Savings in the Relearning of Second Language Vocabulary:
The Effects of Time and Proficiency

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This article extends the line of research that has recently applied the savings paradigm from cognitive psychology to vocabulary relearning. Second language (L2) data from 304 returnees from Japan and Korea provide evidence of the strongest savings effect yet reported in studies of lexical reactivation. The extent of the savings advantage appears to decline over time (with age a confounding factor) and relates significantly to current vocabulary size. No significant gender effects in savings are evident, but unexpected differences between the L2 Japanese and L2 Korean subgroups are reported in both lexical maintenance and savings accessibility. Substantial Matthew effects in both data sets help elucidate sources of individual differences in vocabulary learning and relearning.

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Whereas the study of language learning has received considerable attention over the past half century, research on the loss of language has evolved more recently in applied linguistics (for reviews, see de Bot & Weltens, 1995; Hansen, 2000, 2001; Hansen & Kurashige, 1999; Yukawa, 1997b; for a bibliography, Hansen, 2002). Theoretical arguments for this new focus on language attrition include two major issues referred to by de Bot and Weltens (1995): (a) the contribution of language loss research to our understanding of human memory and language change in individuals and groups and (b) the relations and correspondences between processes of language acquisition and loss. In addition to potential progress in theory, the promise of practical applications in such areas as the relearning of forgotten second language (L2) vocabulary, the focus of the present study, provides impetus for current language attrition research.

**Vocabulary Acquisition**

Advances in our understanding of the nature of lexical knowledge and its acquisition in an L2 provide the groundwork for the study of L2 vocabulary loss and relearning (Meara, 2002; Nation, 2001; Schmitt, 2000). Since word knowledge has been found to be multifaceted and word learning gradual, we surmise that word attrition is also a complex, incremental process. Likewise, the different levels of word knowledge found in language acquisition (e.g., the distinction between productive and receptive knowledge) can also be presumed to be relevant to accounts of language loss and relearning.

**Vocabulary Attrition**

In language attrition research, lexical knowledge has been defined and demonstrated in various ways (for a review, see Weltens & Grendel, 1993): (a) oral production in a monologue (A. Cohen, 1989; Olshtain, 1989; Russell, 1999), in conversation (Tomiyama, 1999), or in response to visual stimulus (Hansen & Chen, 2001); (b) recognition of written/oral form (Weltens, 1989);
or (c) reaction time in experiments in which knowledge is defined by the speed of retrieval (Grendel, 1993).

Bahrick’s (1984) classic study of the loss of L2 Spanish learned at school, combining analyses of production and comprehension data, found that a portion of unused vocabulary knowledge is retained over more than 50 years. The longer the time of language study and the higher the grades received in Spanish classes, the greater the amount of retained language, or *perma-store*, as Bahrick calls it. Recognition vocabulary stabilizes somewhat earlier than recall vocabulary, and smaller portions of it are affected by attrition. The cross-sectional data suggest that vocabulary knowledge declines exponentially for an initial period of from 3 to 6 years after instruction and then remains level for several decades, with an additional positively accelerated decline in middle age.

This Ebbinghaus (1885) forgetting curve does not represent the language loss of the once-fluent returnees in the present study, however. Previous work indicates that returnees from this population experience little measurable attrition in the initial years after departure from the L2 milieu (Hansen, 1996; Russell, 1999), supporting Weltens’s (1989) idea that

> [i]t may be that the Ebbinghaus curve does generally fit FL attrition data, except when we are dealing with relatively high levels of proficiency: in those cases the curve will be preceded by a plateau, i.e. a period of time in which the proficiency does not degrade—or does so only non-significantly. (p. 12)

*Language Relearning*

Although earlier studies have, for the most part, treated the relearning of forgotten language anecdotally or peripherally, a primary focus on this phenomenon has emerged in the last half decade. With the turn of the century has come new impetus to the study of language regaining, most notably from work in Europe that examines the relearning of L2s by children (Pries, 1999, 2000;

As this new subfield of applied linguistics emerges, we see that, for children at least, learning a language a second time can be a dramatically faster experience than the first time (Berman, 1979; Slobin, Dasinger, Kyntay, & Toupin, 1993; Wode, 1996; Yukawa, 1997a). Some studies report parallels between learning and relearning in developmental structures and sequences (Allendorf, 1980; Berman, 1979; Hansen, 1983; Wode, 1996). The occurrence of fewer or abbreviated developmental structures in relearning has also been reported, however (Hansen, 1980; Wode, 1996). In fact Yukawa (1997a), finding little restructuring in the first language (L1) Japanese regaining of her children, claims that attrition was the result of a processing failure of knowledge that had remained virtually intact.

This view, that relearning involves the reactivation of material that is still present but has become inaccessible with disuse, fits well with the prevailing account of memory loss in psychology (Loftus & Loftus, 1976). With respect to linguistic knowledge, support for this theory is found in Werker and Tees’s (1984) experiment involving English-speaking adults who received varying amounts of training in perceiving the difficult (for English speakers) contrast in Hindi between dental and retroflex stops. The only participants who quickly heard the distinction had no conscious memory of Hindi but had been exposed to it early in life. Apparently something from their former experience with the forgotten language remained that enabled them to learn phonetic distinctions that other adults were unable to make in spite of much more training.
In pursuit of a way to access lost language, researchers in applied linguistics have recently turned to the savings paradigm from cognitive psychology. This approach is based on the premise, that, for previously known material that can no longer be recalled or recognized, knowledge remains that can be reactivated. Savings is defined by Nelson (1978) as a relearning advantage of old items over new items. Figure 1 shows the different levels of memory that need to be distinguished. Notice here that for recall, the ability to actively produce a linguistic item, a high level of activation is needed. For recognition, without the ability to actively produce an item, a lower level is sufficient. If the activation drops still further, then the item can no longer be retrieved. Through relearning, that is, the reintroduction of previously known material, old items will become reactivated to a level that makes them retrievable. In contrast to this, new items, that is, words or structures that have not previously been known, will not be able to reach the same level of activation after the same brief learning period.

De Bot and Stoessel (2000) were the first to apply the savings paradigm to the retrieval of forgotten L2 vocabulary. Their two participants, German adults who had spoken Dutch as children during a 4-year period of residence in the Netherlands, were tested.

30 years later for residual knowledge of the forgotten language. Through the savings method, the existence of Dutch vocabulary knowledge was indicated and found to be similarly accessible to both participants. A strong cross-linguistic effect was reported, but noncognate words also seemed to be retained. In laying groundwork for future studies, the researchers offer a caution about the difficulty of distinguishing between real memory and well-developed learning strategies.

The relearning research that was stimulated by de Bot and Stoessel's (2000) initial effort over the subsequent three years is summarized in Table 1. Included here are variables related to time/age, proficiency level, and exposure to the attriting language. In the language attrition literature \( LA \) refers to the attriting language, and \( LR \) to the language replacing it in the linguistic repertoire of a language attriter, an individual who is forgetting a language. The New/Old Ratio column in Table 1 provides an estimate of the ratio of new to old (previously known) words learned under conditions of equal exposure. Notice that although each investigation has substantiated an overall savings effect in language regaining, the strength of that effect has varied considerably, from weak, as for Yukawa's (2001) participant, to strong, as for Tomiyama's (2001). An objective for language attrition research in the next few years is to ascertain the contributions of various factors that may affect the level of accessibility of residual knowledge in vocabulary relearning.

Like de Bot and Stoessel (2000), Ioup's (2001) participants were adults who retained virtually no memory of a language that had been learned to a high level of proficiency in childhood. In this study of two middle-aged brothers who had emigrated to the United States at the ages of 6;9 and 13;1, a substantial savings effect was found. But, unlike de Bot and Stoessel, who judged this effect to be similar for the two siblings they studied, Ioup reports that the older of the two brothers had retained more of the childhood language, Arabic, and also experienced a greater savings benefit in relearning than the younger.
## Table 1

*A Summary of Studies of Savings in Vocabulary Relearning*

<table>
<thead>
<tr>
<th>Study</th>
<th>Exposure Length</th>
<th>Exposure Type</th>
<th>Age</th>
<th>Proficiency Achieved</th>
<th>Time Since Learning</th>
<th>Age When Tested</th>
<th>Proficiency at Testing</th>
<th>New/Old Ratio</th>
<th>Savings Strength</th>
</tr>
</thead>
<tbody>
<tr>
<td>de Bot and Stoessel (1998, 2000)</td>
<td>4 years</td>
<td>natural</td>
<td>3–7</td>
<td>near native</td>
<td>30 years</td>
<td>37</td>
<td>0</td>
<td>1/2</td>
<td>medium</td>
</tr>
<tr>
<td>de Bot and Stoessel (1999)</td>
<td>1 year</td>
<td>classroom</td>
<td>4–6 years</td>
<td>university</td>
<td>2 years</td>
<td>university</td>
<td>completed</td>
<td>1/3</td>
<td>medium</td>
</tr>
<tr>
<td>Hansen, Umeda, and McKinney (2000)</td>
<td>2 years</td>
<td>natural</td>
<td>19–26</td>
<td>high</td>
<td>1–45 years</td>
<td>22–70</td>
<td>low-high</td>
<td>2/9</td>
<td>strong</td>
</tr>
<tr>
<td>Tomiyama (2001)</td>
<td>7 years</td>
<td>natural</td>
<td>1;2–8;0</td>
<td>near native</td>
<td>8–12 years</td>
<td>high-low</td>
<td>none/all</td>
<td>strong</td>
<td></td>
</tr>
<tr>
<td>Iooup (2001)</td>
<td>6 years</td>
<td>natural</td>
<td>0–6;0</td>
<td>native</td>
<td>45 years</td>
<td>0</td>
<td>n.a.</td>
<td>medium</td>
<td></td>
</tr>
<tr>
<td>Yukawa (2001)</td>
<td>16 months</td>
<td>natural</td>
<td>7;0–8;4</td>
<td>low</td>
<td>5 years</td>
<td>13;4</td>
<td>0</td>
<td>9/22</td>
<td>weak, ns</td>
</tr>
<tr>
<td>de Bot and Martens (2001)</td>
<td>4–6 years</td>
<td>classroom</td>
<td>0–13;1</td>
<td>interim</td>
<td>2 years</td>
<td>university</td>
<td>completed</td>
<td>6/11</td>
<td>medium</td>
</tr>
</tbody>
</table>
Tomiyama’s (2001) participant had also achieved a high level of LA competence as a child. The attrition of his L2 English was followed over a period of 4 years from the time of his return to Japan from the United States at age 8;0. This study is unique in that its longitudinal design permits the examination of savings effects over time from prompts given in a story elicitation task. Tomiyama reports that the prompts that had been given for previously known words led to subsequent retention and availability of the words over many months, whereas prompts for new words did not.

The strong savings effect found by Tomiyama (2001) contrasts sharply with the findings of Yukawa’s (2001) study of another Japanese returnee child. In this case, the participant had experienced some exposure to Swedish while living in Sweden for over a year, from age 7;0 to 8;4. Through an analysis of data collected 5 years later, the researcher found a savings trend, but with a lack of statistical significance between the learning of old and new Swedish words.

The original LA proficiency level seems to be implicated in explaining the differing savings effects reported in these studies. Future research needs to address further the possibility that, in the establishment of a larger lexical network during the learning period, the foundation is laid for more reactivation in vocabulary relearning after extensive periods of language disuse.

Turning now to studies of vocabulary attrition in languages learned later in life, the potency of the savings advantage in foreign language classroom contexts was first documented in de Bot and Stoessel's (1999) study of university foreign language students who were studying French in the Netherlands or German in the United States. Again, part of the forgotten lexical knowledge was shown to be helpful in a relearning task.

De Bot and Martens (2001) examined Dutch university students who had discontinued their study of L2 French 2 years previously. After an initial test and relearning session, the participants were retested after 3, 5, 9, and 12 weeks. Words not known in a previous session were tested and relearned again to arrive at
the cumulative effect of the learning sessions. A comparison of the recall of “old” and “new” words in the final session led the researchers to a guarded assessment of the efficacy of long-term savings and of the extent to which words are likely to transfer from passive to active knowledge.

Whereas the original studies which examined the savings effect focused on speakers of closely related LA and LR (de Bot & Stoessel, 1999, 2000), the present study looks at the relearning of Japanese and Korean by speakers of a noncognate replacing language, English. We focus on the savings effect in relearning by returnees from Japan and Korea. Since differences in L2 retention had been found between men and women in this population in a previous study (Hansen, 1999), gender is included in the current study as an independent variable. In addition, our cross-sectional design makes possible the examination of three of the potential influences on savings included in Table 1: (a) time since learning, (b) age when tested, which has a multicolinear relationship with the time variable, and (c) proficiency when tested. Our questions are as follows:

1. What is the strength of the savings advantage in the relearning of L2 Japanese and L2 Korean vocabulary by English-speaking adults?

2. How does the savings advantage relate to (a) the elapsed time since departure from Asia, (b) gender, and (c) the current vocabulary size?

Method

Participants

The 304 participants had learned their L2 as young adults while working as missionaries in the target culture, 166 of them in Japan (144 male, 22 female), 138 in Korea (112 male, 26 female). Native speakers of English in North America, these language attritors had acquired fluent L2 competence through
daily interaction with native speakers in East Asia. Whereas the participants who departed prior to 1969 had no language training before immersion in the target culture, those leaving subsequently experienced 2 months of intensive L2 instruction before departure. The length of time spent in Japan or Korea ranged between 18 and 24 months for the females and between 18 and 36 months for the males. The time since departure from the target area ranged between 1 and 45 years for the Japanese attriters (mean time 15.6 years) and between 1 and 39 years for the Korean (mean time 12.5 years). During the postmission period, L2 access had been discontinued or greatly reduced. Potential participants with a spouse who was a native speaker of the LA or who otherwise make regular use of the language were not included. The participants were initially contacted by mail or e-mail for the scheduling of the telephone interview. There was a 54% response rate for the Japanese sample and a 62% response rate for the Korean.

Instruments and Data Collection

In order to test for a savings advantage in relearning, we used old words and new words. The old words were taken from lessons that missionaries are required from the beginning to memorize and to use repeatedly in their teaching. Thus, we are confident that the 160 potential words in the initial vocabulary test had previously been part of the productive lexicon of our participants.

The new words, 16 pseudowords that we created for use in the elicitations for both languages, were phonologically compatible with the Japanese and Korean sound systems. Like the old words, the new words were evenly divided among concrete nouns, abstract nouns, adjectives, and verbs. The forms were identical for the Japanese and Korean cohorts, with the exception of the verbs, which took the language-appropriate verbal morphology, -ru for Japanese (e.g., huteru) and –da for Korean (e.g., huteda). Consideration was also given to the mean number of syllables in the new words, which was slightly higher than the mean for the old Japanese words and slightly lower than that for the Korean.
In piloting the interview format, six trial elicitations were conducted, leading to the formulation of the data collection procedure. Knowledge of a word is demonstrated by producing it in the L2 in response to hearing a mother tongue translation. Limiting the elicitation to the oral modality was deemed appropriate for participants whose L2 input in the target culture had been mainly the spoken language. Large differences obtain among the returnees in their ability to read and write their L2, particularly in the case of the Japanese learners, with a good number of them having remained virtually illiterate.

At the beginning of the elicitation session the participant was told that the research purpose would be defeated if anything were to be written down, and a promise was obtained from the participant not to do so. A potential weakness of this methodology, of course, is that it relies on the honesty of the participants. However, a recent investigation of spiritual development found honesty and personal integrity to be highly valued in this population (Fotos & Hansen, 1996), and in the course of the data collection, the interviewers believed there were no deviations from their instructions.

In the initial section of the interview, the participant heard a sequence of old words, each followed by a 6-s pause for translation into English. One of 10 different orders, alternated across participants, was used for the presentation. If a word was not known, the participant could say, “Pass,” to move on to the next item. The interviewer continued through the word list in this manner until the number of unknown words reached 16. In the teaching section that followed, each of the 16 old and 16 new words was presented with its English meaning twice in sequence with a 2-s interval between the two presentations and a 5-s interval between each lexical item. A distraction task followed (counting backwards by threes from a thousand in English). Finally the participant again heard the 16 old words, interspersed with the 16 new words, and after each one was given 6 s to translate it into English.
Results

A comparison of the learnability of the words and pseudowords that had been taught shows a sizeable difference between the old (Japanese $M = 9.01$, $SD = 3.20$; Korean $M = 8.2$, $SD = 3.50$) and the new (Japanese $M = 2.15$, $SD = 2.03$; Korean $M = 1.5$, $SD = 1.64$) items. The differences between the forgotten words and the pseudowords of like complexity that had been given equal exposure in the teaching section are highly significant for both the L2 Japanese, $t(165) = 31.33, p < .001, r^2_{pb} = .862$, and L2 Korean attriters, $t(137) = 24.19, p < .001, r^2_{pb} = .833$. The massive effect sizes confirm a strong savings advantage in the relearning of L2 vocabulary by these once-proficient adult attriters.

To examine the stability over time of savings accessibility, we look at the mean scores for old and new words in relation to the number of years the participants had been away from the target language milieu. Notice the similar savings stories told by the Japanese and Korean data sets as displayed in Figures 2 and 3.

![Figure 2. Mean scores for old and new Japanese words by time since leaving Japan.](image)
We see here in the relearning scores (old words) an apparent decrease in the ability to benefit from savings with the passage of time. Significance for the Japanese group, as indicated by a one-way analysis of variance (ANOVA) and post hoc Scheffé analyses, lies between the oldest cohort (36–45 years) and the three youngest (1–15 years), $F(5, 160) = 7.102, p < .05, \eta^2 = .193$. In the Korean data, displayed in Figure 3, the statistical analyses show a significant difference between the two oldest groups (16–38 years) and the most recently returned cohort (1–5 years), $F(4, 133) = 8.131, p < .05, \eta^2 = .275$. The resulting effect sizes are very large for both L2 groups. For the learning of the pseudowords, on the other hand, although no significant difference appears between Korean time cohorts, for the Japanese, the 36–45 year group is less successful than the 6–10 year group, $F(5, 160) = 3.27, p < .05, \eta^2 = .113$, with a smaller, but still substantial, effect size. With regard to gender effects in the data, $t$-test comparisons between male and female scores show no significant differences in either the relearning of old words or the learning of new words.

Figure 3. Mean scores for old and new Korean words by time since leaving Korea.
Turning finally to current vocabulary size, we relate the scores on our initial vocabulary test, taken from the 160-item list discussed above, to the (re)learning scores for the old and new words. The summaries of these data in Figures 4 and 5 reveal similar patterns for L2 Japanese and L2 Korean attriters. Notice that, unlike in the previous analyses of time effects, we find here consistent trends across both data sets for old and new words alike. One-way ANOVA and Scheffé analyses of the Japanese data displayed in Figure 4 show that the attriters who remembered the most words (81–125) benefited significantly more from savings in the relearning of previously known vocabulary than those who remembered the fewest words (0–5), \( F(4, 161) = 19.766, p < .001, \eta^2 = .901 \). Likewise for the Korean sample the statistical analyses confirm that the most proficient cohort (39–120 words) learned significantly more of the old words than the least proficient cohorts (0–7), \( F(4, 133) = 20.816, p < .001, \eta^2 = .855 \). The effect sizes for both L2 groups are enormous.

The Japanese attriters with the highest vocabulary scores (81–126 words) also learned significantly more new words than...
those with the lowest scores (0–5), $F(4, 161) = 9.803, p < .001, \eta^2 = .200$. Similarly the ANOVA and Scheffé tests show that the attriters of Korean who remembered the most vocabulary (39–120) learned significantly more new words than those who remembered least (0–2), $F(4, 133) = 5.196, p < .05, \eta^2 = .155$. Effect sizes for the learning of new words, although much smaller than the ones for the relearning of the old, are still categorized as large according to J. Cohen's (1988) effect size guidelines.

Table 2 presents correlations of the scores on the (re)learning of the old and new words with the three independent variables: time since mission, gender, and current vocabulary score. Although the age of the attriters had also originally been an independent variable in the study, recall that it is not reported because of its multicollinearity with time since mission, with a .98 correlation between these two variables in the Japanese sample and .99 in the Korean. With regard to gender, the correlations shown in Table 2 provide no evidence of a relationship between gender and the relearning of vocabulary (old words) for either group or for the
learning of pseudowords (new words) by the L2 Korean attriters. However, the significant \( p < .05 \) relationship between the learning of new words and gender for the L2 Japanese attriters suggests a slight male advantage (not strong enough for substantiation in the \( t \)-test analysis). Confirmation is found in the table that both the time and proficiency variables relate significantly to vocabulary learning and relearning. In examining the savings effect in relearning (the old words), notice that the current vocabulary size (proficiency) coefficients are even higher (Japanese, .57; Korean, .54) than those for the time since departure from Asia (Japanese, –.43; Korean, –.40).

Discussion

Savings Potency

The savings advantage in vocabulary relearning found in the present study is the most robust reported to date. Further work is
needed to delineate the particular features of a relearning situation that contribute to such high levels of savings accessibility. As shown in Table 1, comparisons of the extant research suggest a relationship between these potent relearning benefits and high proficiency levels originally attained by the attriters. In addition to the variables included in Table 1, it seems likely that the manner in which words have originally been learned and their frequency of use are important factors. When words are learned explicitly by rote in a memorized text and repeated frequently over many months, as in the case of the old words in the present study, they may have a special status in memory that contributes to greater availability in relearning.

From a practical standpoint, our findings indicate that, even though access to lexical knowledge is lost, attriters may retain a substantial advantage in regaining that knowledge, in comparison with others who are learning the same words for the first time. A natural follow-up question is whether this advantage is available to the same extent in the reacquisition of other aspects of linguistic competence. Initial steps in examining savings accessibility in the relearning of syntax can be found in Hansen and Asao (2001) and Ioup (2001).

Time Elapsed Since Departure From L2 Milieu

The decline in access to savings over the decades following departure from Asia, seen in Figures 2 and 3, is no doubt influenced by the time confound. The passing of time since the acquisition period co-occurs with advancing age, bringing with it an increasing potential for language degeneration (de Bot, 2002).

Considering the L2 Japanese data alone, the decrease in savings availability could indeed be viewed as due to changes coincident with age, since the oldest attriters, in their 60s, are the ones who demonstrate significantly less access. The data from the L2 Korean attriters provide less support for this interpretation, however. For them, a significant reduction in the availability of
savings is evident even in the 16–25 year cohort, in their late 30s and 40s.

**Group Differences**

With regard to gender differences, the male advantage, found for this population in a previous study of grammar attrition (Hansen, 1999), is not evident in the availability of savings. For vocabulary relearning we find no significant effect of the males’ longer period of residence in the target culture. Perhaps the missionary lesson lexicon (particularly that in the first lesson, the source of most of our old words) is so overlearned by the end of the 18 to 26 months the women spend in the target culture that the men’s additional 6 months of exposure makes no further contribution to the availability of savings in later vocabulary relearning. That is, a threshold level for savings may be attained by lexical items within a period of 18 months of frequent use.

In comparing the data sets from the two L2 groups, the reader should be aware that, because of the differing histories of the missions in the two Asian nations, Korean returned missionaries of comparable longevity to the Japanese were not found for the study. Thus, despite the similar patterns shown in Figures 2 and 3, the absence of Korean participants of the same senescence as the Japanese senior cohort strengthens the perception that the savings advantage has weakened at a faster rate for the Korean attriters than for the Japanese.

A comparison of current vocabulary size between the returnees from Japan and Korea shows a further unexpected difference between them. Inasmuch as the mean time since departure from East Asia for the Korean group (12.5 years) is shorter than for the Japanese (15.6 years), one might expect the former to have an edge with regard to retained lexicon. The “Words Known” axes in Figures 4 and 5, grouping the participants according to their scores on the initial vocabulary test, suggest a different outcome, however. The rate of lexical loss actually appears to have been greater for the L2 Korean attriters than for the L2 Japanese.
The data in Figures 4 and 5 further suggest that this difference in vocabulary size may contribute to the disparity in savings access between the groups. Notice in the figures that the returned missionaries from Japan appear to retain access to residual lexical knowledge longer and also to remember mission vocabulary longer. Part of the explanation for the greater savings resilience of the L2 Japanese returnees may lie in this relationship between savings and lexical proficiency. Conversely, for the L2 Korean attriters, as they lose words at a faster rate, their ability to benefit from savings in relearning appears to fade in tandem with the lexical loss.

These differences between subgroups of the returnee population should be explored further. Since the location of missionary work is assigned rather than self-selected, we presume that no disparities existed between L2 subgroups at the beginning of the experience abroad. The Japanese and Korean attriters, together with compatriots who were directed to learn scores of other languages around the world, came from a single population. Their varying group experiences during and after their missions, however, may have cultivated differences in affect and in the desire for further L2 interaction.

Thus, L2 group comparisons of motivation, attitudes, and postmission L2 exposure are called for. Although Japanese input is severely limited back in the United States (especially in the Mountain West, the area most heavily represented in our samples), it may be that Korean input is even more scarce. Data from returnees who had learned other languages could also throw valuable light, not only on variations in L2 input, but also on the time/age confound, and on the rich-get-richer effects discussed in the next section.

**Individual Differences: The Rich Get Richer**

In addition to L2 group differences, an accounting has to be made of the effect of individual differences in language relearning. In our data the most interesting independent variable in this
regard is current vocabulary size. As shown in Figures 4 and 5, the larger the lexicon, the greater the apparent savings benefit in relearning old words, and the better able one is to learn new words. A plausible interpretation of these findings is that the correlation between vocabulary size and (re)learning is caused by an intervening variable: aptitude. That is, there are “good vocabulary (re)learners” who are good at learning, maintaining, and relearning words. Such learners are documented by de Bot and Stoessel (2000) in their initial attempt to measure savings. If this interpretation proves correct, then an expansion of the language aptitude construct is indicated to include language retention and language relearning. Memory span for oral and written linguistic information could well be included in aptitude batteries, for example.

Language aptitude presumably contributes to the prominent Matthew effects (Stanovich, 1986) observed in our data that draw attention to literacy as an influence in vocabulary (re)learning. Previous studies of returnees who had learned L2 Japanese in Japan (Hansen & Newbold, 1997), L2 Chinese in Taiwan (Hansen & Chantrill, 1999), and L2 Korean in Korea (Hansen & Shewell, in press) found the acquisition of literacy skills (the number of Chinese characters learned) to be a robust predictor of language retention. In the Korean study, however, a path analysis indicated that the consistent relationship between literacy attainment and language retention may well be due to the influence of an intervening variable, motivation, which has a significant effect on both (Hansen & Shewell, 2002). These findings suggest the inclusion of affect, along with aptitude, in the anatomy of the good vocabulary (re)learner.

The results of the present study indicate that Stanovich’s (1986) insight from the reading research literature that “[t]he rich get richer” also applies to the relearning of vocabulary. The larger the lexical network retained, the greater the chances of reactivating successful pathways to old words and the greater the chances of having the relevant infrastructure in which to integrate new words. Further language attrition studies, incorporating careful control of the original proficiency levels of individual attriters, will
allow us to verify the aptness of extending Stanovich’s maxim to read, “[t]he rich get richer, and they stay richer.”

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Notes

1The original language training for missionaries called to Japan and Korea was organized in Hawaii in 1969. The facility was moved to Provo, Utah, in 1972, where it has remained since. Over the years the language teaching methods used in the training center have evolved, from audiolingualism in the early days to a more recent eclectic approach that includes interactive video (Gubler, 2002). However, a constant element in the language study of the missionaries, both before and after the establishment of the premission training program, was the memorization and repeated practice of the missionary lessons that are the source of the “old” vocabulary used in the present study.

2The number of months spent by missionaries in Asia can be summarized by gender as follows (Gubler, 2002):

<table>
<thead>
<tr>
<th>Years</th>
<th>Men</th>
<th>Women</th>
</tr>
</thead>
<tbody>
<tr>
<td>1945 to 1958</td>
<td>36</td>
<td>24</td>
</tr>
<tr>
<td>1959 to 1969</td>
<td>30</td>
<td>24</td>
</tr>
<tr>
<td>1969 to 1971</td>
<td>26</td>
<td>20</td>
</tr>
<tr>
<td>1982 to 1985</td>
<td>18</td>
<td>18</td>
</tr>
<tr>
<td>1986 to present</td>
<td>24</td>
<td>18</td>
</tr>
</tbody>
</table>

3Missionary work started later in the less heavily populated Korea than it did in Japan, and the pool of returned missionaries who worked there is smaller overall than the number who worked in Japan. Although proselytizing began in Korea in 1955, the number of missionaries remained very small until Korea became a separate mission (from the Japan-centered Northern Far East Mission) in 1962 (Gubler, 2002).

4Matthew effects are sequences in learning in which early higher achievement results in faster rates of subsequent achievement. The name comes from the parable of the talents in Matthew 25:29: “For unto every one that hath shall be given, and he shall have abundance: but from him that hath not shall be taken away even that which he hath.”

In his synthesis of the literature on L1 literacy, Stanovich (1986) documents rich-get-richer and poor-get-poorer patterns in reading development. The primary determinant of vocabulary growth is found to be the amount of reading, and better readers learn more words. Stanovich’s rich-get-richer theme has been further elaborated in vocabulary acquisition in recent work by Hulstijn (2001).
References


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