The effects of three bilingual education models on linguistic creativity

DAVID LASAGABASTER

Abstract

This study analyses the effect of different bilingual education models on the development of linguistic creativity. The sample was made up of 252 students of grades 5 (10–11 year olds) and 8 (13–14 year olds) and the study was completed in the Basque Country. Students were enrolled in three different bilingual education models: model A (a regular program with the L2, Basque, as a subject), model B (a partial immersion program) and model D (a total immersion program). The results only showed significant differences in grade 8 in favour of model B and model D students when compared to model A students. Therefore, it is concluded (with caution) that the two bilingual programs available in the Basque Country have an effect on the promotion of linguistic creativity in the long run when compared to the monolingual program (model A), although it is stated the need for further research, preferably longitudinal studies.

1. Introduction

The authors of the studies completed in the first decades of this century (Saer 1923; Pintner and Keller 1922) agreed that bilingualism caused negative cognitive effects. It was thought that the mental effort made by bilinguals when learning two languages was responsible for creating an impediment which hindered their achieving the same degree of development as that of monolinguals in other cognitive aspects. However, these studies have come in for a great deal of criticism on the grounds that they lacked methodological reliability: criticism regarding control of some important variables, selection of bilinguals, or validity of measures.

However, research carried out in the last decades has made it clear that bilingualism can bring about cognitive advantages. Peal and Lambert's (1962) study represented a major step forward and is considered a key study due to its methodological thoroughness. Nevertheless, and in spite of the great ad-
competing in both languages, whereas non-balanced or dominant bilinguals are those who have attained a high level of competence in only one of their two languages (Hamers and Blanc 1989).

One of the studies from the first group is that of Doyle, Champagne, and Segalowitz (1978), who analysed a group of bilingual (French/English) and another one of monolingual subjects (English), whose age was around 4, and who had to tell a story. These authors counted the number of ideas as the index of creativity and the results showed that bilinguals were better at this task. Kessler and Quinn (1987) also studied the relationship bilingualism-creativity by examining a group of bilingual (Spanish/English) and a group of monolingual (English) students at grade 6. These subjects had to complete a science test in which the generated hypotheses were scored depending on their quality, their syntactic complexity, and the number of metaphors. Bilinguals significantly outperformed monolinguals. Braccini and Cianchi (1993) compared the outcomes of bilingual students (in several languages: Cambodian, Italian, Portuguese, German, French, English) with those of monolinguals in Italian from grades 1, 2, 3, 4, and 5. Students were invited to do the Torrance Test of Creative Thinking (Verbal and Figural forms) and in this research bilinguals did also outscore monolinguals. There are several more studies in which bilinguals have obtained higher scores in creativity than monolinguals in at least one of the tasks involved (Carringer 1974; Koulos 1986; Lambert, Just and Segalowitz 1970; Landry 1974; Okoh 1980; Ricciardelli 1992a, 1992b; Wang 1982).

It is also worth considering that two of the previous studies were done on pairs in which at least one of the bilinguals' languages was not Indo-European. In Okoh's study (1980) some of the bilingual subjects were speakers of Yoruba (a non Indo-European language) and English, whereas in Wang's study (1982) the bilinguals were speakers of Chinese and English. This suggests that not only are bilinguals in two Indo-European languages advantaged as regards creativity, but also those speakers of a non Indo-European language. It seems possible that the typological relatedness of the bilingual participants' two languages does not play a role of paramount importance concerning creativity. Thus being bilingual in Spanish and Basque should not negatively affect creativity scores, as Okoh's and Wang's studies have corroborated.

There is at least one study, Whitney (1974), where no difference whatsoever was observed between the monolingual and the bilingual sample, and just three where monolinguals obtained significant differences in their favour. The first of these studies, chronologically speaking, is that carried out by Gowan and Torrance (1965), in which bilingual participants (English/Chinese, English/Tamil, English/Malay) and monolinguals in English enrolled in grades 3, 4, 5, and 6 took part. These authors scored the figural form of the Torrance Test of Creative Thinking concerning fluency and the monolinguals obtained higher scores than their bilingual counterparts. However, it should be borne in mind that the
Researchers fall back on the explanation that the bilingual person, being able to count on two distinct systems, is more able to work out the arbitrary nature of the linguistic sign and of the system as a whole (Cummins 1976; Landry 1973; Peal and Lambert 1962; Siguan 1983), which makes the bilingual wonder about the functioning and characteristics of both systems and be more creative than the monolingual subject, who lacks the opportunity of comparing two systems. The bilingual subject conceptualises according to the general properties of the linguistic sign instead of depending on the linguistic sign itself. Similarly, those studies which distinguish between balanced and non-balanced bilinguals come to the conclusion that the former outperform the latter.

Nonetheless, and as Braccini and Cianchi (1993: 63) point out, the studies on the relationship between bilingualism and creativity are few, unrecent and scarcely conclusive. Baker (1996: 120) considers that research studies on this topic have methodological limitations and deficiencies, problems that need to be taken into consideration to ensure a fair judgement: some studies did not control some important variables like those related to age or socioeconomic status, some studies did not define the level of bilingualism, some samples were too small and this limited the possibility of generalization, not all studies found a positive relationship between bilingualism and creativity, and it is not clear whether the effects of bilingualism on creativity are permanent or weaken as time goes by. These studies were focused on subjects under the age of 17, but what happens at a later age?

Taken into account these problems to which Baker (1996) refers, it should be remembered that in one (Leamon and Goggin 1989) of the three studies in which monolinguals outscored bilinguals, this superiority only occurred with regard to non-balanced bilinguals. Likewise, in the other two studies (Gowan and Torrance 1965; Torrance et al. 1970) it cannot be stated with certainty that the results would have been the same, had the balanced and non-balanced subjects been dealt with separately within the bilingual group (Ricciardelli 1992c).

This research will endeavour to solve some of these methodological problems, but unfortunately the issue of the effect of bilingualism at a later age will remain beyond our control since the subjects are primary and secondary school students, and furthermore, our study is a cross-sectional one (a longitudinal study needs to be carried out in order to answer this interesting question).

3. Subjects and method of the investigation

Sample

The sample was made up of 252 students from Vitoria-Gasteiz, the capital of the Basque Country; half of them were enrolled in grade 5 (10–11 year olds) with an average age of 10 years and 3 months and the other half in grade 8 (13–14 year olds) with an average age of 13 years and three months. These
students were chosen from the three bilingual education models (42 from each grade and each bilingual education model) that currently exist in the Basque educational system:

**Model A:** Spanish is the vehicle language and Basque is a school subject (4–5 hours per week). Students have Spanish as their mother tongue. These students are given instruction only in Spanish, hence it cannot be considered to be a bilingual program. Moreover, their level of competence in Basque is very low (Gabiña et al. 1986; Lasagabaster 2000; Sierra and Olaziregi 1989) and they should therefore be regarded as monolinguals with a certain (rather poor in fact) knowledge of an L2 (Basque).

**Model B:** Both Spanish and Basque are vehicle languages. Although this is a rather heterogeneous program, in most cases Social sciences, Basque Literature and Language, Physical Education, and Arts and Crafts are taught in Basque, whereas Spanish is used as means of instruction in Mathematics and Spanish Literature and Language classes. The vast majority of students have Spanish as their mother tongue. This program is an example of early partial immersion. Model B students achieve a higher level of competence in Basque than model A students but lower than that of model D students, and a similar one as far as Spanish is concerned (Gabiña et al. 1986; Sierra and Olaziregi 1989). These students could be considered to be dominant bilinguals.

**Model D:** Basque is the vehicle language and Spanish is a subject (4–5 hours per week). Students may have Spanish, Basque or both languages as their mother tongue. In fact, in our grade 5 sample 37 students (88.1 %) had Basque as their L1, 1 (2.4 %) had Spanish as L1, and 4 (9.5 %) both Basque and Spanish as their L1. As for grade 8, 24 students (57.1 %) had Basque as their L1, 2 (4.8 %) had Spanish as their L1, and 16 (38.1 %) both languages as their L1. This is an early total immersion program in the case of students whose L1 is Spanish (the majority language) and a maintenance program in the case of those students whose L1 is Basque (the minority language). Model D students are as highly proficient in Spanish as model A and B students, whereas their proficiency in Basque is significantly higher. These students are the ones who are closer to balanced bilingualism (Lasagabaster, 2000; Sierra and Olaziregi, 1990). It should be remembered that Vitoria-Gasteiz is a Spanish speaking area, where Basque is the minority language. In a study done in 1989 only 2.04 % of the population used Basque regularly and in 1993, it was spoken by 2.56 %, which means an increase of 25.51 % in only four years (Irigo, 1994). Yet, it can be stated that the presence of Basque in everyday life is still very small. That is the reason why only those students who are enrolled in a total immersion program (model D) attain a high degree of proficiency in both languages and are regarded as balanced bilinguals. In any case, the two model D schools were chosen because they usually have a higher rate of Basque speakers, which gave us the opportunity of working with really balanced bilinguals.

Another issue to bear in mind is that since both Basque and Spanish are official languages in the Basque Country, both languages are taught at school from the outset, which is the reason why there was no possibility of having a control group who knew no second language. Furthermore, since the teaching of English as a foreign language in Spain starts at the age of 8 (grade 3), not even in the surrounding communities could we have found any monolingual group with no knowledge of a second language.

**Instruments**

These subjects had to complete Raven’s Progressive Matrices Test in order to control the non-verbal cognitive ability, and a general questionnaire in which they were asked some personal and background information (gender, age or socioeconomic status). Raven’s test was chosen because it can be completed individually or in group, and also because it is easier to administer with subjects under the age of 12 (the grade 5 sample in this study) for several reasons: a) it only needs a simple explanation, b) easy to complete, c) it is attractive for the students due to its gestalitic materials. It is made up of incomplete geometrical abstract figures, the questions following a multiple-choice format. It is considered to be a highly satisfactory tool and very suitable to measure the “g” factor (IQ) because its avoidance of any verbal support eliminates any cultural influences. This allowed us to match the three bilingual education models in each grade on gender, IQ, socioeconomic status and age. In no grade were there significant differences concerning these four independent variables between the three bilingual education models.

Competence in Basque (Olaziregi and Sierra 1988; Sierra and Olaziregi 1991) and Spanish (Sierra and Olaziregi 1986; Olaziregi and Sierra 1992) were measured via standardized tests, the Galbabe Tests. These tests were created by the Department of Education of the Basque Government with the aim of creating a battery of standardized tests that could be used in research. The grade 5 tests were made up of three activities: a listening activity, a reading activity and a writing activity. The listening activity consisted of ten sentences which were read aloud and the students had to choose the right one between four pictures for each of the sentences. In the second activity students had to read a text and answer some multiple choice questions about it. In the last activity they were given a picture about which they had to write. In the case of the grade 8 sample both the Basque and the Spanish tests consisted of two activities: a reading activity and a writing one, which were like those used in grade 5 but adapted to this stage of linguistic development.
On no occasion did the results of the Spanish test show significant differences between the three bilingual education models. In grade 5 the ANOVA analyses showed that the differences were not statistically significant (F = .671), as happened in the case of grade 8 (F = .336). As far as competence in Basque is concerned the differences did turn out to be significant, as T-test analyses revealed. Concerning grade 5, model D students outperformed both model A (p < .001) and model B (p < .001) students. The same results were achieved in grade 8, since model D students performed once again significantly better than model A (p < .001) and model B (p < .001) students in the Basque test. In both grades model D students did also outperform model A students (p < .001). These results coincide with those of the previously quoted studies (Gabía et al. 1986; Sierra and Olazirregi 1989; Sierra and Olazirregi 1990) and clearly show that model D students are the only ones who can be regarded as balanced bilinguals, whereas model B students could be termed as non-balanced bilinguals. The case of model A students is rather peculiar, because despite having spent seven years (in the case of grade 5 students) and ten years (in the case of grade 8 students) learning Basque their results in the Basque tests are extremely poor. That is why they are considered to be monolinguals with some “acquaintance” with the Basque language. Two main factors could be blamed for this: a) Students’ motivation to learn the minority language is extremely poor. b) The methodology is rather old-fashioned in most cases, apart from being taught just as a subject and never used as means of instruction.

The dependent variable of this study was measured via Torrance’s (1990) Thinking creatively with words. Verbal booklet A. The verbal form was chosen, instead of the figural one, on the grounds that our hypothesis would be related to the effect of different bilingual education models on linguistic creativity, which leads us to conclude that the verbal form was the most appropriate one. However, Torrance’s statement should be taken into account when he says that both the verbal and the figural form are equivalent to each other when it comes to measuring creativity. As an example, the first activity in the verbal booklet A consists in making the students write out all the questions they can think of about a picture. In this picture there appears a bended-knee boy dressed as a sort of clown looking at his reflected image in the water. Students are asked to write down all the questions they would need to ask to know for sure what is happening, while avoiding to ask questions which can be answered just by looking at the drawing. This test consists of six activities which are scored for fluency, flexibility and originality (Torrance 1981; 1990):

- Fluency: this represents the total number of relevant responses, with relevance being defined in terms of requirements of the specific task or activity.
- Flexibility: this represents a person’s ability to produce a variety of different kinds of ideas, to shift from one approach to another, or to use a variety of ideas.
- Originality: this represents the subject’s ability to produce ideas that are removed from the obvious, commonplace, banal, or established. It indicates a nonconforming person with much intellectual energy. From an operative point of view, Moran et al. (1983) define original ideas as those which are statistically unusual and of high quality.

In this study both fluency, flexibility and originality are measured, obtaining an average score by calculating the mean score of the marks obtained in them, because this average score “is perhaps the best overall indicator of creative strength” (Torrance 1990: 45). An example of the scoring system would be the following. A student from our grade 5 sample wrote these sentences with respect to the above described first activity from verbal booklet A:

```
- Why is he wearing such a strange hat?
  1  4  0
- What is his name?
  2  1  0
- Is he from a different historical period?
  3  15  1
- How old is he?
  4  1  0
- What is he doing?
  5  11  0
- Where does he live?
  6  7  0
- Why is he wearing pointed shoes?
  7  4  0
- What is he looking at?
  8  11  0
- How did he come here?
  9  8  1
- Why is he so happy?
  10  5  0
- Does he live by the stream?
  11  7  0
- Does he come here often?
  12  11  1
- Is it a puddle, a pond or a stream?
  13  14  0
- Will he fall into the water?
  14  11  0
```

The fluency score is defined as the number of relevant responses, the flexibility score as the number of flexibility categories used from those provided for each activity, and the originality score as a response which is not found on the zero-response list (a list that is made up of the most frequently occurring responses). Hence, this student would achieve the following score in the first activity: fluency = 14; flexibility = 8; and originality = 3.

**Method**

These tests were completed in class by students from six different schools in three sessions. In each case there was an interval of two to three days between the sessions. Students’ were offered the possibility of choosing the language in which to complete the creativity test and the general questionnaire, so that the language to be used would not hinder their performance and students could work in the language they felt most comfortable. Arramendi (1994) states that by giving the students this choice, the language in which the tests are car-
ried out will not affect the results, unlike previous studies within the Basque Country in which the presentation of the tests was only in Spanish. After having examined several verbal and non-verbal tests, Artamendi concluded that the verbal tests were precisely the ones where bilinguals turned out to show some deficit in comparison to their monolingual counterparts under the same conditions. This was due to their presentation only in the majority language (Spanish). The results were finally marked and codified so that they could be later be analysed via the SPSS statistical package.

4. Hypothesis

Bearing in mind the previous theoretical context, the following hypotheses were put forward:

4.1. Model D students will obtain better scores in linguistic creativity than model A students. Since model D students are the only ones who can be considered to be balanced bilinguals, their scores should be significantly better than those of model A students, whom we regard as monolinguals with some knowledge of Basque as L2.

4.2. Model D students will perform significantly better in linguistic creativity than model B students, as balanced bilinguals should outperform their non-balanced counterparts.

4.3. Model B students will score significantly higher in linguistic creativity than model A students. It is hypothesized that the better knowledge of the Basque language on the part of model B students should have some positive effect on the creativity results. As it has been proven that even a limited contact with an L2 affects positively a pupil’s cognitive ability (Yelland et al. 1994), the wider the contact with the L2 is the better the results they should achieve in the creativity test. As has already been commented on, model B students’ command of Basque is significantly better than that of model A students.

5. Analysis of the results

The ANOVA analysis showed the following results in grade 5 concerning fluency, flexibility and originality (Table 1).

Model A students achieved the highest scores in fluency and originality, whereas model D students were superior in flexibility. However, in no case were there significant differences between the three models. T-test analysis corroborated these results. The average score is calculated by adding the three separate scores for fluency, flexibility and originality, with the total divided by 3. As far as the average score is concerned, the conclusion to be drawn is the same, as no difference whatsoever was recorded (Figure 1).

<table>
<thead>
<tr>
<th>Model</th>
<th>Fluency</th>
<th>Flexibility</th>
<th>Originality</th>
</tr>
</thead>
<tbody>
<tr>
<td>Model A</td>
<td>45.71</td>
<td>45.02</td>
<td>46.57</td>
</tr>
<tr>
<td>Model B</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Model D</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Figure 1. Average score. Grade 5

Table 1. Scores concerning fluency, flexibility and originality

<table>
<thead>
<tr>
<th></th>
<th>Model A</th>
<th>Model B</th>
<th>Model D</th>
<th>F</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fluency</td>
<td>49.88</td>
<td>44.69</td>
<td>45.67</td>
<td>.565</td>
</tr>
<tr>
<td>Flexibility</td>
<td>44.76</td>
<td>50.38</td>
<td>52.81</td>
<td>1.651</td>
</tr>
<tr>
<td>Originality</td>
<td>49.62</td>
<td>48.45</td>
<td>48.19</td>
<td>.044</td>
</tr>
</tbody>
</table>

* p < .05    ** p < .01

Table 2. Scores concerning fluency, flexibility and originality

<table>
<thead>
<tr>
<th></th>
<th>Model A</th>
<th>Model B</th>
<th>Model D</th>
<th>F</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fluency</td>
<td>52.52</td>
<td>57.76</td>
<td>63.05</td>
<td>1.784</td>
</tr>
<tr>
<td>Flexibility</td>
<td>33.64</td>
<td>48.24</td>
<td>44.88</td>
<td>4.644**</td>
</tr>
<tr>
<td>Originality</td>
<td>53.36</td>
<td>64.90</td>
<td>65.00</td>
<td>3.898*</td>
</tr>
</tbody>
</table>

* p < .05    ** p < .01

Insofar as grade 8 students were concerned the results obtained in fluency, flexibility and originality are shown in Table 2.

In this grade Model D students attained the best scores in fluency and originality, whereas model B students were the first in flexibility. In the three model A students achieved the lowest scores. We resorted to T-test analysis to examine in more detail the differences between these three groups. It was observed that model B students outperformed model A students in flexibility (t(82) = 2.90, p < .01). Likewise, model D students significantly outscored model A students in originality (t(82) = 2.47, p < .01) and originality (t(82) = 2.54, p < .01). No significant differences were observed between model B and model
D students. On the other hand, significant differences were observed for the average score (Figure 2).

By means of the T-test analysis it was confirmed that both model B \( t(82) = 2.24, p < .01 \) and model D students \( t(82) = 2.64, p < .01 \) scored significantly higher than model A students.

6. Final considerations

One of our main aims was to endeavour to avoid those methodological deficiencies that studies on the relationship between creativity and bilingualism had undergone (Baker 1996), which was the reason why our three linguistic groups were matched on IQ, sex, socioeconomic status and age, while the students’ linguistic proficiency in the L1 and the L2 was also controlled. Most of the previous researches agreed in that bilingual subjects outperformed monolinguals, and when bilinguals were divided according to their level of competence in their two languages, they also coincided in that balanced bilinguals obtained better scores than non-balanced or dominant bilinguals.

Nevertheless, none of our hypotheses was borne out in grade 5, and only two (4.1. and 4.3.) in grade 8, since both dominant bilinguals (model B) and balanced bilinguals (model D) outperformed monolingual students (model A), whereas there was no significant difference in favour of the balanced bilinguals (model D) when compared to non-balanced or dominant bilinguals (model B), contrary to what was put forward in our second hypothesis (4.2.).

Hence, the first conclusion to be reached is that the positive effects of bilingualism on linguistic creativity seem to appear at a later stage of education, as no difference was observed depending on the bilingual education model in grade 5, but it did have an effect in the case of the grade 8 sample. However, this conclusion has to be considered with caution, since the subjects are not the same. There is a need to carry out longitudinal studies which may shed light on this issue, i.e., whether bilingualism fosters linguistic creativity in the long run (one of the questions addressed by Baker 1996).

Our results in grade 5 support those of Whitney (1974), the only study to which we have had access wherein no difference whatsoever was observed between the bilingual and the monolingual sample, whereas in grade 8 bilingualism does turn out to foster linguistic creativity as has been the case in several other studies (Braccini and Cianchi 1993; Carringer 1974; Doyle, Champagne and Segalowitz 1978; Kessler and Queen 1987; Koulos 1986; Lambert, Just and Segalowitz 1970; Landry 1974; Okoh 1980; Ricciardelli 1992a, 1992b; Wang 1982).

A second conclusion concerns the fact that there was no difference between balanced and non-balanced bilinguals in either grade. This leads us to hypothesize that the learning of an L2 may foster the development of creativity irrespective of the level of competence attained in the L2: at least once a minimum level is attained, since the teaching of the L2 only as a subject, as is the case in model A, does not bring about any positive cognitive effect concerning creativity. In fact Yelland et al. (1993) proved that even an hour of L2 teaching a week has an effect on a pupil’s cognitive ability. We are aware of the fact that we were unable to resort to a control group in which students had no contact with an L2 at all, but this was beyond our reach; this sort of control groups wherein students only have contact with one language is becoming more and more difficult to find in the European context (Hoffmann 2000; Lasagabaster 1998a), and in ours it can be said to be impossible.

In any case, these results show that the two bilingual programs (models B and D) available in the Basque educational system have a positive effect on the development of creativity when compared to the regular program (model A), although only when the grade 8 results are taken into consideration, which leads us to conclude that this effect may be observable in the long run. As it has already been said, more studies in different contexts are needed, and especially longitudinal studies that would undoubtedly help to clarify some of the issues left unresolved in this study.

References


