BILINGUAL PROCESSING STRATEGIES IN A UNIVERSITY-LEVEL IMMERSION PROGRAM

Andrew D. Cohen and Kirk Allison

Introduction

It is likely that for some people, if not many, the use of one language or another for thinking while performing language tasks is not viewed by them as a matter of strategy selection or of strategizing. Rather, it is seen as a given. The fact is that for bilinguals and multilinguals — especially for those with at least minimal control of a second or third language, there **is** an element of choice involved in arriving at the language(s) used to perform cognitive operations (Cook, 1994; Cohen, 1995). Furthermore, the very choice of language of thought may have significant implications for ultimate success at learning and using the target language in a given situation. Methods of second language teaching and learning are often predicated on the principle that learners need to think as much as possible in a language that they wish to learn. The intuitively-based assumption has been that the more thinking through the target language the better. There is, however, some evidence from research on second-language reading and writing that selective translation into the native language may play a **positive** role for some, if not many, language learners in the comprehension, retention, and

production of written texts (cf. Kern, 1994; Hawras, 1996; Cohen & Hawras, 1996, with regard to reading; Jones & Tetroe, 1987; Lay, 1988; Friedlander, 1990; Kobayashi & Rinnert, 1992; Brooks, 1993, with regard to writing). Thus, it is not a foregone conclusion that elimination of mental translation is essential.

In addition, it has been hypothesized in the literature that learners create their own highly personal discourse domains of second language use. These domains are "internally-created contexts, within which. . . interlanguage structures are created differentially" (Selinker & Douglas, 1985, 190). It is reasonable to assume that nonnatives will be more prone to use the target language for performing cognitive operations in a discourse domain over which they have greater control. Selinker and Douglas (1985) gave the example of a discourse domain in civil engineering created by a native Spanish-speaking graduate student. They demonstrated in their research how nonnatives may be more conversant in talking about content in certain discourse domains than in others. There is also research which shows that even nonnatives with limited language proficiency may still be more conversant in talking about content within their professional discourse domain than less knowledgeable native speakers (Zuengler, 1993).

While the choice of language for performing cognitive tasks has been investigated in immersion programs at the elementary-school level (Cohen, 1994; Parker, Heitzman, Fjerstad, Babbs & Cohen, 1994), there appears to be little if any research data available concerning language choice for cognitive processing among university-level immersion students. In the elementary-school study, it was found that considerable mental translation was being used, possibly to the detriment of Spanish language acquisition. The current university-level study was designed in order to describe how second-language immersion students use both their native language and the immersion language to process meaning on academic tasks, and to compare their behavior with that of their peers taking immersion courses but not engaged in full immersion. The research questions were as follows:

1. To what extent do immersion and non-immersion students take notes in the immersion program language?
2. To what extent do the students engage in internal mental dialog in that language?
3. To what extent do they use mental translation during classroom activities and how helpful do they consider it to be?

Research Design

Sample

The University of Minnesota's Foreign Language Immersion Program (FLIP) provided a context for this study. In Spring of 1996 the program consisted of three sub-programs, for Spanish, French, and German, each providing a set of three content courses, a course on media, and a language support course. The content courses varied from language to language: French had courses in film, and a history and literature course on aspects of French colonialism; for German, the topics were the 60s' West German student movement and a survey of postwar history; for Spanish, there were courses on colonialism and historical epidemiology in Latin America.

For the purpose of the study, a *FLIP student* was defined as a student who took and remained in a full complement of four FLIP courses. Content courses were also open to non-FLIP students individually if space was available. In several cases, a student needed only a single course to complete a major and the FLIP course was relevant in content to that major. Instructors were native speakers of the language or had a high level of proficiency in the target language in addition to expertise in their subject area. If fully-enrolled FLIP students dropped one course or more, they become non-FLIP students. There were twenty-four FLIP students (14 in Spanish, 6 in French, and 4 in German FLIP respectively) in the program at the time of the study in the spring of 1996, as well as 17 non-FLIP students taking FLIP courses. It should be noted that non-FLIP students were often more "advanced" in a program

of language study than FLIP students. On the other hand, the non-FLIP students did not have the unique immersion environment supporting their language experience.

Instrumentation

The principle type of data elicited in this study was retrospective self-observation, using a verbal report questionnaire. In other words, it called for the inspection of specific, not generalized language behavior, some time after the mental event had taken place (see Cohen, 1996, for more on verbal report). An example of retrospective self-observation would be, "What I did during that lecture in French was to listen for key words and phrases, and to translate the difficult ones into English to see if they made sense to me." The instrument included items relating to the choice of language for note taking, the extent of internal mental dialog in the target language, the extent of mental translation, and the students' view regarding the helpfulness of mental translation.

Concerning *note-taking*, students were asked about the extent to which they took notes during the activity, and if they did, whether they did so in the target language. They were also asked if they had conducted a *mental dialog* with themselves in the target language while doing the activity at hand (e.g. while listening to a recorded lecture). With regard to *mental translation*, the respondents were asked about their "use of internal translation in language processing." This item consisted of three segments: 1) a yes/no question concerning use of mental translation, 2) a check-off box concerning the extent ("all the time," "often," "at difficult spots," and "a little") and direction of mental translation ("into English," "from English," or "back and forth"), and 3) an open-ended inquiry as to whether mental translation helped, and if so, in what ways.

Another source of data was from an out-of-class task and interview session. The task and interview session called for the collection of verbal report data during the processing of academic material in listening, reading, writing, and speaking tasks. The listening portion

involved stopping the tape to report strategies for dealing with challenging sections of a pre-recorded oral recitation. During the speaking task, students were interrupted twice — usually at hesitation points — and asked to provide verbal report concerning their language production strategies. Directly after completing the task, their performance was replayed to them, and they provided retrospective data on the processing and production strategies that they had employed.

Data Collection and Analysis Procedures

During the last three weeks of the ten-week quarter, the retrospective questionnaire was administered in all four French and German FLIP classes and in the Spanish support class.[1] The questionnaire was completed immediately after a regularly-scheduled class activity (either viewing a videotaped newscast or documentary film, listening to a lecture, discussing an article, or engaging in process writing). In the French courses, the choice of language for cognitive processes was investigated for all designated activities except writing, in the German courses the activities were "viewing a videotape" and "discussing an article," and for the Spanish support course the activity was only "process writing." In an effort to compare FLIP and non-FLIP students' language processing strategies, all students present in a class were encouraged to respond to the questionnaires distributed at the end of a designated classroom task. The respondents were encouraged to provide verbal report only with respect to their actual choice of languages, rather than what it ought to have been or what it usually was.

There were also a total of eight out-of-class task and interview sessions conducted with three German, three French, and two Spanish volunteer FLIP students. For the listening, reading and writing modules, students were encouraged to perform the tasks in the manner most natural to them, making use of note taking, the dictionary, and so forth. The material for all modules was selected as representative of authentic academic content. During the performance of these tasks, students

were requested to provide commentary concerning their language processing. After completion of this speaking task, the audio-tape was rewound and played back to the respondent who then provided an additional immediate retrospective commentary on their just completed task. During the performance of these tasks, the students were asked to note, among other things, the use of internal mental dialog through the target language, as well as instances of mental translation. Students were told that they could comment in the FLIP language or in English.

The data from the questionnaires were submitted to cross-tabulation, and a chi-square test of statistical significance was applied. The verbal report protocols for all eight of the verbal report task and interview sessions were transcribed. Then a content analysis of the responses for each subject on each of the four modular tasks was performed and summarized in tabular form.

Findings

The findings to be reported here are primarily from the retrospective questionnaire since these data most directly addressed the research questions posed above. While the task and interview sessions produced extensive data, only two findings appeared relevant to the focus of this paper.

The Extent of Note Taking in the FLIP Language

Sixty-seven percent of the FLIP students indicated that they took notes in the FLIP language, 10% indicated bilingual notes, and the rest did not specify. Fifty-four percent of the non-FLIP respondents indicated taking notes in the FLIP language, 16% indicated the use of both, while 30% did not specify. Thus, while a somewhat higher percent of FLIP students took their notes in the FLIP language, this difference was not statistically significant.

The Extent of Internal Mental Dialog in the FLIP Language

As to a depiction of what mental dialoging in the FLIP language actually meant, one student characterized it as follows:

> "Often after the lecture or conversation is over, I will replay the conversation in my mind with my own running commentary."

Of course, mental dialoging would also go on during the processing of material as well, not just afterwards.

It was expected that the FLIP students would engage in more mental dialog in the FLIP language since they were having to function in courses that were conducted entirely in that language. As it turned out, almost all the FLIP students indicated the use of mental dialoging (91%) during the task that was assessed, compared to a somewhat lower 79% for the non-FLIP students. This difference between the two groups of students was not, however, statistically significant. An explanation for this lack of a greater disparity between the two groups was that the two Spanish non-FLIP Spanish records presented scores that were uncharacteristically high in comparison to those of other non-FLIP students. One of the students had by far the highest mental dialog score in the data set.

The Extent of Mental Translation During Classroom Activities and its Perceived Helpfulness

With regard to the extent of use of mental translation, there was a notable difference between FLIP and non-FLIP students. About 60% of the FLIP respondents indicated that they had not used mental translation on the task (26 vs. 18), while for non-FLIP records, the result was the reverse, with only one-third reporting that they refrained from using mental translation (6 vs.13). This difference was statistically significant (chi-square significant at $p < .05$). It would appear that as a

consequence of participation in the immersion program, the students had the necessary language skills and the desire to do their cognitive processing more through the target language directly than by means of translation between languages. The non-FLIP students, on the other hand, seemed to be doing more translation in order to function in the FLIP classes. This enhanced capacity to function within the FLIP language exclusively, then, could be seen as a real plus of the immersion programs, opening up possibilities for new language experiences.

Since the initial question about the use of mental translation called for an "all or nothing" response, follow-up questions were employed to determine gradations of mental translation. So, for example, it was found that nine of the FLIP students who responded with a "no," indicated some use of mental translation, eight of these at the "a little" or "at difficult spots" level. Likewise, three of the six non-FLIP students who responded with "no" on the dichotomous question, also indicated some use when given the option of gradations of use.

It was actually in responses to the question about the perceived helpfulness of mental translation that some insights were gleaned as to its possible benefits and costs for these FLIP and non-FLIP students. Forty-five percent of the students provided responses to the question regarding the perceived helpfulness of mental translation for language processing. Eight of the FLIP students indicated that mental translation was helpful, two gave a mixed review, and two felt it did not help. Among the non-FLIP students, six reported finding it helpful and two did not. The following is a description of student responses regarding the perceived helpfulness of mental translation according to level of frequency.

Helpfulness of frequent mental translation

One FLIP student who indicated that she "often" went "back and forth" between languages, stated:

> "Yes [it is helpful]. It makes me think of how to say something in the opposite language and I get used to doing this. Therefore it helps me become more fluent."

This student, thus, viewed the use of mental translation not as a "crutch" but as an opportunity to develop flexibility and fluency in bilingual language use.

In addition, two German FLIP students reported frequent use of mental translation. One indicated that it generally helped "a lot," citing as an example the preparation of a speech, which was beyond the observed classroom task, which was a report on the reading of a text. The other German FLIP student indicated that it was helpful because it "helps me recognize and remember complex structures," hence supporting grammatical functions more than the content *per se*.

Helpfulness of some mental translation

A Spanish FLIP student who indicated "a little" use of mental translation was emphatic about its benefits as a strategy:

> "Yes, you learn and catch on so much faster and you lose much less in the translation."

Thus, English was used to organize a thought, which was then converted to the target language. Another Spanish FLIP student who indicated going back and forth "at difficult spots," noted:

> "Yes, it makes it very easy for me to translate to or from English and Spanish."

A French FLIP student who checked "a little" for mental translation "into English" and "back and forth," made the following observation:

> "Yes, I understand some things a little better when I know them in English,"

thus, calling attention to the function of comprehension consolidation, which can result from using the native language in comprehension processing.

Three non-FLIP students also indicated the benefit derived from occasionally using mental translation in order to deal with problematic vocabulary:

> "I may translate certain words into English so that I can then comprehend the whole sentence."

> "Words that I am uncertain about may be processed/ understood easier in one or the other language."

> "Sometimes the right word or phrase doesn't pop into my head. I'll have a nebulous idea, that I sometimes have to put words to in English."

One French FLIP student who indicated "a little" for all categories found mental translation beneficial, but not a cure-all:

> "Some, it helps my understandings."

A FLIP student who originally indicated "no" to the use of mental translation indicated on the questionnaire that she did go back and forth, although "sometimes it's more difficult to think in both languages" at the same time. Comments by a FLIP and a non-FLIP French student identified the identical draw back of mental translation as well as a benefit in a lecture context:

> "Yes, it helps me understand, but I miss the next section because I'm translating the previous phrase."

> "Yes, but it is easy to miss some of the lecture while translating."

Infrequent mental translation

A German FLIP student who indicated "no" stated that she had "no time for English when listening critically to a lecture or a speech." A Spanish FLIP student who indicated a lower level of mental translation described his use as follows:

> "I sort of use it — just to understand a phrase. But it's easier to just try and think in Spanish all the time."

Hence, this student expressed a desire to maintain more of a partition between the languages, with the preferred approach being to stay in the target language. Another German FLIP student wished to maintain a partition between the languages but indicated in the out-of-class task and interview session that English just seeped in, even when she did not want it to. This student, in fact, viewed the use of the native language while doing German tasks as invasive. She commented as follows while in the midst of the writing module:

> "When I'm just staring at it like this...when I am stuck, English does come, but I don't want to use it. So it's like I'm going through the English inventory, but I'm refusing it at the same time...I guess, as long as the English inventory does invade my thought process, then I feel like I start using a little bit of translation...When I get stuck, then all of the sudden...English starts creeping in because I am moving so slowly...it has more time to seep in."

Also in the out-of-class task and interview session, a French FLIP student had an insight about how reading in content matter in French

can prompt emotions, which for her was uncommon in traditional language classes. One claim about FLIP programs is that it offers the students an opportunity to experience a world of ideas and emotions directly through the FLIP language, rather than having them possibly distilled and filtered through mental translation into English. She was engaged in a text about French handling of immigration from North Africa, and she became upset at French immigration policies in the process:

> "So... and I guess it's kind of shocking to even read it in French, because I guess when I think, 'I'm reading in French,' I always think that it's going to be like non-offensive...because it's in French...I guess I'm surprised that I read French well enough to have an emotional response to something written in French."

Although there is no direct indication in her quote that she was avoiding mental translation, it would appear that the language experience she was recounting was a direct one, removed from the influence of English.

Discussion and Conclusion

On the basis of this sampling of college-level immersion and non-immersion students, it would appear that the program may have encouraged more cognitive processing directly through the second language used as a vehicle for communication. While we might also have expected the immersion program students to report more mental dialoguing in the immersion program language, this was not found to be the case, partly due to the high level of mental dialoguing reported by the two Spanish non-immersion students. Not so surprisingly, the immersion program students were apparently taking more notes through the immersion language than were the non-immersion students.

This investigation of language use in FLIP classrooms, then, produced some similarities between FLIP and non-FLIP students and one significant difference. It would appear that the effects of having all of one's courses taught through the target language for a quarter has some impact on the choice of language for the processing of tasks. It may, for example, help to reduce the amount of mental translation into the native language, and perhaps help to fine-tune the mental translation that does take place so that it yields greater benefit than when used indiscriminately and in excess. As suggested at the outset, there is literature suggesting that some mental translation can be a good thing, and quotes from some of the students in this study would underscore that point. The issue is one of extent of mental translation and whether it serves as valuable support or as a crutch — that is, whether it is used because it genuinely contributes to language processing. Advocates of university-level immersion programs would like to view this enhanced capacity to function within the FLIP language exclusively as a real plus of the immersion programs, opening up possibilities for new language experiences.

In conclusion, if the intention is to have FLIP encourage cognitive processing in the target language, this appears to be taking place, at least in the tri-language foreign immersion program offered at the University of Minnesota. The relative luxury of being able to take all of one's classes through the immersion language for an entire quarter was seen to have an impact similar perhaps to that experienced by students in the study abroad programs. The one advantage, as pointed out by one of the FLIP students, is that at the end of the day, the student gets some time off from constant exposure to the language:

> "The nice thing about FLIP, though, is that you can be punished all day...and go home and you don't have the cultural environment, which is fortunate and unfortunate, because it's a little relief, it's not so intensive then because you do get to escape."

Note

1 So as not to conflict with other research underway at the time, retrospective verbal report data were not collected during observational visits to the other Spanish FLIP courses.

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