

## The Attrition Rate of Vocabulary among EFL Learners Across Different Proficiency Levels

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### ABSTRACT

This study aimed to investigate the attrition rate of EFL concrete and abstract vocabulary among continuing and non-continuing Iranian female and male English language learners across different proficiency levels. They were students of a University who majored in different fields (between 20 and 25 years old). There was no treatment involved in this study, where the researcher compared two groups using the same variables. Hence, the design of the current study is an ex-post facto design. A 40-item vocabulary test, which varied across two proficiency levels, was used to measure the rate of vocabulary attrition as the instrument of this research. In the two stages, after an interval of three months, the students were requested to take the same tests. The results revealed that there was no significant difference between the EFL attrition rate of the abstract and concrete nouns among the continuing students across different proficiency levels. However, this hypothesis was rejected for the non-continuing learners at intermediate and advanced proficiency levels.

**Keywords:** Vocabulary attrition, abstract and concrete nouns, continuing and non-continuing students, proficiency level

### INTRODUCTION

The study of language attrition has recently emerged as a new field of study. The conception of loss in language skills occurred in a conference at the University of Pennsylvania (UPenn) in 1980. This conference was dedicated to the theoretical basis of research in the field of language attrition and other related conferences which probed the process of language loss as a natural disorder from many other perspectives.

Kopke (2004) stated that "attrition refers to the natural (non-pathological) loss of a language in bilinguals; generally speaking, changes in the linguistic environment and termination of an instructional program may lead to attrition" (p.15).

In terms of language learning, researchers have used the same definition to develop a framework which involved divergent methods of data collection, sampling and instrumentation on language attrition in papers and publications. This taxonomical framework was the one provided by Van Els (1986, as cited in Kopke & Schmid, 2004) with the following categories:

1. L1 loss in L1 environment: Dialect loss
2. L1 loss in L2 environment: Immigrant
3. L2 loss in L1 environment: Foreign language attrition
4. L2 loss in L2 environment: Language reversion in elderly people

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The main phases in the field of language attrition are as the above categories since the framework has divided the field of attrition into four simple and discrete categories. In order to gain a better and clearer picture of the concept of attrition, however, other methodological issues such as the distinction between attrition in adults and children, the effects of age at the amount of attrition, the effects of age at bilingualism, the effects of gender at the amount of L2 attrition and so forth, also need to be taken into consideration.

#### *Stages in Language Attrition*

Weltens and Grendel (1993) suggested that in “the first stage of language attrition that it takes longer to retrieve the required information, and the next stage, may be the required information becomes inaccessible” (p.135). In this stage, under some conditions, attriters can retrieve the required information but in other conditions, they cannot. Weltens and Grendel (1993) further claimed that a good example in this regard is the fact that one may be very capable of recognizing certain words but cannot produce them actively. Finally, if the periods of disuse continue, information may become completely and permanently inaccessible. Hence, language recovery should be viewed as a reactivation process. In this regard, Hansen (2001) stated that the first sign of language attrition is not the loss of certain items but rather an increase in the length of time which is needed for their retrieval.

According to Smith (2002, as cited in Kopke, 2007), the stages of language attrition are classified into three stages. Smith remarks that the first stage of attrition can be characterized by the deviation in the performance of attriters, while their competence remains intact. In the second stage, the attriter is in the possession of a new extremely conditioned variety of his/her language.

#### *Cognitive Processes and Causes of Attrition*

One of the most widely studied themes in the language attrition process is probably whether

the attrition phenomenon of language skills occurs in the reverse order of acquisition and attrition to verify whether second language happens. Smith (2002, as cited in Kopke & Schmid, 2004) pointed out that “language attrition is not the consequence of lack of L1 use alone; but first language is generally replaced by another language and this language is often assumed to influence the process of L1 attrition” (p. 135). Smith (2002, as cited in Kopke & Schmid, 2004) hypothesized that “transfer is one of the most important processes which determine attrition” (p. 156). This hypothesis which is known as cross-linguistic interference has been adopted by many researchers and supported by many studies.

Pavlenko (2002, as cited in Kopke & Schmid, 2004) remarked that the transfer from L2 undeniably plays a role in L1 attrition; on the contrary, Kopke (1999, as cited in Kopke & Schmid, 2004) pointed out that transfer is not the only source of linguistic change in L1 attrition. However, Paradis (1985, as cited in Tomiyama, 2000b) remarked that “language transfer is a fundamental process in loss” (p. 29). As for the cause of attrition, Yangur (2004) stated that:

“Depending on the approach to attrition within which researchers work, different theories and hypotheses concerning language loss have been postulated. Taking contact linguistic, sociolinguistic, language change or acquisition perspectives bring about varying hypotheses about the causes of language loss. Due to this inconsistency there are no commonly agreed definitions of language attrition, loss, or shift as yet” (p. 135).

Based on the previous studies on attrition, some hypotheses have supported the account of how and when transfer occurs. The first hypothesis of transfer was proposed by Kerlinger (1986, as cited in Tomiyama, 2000) as that the degree of markedness determines the occurrence of transfer. The second hypothesis was put

forward by Waas (1996, as cited in Tomiyama, 2000b), i.e. “only if L1 and L2 have structures meeting a crucial similarity measure will there be interference” (p. 131). Consequently, in the context of L1 attrition, the similarity between L1 and L2 is a necessary condition for transfer to occur.

#### *Important Variables in Attrition Studies*

At the first specialized conference of language loss, Gardner and Macintyre (1993) stated that affective factors influence the amount of language retention and language attrition. In 1999, Nagasawa found that participants whose motivation decreased over the school years used Japanese little outside the class. Meanwhile, those who are motivated would seek for more opportunities to use the language during the period of disuse, and this was the reason why they could retain much more linguistic information (Hansen & Shewell, in press).

Oxford (1982) proposed that studies in the field of EFL/ESL attrition would inform language teachers regarding the long-term effects of their teaching methodology. The findings of research reported that there is a high and positive correlation between personality factors (e.g. attitude, motivation) and language maintenance. Likewise, she further indicated that summer recess does not have a detrimental effect on language maintenance and individuals lose different aspects of second language throughout non-use intervals. Hence, there is no one rule preferable to all language attriters.

In Canada, Gardner, Lalonde and Macpherson (1985, as cited in Hansen & Shewell, in press) carried out a study which displayed a high degree of correlation between less favourable attitude and lower language use with the attrition of speaking and understanding skill, as reported on a can-do scale but not with attrition of reading. Gardner *et al.* (1985) suggested that “the attitudinal motivational factors may exert their greatest influence on attrition primarily during the acquisition period by influencing the level of competence acquired” (p. 531).

In another study by Ebbinghaus (1885), it was indicated that in spite of the proficiency level of students being the best and clear predictor of attrition, their attitude and motivation have been found to indirectly influence their attrition throughout the study. Ebbinghaus (1885, as cited in Weltens & Grendel, 1993) elaborated that there is a positive correlation between proficiency level and amount of attrition; in other words, the more you know the more you will forget.

Kuhberg (1992, as cited in Kopke & Schmid, 2004) stated that the subjects’ educational level is also another factor that plays an important role in L2 attrition studies. In addition, educational level can also be the cause of absence of attrition in some studies. Ammerlaan (1996), Bouba *et al.* (2002), Gurel (2004, Kopke & Schmid, 2004) stated that another factor which affects L2 attrition in foreign language environments is the length of stay abroad. Empirical evidence indicated that after a short period of stay in an L2 environment, reversal of language dominance occurs and is manifested by faster picture naming in second language than L1.

Meanwhile, Hutz (2004) remarked that “L1 attrition studies have not reached conclusive evidence about the effect of time on L1 attrition” (p. 193). Montrul (2002, as cited in Kopke & Schmid, 2004) pointed out that this degree of erosion might be to the extent that psycho and neurolinguistic methods could detect no trace of it. Before reaching the critical period, it is easier for a child to learn an L2; at the same time, it is more likely that the child forgets her L1. In accordance with the results of several studies, (e.g. Nicolladis & Grabis, 2002), Pallier *et al.* (2003, as cited in Kopke & Schmid, 2004) suggested that before reaching critical period, L1 could be easily replaced.

Reetz-Kurashige (1999) maintained that factors such as the personal characteristics of returnees, age, length of time abroad, length of time back, the proficiency level at the study onset and high competence at the onset of the study were the most predictive variables for the amount of L2 retention. Additionally, being older groups did not guarantee high retention;

this is on the contrary to the study by Olshtain whereby older groups were found to retain more. Reetz-Kurashige (1999) claimed that “it is not one factor but a combination of factors that predict strong maintenances; near-native speaking English ability was practically a requirement for minimal attrition” (p. 41).

#### *Learning and Relearning Vocabulary*

In 1986, Cohen declared that “each exposure to a word has the potential of increasing learner’s depth of knowledge about that word” (p. 146). Cohen also claimed that some words come into learners’ vocabulary very easily without much attention, whereas some others need conscious effort involving either rote repetitions or organizational techniques.

Each vocabulary, spoken and written forms, has certain characteristics including conceptual and indicating meaning in the context where it can be used and the syntactic restrictions which the language imposes on the word. Cohen (1986) noted that the most obvious type of forgetting vocabulary involves forgetting the conceptual or denotative meaning of a word or its spoken or written form. Furthermore, he believes that there are many aspects of a word that should be learned because many aspects of a word may also undergo attrition.

In 2000, De Bot and Stoessel conducted a study on the difference between learning and relearning of vocabulary. In this research, the German participants relearned those L2 Dutch words which the subjects claimed they had forgotten. The results of their study revealed that the subjects who knew the words before they showed development. Hansen (2001) states that the words which are to be learned for the first time in L1/L2 cannot reach the required activation level as fast as the forgotten words reach through relearning.

#### **METHOD AND MATERIALS**

The present research compared two or more groups of the subjects of study on the same variables which were done in past research. As

there was no treatment in this study, the design selected for this study is the quantitative research (ex-post facto). The designation of the ex-post facto, i.e. from Latin for “after the fact”, was used to determine the natural course of events. The method of ex-post facto research is investigated the cause-and-effect relationships between the independent and dependent variables.

The objectives of the present study were to measure the level of attrition of abstract and concrete vocabulary among continuing and non-continuing students’ performances at two proficiency levels in both stages. The independent variables in this study were the between-group and within-group variables. The between-group variables include status in two levels, namely, continuing vs. non-continuing students and the level of proficiency in two levels (intermediate and advanced). Meanwhile, the within-group variables include stages with two levels (stage 1 and stage 2). It is important to note that the comparison was to show whether or not attrition had taken place and the vocabulary items were with two levels, i.e. concrete vs. abstract. The dependent variables, which include students’ scores in the vocabulary test, were categorized across modalities and contexts.

This study was conducted in the capital city of Tehran, i.e. in the Islamic Republic of Iran, at the KISH English Language Institute. The subjects in this study comprised of two hundred male and female adult Iranian language learners who had registered for the IPL3 and APL (intermediate and advanced) levels at the KISH English Language Institute in the mixed classes during the spring and summer seasons in 2008.

An accidental sampling of the main major of non-probability sampling involved using the available cases for a study was employed in this research. Hence, the sampling procedure is the EFL learners from different classrooms or to have volunteers to take the tests in one session at both stages.

For both levels, the summer term has thirty sessions during the period of three months. The respondents attended English classes thrice a week. Table 1 below displays the distribution of the subjects.

TABLE 1  
The distribution of the respondents

Proficiency	Continuing students		Non-Continuing students	
	Female	Male	Female	Male
Intermediate	23	29	22	26
Advanced	25	38	17	20
N	48	67	39	46
TOTAL	115		85	

The 40-item vocabulary test was carried out to recognize which and how many lexical items have significant effects of attrition on the students. This test was also prepared for those in the intermediate and advanced levels. In addition, the same vocabulary tests were administered among the continuing and non-continuing groups across different proficiency levels at two stages.

In this study, the test was administered twice with a three month's interval. The instrument was chosen for the standardized achievement tests for reading and writing; on the other hand, the validity of the test was checked thoroughly by the English language teachers who have had some years of teaching experience at KISH English Language Institute. The reliability test was applied to measure the inter-item consistency. In addition, the reliability of this test was 0.769 in the first stage and 0.767 in the second phase.

The data of this study were collected in two separate stages with an interval period of three months. In the first stage, which was towards the end of the spring term (the end of June 2008), all the participants sat for the vocabulary test. After the period of three months, which was in the second stage, the continuing group (those who would be attending classes in the next term, at the end of September 2008) also took the same vocabulary test in the class. In order to find out the amount of attritions, the performance of the participants in the second stage was compared with their earlier performance in the first stage. The present study has its own limitations and is constrained by a number of delimitations, as follows:

At first, the type and number of vocabulary which were examined in this research are limited to abstract and concrete nouns at the intermediate and advanced proficiency levels. Second, only two hundred students participated as the respondents in this study, out of which, 100 of them were in the intermediate level and 100 others were in the advanced level among the continuing and non-continuing adult students. Next, the attritions of the learning strategies and teaching methodology, the degree of motivation, attitude, affective and other individual factors were not controlled in this study. Likewise for non-continuing students, it was not possible to control the extraneous variables, such as references to dictionaries or other forms of assistance.

The data collected were coded and entered into the Statistical Package for the Social Science [SPSS version 16 for Window Vista], and a statistics computer programme was used to process and analyze the data. In the current study, both types of statistics, namely, the descriptive (such as the frequency distribution, percentages, means, and standard deviations) and inferential (one-way ANOVA), were conducted. For this study, a five percent ( $\alpha=0.05$ ) level was determined as the accepted level of significance for the statistical analysis.

## RESULTS

These demographic variables help to describe the profiles of the respondents and it could be observed that the majority of the respondents in both stages (56.5 percent) were males. In this study, two proficiency levels were used, with 50

percent for the whole population. The subjects were divided into two groups at two different stages with a three month's interval. The rate of the continuing students was found to be 57.5 percent, and this was 42.5 percent for the non-continuing students.

All the respondents were Iranian students aged from 20 to 25 years old, were born and living in Iran/Tehran with Persian as their mother tongue. The majority of them were university students from different fields, and most of them were students (86.6%).

The 40-item vocabulary test consisted of two types of nouns. For each level, 20 concrete nouns and 20 abstract nouns were randomly extracted from the vocabulary books or texts which learners used in their classes. The vocabulary tests were prepared for the students in the continuing and non-continuing groups for both the intermediate and advanced levels. The same vocabulary tests were used for both stages.

Based on the data presented in table above, there was no missing value at the two stages in this research. Meanwhile, the means for the abstract and concrete nouns were 18.15 and 18.21 for the continuing group, and these were 18.29 and 18.34, respectively for the non-continuing students.

#### *The Level of Attrition of the Abstract and Concrete Nouns*

The first research question was meant to examine the following null hypothesis, i.e. there are no differences between EFL attrition rate for the abstract and concrete nouns among the continuing and non-continuing students at the intermediate level. The second research question was used to evaluate the same variables at the advanced proficiency level. The level of significance was  $\alpha = 0.05$ .

The data presented in the above table indicate that the mean for the concrete nouns was improved at the advanced level in the second stage. In addition, the analysis of variance (ANOVA) was also conducted to gather information related to the abstract and concrete nouns for the continuing students at the intermediate and advanced levels.

The results presented in the table above indicated that neither the stages nor the proficiency levels showed any significant effects. In other words, the students who continued their exposure to the English language did not experience significant attrition with the abstract nouns ( $F = 2.809, p > .05$ ) ( $F = .586, p > .05$ ).

Once again, the results indicated that the attrition of the concrete nouns did not occur on the continuing students at the intermediate level

TABLE 2  
Distribution of the variables at both levels of the test on both groups

	Continuing		Non-Continuing	
	Abstract nouns	Concrete nouns	Abstract nouns	Concrete nouns
Valid	230	230	170	170
Missing	0	0	0	0
Mean	18.15	18.21	18.29	18.34
Median	18	18	19	19
S.D	1.259	1.193	1.357	1.296
Variance	1.585	1.424	1.842	1.680
Minimum	14	15	12	14
Maximum	20	20	20	20

n=200

TABLE 3  
Descriptive statistics of the continuing students' performance with the abstract and concrete nouns at two levels for both stages

Proficiency Level		Abstract Nouns		Concrete Nouns	
		Stage 1	Stage 2	Stage 1	Stage 2
Intermediate	Mean	17.88	18.29	18.10	18.06
	N	52	52	52	52
	Std. Deviation	1.182	1.273	1.176	1.259
	Std. Error of Mean	.164	.177	.163	.175
Advanced	Mean	18.29	18.11	18.17	18.46
	N	63	63	63	63
	Std. Deviation	1.250	1.309	1.225	1.105
	Std. Error of Mean	.157	.165	.154	.139

n=115

TABLE 4  
The ANOVA results for the effects of attrition of the abstract nouns for the continuing students at the intermediate level

Source	Sum of Squares	df	Mean Square	F	Sig.
Stage					
Between Groups	4.240	1	4.240	2.809	.097
Within Groups	153.981	102	1.510		

TABLE 5  
The ANOVA results for the effects of attrition of the abstract nouns for the continuing students at the advanced level

Source	Sum of Squares	df	Mean Square	F	Sig.
Stage					
Between Groups	.960	1	.960	.586	.445
Within Groups	203.079	124	1.638		

( $F = .026, p > .05$ ) and at the advanced level ( $F = 1.890, p > .05$ ).

To conclude, no differences were found between the EFL attrition rate of the concrete and abstract nouns among the continuing students across different proficiency levels. In addition, similar descriptive statistics and analysis were also conducted on the abstract and concrete vocabulary. The following tables of analysis display the attrition which has taken place on the non-continuing group in the different stages.

As shown in Table 8, the means for the abstract and concrete nouns were diminished for the non-continuing group in the second stage. The one-way ANOVA was conducted to find out the significant differences between the proficiency levels and the stages of the abstract nouns.

The results presented in Table 9 reveal that there is a significance of 0.041 in the stage for the non-continuing students. As mentioned earlier, the significant level of the whole analysis process is  $\alpha=0.05$ ; therefore, the attrition of the abstract

TABLE 6  
The ANOVA results for the effects of attrition for the concrete nouns on the continuing students at the intermediate level

Source	Sum of Squares	df	Mean Square	F	Sig.
Stage					
Between Groups	.038	1	.038	.026	.872
Within Groups	151.346	102	1.484		

TABLE 7  
The ANOVA results for the effects of the attrition of the concrete nouns on the continuing students at the advanced level

Source	Sum of Squares	df	Mean Square	F	Sig.
Stage					
Between Groups	2.571	1	2.571	1.890	.172
Within Groups	168.730	124	1.361		

TABLE 8  
A descriptive statistics of the non-continuing students' performance for the abstract and concrete nouns in both stages

Proficiency Level		Abstract		Concrete	
		Stage 1	Stage 2	Stage 1	Stage 2
Intermediate	Mean	18.52	18.00	18.42	17.81
	N	48	48	48	48
	Std. Deviation	1.167	1.288	1.108	1.347
	Std. Error of Mean	.168	.186	.160	.194
Advanced	Mean	18.65	18.03	18.92	18.32
	N	37	37	37	37
	Std. Deviation	1.585	1.343	1.064	1.435
	Std. Error of Mean	.261	.221	.175	.236

n=85

nouns has taken place on the non-continuing students in the intermediate level ( $F = 4.310$ ,  $p < .05$ ).

As shown in Table 10, the results of the analyzed factors revealed that there were significant of the abstract nouns on the non-continuing students at advanced level ( $F = 4.578$ ,  $p < .05$ ).

The analysis of variance procedure was used to find out the concrete nouns for the non-continuing students across the different

proficiency levels. The results obtained from the ANOVA conducted are presented in the following tables.

Based on the data shown in Table 11, there were significant effects on the concrete nouns at the intermediate levels for the non-continuing students ( $F = 5.759$ ,  $p < .05$ ).

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TABLE 9  
The ANOVA results for the effects of attrition of the abstract nouns for the non-continuing students at the intermediate level

Source	Sum of Squares	df	Mean Square	F	Sig.
Stage					
Between Groups	6.510	1	6.510	4.310	.041
Within Groups	141.979	94	1.510		

TABLE 10  
The ANOVA results for the effects of attrition of the abstract nouns for the non-continuing students at the advanced level

Source	Sum of Squares	df	Mean Square	F	Sig.
Stage					
Between Groups	11.365	1	11.365	4.578	.036
Within Groups	178.757	72	2.483		

TABLE 11  
The ANOVA results for the effects of attrition of the concrete nouns for the non-continuing students at the intermediate level

Source	Sum of Squares	df	Mean Square	F	Sig.
Stage					
Between Groups	8.760	1	8.760	5.759	.018
Within Groups	142.979	94	1.521		

TABLE 12  
The ANOVA results for the effects of attrition of the concrete nouns for the non-continuing students at the advanced level

Source	Sum of Squares	df	Mean Square	F	Sig.
Stage					
Between Groups	6.541	1	6.541	4.100	.047
Within Groups	114.865	72	1.595		

Based on the results given Table 12, significant effects were shown for the concrete nouns for the non-continuing students at the advanced proficiency level, as well. Nonetheless, the significant levels across the different proficiency levels are lower than 0.05 ( $F = 4.100, p < .05$ ). This shows that in the second stage of the concrete nouns, there is a reduction in the students' performance and

their performances lead to the reduction of the significant level. In other words, the EFL attrition has been found on the concrete nouns for the non-continuing group at both the proficiency levels. Consequently, the results demonstrate that there are differences between the attritions of the abstract and concrete nouns among the non-continuing students at the intermediate and advanced levels.

## CONCLUSIONS AND IMPLICATIONS

The findings of this research indicated that the continuing students did not undergo significant attrition of the abstract and concrete nouns, whereas the non-continuing students underwent significant attrition of the abstract and concrete nouns across the different proficiency levels. However, the absence of attrition on the continuing students is not against the researcher's expectation. The results of this study contradict with that of De Groot and Keijzer (2000, as cited in Ross, 2002) who proved that the attrition of the abstract nouns did not take place faster than the concrete nouns.

In addition, the results also revealed that the continuing students did not experience attrition with the abstract and concrete nouns. This might be due to the short period of disuse. In spite of the short non-use period, the non-continuing students showed a trend of attrition of the abstract and concrete nouns at two different proficiency levels. The amount of attrition might turn out to be significant in the long run and revealed the trend of attrition for the abstract nouns in the two stages. As compared to the past studies, abstract nouns turned out to be more resistant to attrition.

In the previous studies by Bahrck (1984) and Olshtain (1989), it was shown that the advanced students were more resistant to attrition as compared to learners with low proficiency. In this study, nonetheless, the advanced students were found to have experienced attrition, as well. This might be due to some intervening variables such as the amount of the out-of-class exposure, attitude, motivation, teaching methodology and so forth, which were not taken into consideration in this study.

A study by Baharik (1984) indicated that during the first 5 years of second language disuse, all attriters would experience the same attrition regardless of their proficiency levels. In 1885, Ebbingham noted that the more one knows the more one will tend to forget; so, there is a positive correlation between proficiency level of attriters and the amount of attrition. The results

attained in this study also support the findings of the other studies in which advanced-level learners experienced a high attrition compared to those with low-proficiency.

Meanwhile, Tomiyama (1999) asserted that the first and second language attritions set in within six months of disuse. In this research, the 3-month interval of nouns of the language could lead to attrition as well.

According to Cohen (1986), vocabulary which was added most recently was found to be the most vulnerable reason which led to attrition. The findings of this study also support the types of vocabulary which led to attrition among the continuing and non-continuing groups across the different proficiency levels. Nouns are known to be easier to learn than verbs or adverbs; however, the regression hypothesis outlines that these classes of words can be forgotten much sooner than the earlier group mentioned.

More interestingly, the findings of this study have shed some lights on the attrition of the concrete and abstract nouns among the continuing and non-continuing students with different proficiency levels. In some past studies, the effects of class exposure on attrition have not been investigated; hence, this study has contributed in explaining the role of word classes in EFL vocabulary attrition. Additionally, this research has also shown that attrition is not limited to the non-continuing students as even the continuing students have had the possibility to experience attrition, as well.

Hence, English language teachers are required to identify the differences between the abstract and concrete nouns in the English textbooks and to draw their students' attention more on them, apart from providing them with a lot more practices on vocabulary. In addition, English language teachers should make modifications with their teaching methodologies based on the results of this study to put more emphasis on the areas which turn out to be vulnerable to attrition.

## REFERENCES

- Ammerlaan, R. (1996). "You get a bit wobbly..." *Exploring bilingual lexical retrieval processes in the context of first language attrition*. (Unpublished Doctoral Dissertation), Nijmegen: Katholieke University Nijmegen.
- Bahrick, H. (1984). Fifty years of second language attrition: Implications for programmatic research. *The Modern Language Journal*, 68, 105- 118.
- Cohen, A. (1986). Forgetting foreign language vocabulary. In B. Weltens, K. de Bot & T. Van Els (Eds.), *Language Attrition In Progress*. Dordrecht (pp. 143-158). The Netherlands: Foris.
- De Bot, K., & Stoessel, S. (2000). In search of yesterday's words: Reactivating a long forgotten language. *Applied Linguistics*, 21(3), 333-353.
- Ebbinghaus, H. (1885). *Über das Gedächtnis. Untersuchungen zur experimentellen Psychologie*. Leipzig: Duncker & Humblot.
- Gardner, R. C., Lalonde, R. N., Moorcroft, R., & Evers, F. T. (1987). Second language attrition: The role of motivation and use. *Journal of Language and Social Psychology*, 6(1), 29-47.
- Gardner, R. C., & Macintyre, P. D. (1993). One the measurement of affective variables in second language learning. *Language Learning*, 43, 157-194.
- Hansen, L. (2001). Language attrition: The fate of the start. *Annual Review of Applied Linguistics*, 21, 60-73.
- Hansen, L. (2002). Saving in the relearning of second language vocabulary: The effect of time and proficiency. *Language Learning*, 52(4), 653-678.
- Hansen, L., & Shewell, J. (In Press). *Keeping a Second Language: The influence of literacy and motivation in the attrition of Japanese, Chinese and Korean*. Unpublished manuscript, Brigham Young University.
- Hutz, M. (2004). Is there a natural process of decay? A longitudinal study of language attrition. In M. Schmid et al. (Eds.), *First Language Attrition* (pp.189-206). USA: John Benjamins North America.
- Kopke, B. (1999). L'attrition de la première langue chez le bilingue tardif: implications pour l'étude psycholinguistique de bilinguisme. (Unpublished Doctoral dissertation), Université de Toulouse, LeMirail.
- Kopke, B. (2004). Neurolinguistics aspects of attrition. *Journal of Neurolinguistics*, 17, 3-30.
- Kopke, B. (2007). Language attrition at the crossroads of brain, mind, and society. In B. Köpke, M. Schmid, & M. Keijzer/Susan Dostert (Eds.), *Language Attrition*. Theoretical perspectives (pp. 9-37), Amsterdam: John Benjamins.
- Kopke, B., & Schmid, M. (2004). Language attrition: The next phase. In Monika S. Schmid, B. Köpke, M. Keijzer, and L. Weilemar (Eds.), *First language attrition: Interdisciplinary perspectives on methodological issues* (pp. 1-47). Amsterdam: John Benjamins.
- Kuhberg, H. (1992). Longitudinal L2-attrition versus L2-acquisition in three Turkish children: Empirical findings. *Second Language Research*, 8(2), 138-154.
- Montrul, S. (2002). Incomplete acquisition and attrition of Spanish tense/aspect distinctions in adult bilinguals. *Bilingualism: Language and Cognition*, 5, 39-68.
- Nagasawa, S. (1999). Learning and losing Japanese as a second language: A multiple case study of American university students. In L. Hansen (Ed.), *Second language attrition in Japanese context* (pp. 169-199). New York: Oxford University Press.
- Oxford, R. (1982). Research on language loss: A review with implications for foreign language teaching. *The Modern Language Journal*, 66, 106-169.
- Pavlenko, A. (2002). Poststructuralist Approaches to the Study of Social Factors in L2. In V. Cook (Ed.), *Portraits of the L2 Users* (pp. 277-302). Clevedon: Multilingual Matters.
- Reetz-Kurashige, A. (1999). Japanese returnee's retention of English-speaking skills: Change in verb usage over time. In L. Hansen (Ed.), *Second language attrition in Japanese context* (pp. 21-58). New York: Oxford University Press.
- Schmid, M. S. (2004). First Language Attrition: The Methodology Revised. *International Journal of Bilingualism*, 8, 239-255.

- Smith, L. R. (2002). The social architecture of communicative competence: A methodology for social-network research in sociolinguistics. *International Journal of the Sociology of Language*, 153, 133-160.
- Tomiyama, M. (2000). Cross-Linguistics influence in L2 attrition. *JACET Bulletin*, 32, 123-136.
- Van Els, T. (1986). An overview of European research on language attrition. In B. Weltens, K. de Bot and T. van Els (Eds.), *Language Attrition in Progress* (pp. 318). Dordrecht: Foris.
- Waas, M. (1996). *Language Attrition Down under*. Frankfurt: Peter Lang.
- Weltens, B., & Grendel, M. (1993). Attrition of vocabulary knowledge. In R. Schreuder & B. Weltens (Eds.), *The Bilingual Lexicon* (pp. 135-156). Amsterdam: John Benjamin.
- Yamgur, K. (2004). Issues in finding the appropriate methodology in language attrition research. In M. Schmid *et al.* (Eds.), *First language attrition* (pp. 133-164). USA: John Benjamin North America.