their TOAs as well as their mean scores in final survey are presented, with 41 participants who didn’t pass CET-4 and 33 participants who didn’t take CET-4 excluded. From the table, there are 46 participants with TOAs being 2 years, 43 with TOAs being 3 years, 18 with TOAs being 4 years, 11 with TOAs being 5 years, and so forth. It shows that the participants’ syntactic proficiency declines with their increasing TOAs.

#### Table 5 – PCC for Participants’ TOAs and Their Scores

<table>
<thead>
<tr>
<th>Year</th>
<th>Pearson Correlation</th>
<th>Sig. (2-tailed)</th>
<th>Sum of Squares and Cross-products</th>
<th>Covariance</th>
<th>N</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>-.805(**)</td>
<td>.002</td>
<td>143.00</td>
<td>-3.00</td>
<td>12</td>
</tr>
<tr>
<td>2</td>
<td>.002</td>
<td>.</td>
<td>13.00</td>
<td>-.27</td>
<td>12</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Year</th>
<th>Pearson Correlation</th>
<th>Sig. (2-tailed)</th>
<th>Sum of Squares and Cross-products</th>
<th>Covariance</th>
<th>N</th>
</tr>
</thead>
<tbody>
<tr>
<td>3</td>
<td>.002</td>
<td>.</td>
<td>-3.00</td>
<td>.01</td>
<td>12</td>
</tr>
<tr>
<td>4</td>
<td>-.27</td>
<td>.</td>
<td>0.10</td>
<td>12</td>
<td></td>
</tr>
</tbody>
</table>

**Correlation is significant at the 0.01 level (2-tailed).**

The statistical data in table 3-5 indicates that the results are significant at the 0.01 level with Pearson Correlation Coefficient (PCC) r being -0.805 and sig. value being 0.002 (2-tailed), which means there is highly inverse correlation rate between participants’ TOAs and their scores. To be exact, the shorter TOA one owns, the higher score he or she will get in interrogation test, and vice versa.

By this token, TOA did play an important role in affecting the process of attrition although there were no significant differences among the 3 groups with different TOAs. To be more specific, participants with short TOAs had a better retention than those with longer ones, to some extent.

#### 4. Discussion

This finding of the present study, on the one hand, is in agreement with Hansen’s [4] results as well as Graham’s (1990) findings, who argue that learners’ performance on target language skills declines with their increasing TOAs, or, lengths of disuse. On the other hand, the finding also differs from those of precedent studies a little. Tomiyama’s research [9] reveals ‘4 years’ is a sensitive boundary after which vocabulary and fluency are attrited to a great extent. Ni [8] also maintains that participants with TOAs ranging from 4 to 8 years are most sensitive to attrition. However, no significant difference was spotted between participants with TOAs being longer and shorter than 4 years from the present study.

What cause the abnormal finding of the study?

First, in the circle of language attrition, it is commonly accepted that syntactic knowledge is relatively more invulnerable to attrition than other knowledge, such as lexicon, phonology and fluency [5]. In other words, syntactic attrition is less significant than lexical attrition. Therefore no significant differences are spotted between the performances of participants with TOAs being longer and shorter than 4 years in terms of syntactic level.

Second, the numbers of respondents with different TOAs are disproportionally distributed in the present study. To be more precise, there are 149 participants with TOAs ranging from 1 to 4 years, while there are just 65 participants with TOA ranging from 4 to 8 years, and only 29 participants above 8 years. The disproportional distribution inevitably poses its influence on the data and thus interferes with the findings of the study.
Third, Ni [8] asserts at least eight factors are identified in affecting foreign language attrition, namely, PLPA, TOA, exposure to target language, age at onset of language attrition, foreign language instruction, affective factors, literacy and gender. What’s more, it is reviewed that the speed of attrition depends on a number of factors such as the difficulty of the learned material, how meaningful the material is to the subject, representation of material, and other physiological factors. The 243 participants involved in the present study are unequally distributed in terms of PLPAs, foreign language instruction, age at onset of language attrition, gender and so forth. Nevertheless, in the study they are classified into 3 groups just with their TOAs as a sole criterion. Factually, participants in the same group vary from person to person in terms of PLPA, foreign language instruction, age at onset of language attrition and etc [6]. These factors are absolutely bound to influence the results. The present study, however, does not take interactions of these different factors into consideration and surely suffers from the fallacy of simplification.

Fourth, according to Ni [8], a critical threshold exists in the EFL learner’s original language levels. The critical threshold is a point, or a level, above which the learner has a stable enough mental representation of some linguistic elements or structures that are stable and resilient to loss, below which attrition is rapid and extensive. In the survey of the research, all of the participants involved are college students, although their performance on interrogative structures declines with increasing TOAs, i.e., lengths of disuse.

In the light of the analysis and discussion of interrogation attrition, some tentative suggestions are proposed for English learners and teachers to tackle the issues of attrition and improve learning and retaining.

The group of people whose acquired language skills are most vulnerable to attrition was identified as subjects with TOAs being more than 8 years. Accordingly, this group should deserve much more attention. On the one hand, teachers are expected to introduce more efficient mnemonics and more useful strategies that can produce strong memory traces to learners. On the other hand, learners themselves should be encouraged to develop their own methods to strengthen their retention of English skills.

However, methodologically speaking, attrition, by its nature, is rather difficult to be investigated empirically. Hence, a longitudinal paradigm is preferable in language attrition research, where the learner’s dynamic process of acquisition and attrition can be traced. Thus a longitudinal method should be adopted as a best way to examine the learner’s attrition in future research.

Список литературы / References


Список литературы на английском / References in English

The variety and quantitative composition of the games is a known difficulty for an English teacher, so it is necessary to use gaming technology, project training, technology of problem-based learning, ICT technologies and health-saving technologies.

Keywords: gaming technology, project training, information and communication technologies, multimedia technology, health-saving technologies.


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FORMATION OF COGNITIVE INTEREST AT ENGLISH LANGUAGE LESSONS IN PRIMARY SCHOOL: TECHNOLOGIES, METHODS, TECHNIQUES

Abstract
There are a lot of didactic and technological methods and techniques that shape and develop cognitive interest of primary school students in modern methodology of teaching foreign languages. The use of various forms of gaming interaction, problem assignments, information and communication technologies in the teaching of primary school students allows diversifying the teaching of a foreign language, contributes to the development of their creative and cognitive activity. The use of health-saving technologies ensures the creation of a psychologically and emotionally supportive atmosphere at the lesson, which is an essential condition for acquiring new knowledge and maintaining stable cognitive interest among students while learning a foreign language.

Keywords: gaming technology, project training, information and communication technologies, multimedia technology, health-saving technologies.

Introduction
An important task of teaching a foreign language in a modern school is a comprehensive and harmonious development of the personality of a learner capable and willing to participate in intercultural interaction. Motivation is, at the same time, one of the main tools of the learning process. In order to form it, it is necessary to create adequate conditions for the manifestation of internal motives for learning and make sure that students themselves are aware of the purpose of further personal development of the motivational sphere.

It is obvious that the use of modern pedagogical technologies helps to take into account all the constructive conditions for increasing cognitive interest and positive motivation for studying a particular subject. In this regard, the role of didactic and technological methods and techniques increases; they must be used with a specific goal, accompanied by clearly formulated and understood tasks [1, p.248], [2, p.139], [4, p.52].

The purpose of this study is to consider the increase in the cognitive interest of primary school students through the use of modern pedagogical technologies.

In order to achieve this goal, it is necessary to solve the problems associated with describing the practical application of pedagogical technologies that take into account the age characteristics of students in English teaching, their abilities and interests, namely: gaming technologies, technology of project training, technology of problem-based learning, ICT technologies and health-saving technologies.

Methods
While working on the stated topic, we used such methods as: Analysis of literature on the study of the formation of cognitive interest of primary school students and the application of modern pedagogical technologies at foreign language lessons, as well as methods of observation, study and generalization of pedagogical experience.

Discussion
Gaming technology is one of the most valuable technologies among the teacher’s tools. It takes an important place in organizing a foreign language lesson, fully satisfying the age requirements of this category of students.

It should be noted that the educational effectiveness of gaming techniques depends, first of all, on their systematic and purposeful use in combination with the usual didactic tasks and exercises.

The variety and quantitative composition of the games is a known difficulty for an English teacher, so it is necessary to approach the issue of their selection and application carefully. Classified according to certain attributes, properties and features, gaming activities entirely depend on the target setting.