Sex differences in L2 vocabulary learning strategies

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This article reports the results of a descriptive study on sex differences in the use of a second language. A questionnaire was administered to 581 Spanish-speaking students learning Basque and English as L2 (279 males and 302 females) in order to answer these questions: Do male and female second language learners differ in (1) the number and (2) the range of vocabulary strategies they use? The results show that they differ significantly in the number of strategies used. Regarding the range of vocabulary strategies, 8 out of the 10 most frequent strategies are shared by males and females. However, a close analysis of the data also reveals differences, such as females' greater use of formal rule strategies, input elicitation strategies, rehearsal strategies and planning strategies, and males' greater use of image vocabulary learning strategies. In addition, the females' total strategy usage percentages are higher than the males', which points to either different perceptions of vocabulary learning behaviors or different patterns of vocabulary strategy usage for males and females.

Introduction

'Sex' and 'gender' are controversial terms. Some scholars distinguish between the two, using 'sex' as a biological category that serves to differentiate males from females and 'gender' as a social category that refers to social attributes given to men and women as well as to a grammatical distinction in language. Others use the terms indistinguishably, as if they were two sides of the same coin. These inconsistencies are mainly due to the difficulty in establishing a clear boundary between the two terms. For the sake of clarity and convenience, throughout this article I will use the term 'sex' to characterize the male and female students in this study. By using 'sex' rather than 'gender', I do not imply any claim about the origins of differences found here.

Traditionally, sex has been studied as a factor of variation in sociolinguistics. Research in this field has brought to light the existence of differences in language use depending on the sex of the speaker and the listener. For instance, in mixed-sex interactions, women on average ask more questions, use more polite speech forms and interrupt less frequently than men, and, contrary to the widespread myth of talkative women, research findings suggest that men listen less and talk more than women (Thorne & Henley 1975; Fishman 1980; West & Zimmerman 1983; Holmes 1988, 1994).

Sex as a variable has received little attention in the fields of second language learning/teaching. An example of this gap is clearly revealed by introductory textbooks to these fields: sex is barely included among individual factors of learning, and when it is included, only a few lines are devoted to the issue (Jiménez Catalán 2000). As far as journal articles are concerned, some research related to sex and individual factors has been published over the last two decades; for instance, sex and language achievement (Burstall et al. 1974; Ekstrand 1980), sex and attitudinal factors (Burstall et al. 1974; Powell & Baters 1985; Kaylani 1996), sex and learning styles (Reid 1987; Willing 1988; Ehrman & Oxford 1989) and sex and language learning strategies (Oxford, Nyikos & Ehrman 1988; Oxford 1993). However, studies specifically designed to study sex as a variable in L2 learning are few compared with research on other factors such as motivation, age or personality.

The present study is part of an extensive investigation into sex and second language learning with the purpose of finding out whether there are significant differences in the number and range of strategies used by students of different sexes, educational levels and target languages. The aim of this article is to describe and discuss the sex differences in L2 vocabulary learning found in a survey carried out with 581 Spanish speakers learning English and Basque as L2 in instructed formal settings in La Rioja and Navarre, Spain.

Three main research influences inspired this study: (1) sex studies on language learning strategies, particularly the work done by Oxford and her associates over the last decade; (2) Meara's reflections on the limitations of vocabulary research as expressed in his 1996 article; (3) Schmitt's (1997) survey on the vocabulary learning strategies of Japanese students. Each of these influences will be taken up again in the next section. I will then describe the instruments and procedures and finally present some results of this study.

Review of the literature

The definition of a vocabulary learning strategy stems from that for a language learning strategy, and, as happened with the usage of the terms 'sex' and 'gender', here we also find a lack of agreement. According to Oxford (1989, 1993), the term 'learning strategy' refers to "steps or actions taken by students to improve their own language learning". For her part, Wenden (1987: 6–7) not only defines learning strategy as the "learning behaviours learners actually

engage in to learn and regulate the learning of a second language", but she also refers to "what learners know about the strategies they use".

As far as a vocabulary learning strategy is concerned, Schmitt (1997) adopts Rubin's (1987: 29) definition of learning as "the process by which information is obtained, stored, retrieved, and used" and extends it to a vocabulary learning strategy in the following way: "vocabulary learning strategies could be any which affect this rather broadly-defined process". Based on the belief that the above definitions do not exclude but complement each other, I will adopt the following as a working definition for ***vocabulary learning strategy***: *knowledge about the mechanisms (processes, strategies) used in order to learn vocabulary as well as steps or actions taken by students (a) to find out the meaning of unknown words, (b) to retain them in long-term memory, (c) to recall them at will, and (d) to use them in oral or written mode.*

Regarding language learning strategies, the last two decades have been characterized by a large number of studies aimed at differing but related purposes, such as the description of the strategies used by good and poor language learners, the discussion of terminology or the elaboration of taxonomies. In addition, a number of investigations have focused on distinguishing between learning and communication strategies. In contrast, hardly any research has been carried out on sex as a predictor of variation in the knowledge and use of language learning strategies. As Oxford, Nyikos and Ehrman (1988: 321) remark, "Omission of sex as a variable in language learning strategy research is rather surprising, since sex is a classic and significant predictor in other educational, psychological, and linguistic research."

In a review of eighty articles, papers and chapters describing second language learning strategies conducted by Oxford in the 1980s, she found that only four studies directly looked at sex differences in strategy use. These studies – in which Oxford and her associates' work is included – are reviewed in Oxford, Nyikos and Ehrman (1988) and present data showing that females use a far wider range of language learning strategies than males. Moreover, they offer evidence that women usually employ social strategies which contribute strongly to the development of communicative competence. Nearly a decade has passed since Oxford's review, but even now very few studies on sex and language learning strategies have been published. In my search based on six journals from 1988 up to 1998, I have been able to trace no more than a dozen articles and chapters dealing directly with the issue. What follows is a brief summary of the main tendencies that can be observed in these publications; included here are the studies reviewed by Oxford.

Practically all the investigations carried out on sex and language learning strategies reveal a greater use of these strategies by females compared with males. Research has also shown that the two groups use different strategies. For instance, female students use more: social language learning strategies not only in interaction in the classroom, but also in interaction in the real world (Politzer 1983; Ehrman & Oxford 1989); study strategies and formal rule-related strategies (Ehrman & Oxford 1989; Oxford & Nyikos 1989); conversational/input

elicitation strategies (Oxford & Nyikos 1989; Gass & Varonis 1986); monitoring strategies in comprehension (Oxford & Nyikos 1989; Bacon 1992); rehearsing and planning strategies (Ehrman & Oxford 1989; Bacon & Finnemann 1992). For their part, male students have been reported to: use translation strategies more than female students (Bacon 1992); use the opportunities to interact to produce more output, whereas females use it to obtain more input (Gass & Varonis 1986); prefer visual and tactile learning strategies (Reid 1987).

Research has also provided evidence that language learning strategies may be associated with other individual factors such as types of memory (Nyikos 1990; Kaylani 1996), learning styles (Willing 1988), and motivation and culture (Kaylani 1996).

From the analysis of these studies, it can also be deduced that as far as research methodology is concerned, most studies on sex and language learning strategies are characterized by the following traits: university students are taken as subjects of the study; except for Oxford and Nyikos' study (1989) which included a sample of 1200 students, the number of research subjects is small; although there are typical experimental studies which make use of control conditions, self-report and questionnaires are among the most common tools for gathering data.

Having summarized the major studies on sex and language learning strategies, I will now focus on establishing the context for vocabulary learning strategies. We must recognize, however, that the line which separates research on language learning strategies from that on vocabulary learning strategies is by no means clearly defined. As Sharwood Smith (1984) points out, studies on vocabulary learning overlap with those on communication strategies (quoted in Gass 1988: 93).

The main objective of research on vocabulary acquisition is the investigation of vocabulary development and the description of the main processes which underlie acquisition of this language component. According to Maiguashca (1993), different lines of research stem from this common objective: the attempt to differentiate passive from active, productive/receptive vocabulary; the influence of specific teaching methods and techniques on vocabulary learning; and the description and explanation of the learning processes revealed by learners' lexical errors and vocabulary learning strategies. The main goal of studies on vocabulary learning strategies is to discover how words are learnt and what part is played by different processes such as lexical inferencing, guessing the meaning of words from the context, memory processes, lexical simplification, and finally, lexical transfer from L1 to L2.

As Schmitt (1997) notes, many articles and a considerable number of books have been published on both language learning strategies and vocabulary learning over the past twenty-five years. Nevertheless, little has been published on vocabulary learning strategies. The few studies we can find either tend to focus on a very small number of strategies or examine the use of strategies by a small number of learners; in addition, a comprehensive taxonomy of strategies is lacking in the area of vocabulary learning strategies; the result according to Schmitt is a lack of large-scale studies based on comprehensive taxonomies.

In an attempt to overcome these drawbacks, Schmitt compiled a taxonomy from different sources such as reference books, textbooks, and L2 language teachers' interviews with learners. He obtained a list of 58 strategies which he arranged into a framework based broadly on Oxford's (1989), but also on Cook and Mayer (1983) and Nation (1990). Schmitt's taxonomy falls into two groups of strategies: ***discovery strategies*** and ***consolidation strategies***. The former comprises *determination strategies* and *social strategies*; the latter, *social strategies*, *memory strategies*, *cognitive strategies* and *metacognitive strategies*. Schmitt also conducted a survey in Japan with 600 Japanese students of English. This large sample of subjects fell into four groups: junior high school students, high school students, university students and adult learners. The purpose of this study was, in Schmitt's own words, "to assess which vocabulary learning strategies learners actually use and how helpful they believe them to be" (1977: 199). He found that among the six most-used strategies were: using a bilingual dictionary, guessing from textual context and asking classmates for meaning as strategies to discover meaning, and verbal repetition, written repetition and studying the spelling as strategies to consolidate meaning. Regarding the most helpful strategies, he found that there was a close correspondence between the most-used strategies and the most helpful ones. According to Japanese students' perceptions, the most helpful vocabulary learning strategies were: using a bilingual dictionary, written repetition, verbal repetition, saying a new word aloud, studying a word's spelling and taking notes in class.

The present study seeks to contribute to filling the gap in large-scale surveys of vocabulary learning strategies for L2 by presenting a study that closely resembles the one conducted by Schmitt. The points in common lie mainly in the use of a similar self-report questionnaire, a similar number of subjects and similar groups. However, several changes were introduced: for instance, I did not assess how helpful students believe strategies to be, I introduced the contrast between English and Basque as L2, and above all I included the sex variable.

By carrying out a survey with a great number of subjects of different sexes, ages, levels and two target languages, this research contributes to the study of the effect of individual variation on the perceptions of use of vocabulary learning strategies. In this way, I hope to palliate some of the limitations of vocabulary acquisition studies which, according to Meara (1996), consist mainly of a focus on L2 beginners and on English as a target language.

Because of space limitations, the discussion of variation due to age, level and target language (English/Basque here) will be left for another occasion; instead, in this article I will focus only on the sex variable. It is known from investigations in other areas of research on both vocabulary and language learning strategies that female students commit fewer errors in L2 compositions, produce a greater number of words, and in particular make use of a greater number of language learning strategies than do male students. One might logically expect to find the same pattern of variation in vocabulary learning strategies.

So with this purpose in mind, I set out to investigate the following research questions:

1) Do male and female second language learners differ in the number of vocabulary learning strategies they claim to use?
2) Do male and female students differ in the range of vocabulary learning strategies they claim to use?

Method

SUBJECTS

A total of 581 Spanish-speaking students participated in this study, 279 males and 302 females. Of the total sample, 450 were studying English at primary, secondary or university level, while 131 adults were studying Basque in courses for civil servants run by the Navarre government. The ages for the total sample of learners ranged from 11 to 56. Care was taken to gather data from intact groups from three high schools, five primary schools, one university and a Basque language school, all of them state run and located in separate towns of different sizes in La Rioja and Navarre.

The participants in this study fall into eight groups. Table 1 shows the distribution of subjects by group, sex and age.

The total amount of language instruction for each group, as well as the language level and the language teaching approach, are determined by official guidelines. A communicative approach, with emphasis on real input and language for communication, is followed in all of them. None of these groups was taught explicitly how to learn new words; that is to say, none of them had received any training in vocabulary language learning strategies in their schools – this fact was established during interviews with the teachers involved before the questionnaire was completed. The teachers of these groups explained that they teach vocabulary integratively with other language components.

Table 1. *Distribution of subjects by group, sex and age*

Group	Females	Males	Total	Mean age
Beginner's English (6th-year Primary)	72	68	140	11.6
Intermediate English (4th-year Secondary)	118	137	255	15.8
Advanced English (1st-yr. Eng. Philology, Univ.)	8	22	30	19.9
English Proficiency (4th-yr. Eng. Philology, Univ.)	7	18	25	25.7
Beginner's Basque	37	26	63	32.9
Intermediate Basque	11	12	23	35.6
Advanced Basque	8	11	19	35.2
Basque Proficiency	18	8	26	37.0

INSTRUMENTS AND PROCEDURES

In an attempt to provide answers to the preceding research questions, a questionnaire on vocabulary learning strategies was given to all the participants in this study in the last two weeks of April 1999. This questionnaire was designed from the information reported by Schmitt (1997). As well as translating the taxonomy from English into Spanish, I added two new items to Schmitt's list. These were strategies 59 and 60 (see Appendix 1). The former elicits information on the use of free word association as a strategy for learning vocabulary; for instance, from *snow* we might get, by association, *winter*, *white*, *skies*. Item 60 is deliberately left unstructured to allow students to mention other possible strategies which they use but which are not present in the taxonomy. I also illustrated each type of strategy by means of an appropriate example, in Spanish or in Basque, depending on the target language of the learners.

The use of Schmitt's taxonomy as the instrument for gathering the data in the present study has several advantages:

- It can be standardized as a test.
- It can be used to collect the answers from students easily.
- It is based on the theory of learning strategies as well as on theories of memory.
- It is technologically simple, which allows for ease in coding, classification and managing of the data in computer programs.
- It can be used with learners of different ages, educational backgrounds and target languages.
- It is rich and sensitive to the variety of learning strategies.
- It allows comparison with other studies, among them Schmitt's own survey.

Students were given one hour to complete the questionnaire during class time, afterwards being told that the results of this task would have no influence on their marks. The students were asked to read the questionnaire through and only then to select those strategies that, in their opinion, they used most frequently.

The next step was the codifying and managing of the data by means of the dBase IV relational database. Finally, in order to find out whether the results were significant, a z-test was applied to the data. The use of this test rather than a t-test was justified by the large number of subjects involved in the study.

Results

The first research question was concerned with whether male and female second language learners differ in the *number* of vocabulary learning strategies they claim to use. Table 2 summarizes the frequencies and standard deviations for the total sample.

Table 2. *Summary of mean results for strategies used*

Sex	Number	Mean no. of strategies used	SD
Males	279	20.7	8.2
Females	302	22.0	7.6
Total	581	21.4	8.2

As can be seen from Table 2, in absolute terms there is only a small difference in favor of females. However, this is statistically significant, as the results of the z-test applied to these figures gave the following values: $z = 1.98$, $p = 0.0239$ (2.39%; directional). On the face of it, it can be inferred that males and females differ significantly with regard to the number of vocabulary strategies used.

As to the second research question – whether male and female students differ in the *range* of vocabulary learning strategies they claim to use – the results also show very small differences between the sexes if only the rank order of the ten most and least frequently used vocabulary strategies are taken into account. Tables 3 and 4 show that there is more similarity than difference between the two groups.

Regarding the ranking of the ten most frequently used vocabulary strategies, it can be observed that the number of discovering and consolidating strategies is balanced in both sexes: five are strategies to discover meaning (D) and five are strategies to consolidate a new word once the student has encountered it (C). It

Table 3. *The ten most frequently used strategies*

Strategy	Rank		Percentage	
	male	female	male	female
Use a bilingual dictionary (D)	1	1	83.2	85.8
Take notes about the word in class (C)	2	2	78.1	84.8
Guess from textual context (D)	3	3	74.9	80.8
Ask teacher for an L1 translation (D)	4	5	72.8	73.2
Ask classmates for meaning (D)	5	4	69.2	74.8
Analyse part of speech (D)	6	8	64.5	71.5
Connect the word to cognates (C)	7	7	59.9	69.9
Use English-language media (C)	8	9	55.9	62.6
Say word aloud when studying (C)	9	6	55.8	71.5
Form image of word's meaning (C)	10		56.3	
Use vocabulary section in textbook (C)		10		61.3

D = discover meaning C = consolidate meaning

Table 4. *The ten least frequently used strategies*

Strategy (all consolidating)	Rank		Percentage	
	male	female	male	female
Underline initial letter of a word	1	2	2.9	4.3
Use flash cards	2	5	7.9	7.6
Put English labels on objects	3	1	8.6	3.6
Use peg method	4	4	9.7	6.6
Group words together spatially	5		11.1	
Configurate the word	6	6	11.5	8.6
Group words within a storyline	7	3	12.2	6.6
Other strategies		7		9.6
Use physical action	8	9	13.3	9.9
Use semantic map	9		13.3	
Skip or pass new word	10	8	14.3	9.9
Use loci method		10		9.9

can also be observed that nine strategies are shared by males and females while only two are not: forming an image of the word's meaning for the males and using the vocabulary section in the textbook for the females. The similarity is even more evident when the rankings of the strategies are considered: four strategies hold the same position in males' and females' rankings: 1st, use/consult a bilingual dictionary; 2nd, take notes in class; 3rd, guess from textual context; and 7th, use cognates.

In relation to the ten least frequently used strategies, Table 4 illustrates that they are all consolidating strategies rather than strategies for discovering meaning. These ten strategies are hardly ever used by males or females, and again, almost an identical pattern stands out: eight strategies as well as very similar rankings and percentages of usage are shared by both sexes.

Up to this point, it looks as if there were more similarities than differences since the ten most and least frequently used vocabulary strategies reported by males and females are alike. However, a closer analysis of these frequencies reveals a tendency for females' percentages of usage to be higher than their male counterparts over a wider range of strategies.

The same pattern of higher usage by females emerges if the analysis is not restricted to the ten most and least frequently used strategies but is observed throughout the overall ranking lists for discovery strategies (Appendix 2A) and consolidating strategies (Appendix 2B). By examining these lists, clear differential patterns appear. First, of the fourteen discovery strategies, females report greater use in nine strategies, while males report greater use in only five. Second, as far as the forty-six consolidating strategies are concerned, females reported higher usage of thirty-one strategies, whereas males reported greater use in only fifteen strategies. A close analysis of the overall lists of discovery and consolidating

Table 5. *Main differences in strategy usage in percentages*

Strategy (all consolidating)	Males	Females
Associate the word with its coordinates (MEM)	50.2	40.3
Group words together to study them (MEM)	34.1	44.4
Study the spelling of the word (MEM)	43.7	55.0
Study the sound of the word (MEM)	28.3	38.1
Say the new word aloud when studying (MEM)	55.9	71.5
Connect word with cognates (MEM)	59.8	69.9
Use word lists (COG)	45.9	57.3
Use vocabulary section in your textbook (COG)	50.5	61.3
Keep a vocabulary notebook (COG)	45.8	55.0
Test oneself with word tests (META)	30.4	48.3

MEM = memory COG = cognitive META = metacognitive

strategies also reveals that ten strategies show particularly high differences between males and females. As illustrated in Table 5, they are all consolidating strategies, and in only one of these cases do males report greater usage than females.

Discussion

The results of this study yield two kinds of evidence: similarity and difference. Similarity is reflected in the average number of strategies used by males and females: 21.4 for male and female learners taken together. This low number – only about a third of the total number of strategies offered in the questionnaire – is shared by both sexes, with females having only a slightly but significantly higher mean.

The results suggest that male and female students normally use the same strategies: using a bilingual dictionary, guessing from textual context and asking the teacher and classmates are by far the most popular ways of discovering meaning, while taking notes in class, saying the word aloud when studying, using English-language media, and using new words in sentences are among the most popular for consolidating meaning. On this particular point, this study confirms the results obtained by Schmitt with English learners in Japan; their most frequently used strategies were: using a bilingual dictionary, guessing from context, asking classmates for meaning, and saying the new word aloud when studying.

These similar findings lead to several interpretations. First, discovery strategies are more frequently used than consolidation strategies. This means that students focus on solving immediate problems of finding out the meaning of unknown words, but they do not usually go further towards its consolidation. Second, using a bilingual dictionary and asking others are universal discovery

strategies for people from very different cultures, e.g. Japanese and Spanish students. Third, the use of the memory strategy of saying the new word aloud when studying seems to be popular among language learners even if, as happens, the factor of memory is neglected in most language teaching methods as well as in second language acquisition research.

The second point arising from the data is the existence of variation between males' and females' responses to the questionnaire. The significant difference in the average number of strategies used by males and females, as well as the differences shown in the overall percentages of usage reported by males and females, brings to light the existence of clear differential patterns between these two groups. Unfortunately, when it comes to relating these findings to previous research, most studies on vocabulary learning strategies either fail to explore the sex variable or to report its effect on the use of strategies; consequently, it is extremely difficult to compare these results with those obtained in other vocabulary learning strategies studies. Nor is it any easier to make comparisons with research on sex and language learning strategies, partly because studies in this area focus on the analysis of wider aspects of learning, partly because of the different terms and taxonomies used to define and classify strategies, but mainly because of the different number of subjects, languages and the variety of research designs and statistical tests used in the studies. Bearing these limitations in mind, what follows is a cautious attempt to interpret the results obtained in the light of previous research on sex and language learning strategies.

The finding that males and females differ significantly with regard to the number of vocabulary strategies used corroborates the results obtained by Ehrman and Oxford (1989), Oxford and Nyikos (1989) and Graham (1997) on sex and language learning strategies. In these investigations, the number of strategies which female students report that they use is significantly greater than that for male students. The survey carried out by Oxford and Nyikos is particularly relevant because of the large sample used and the variety of languages investigated: 1200 North American university students learning French, Italian, German and Russian. Unfortunately, ranking orders of the ten most and least frequently used strategies for the two groups are not provided in these studies, which prevents us from confirming or rejecting the existence of common patterns between males and females. If these frequencies had been reported, I gather that similar results might have been found. As human beings, males and females are more alike than different; although there may be sex differences in language learning due to innate and social causes, research carried out so far is not conclusive enough to determine absolutely different ways of learning for the two sexes; to this should be added the role of encouraging uniformity played by educational systems and the similarity of foreign language classes. Certainly, further studies are needed to ascertain the influence of such factors on the usage of vocabulary learning strategies by the two sexes; but the remarkable similarity found in the most frequently used vocabulary strategies by Japanese learners of English in Japan and Spanish learners of English and Basque in Spain cannot be understood unless it is accepted that there is, in

fact, a great deal of uniformity in second and foreign language classes in academic settings even in far distant countries.

The existence of common patterns of vocabulary learning strategies shared by the two sexes by no means contradicts the hypothesis of variation. Within second language learning theories, it is widely acknowledged that systematicity in language learning processes goes hand in hand with language learning variation due to individual and contextual differences. The present study is in line with second language acquisition theories, as it shows that the ten most and least frequently used vocabulary strategies are shared for the most part by male and female students, but at the same time, it also shows the coexistence of different patterns and percentages of usage by the two sexes.

If we review the categories of the taxonomy of vocabulary learning strategies utilized in the present study, we note that the differential patterns obtained show a high degree of coincidence with the ones found by Ehrman and Oxford (1989), Oxford and Nyikos (1989), Bacon (1992) and Graham (1997) in sex and language learning strategies, which are identified as females' greater use of formal rule strategies, study strategies and social elicitation strategies. However, some outcomes at variance with this research are also evident. Thus, for discovery strategies, these same tendencies stand out for some strategies but not for others; for instance, whereas more females report that they analyze the part of speech for a new word, more males report that they analyze affixes and roots; and while a higher percentage of female students claim to use a bilingual dictionary, more males report using a monolingual one. A similar pattern is found for social strategies used to discover meaning, which partially supports the results obtained by Gass and Varonis (1986) and Oxford and Nyikos (1989). In both studies it is said that females used more elicitation strategies than males. The present study reveals higher percentages of females reporting the use of two elicitation strategies: asking the teacher for an L1 translation, and asking classmates for the meaning. However, we also find higher percentages for males in two elicitation strategies: asking the teacher for a sentence including the word, and asking the teacher for a paraphrase/synonym (see Appendix 2A).

This tendency for higher usage among females appears even stronger in the case of the four categories (social, memory, cognitive and metacognitive) that comprise the forty-six consolidating strategies. As mentioned in the previous section, females report greater use than males for thirty-one consolidating strategies. Without doubt, the analysis of the results obtained in each of the four categories of consolidating strategies indicates that more females than males report using these strategies.[1] The differential patterns already commented on for discovery strategies (as well as females' greater report of use of formal rule strategies and study strategies) appear again with even more force, reflecting the highest differences in percentages which are displayed in Table 5.

Other interesting aspects are disclosed by this table and confirmed by the overall list of consolidating strategies included in Appendix 3. First, we note that memory strategies and cognitive strategies related to memory fall within the most used as reported by both sexes. This finding corroborates research on

memory and language learning strategies: for instance, Cohen and Aphek (1981) revealed that students' most common vocabulary strategy was learning the word by heart to the detriment of other memory strategies such as the loci method or peg method.[2] The overall results reveal that these two strategies are hardly used by students in the present survey. Second, we observe that of the twenty-seven memory strategies, females' percentages of usage are higher than males for twenty, whereas males report greater use in seven strategies. Last but not least, males and females' highest percentages for memory strategies reveal interesting differential patterns, e.g. females' greater use of saying the new word when studying, studying the sound of a word, and grouping words together to study them. In comparison, where males' percentages of memory strategies are higher than females', this usually coincides with the least frequently used strategies, for example the loci method, the peg method, and using physical action when learning a word. The only exceptions are the slightly higher percentages reported by males in forming an image of a word's meaning and remembering affixes and roots (see Appendix 3).

In interpreting these findings, three possible explanations for the variation obtained come to mind. First, the greater number of discovery strategies and particularly of consolidating strategies reported to be used by females might be due to a higher degree of motivation towards language learning in general and vocabulary learning in particular. It is widely acknowledged that motivation is a complex set of interrelated factors. Among the most relevant in foreign language learning contexts are: the desire to achieve the goal of learning, the effort and investment devoted to its achievement, and the attitude held by learners towards the target language. On the whole, research has shown females to hold more positive attitudes towards language learning and culture, to be more motivated, and to achieve higher marks in the foreign language (Burstall et al. 1974; Bacon & Finneman 1992; Kaylani 1996). The tentative assumption that a greater use of vocabulary learning strategies may be linked to a higher degree of motivation is corroborated by the investigation carried out by Oxford et al. (1993) with Japanese students. In their study, frequency of strategy and motivation were significant predictors of language achievement when instruction was delivered by satellite television.

Second, males' and females' different percentages for formal rule strategies and memory strategies suggest distinct learning styles and learning preferences by sex. The comparison of females' greater use of saying the new word when studying and studying the sound of a word with males' greater use of the loci method, the peg method, forming an image of the word's meaning, using physical action, and putting English labels on objects immediately suggests an auditory learning style for females and a visual and tactile one for males. The remark made by Oxford (1994: 143) that "[v]isual strengths, though prevalent in both males and females, may be slightly more so in males, and auditory preferences might appear more often in females than males" is corroborated by research on vocabulary learning strategies: Reid (1987) found that males preferred visual and tactile learning strategies significantly more than females.

Finally, the results of the present study allow us to establish interdisciplinary links with the results obtained in other related fields. Thus, the different styles of communicating for the two sexes persistently (although not consistently) found in the literature on sociolinguistics (Thorne & Henley 1975; Fishman 1980; West & Zimmerman 1983; Holmes 1988, 1994), and the different models of knowing, learning, and perceiving the world by women found in some research conducted in the field of psychology (among others, by Belenky et al. 1986; Gilligan 1993) resemble the sex differential patterns in the use of vocabulary strategies of second language learners reflected in our investigation. In particular, the distinct learning styles and learning preferences suggested by the differences found in the use of memory strategies by the male and female students in the present study suggest different modes of learning by sex, which in turn seems to be consonant with the claims for a 'different voice' in women as put forward in Belenky et al.'s and Gilligan's research. However, there are important methodological differences between our study and the ones carried out by these researchers, the most important being that in their studies, only women were taken as informants and a qualitative approach was followed in the analysis, mainly based on the data elicited by means of intensive oral interviews as well as from psychological and literary texts, whereas in the present study, both males and females were present in the sample, and the analysis was of a quantitative type derived from responses to written questionnaires. But leaving these differences aside, an important question emerges that connects – and at the same time expands – those studies in psychology and the one described in this article: do male and female students exhibit two different ways of learning as a consequence of distinct developmental psychological processes?

Conclusion

By means of a large-scale survey of vocabulary strategies used by Spanish speakers of English and Basque as L2, I have attempted to introduce the sex variable as a factor in vocabulary learning strategies.

The present study has provided answers to the two research questions. The results indicate that male and female students differ significantly in the number of strategies that they claim to use. The results also show that male and female students differ in the range of strategies that they report using, as can be seen by the patterns of difference found in the rankings and percentages in the overall lists of discovery and consolidating strategies. However, care should be taken in interpreting the results exclusively in the direction of the hypothesis of difference, as common patterns shared by the two sexes together with differential patterns have also been found

In addition, one should be cautious in the interpretation of the data, as this investigation has some limitations: on the one hand, I did not study students' vocabulary learning behaviors but rather their perceptions of their learning behaviors; on the other, I only asked students to mark from the list those

strategies they used normally, but I did not go further to assess what they understood by the word 'normally' or how frequently they used them.

Apart from the need to improve on these points in future studies, more questions are raised by the present study that also need further investigation. For example, why do these tendencies of difference occur? Why do female students tend to use a greater number of strategies? What does the pattern of variation in the range of strategies used by the two sexes mean? Is it significant? Do males' and females' perceptions of their use of vocabulary strategies correlate with other variables, such as the degree of motivation towards the L2 or the language learning style? Do these reported differences matter? Can we speak of different modes of vocabulary learning for the two sexes?

From the results obtained in this study, I see the need to carry out further research in order to prove the hypothesis stated in the previous section, that the sex differences obtained in the reporting of usage of vocabulary learning strategies may be due to differences in language learning styles as well as different degrees of motivation for males and females.

The present study does not allow us to claim whether the differences obtained matter or not. If we talk about foreign language learning at school, I presume that consolidating strategies such as organizing and reinforcing learning are likely to be related to success in vocabulary learning, and as a result may correlate positively with a higher lexical competence and with higher marks on vocabulary tests. But as this is only a descriptive study, I cannot establish correlations between the use of vocabulary strategies and success in second/foreign language learning, as is done for instance, in Kojic-Sabo and Lightbown (1999), among other studies.

The implications for language teachers are clear, as this study provides evidence of differences in the number and range of vocabulary strategies that males and females claim to use. Knowledge of these differences can serve in the preparation of language classroom activities that cater for the variation shown by sex. The data can also be useful for teachers as an 'indicator' of the vocabulary strategies which are barely used by male and female students and which may thus require a systematic plan for strategy training.

Notes

I would like to thank the teachers who allowed me to gather the data for this study from their students; Professors Jasone Cenoz and Christopher Butler, who read previous versions of this paper; and the two referees. All of them helped me a great deal. Any remaining flaws, of course, are my responsibility.

1. The detailed analysis of each strategy within each category is not possible here. The reader is referred to Appendix 3, where the different percentages for males and females are displayed according to the categories of the taxonomy used in the present study.
2. The foundations of the 'loci method' lie in establishing mental links between the word to be learnt and a familiar place. For instance, if the purpose is learning names of tools such as *screwdriver*, *hammer* and *pliers*, one imagines a familiar place and proceeds to mentally locate each item in that place, as in the following

example: "The hammer is in the kitchen, the screwdriver is in the living room, the pliers are in the bathroom."

For its part, the 'peg method' establishes a mental link between a number and a rhymed word (the peg word) and the image of the word to be learnt. As Schmitt (1997: 213) describes it: "One first memorizes a rhyme like 'one is a bun, two is a shoe, three is a tree etc.' Then an image is created of the word to be remembered and the peg word. If the first word to be remembered is *chair*, then an image is made of a bun (peg word) resting on a chair. Recitation of the rhyme draws up these images, which in turn prompt the target words."

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Appendix 1

Note: the students participating in our study were given a Spanish version of this questionnaire, which can be supplied by the author. Both the Spanish version and the English version are based on Schmitt's taxonomy of vocabulary learning strategies, in N. Schmitt & P. McCarthy (eds.) (1997) *Vocabulary Description, Acquisition and Pedagogy*, Cambridge University Press, 206–8.

Informant Data
Sex
Age

Course/level
Mother tongue

Below there is a list of strategies that can be used in order to discover the meaning of unknown words. Mark with a cross those that you normally use.

A. What do you usually do to discover the meaning of an English word that you do not know?

No.	Strategy	I use
1	I analyse the part of speech	
2	I analyse the word affixes and roots	
3	I check for an L1 cognate (I try to link the English word to a Spanish word that reminds me of the former's form and meaning, e.g. history–historia)	
4	I analyse any available pictures or gestures accompanying the word	
5	I try to guess the word's meaning from the text/context in which the word appears	
6	I look for the word's meaning in a bilingual dictionary	
7	I look for the word's meaning in a monolingual dictionary	
8	I learn the word through English–Spanish word lists	
9	I deduce the meaning of the word from flashcards and posters shown by the teacher	
10	I ask the teacher for an L1 translation (English into Spanish)	
11	I ask the teacher for a paraphrase or synonym of the new word	
12	I ask the teacher for a sentence including the new word	
13	I ask classmates for the meaning of the word	
14	I discover the new meaning through group work	

B. What do you usually do to consolidate the learning of a word after discovering its meaning?

No.	Strategy	I use
15	I study and practice meaning in pairs/groups in class and outside class	
16	I keep a word list/card and my teacher checks for learning	
17	I try to use the new word in interactions with native speakers	
18	I study the new word with a pictorial representation of its meaning: through images, photographs or drawings	
19	I study the word by forming an image of it	
20	I connect the word meaning to a personal experience	
21	I associate the word with its word coordinates, for instance: apple with peach, orange . . .	

22 I connect the word to its synonyms and antonyms (opposites)
23 I use semantic maps (word trees)
24 I use 'scales' for gradable adjectives, for example: cold, colder, coldest; huge, big, medium-sized, small
25 I use the peg method (linking the word to one that rhymes with it) to learn the word, for example: two is a shoe, three is a tree, four is a door . . .
26 I use the loci method to learn the word (I connect the new word to a familiar place)
27 I group words together to study them, for instance, I relate the new word to other words from the same class, same meaning, same family, etc.
28 I group words together spatially on a page, notebook or card by forming geometrical patterns, for instance, columns, triangles, squares, circles, curves, etc.
29 I learn the new word in an English sentence
30 I group words together within a storyline, for instance: 'fish', 'cats', 'like'
31 I study the spelling of the word carefully
32 I study the sound of the word carefully
33 I say the new word aloud when studying
34 I image the word form
35 I underline the initial letter of the word
36 I configurate the word (I arrange the word in parts, letters, etc. in order to memorise it better)
37 I use the keyword method to learn the word (I connect the English word to a Spanish word by sound, for example, the English word 'cooker' sounds very similar to the Spanish word 'cuca')
38 I try to remember the word affixes and roots
39 I try to relate the word to its part of speech (noun, verb, adjective, etc.)
40 I paraphrase the word's meaning
41 I connect the word to cognates (words of similar form and meaning in Spanish, for instance: interested–interesado, history–historia, tomato–tomate)
42 I learn the words of an idiom together as if they were just one word
43 I use physical action to learn a new word
44 I use semantic feature grids, for example: man, woman = human beings; cat, dog = domestic animals (pets)
45 I use verbal repetition of the word
46 I write the word several times
47 I use word lists and revise them
48 I use flash cards with the representation of the word to consolidate meaning
49 I take notes about the word in class
50 I revise the vocabulary section in my textbook
51 I listen to tapes of word lists

52 I put English labels on physical objects
53 I keep a vocabulary notebook
54 I use English-language media (songs, movies, newcasts, etc.)
55 I test myself with word tests
56 I use spaced word practice to revise vocabulary
57 I skip or pass the new word (I ignore it)
58 I continue to study the word over time
59 I learn the word by using free associations from the new word, for example, from snow: winter, cold, coat, etc.
60 I use other strategies that do not appear in the list, for example:

Appendix 2

A. Full list of strategies for the discovery of a new word's meaning

Strategy	Rank		Percentage	
	male	female	male	female
Use a bilingual dictionary	1	1	83.2	85.8
Guess from textual context	2	2	74.9	80.8
Ask teacher for an L1 translation	3	4	72.8	73.2
Ask classmates for meaning	4	3	69.2	74.8
Analyse part of speech	5	5	64.5	66.2
Ask teacher for paraphrase/synonym	6	8	53.8	49.7
Check for L1 cognate	7	6	52.8	59.3
Analyse any available picture or gestures	8	7	52.0	56.2
Analyse affixed and roots	9	11	34.1	27.8
Use word lists	10	9	33.0	40.7
Discover new meaning through group work	11	10	25.1	28.1
Deduce meaning from flash cards	12	12	19.4	16.9
Ask teacher for sentence including the word	13	13	18.3	14.2
Use a monolingual dictionary	14	14	16.1	13.9

B. Full list of strategies for consolidating a word once encountered

Strategy	Rank		Percentage	
	male	female	male	female
Take notes about the word in class	1	1	78.1	84.8
Connect the word to cognates	2	3	59.9	69.9
Image word's meaning	3	13	56.3	50.0
Use English-language media	4	4	55.9	62.6
Say new word aloud when studying	5	2	55.8	71.5

Use new words in sentences	6	6	55.2	57.6
Verbal repetition	7	9	51.3	55.6
Use the vocabulary section of your textbook	8	5	50.5	61.3
Associate the word with its coordinates (items in its lexical field)	9	17	50.2	40.4
Written repetition	10	8	47.3	56.0
Word lists	11	7	45.9	57.3
Keep a vocabulary notebook	12	11	45.8	55.0
Relate the word to its part of speech	13	12	44.4	50.3
Study the spelling of the word	14	10	43.7	55.0
Study the word with a pictorial representation of its meaning	15	15	40.5	46.4
Connect the word to its synonyms/antonyms	16	18	38.0	40.3
Group words together to study them	17	16	34.1	44.4
Use 'scales' for gradable adjectives	18	21	32.3	34.4
Study and practise meaning in a group	19	20	30.5	35.8
Test oneself with word tests	20	14	30.4	48.3
Continue to study the word over time	21	22	30.1	33.8
Keep a word list/card which the teacher checks	22	23	30.0	33.1
Study the sound of the word	23	19	28.3	38.1
Remember word affixes and roots	24	27	28.0	23.5
Image word form	25	24	25.4	26.5
Use spaced word practice	26	30	23.3	20.5
Use free word associations	27	31	23.2	17.9
Use semantic feature grids	28	25	21.9	25.5
Connect word to a personal experience	29	26	20.4	24.2
Use keyword method	30	29	19.4	20.5
Paraphrase the word's meaning	31	28	19.3	22.2
Learn the words of an idiom together	32	32	17.2	17.5
Use the word with native speakers	33	33	16.8	17.2
Use loci method	34	37	15.4	9.9
Listen to tapes of word lists	35	35	15.3	12.3
Use other strategies	36	40	15.1	9.5
Skip or pass new word	37	39	14.3	9.6
Use semantic maps	38	34	13.3	13.9
Use physical action to learn the word	39	38	13.2	9.8
Group words together within a storyline	40	44	12.2	6.5
Configure the new word	41	41	11.5	8.6
Group words together spatially on a page	42	36	11.1	11.6
Use peg method	43	43	9.7	6.6
Put English labels on physical objects	44	46	8.6	3.6
Use flash cards to consolidate learning	45	42	7.9	7.6
Underline initial letter of a word	46	45	2.9	4.3

Appendix 3

A. Reported percentages for all discovery strategies

Determination Strategies	male	female
Anayse part of speech	64.5	66.2
Analyse affixes and roots	34.1	27.8
Check for L1 cognate	52.8	59.3
Analyse any available picture or gestures	52.0	56.2
Guess from textual context	74.9	80.8
Use bilingual dictionary	83.2	85.8
Use monolingual dictionary	16.1	13.9
Use word lists	33.0	40.7
Use flash cards	19.4	16.9
Social Strategies		
Ask teacher for an L1 translation	72.8	73.8
Ask teacher for paraphrase/synonym of new word	53.8	49.7
Ask teacher for a sentence including new word	18.3	14.2
Ask classmates for meaning	69.2	74.8
Discover new meaning through group work activity	25.1	28.1

B. Reported percentages for all consolidating strategies

Social Strategies	male	female
Study and practice meaning in a group	30.5	35.8
Teacher checks students' flash cards	30.0	40.7
Interact with native speakers	16.8	17.2
Memory Strategies		
Study word with a pictorial representation of its meaning	40.5	44.4
Form an image of word's meaning	56.3	50.0
Connect word to a personal experience	20.4	24.2
Connect the word with its coordinates (items in its lexical field)	50.2	40.3
Connect the word to its synonyms and antonyms	38.0	40.3
Use semantic maps	13.3	13.9
Use 'scales' for gradable adjectives	32.3	34.4
Use peg method	9.7	6.6
Use loci method	15.4	9.9
Group words together to study them	34.1	44.1
Group words together spatially on a page	11.1	11.6
Use new word in sentences	55.2	57.6
Group words together within a storyline	12.2	6.5

Study the spelling of a word	43.7	55.0
Study the sound of a word	28.3	38.1
Say the new word when studying	55.8	71.5
Image word form	25.4	26.5
Underline initial letter of the word	2.9	4.3
Configure word	11.5	8.5
Use keyword method	19.4	20.5
Affixes and roots (remembering)	28.0	23.5
Part of speech (remembering)	44.4	50.3
Paraphrase the word's meaning	19.3	22.2
Use cognates in study	59.9	69.9
Learn the words of an idiom together	17.2	17.5
Physical action when learning a word	13.2	9.8
Use semantic feature grids	21.9	25.5
Cognitive Strategies		
Verbal repetition	51.3	55.6
Written repetition	47.3	56.0
Use word lists	45.9	57.3
Use flash cards	7.9	7.6
Take notes in class	78.1	84.8
Use the vocabulary section in textbook	50.5	61.3
Listen to tape of word lists	15.3	12.3
Put English labels on physical objects	8.6	3.6
Keep a vocabulary notebook	45.8	55.0
Metacognitive Strategies		
Use English-language media	55.9	62.6
Test oneself with word tests	30.4	48.3
Use spaced word practice	23.3	20.5
Skip or pass the new word	14.3	9.6
Continue to study the word over time	30.1	33.8