

Impact of Interlocutor and Task on First and Second Language Use in a Spanish Immersion Program

BY MAGGIE A. BRONER

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Maggie Araoz Broner

Center for Advanced Research on Language Acquisition
University of Minnesota, Minneapolis

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TABLE OF CONTENTS

1. INTRODUCTION	p.1
Immersion Education: Overview.....	p.1
2. REVIEW OF THE LITERATURE	p.3
First and Second Language Use in Immersion Classroom Settings.....	p.3
Child Development.....	p.16
Research Questions.....	p.21
3. METHODOLOGY	p.23
The Immersion School.....	p.23
Role of the Researcher.....	p.24
Description of Participants.....	p.25
Data Collection.....	p.28
Data Analysis.....	p.34
4. RESULTS	p.41
General Patterns of L1 (English) and L2 (Spanish) Use in the Classroom.....	p.41
Research Question I: <i>First and second language use according to interlocutor</i>	p.42
Research Question II: <i>First and second language use according to task</i>	p.58
VARBRUL Analysis for Research Questions I and II.....	p.76
Research Question III: <i>First and second language use according to some older middle-year or preadolescent characteristics</i>	p.91
5. DISCUSSION AND CONCLUSIONS	p.111
Discussion	
<i>Discussion pertinent to Research Question I</i>	p.112
<i>Discussion pertinent to Research Question II</i>	p.117
<i>Discussion pertinent to Research Question III</i>	p.121
Conclusions.....	p.126
Implications for Teaching and Future Research.....	p.128
Limitations.....	p.129
6. REFERENCES	p.131

LIST OF TABLES

Table 1. Transcription conventions used in this study	p.33
Table 2. Spanish (L2) and English (L1) tokens produced by each participant.....	p.42
Table 3. Spanish (L2) and English (L1) tokens produced by Leonard, Carolina and Marvin according to interlocutor: Adults vs. Peers.....	p.43
Table 4. Individual Spanish (L2) and English (L1) tokens produced by Leonard, Carolina, and Marvin when talking to an adult	p.44
Table 5. Spanish (L2) and English (L1) tokens produced by Leonard, Carolina, and Marvin when the teacher is in the vicinity during desk work.....	p.45
Table 6. Individual Spanish (L2) and English (L1) tokens produced by Leonard, Carolina and Marvin when talking to a peer.....	p.47
Table 7. Individual Spanish (L2) and English (L1) tokens produced by Leonard, Carolina and Marvin when speaking to self overall and during math.....	p.49
Table 8. Individual Spanish (L2) and English (L1) tokens produced by Leonard, Carolina, and Marvin when talking to each other.....	p.50
Table 9. Spanish (L2) and English (L1) tokens produced by Leonard, Carolina, and Marvin when talking to “other”.....	p.51
Table 10. Students’ self-reported language use in Leonard’s, Carolina’s, and Marvin’s fifth grade immersion classroom	p.54
Table 11. Students’ self-reported language use in other fifth grade immersion classrooms at Leonard, Carolina, and Marvin’s school.....	p.54
Table 12. Summary table for language choice with interlocutor	p.57
Table 13. Summary table for language choice with “The subjects as interlocutors”	p.57
Table 14. Leonard’s Spanish (L2) and English (L1) use according to the classroom activity	p.58
Table 15. Carolina’s Spanish (L2) and English (L1) use according to the classroom activity	p.59
Table 16. Marvin’s Spanish (L2) and English (L1) use according to the classroom activity	p.59
Table 17. Summary table for chi-square results between language choice and task-activity for Leonard, Carolina and Marvin	p.62
Table 18. Summary table for chi-square results between language choice and task-activity for Leonard, Carolina and Marvin without the factor transition.....	p.62
Table 19. Leonard’s Spanish (L2) and English (L1) use according to the overall content of the task.....	p.63
Table 20. Carolina’s Spanish (L2) and English (L1) use according to the overall content of the task.....	p.64

Table 21. Marvin’s Spanish (L2) and English (L1) use according to the overall content of the task.....	p.64
Table 22. Spanish utterance complexity according to content. Data is presented as the percentages of verbless, 1 and 2 s-nodes tokens produced by Leonard, Carolina and Marvin in creative writing (CW), science (S) and math (M).....	p.70
Table 23. Summary table for language choice with content of the task.....	p.71
Table 24. Percentage of Spanish (L2) and English (L1) use when Leonard was On-task or Off-task.....	p.71
Table 25. Percentage of Spanish (L2) and English (L1) use when Carolina was On-task or Off-task.....	p.72
Table 26. Percentage of Spanish (L2) and English (L1) use when Marvin was On-task or Off-task.....	p.72
Table 27. Summary table for language choice with “on/off” task.....	p.75
Table 28. VARBRUL Model which best fit the data: Leonard	p.77
Table 29. VARBRUL Model which best fit the data: Carolina	p.82
Table 30. VARBRUL Model which best fit the data: Marvin	p.86
Table 31. L1 vernacular words or phrases produced by Leonard	p.92
Table 32. Vernacular tokens produced three times or fewer by Leonard	p.92
Table 33. L1 vernacular words or phrases produced by Carolina	p.94
Table 34. Vernacular tokens produced three times or fewer by Carolina	p.94
Table 35. L1 vernacular words or phrases by other children.....	p.96
Table 36. Vernacular tokens produced three times or fewer produced by other children.....	p.97
Table 37. Summary of all Anglo preadolescent culture: English language mentions.....	p.98
Table 38. Number of turns per language related episode (LRE) produced during the 13 taped sessions in which at least one of the three children made a contribution.....	p.104
Table 39. Number of turns per language related episode (LRE) produced during the 13 taped sessions in which at least one of the three children made a contribution by school subject.....	p.105
Table 40. Number of metalinguistic tokens produced by Leonard, Carolina, and Marvin.....	p.106
Table 41. Number of Form-based and Lexis-based tokens produced by three fifth grade immersion students	p.108

LIST OF FIGURES

Figure 1. Leonard, Carolina, and Marvin’s language shift pattern: “On” and “Off” task.....	p.73
Figure 2. Scattergram for data in Table 29.....	p.78
Figure 3. Scattergram for data in Table 30.....	p.83
Figure 4. Scattergram for data in Table 31.....	p.87

INTRODUCTION

Immersion Education: Overview

There is much anecdotal evidence that suggests that as children in immersion schools become older, they do not use the L2 exclusively (Tarone & Swain, 1995); many variables may influence language choice in the classroom, such as interlocutor, content, and task. Taking into consideration relevant literature on language use in immersion classrooms (Bruck et al., 1976; Swain, 1985; Broner, 1991; Heitzman, 1993; Parker et al., 1995; Blanco-Iglesias & Broner, 1993, 1994; Tarone & Swain, 1995; Blanco-Iglesias et al., 1995; Chan, 1996; Swain & Lapkin, 1998; Fazio & Lyster, 1998; among others), this study focuses on a description of L1 (English) and L2 (Spanish) use by three fifth graders in an immersion classroom and identifies the contexts in which the L1 and the L2 are used in both peer-peer and peer-teacher interactions. In order to gain a more complete picture of L1 and L2 use we also look at developmental features, analyzing how some preadolescent characteristics may impact the use of the L1 and the L2 in the classroom.

REVIEW OF THE LITERATURE

The present study emerged from Nunan's (1992) call to carry out more research in actual classrooms, and Tarone and Swain's (1995) call for systematic observations of immersion students' interactions that take place in a natural context—the classroom. This chapter will focus on relevant research in Canada and the United States with particular focus on language immersion and on classroom studies.

Immersion has been defined (Swain, 1978) as a form of bilingual education in which children who share the same L1 receive content instruction throughout their elementary education in an L2. Genesee (1983) defined an immersion program slightly differently as

a type of bilingual education in which a second language (or second languages) is used along with the children's native language for curriculum instruction during some part of the students elementary and/or secondary education. (Genesee, 1983, p. 3)

First and Second Language Use in Immersion Classroom Settings

Given the fact that language learning occurs in the classroom, Nunan believes that looking at what actually goes on in classrooms (immersion or other foreign language classrooms) may shed light into the process of SLA:

If context is important in research outcomes, then we need far more of these classroom-based, as opposed to classroom oriented, studies. (Nunan, 1992, p. 103)

He asserts that SLA “classroom research” which is “actually grounded in the classroom itself” (p. 265) is very rare:

When one examines the literature on classroom observation and research, one is struck by the relative paucity of research [...] where the data were actually collected within genuine classrooms. (Nunan, 1992, p. 102)

Nunan examined fifty widely cited studies of L2 research carried out “in the classroom context” and found that only fifteen out of the fifty were actually carried out in real second language classrooms (1992, pp. 102-103). Since this figure relates to second language research in general, it can be argued that the number of L2 studies in immersion classrooms is scarce. In the following section I will review the few immersion classroom studies which are pertinent to this study.

In recent years, there have been a handful of studies carried out in the United States and Canada, which focus on the role of first and second language in the immersion classroom: Broner

(1991), Blanco-Iglesias and Broner (1993), Heitzman (1993), Parker et al. (1994), Tarone and Swain (1995), Blanco-Iglesias, et al. (1995), Chan (1996), and Swain and Lapkin (1998).

Recently, researchers and observers have reported that there seems to be a marked difference between the amount and the quality of the L2 used in class by children at different grade levels of immersion education in the United States (Broner, 1991; Carranza, 1995; Heitzman, 1993; Parker et al., 1994; Blanco-Iglesias & Broner, 1993; Tarone & Swain, 1995; Blanco-Iglesias et al., 1995) noting that while children in the early years of immersion tend to use the target language more, children in the later years tend to fall back into using their L1.

In a series of studies Heitzman (1993), and Parker et al. (1994) reported on a pilot study set up to look at language use by immersion students while they performed verbal cognitive tasks in mathematics (Heitzman, 1993, p. 6).¹ Because the two studies are based on the same set of data, I will combine relevant information from both.² Data were collected from one fifth grade classroom and one sixth grade classroom in a full immersion program in the Twin Cities, Minnesota. Three participants were from the fifth grade and five were from the sixth grade (Heitzman, 1993, pp. 7-8; Parker et al., 1994, p. 4).³ The English L1 participants were selected by the teachers in the program and represented a high, middle, and low level of Spanish ability (Heitzman, 1993, p. 7; Parker et al., 1994, p. 4). Data were collected through non-participant observation procedures and by eliciting verbal report protocols from the students as these were carrying out math tasks (Heitzman, 1993, p. 8; Parker et al., 1994, p. 7). The verbal reports and the teacher fronted observations were tape-recorded. Data were collected during a period of four months when the researchers visited the school in the morning twice a week for a period ranging between one to two hours (Heitzman, 1993, p. 8).

The purpose of the studies was to look at the L1 and L2 use “during the [students’] processing of classrooms tasks, [and] the extent to which learners use the native and the target languages with each other” (Heitzman, 1993, p. 5; Parker et al., 1994, p. 5). In other words, the authors examined the nature of the “internal language environment” and the “external language environment” (Heitzman, 1993, p. 5).

According to Heitzman’s data analysis, Spanish was only used for task-oriented activities (especially in teacher-fronted situations) while English was used in both task-oriented and social

¹ These two studies are part of a larger study (Cohen, 1994).

² Heitzman (1993) was an unpublished summa thesis.

³ The full sample consisted of 32 students in grades 3-6. (Parker et al., 1994, p. 5). The reported data in both Heitzman (1993) and Parker et al. (1994) is from fifth and sixth grades only.

functions (although there were only five instances of social functions recorded) (Heitzman, 1993, p. 23). The researcher also analyzed the language used while the children were solving problems and found that when the vocabulary was unfamiliar or the task was too difficult children tended to talk through the problem in English (Heitzman, 1993, p. 35). She also found that when the children “read out loud” instructions in Spanish the tendency was to stay in Spanish (Heitzman, 1993, p. 33).

The children self-reported using the L2 to carry out math problems, but according to Heitzman, she did not find much Spanish think-aloud use when students “performed cognitive operations” (1993, p. 30). The students also reported that they used the L1 when the problem was too hard or required many operations (Heitzman, 1993, p. 37). The author concludes that, according to her observations children “may not be as immersed in the target language as educators, administrator, and teachers would hope they would be” (Heitzman, 1993, p. 50).

Parker et al. (1994) further explored patterns of learners’ language use which emerged from the external and internal language environments⁴ in immersion classrooms (Parker, 1994, p. 4). The analysis of language use is based on 51 instances for all participants.

Each instance was at least one adjacency pair, but it is important to keep in mind that many instances were much longer than one adjacency pair. For example, some instances in English went on for many minutes: whereas, others in English or Spanish were very short. (Parker et al., 1994, p. 12)

Students used the L2 (Spanish) in 70% of the instances in teacher-fronted situations, while they only used the L2 27% of the time in task-oriented small group activities (Parker et al., 1994, p. 13). As reported in Heitzman (1993), Spanish was not used for social purposes in the fifth and sixth grades. In 15 task-related activities, the authors found that only 4 instances of small group situations were carried out in Spanish while 11 instances of the same situation occurred in English. According to the authors,

Spanish [was used] with the teachers in teacher fronted situations and sometimes on task-related activities in small group work; English with classmates in non-teacher fronted situations for both task-based and social purposes. (Parker et al., 1993, p. 17)

Parker et al. support their findings with data from self-report on language use (1994, p. 14). According to the authors’ findings, the students reported that the L2 was used with the teacher and “very occasionally with friends” (Parker et al., 1994, p. 12). Furthermore, the children

⁴ As defined in Heitzman (1993).

reported that they used English when they felt that their vocabulary in Spanish was not comprehensive enough to talk about things that were not school-related. (Parker et al., 1994, p. 14)

In non-teacher-fronted situations the learners more often tended “to use Spanish in small group task-oriented interactions than in other non-teacher-fronted situations” (Parker et al., 1994, p. 17). The L2 was used to perform a limited set of speech acts while English was used for a wide range of these (Parker et al., 1994, p. 17). An interesting observation made by the authors is that the L2 was used when learner output (written or verbal) was monitored by the teacher, i.e. in a written report, on the chalkboard, etc. (Parker et al., 1994, p. 22). The authors found an even more specialized use of the L1 and the L2 when they analyzed problem solving interactions among learners (Parker et al., 1994, p. 24). Learners favored the use of the L1 “during many of the verbalized cognitive processes that accompany the performance of classroom tasks” (Parker et al., 1994, p. 24). Furthermore, learners switched from the L2 to the L1 when they encountered problems with their L2 competence or when the actual problem was too difficult (Parker et al., 1994, p. 25).

Heitzman’s and Parker et al. have several weaknesses. In the first place, the claims about language use are based on only 51 instances which included at least one adjacency pair. Furthermore, it is important to note that Heitzman was a native speaker of English with very little Spanish proficiency. The author elicited verbal reports by sitting next to the children and asking the children in English to “talk out loud” while they were carrying out particular tasks (Heitzman, 1993, p. 9). It is not surprising then, that interactions with the children seemed to be primarily in English (Heitzman, 1993, p. 15).

Use of L1 by an adult in this context could have had consequences for the use of the L2 during these particular sessions—thus, potentially, skewing the data toward the L1. It is important to note that Heitzman (1993, p. 41) acknowledges that the fact that she prompted the children in English may have had an effect on their use of English as opposed to Spanish. Heitzman concludes her study stating that more empirical research on language use in immersion classrooms remains to be carried out. The limitations mentioned for Heitzman’s (1993) study also hold for Parker et al. (1994), basically that these claims are based on very few instances.

Carranza (1995) looks at the role of first and second language use in interactions between teachers and students in a two-way immersion program in Washington D. C. (p. 170). The languages in these programs are Spanish and English, each used 50% of the instructional period

(Carranza, 1995, p. 170). The study is based on observations carried out in three schools, and is based on “student-initiated exchanges” only (1995, p. 171).

According to Carranza, when the interlocutor is an adult native speaker of Spanish, the students tend to use Spanish (1995, p. 174). But in the classroom, fifth graders were observed to use both the L1 and the L2 when addressing the teacher even in the Spanish-portion of the day, while this was not the case for the third graders (Carranza, 1995, p. 175). When the interlocutor is another peer, Spanish speaking dyads and dyads composed of one “Spanish-background and one English-background child, both show a similar tendency to speak in English even in the Spanish portion of the day” (Carranza, 1995, p. 174). Several factors conditioned the use of L1 or L2, including how strictly a teacher enforced the “language rules” (1995, p. 175). Carranza’s observations were unsystematic. There is no mention of how many hours were observed, the methodology used, what grade levels, or how many students were involved.

In a non-published pilot study, Broner (1991) reports on the use of Spanish (L2) and English (L1) in an immersion school in St. Paul, Minnesota. The researcher carried out informal observations in several immersion classrooms in a K-6 total immersion program during the Fall of 1991, in kindergarten through third grade. All K-3 classes were observed for a period of one and a half hours and were visited at least twice. Other grade levels were visited for shorter periods of time. The number of students in each class varied from 16 to more than 20 students. Each class had a teacher, either a native speaker of Spanish or a non-native, and a teacher aide who was a native speaker. The role of the researcher was as a non-participant observer who did not ask the children questions or interact with them during class time. The researcher visited each classroom, with permission from each teacher, and took notes on first and second language use, extralinguistic factors which were present, i.e. interlocutors, physical environment, as well as classroom activities which the children were carrying out at that moment. The researcher did not concentrate on a particular number of subjects, but on whole classroom observations. Broner also observed each group throughout different activities such as lunch, recess, and other school related activities, such as a school play.

This study found that the children tended to speak Spanish in the classroom through second grade, except in peer-peer interactions in kindergarten and first grade. In first grade,⁵ children used both the L1 and the L2 in the classroom with an increased use of the L2 (Spanish) in more structured (i.e. teacher-centered) activities; they showed no overt unwillingness to speak the L2.

Hence, the children were not diverging in spirit from the “Spanish Only” sociolinguistic rule in the classroom. In second grade, there was an observable increase in the use of Spanish in all contexts. However, by third grade, a shift to English was evident. According to the author’s observations, this shift to the L1 was especially evident in

instances where they [the students] were ‘Socializing’ rather than doing an academic activity. Although they are more proficient in Spanish and can carry out more elaborate tasks, they seem to use English as a reaffirmation of their ‘identity’.... At the school speaking more Spanish enables the children to advance in their studies, but English is not only their L1 but also the language of the outside world. (Broner, 1991, p. 16)

Because Broner’s (1991) report was based on nonsystematic observations, she proposed a series of research questions that the area of immersion research should address in order to shed light on the use of the L1 and the L2 in immersion classrooms, arguing that researchers need to understand the social motivation behind the children’s language choice, and need to look at the input that the children are receiving from the outside world as it is reflected in the classroom.

Blanco-Iglesias, Broner, and Tarone⁶ (1995) tried to answer some of the research questions posed by Broner (1991), using data gathered by Blanco-Iglesias and Broner in a full immersion program in a large Midwestern city in the United States, during the Spring of 1994 in a pilot study from which the research questions for this study surfaced. Blanco-Iglesias and Broner focused on observations and notebook data (Beebe, 1994) gathered during six weeks in Spring 1994 in a K-5 full immersion Spanish language program located in Minnesota. Children were fully immersed in the L2 (Spanish) from kindergarten to grade 1. English was introduced for the first time in second grade when English language arts were taught for half an hour a day. As in other immersion programs, the amount of time devoted to English, reading and language arts increased from 30 minutes in second grade to approximately 60 minutes in third and fourth to 90 in fifth. Fifth grade was the end of elementary education at this immersion site.

Using notebook data gathering techniques (Beebe, 1994, p. 3)⁷ the researchers observed language use in relation to interlocutor and task in these immersion classrooms from kindergarten to grade five (Blanco-Iglesias et al., 1995, p. 243). The researchers focused especially on second

⁵ It is important to note that observations were carried out at the beginning of the school year. The first graders had only been in first grade for a few weeks.

⁶ This is the published paper based on the pilot study for this research project. I will review relevant parts of it here and other parts in section (5) to set up the research questions.

⁷ Beebe lists instances (such as a courtroom, a classroom, a marital argument, to name a few) in which note taking is a valuable data-gathering technique (1994, p. 3).

through fifth grade. Several classrooms were observed more than once and each observation period lasted from 10 to 50 minutes each (p. 242). The researchers observed and took notes on first and second language use in different settings over a 6-week period in 14 different classrooms, the hallways, the library, the computer room, the bathrooms, during physical education, during recess, during lunch, in the main office, outside the school grounds, as well as when children were interacting with peers, teachers, and other adults in all of the above mentioned settings.

Blanco-Iglesias and Broner gathered naturally occurring data. Inside the classrooms, the researchers sat at the back of the room and took notes on first and second language use in each classroom: not only the medium of the observed language sample (English or Spanish) but also a transcription of what was actually said. The language samples were accompanied by detailed notes on the physical environment, the participants, the kind of activity and any other information that was considered to be helpful in understanding a particular observation. Notebook data were transcribed using the procedures described in Beebe (1994), which included immediate facilitated recall (Blanco-Iglesias et al., 1995, p. 242). After every session, both researchers edited and typed the notes and then cross checked them for accuracy.

Observations from this immersion program indicated that there seemed to be a marked difference in the children's use of the L1 and L2 between the lower and upper grade levels.

We see that teachers consistently used Spanish to address the children in every grade level. The children's use of Spanish and English, however, varies from grade to grade. (Blanco-Iglesias et al., 1995, p. 245)

In first and second grades English was used somewhat by children in peer-peer interactions, especially in contexts outside the classrooms. In third grade children spoke only Spanish in all contexts in and out of class (Blanco-Iglesias et al., 1995, p. 246). Children at this grade level not only used the L2 in peer-peer interactions but also produced difficult grammatical distinctions in Spanish, such as preterite vs. imperfect (Blanco-Iglesias et al., 1995, p. 246). By fourth grade an increased use of English in the classroom and a decrease in linguistic accuracy was observed (1995, p. 247). This observation was striking given the fact that third graders showed such proficiency both in the quality and quantity of the L2 used. The authors note that there seemed to be a specialized use for the L1 and the L2 in these upper grades in peer-peer interactions: English for socialization and for topics not related to school work and Spanish for academic topics (Blanco-Iglesias et al., 1995, p. 248).

Blanco-Iglesias et al. (1995, p. 247) also found that cultural differences between native and non-native speaking teachers seemed to have an observable impact on the language choice of the

students. In one fourth-grade class it was noted that the teaching style of the Spanish native teacher triggered the overt use of English by the students, a behavior which was never noted with the English native teachers. The general atmosphere in the class was very tense. In several instances the authors observed behavior that could be interpreted as a culture clash (Blanco-Iglesias et al., 1995, p. 253). One such instance took place when the fourth-grade teacher introduced the two researchers as being in the class to observe how well the children spoke Spanish and how well they behaved (Blanco-Iglesias et al., 1995, p. 247) This was the first and only time the researchers were introduced in such a fashion in this school. After the teacher introduced the researchers, as stated above, one child said “Cool”! in English which was an overt violation of the Spanish Only sociolinguistic rule. In the same class, the teacher asked another child a question:

The teacher then asked “Jane” a question (in Spanish) and “Jane” responded in English.

Teacher:	¡Muy mal Jane! Todavía lo puedes mejorar si lo dices en español. <i>Very bad, Jane! You can only improve this situation [speaking English in front of observers] if you speak in Spanish</i>
Jane:	Tú hablas inglés. <i>You speak English. (very ironic voice)</i>
Other students:	¡Muy mal, muy mal!(to teacher) <i>very bad, very bad!</i>

(Blanco-Iglesias et al., 1995, p. 247)

In this exchange, Jane overtly reacted against the teacher because the teacher had put her on the spot in the previous turns. This is the only time we saw a teacher use this kind of language with the children, and in this particular case the teacher had only recently begun teaching in the U.S. and was not aware that within this context teachers generally do not shame students publicly.

Blanco-Iglesias et al. found also that in fifth grade there was an increased use of the L1 in peer-peer social interactions (Blanco-Iglesias et al., 1995, p. 249). The authors conclude with a call for more systematic research to further explore the link between the use of the vernacular and the L1 in these classrooms (Blanco-Iglesias et al., 1995, p. 252).

Tarone and Swain (1995) explore the reports of teachers and researchers alike (e.g. Blanco-Iglesias et al., 1995) that as immersion students progress through grade levels there is an observable decrease in the use of the L2. Based on these reports and interviews with a Canadian French immersion student, the authors suggest that in immersion settings a *diglossic* situation may emerge as students progress through the grade levels (Tarone & Swain, 1995, p. 166). This

diglossia is reflected in the specialized use of the L1 and the L2, the first being used in social interactions while the L2 is reserved primarily for on-task academic interactions with the teacher (Tarone & Swain, 1995, p. 167). One reason for an increased use of the L1 in the classroom in higher grade levels is that there are more social interactions in the classroom.

Suzannah suggests that she used a different linguistic code depending on who was the interlocutor (i.e. parent, teachers, peers) and that the immersion school had only taught her the language style that was appropriate to use with adults, but not the language style that she needed to use in social situations with peers in French (Tarone & Swain, 1995, p. 172).

In the French immersion literature, there are several early mentions of the role of the L1 and the L2. Bruck et al. (1976) noted that students attending both French full immersion and late immersion programs reported that they used the L2 for “school activities while English remains the language for most other activities” in and outside of the classroom (Bruck et al., 1976, pp. 54-56). Swain (1985) points out that in full immersion programs the target language is rarely used outside the school setting (1985, p. 235). Swain also points out that L2 input comes from “native-speaker teacher talk and non-native peer talk” (1985, p. 235).

More recently, Fazio and Lyster (1998) in a study which examines the difference between L2 learning in immersion and submersion classrooms in Canada, note that in full immersion programs, “English is part of the curriculum and is generally the language of social interaction and administrative activities” (p. 315).

Chan (1996) and Swain and Lapkin (1998) are two recent studies which explicitly examine the issue of language use and interaction in classrooms in two Canadian French immersion programs. Chan (1996) reports on a study of first language use by immersion students attending a French full immersion program in Canada. The purpose of the study is to identify contexts in which these students incorporate English words in their oral production of French. The author also examines teachers’ responses to students’ code switching (Chan, 1996, p. ii).

Chan collected data to describe the contexts of code switching which are present in immersion situations, where the children’s maternal language is the same as the majority language. Chan’s detailed analysis was based *only* on those instances of code switching which occurred during classroom interactions with the teachers and classmates (Chan, 1996, p. 34). Data were collected from 92 children and their teachers in five middle elementary classrooms, grades 2 through 6 (Chan, 1996, p. 20). All participants were native speakers of English. Data were collected through

non-participant observation procedures:⁸ specifically, Chan took detailed notes on those utterances in which she heard the children code switch to English (Chan, 1996, p. 24).

The researcher recorded the exact wording of code switched utterances as they occurred during observations, the student's name in brackets following each utterance, and a description of the contexts in which the code switched utterance had occurred was written. (Chan, 1996, p. 30)

Data were collected during the 1995-1996 school year, and were based on "10-17 hours of observations conducted in each of the classrooms" (Chan, 1996, p. 27). Once data were gathered and transcribed, Chan counted and analyzed 482 instances⁹ of code switching in French immersion classrooms. Overall, according to her calculations, children only code switched in immersion classroom interactions 2.7% of the time (Chan, 1996, p. 38). According to Chan's data analysis, there were three major reasons for code switching represented in her data: lack of knowledge (153 instances, or 31.7%); reasons other than lack of knowledge (199 instances, or 41.3%); and teaching and learning strategies (118 instances, or 24.5%).

The author describes in detail how each code switch is categorized. Under the category lack of knowledge, Chan includes code switches in which English was used to substitute for French equivalents (Chan, 1996, p. 36). Examples included:

"A vos places" (Teacher C)
"C'était un **stampede**." (student)
(Chan, 1996, p. 45)

Under a category "reasons other than lack of knowledge" (1996, p. 37), there are two sub-categories under this category: "learning French in isolation" and "emotion." "Learning French in isolation" included a set of reasons such as

person, space, direct quotes, music, books, movies, events and organizations, things (toys, games, foods), and 'French ending with an English verb', and 'use word that sound like English and interference. (Chan, 1996, p. 43)

⁸ However Chan acknowledges that there were instances in which she felt compelled to interact with the children "to ensure that students were aware of safety precautions as well as to instruct students when they were seen performing tasks incorrectly" (Chan, 1996, p. 28).

⁹ It is important to note that Chan uses the terms "utterance" and "instances" interchangeably. She says

.... the word 'utterance' will be used to refer to a sentence, and the word 'instance' will be used to refer to an interaction usually consisting of several utterances (Chan, 1996, p. 37).

However, when she talks about percentages of the data the author states that these are based on 482 'utterances' but they seem to include instances as well (Chan, 1996, p. 40).

An example of 'space' is:

Do you have any candy? (R)
No, I don't have any more. (B)
R is in the hallway, speaking to B who is just inside the door of the classroom.
The students know that French must be spoken in the classroom at all times but the hallway is an ambiguous area, where either English or French are spoken depending on the circumstances and the language of the person with whom the students are interacting. (Chan, 1996, p. 62)

It is interesting, in light of Tarone and Swain's (1995) hypothesis, that the author found examples of 'kid talk' which are words that are part of the kid culture (i.e. booger, spit, etc.) but which are considered taboo in the school context.

The students used English words to refer to topics that may be considered disgusting or taboo to adults, but that are often a source of interest and delight to children. (Chan, 1996, p. 68)... A lack of knowledge is the most likely reason for which the words used in this section were said in English. (Chan, 1996, p. 67)

Chan did not use a separate category for these instances of 'kid talk.' They seemed to have been coded under the category 'studying French in isolation.' 'Emotion' was also categorized under "reasons other than lack of knowledge." Chan defined examples of emotion as

anger, annoyance, frustration, pain, excitement, silliness or mischievousness, relief after a tense situation, attempt to maintain order, distancing. (Chan, 1996, p. 43)

Some examples of 'emotion' included:

anger.
"A, tu ne joues pas! Vas t'asseoir dans le coins." (Prof. D)
"C'est pas **fair**! Tu es juste comme mon maman!" (A)
(Chan, 1996, p. 81)

Chan also recorded instances in which French was used as the language of 'neutrality' or 'distancing' where a student used French to try to protect himself from an accusation in English (Chan, 1996, p. 85).

"C. letdo all the work."
"Non, Non, Je commence mais fait le plus vite." (C, a little sheepish)
K comments that C let his partner do all the work, and C is embarrassed because he knows that K's comment is true.
(Chan, 1996, p. 83)

Last, instances where English was used as a learning instrument included 'confirmation', 'information clarification' (19 instances out of 118). Instances of English used as a teaching instrument included 'explanation', providing an unknown word', use of French to explain',

'reminder to speak French' (99 instances out of 118) (Chan, 1996, p. 37). These categories referred to what the teachers did in these classrooms. Chan notes that although she recorded instances in which English was used by the teachers this was not the norm:

French was the language used for communication and instruction in all of the classes, most of the time, with the instances of English-use recorded for the present study being exceptions to the 'French only' rule of the classroom. It was interesting to note that although the students seemed to prefer speaking in English, judging from their tendency to switch to English in situations where the use of French was not required they were nonetheless able to communicate in French relatively easily and effectively. (Chan, 1996, p. 91)

Chan concludes with an extensive proposal of the teaching implications, stating that the analysis of the contexts in which English is used can be helpful in reviewing curricular goals for immersion programs.

In a final study, Swain and Lapkin (1998) explore the role of interaction in the process of second language learning in a French immersion program, as part of a larger study in four eighth grade classrooms. They examine data produced by two students while they were carrying out a collaborative task, the writing of a short narrative.

The data are drawn from an interaction between Kim and Rick—two students out of 35 in the class. Kim is more advanced in her French skills than Rick.¹⁰ The particular task that they and other student pairs in the class perform is a "jigsaw task":

... student dyads received a set of numbered pictures (each member of the dyad getting half the pictures) which told a story. The students were to work out the story together and then write it out. Prior to doing the task, the class was given a short mini-lesson (5 minutes) on French reflexive verbs. (Swain & Lapkin, 1998, p. 324)

The authors focus on the "language-related episodes" which occur in the dyadic interactions (Swain & Lapkin, 1998, p. 325). A language-related episode (LRE) is defined as

.... any part of a dialogue where the students talk about the language they are producing, question their language use, or other- or self-correct. [These] were classified as either 'lexis-based' or 'form-based.' (Swain & Lapkin, 1998, p. 326)

Quantitative analysis reveals variation among pairs of students carrying out the task. Specifically, in carrying out the narrative task, Kim and Rick stay "on-task" for 23 minutes, while the average number of on-task minutes is 8.8 for all two-student dyads combined.

The authors find in analyzing their LREs that Rick and Kim generated and tested hypotheses about the L2 as a result of their collaborative dialogue. Rick was able through collaboration to shift from an incorrect use of a particular lexical item “reve-matin” to the correct item “réveille-matin” (Swain & Lapkin, 1998, p. 329). The authors also observe how the subjects were able to extend the use of L2 knowledge to new L2 contexts. Kim “invented” a new word “sonnement” which does not exist in French by applying a French morpho-phonological rule.

....Kim and Rick [are] applying rules to new contexts, albeit incorrectly. They solve a lexical problem in much the same way as native speakers might coin a new word, by using their existing language knowledge as a tool to create new knowledge. (Swain & Lapkin, 1998, p. 329)

Swain and Lapkin also find instances in which the students used their L1 “as a tool to regulate their cognitive activity” (1998, p. 329).

- Kim: Du réveille-matin qui sonne? Does that sound OK?
(*of the alarm-clock that rings?*)
- Rick: Or what about...Jacqueline se lève a cause du...du réveill-...yeah, qui sonne.
(*Or what about...Jacqueline [the girl in the story] gets up because of the...of the alarm-...yeah, that rings.*)
- Kim: OK. Or you can say, du réveille-matin, or du **sonnement** du réveille-matin.
(*OK. You can say, of the alarm clock, or the ring of the alarm clock.*)
- Rick: No, réveille-matin qui sonne.
(*No, alarm-clock that rings.*)

(Swain & Lapkin, 1998, p. 329)

Based on the analysis of qualitative and the quantitative data, Swain and Lapkin believe that their study of Kim’s and Rick’s LREs supports the claim that dialogue can be viewed “as both a means of communication and a communicative tool” (p. 333).

In summary, there have been relatively few studies which have looked at the role of first and second language use and interaction in immersion classrooms. The issues that have been studied with respect to first and second language use include: the effect of the interlocutor (Broner, 1991; Heitzman, 1993; Parker et al., 1994; Tarone & Swain, 1995; Chan 1996), the effect of the type of task and the content of the task students are carrying out (Heitzman, 1993; Parker et al.,

¹⁰ This difference in proficiency was preferred in order to test the Vygotskian notion of scaffolding which occurs when two participants of different knowledge levels interact (La Pierre, 1994).

1994; Chan, 1996; Swain & Lapkin, 1997), and the use of the L1 to help learners reflect on L2 in collaborative discourse (Swain & Lapkin, 1998).

Hence, while the use of both L1 and L2 in immersion classrooms has been acknowledged in the literature there seems to be insufficient information on the extent of L1 use and particularly on the reasons why a shift in preference for one language to the other across grade levels might take place. This lack of information is in part due to a failure to systematically study this issue, and in part due to differences in data collection and data analysis techniques which were employed in each study. More rigorous data gathering techniques used in natural immersion classrooms and data analysis procedures which include statistical analysis of larger bodies of data are needed in order to expand and test some of the claims and hypotheses which have emerged from the above mentioned studies.

Child Development: Characteristics of Middle Childhood

Piaget referred to the age period 7 to 11 as the stage of *concrete operations*, Freud referred to it as the *latency period*, and Erikson¹¹ referred to this stage as the crisis of *Industry vs. Inferiority*. Erikson (1959) defines industry as the child's view of his/her capacity for productive work. At this stage, children—through some kind of schooling¹²—are able to learn tasks that are beyond the here and now of the home. They are now able to learn math, biology, social sciences, all activities that give children a sense of practical accomplishment, of industry. In this respect, *growing up* is divided into different parts—i.e. the child's development of his/her body which in turn is tied to the development of the mind (Erikson, 1959). Children learn to control their body and mind through play—socializing with peers—in which children try out different roles, identities, jobs, etc. Furthermore, as children spend more time in school and away from home, as they interact more and more with peers than parents, and as their cognitive abilities develop, children's view of themselves, of social relationships and of others is increasingly more complex (Berk, 1993, p. 458; Erikson, 1959; Hartup, 1983; Hoyle & Adger, 1998).

While Erikson talked about the role of tasks and play in the development of a sense of competence and self-efficacy, Vygotsky (1981) talks about the role of these issues in the

¹¹ Erik Erikson (1959) proposed a theory of human development from a psycho-social perspective. While Freud looked at child development from the perspective of sexual development and Piaget looked at development from the cognitive perspective, Erikson argued that child psychology needed to look at the social environment in which the child was raised. His work is particularly relevant to the notion of identity. Erikson stated that a main theme in life is the quest for identity (Miller, 1993, p.159).

development of higher cognitive processes and language. Vygotsky, like Erikson, also considers the importance of social relationships in the development of higher cognitive processes. For Vygotsky humans are embedded in a social context and their behavior can only be understood with reference to this context (Miller, 1996, p. 370). Both Erikson and Vygotsky share the vision that in order to understand the child we need to understand the child as he/she interacts with others in a particular context.

Since language use does not occur in isolation, some salient characteristics of older middle childhood which are relevant to this study will be described in greater detail in the following sections.

Emotional and Social Development

According to Erikson (1959) during the preadolescent years, children are involved by a pretend world through playing.¹³ But with puberty and adolescence, this pretend play becomes real, and how adolescents fare in different situations will ultimately define their adult identity. They become concerned with how others see them, not with how they see themselves. They seek a new identity, and in doing so they need to fight many of the same battles also fought during the pre-school years (independence, self-assurance, etc.). In this respect, they first have to build a sense of the 'self' in order to build a sense of 'the other.' It is at this stage that children become polarized into different groups and wish to identify with members of such groups. For the pre-teen group, "the other" can be different subsets of the peer group (e.g. cliques) as well as members of the adult world.

The development of the notion of self

In middle childhood there are several changes to the concept of "self." Children are now capable of describing themselves in terms of psychological characteristics and they start to compare their own characteristics to the characteristics of other peers (Berk, 1993, p. 459, 1996, p.429; Harter, 1998). Specifically, older children start to make *social comparisons*, in which they judge their appearance, abilities, and behavior in relation to those of other children (Berk, 1993, p. 460,

¹² Although note that in some societies this stage may be reached through other than formal education such as, hunting, fishing or herding of livestock.

¹³ For Vygotsky (1978) *play* is important in the development of the child. For Vygotsky play allows the internalization of rules of behavior.

Like the functions of consciousness, it originally arises from actions. The old adage that child's play is imagination in action must be reversed: we can say that imagination in adolescents and school children is play without action. ... Thus, in establishing criteria for distinguishing a child's play from other forms of activity, we conclude that in play a child creates an imaginary situation. (Vygotsky, 1978, p. 93).

1996, p. 430; Harter, 1990). Another characteristic of older middle-childhood children is the ability to imagine what other people are feeling. According to Berk (1993, p. 460, 1996, p. 396), and Berndt (1996, p. 350) *perspective taking* plays a crucial role in the transformation of the self-concept.

Children between the ages of 7 and 12 are able to “step into someone else’s shoes” while children between the ages of 10 and 15 can look at a two-person situation from the perspective of a third, impartial party (Berk, 1996, p. 445).¹⁴ This added dimension to the evaluation of the self increases the importance of how others view and judge the child. (Berk, 1996, p. 583)

Peer Relations and Identity Formation in Older Middle-school Children

With the ability to understand how others see/perceive 10 year-olds, ‘the society of peers gradually becomes a more important context for development (Berk, 1993, p. 470,). In this sense, older middle-childhood children show a strong desire for group belongingness (Berk, 1993, 1996; Hartup, 1983, 1996; Kerns, 1996, p. 141; Ames et al., 1988, p. 46). A peer group has formed when a group of children create a set of values for the group and a social structure of leaders and followers (Hartup, 1983, pp. 146-149). Peer groups have a tendency to be gender segregated. They are formed by all girls or all boys (Hartup, 1992; Hibbard & Buhrmester, 1998). Furthermore, during this period, children embrace their status as children (Stone & Church, 1984). They do not miss the pre-school years and are not particularly interested in the future years. It is important to point out that the need to belong to ‘the peer group’ is a gradual process that starts in kindergarten. According to Stone and Church (1984), by age *eight* or *nine*, the transition to ‘the peer group’ is usually complete, and with it the adoption of the peer group’s values, manners and speech patterns (Hartup, 1983; Berk, 1993, p. 471, 1996, p. 590; Kerns, 1996, p. 141).

While children are consolidating their attachment to the peer group, they are likely to rebel against their parents and other adult figures (i.e. teachers, principals, even older siblings, etc.)¹⁵. They are also likely to be insolent and adopt odd mannerisms and postures (Ames et al., 1988, p. 47). Their speech may be slurred and careless and they may use curse words and obscenities—even if the children are not sure what these words really mean (Ames et al., 1988, p. 54).

Furthermore, older children are fascinated by codes, and ‘secret languages’ (i.e. ‘pig Latin’). These codes and secret languages emphasize both communication and allegiance within the in-

¹⁴ Although empathy has its roots in early childhood (Yarrow et. al., 1973) it becomes more fully developed in middle childhood and adolescence.

¹⁵ Parents continue to have a significant role in their children’s lives—despite the “testing”. It is a process of “negotiation” and co-regulation (Maccoby, 1984; Gross, personal communication, Nov. 2000).

group and the exclusion of the out-group. Children also use abundant slang, although it is usually in the form of isolated words and phrases (i.e. 'awesome', 'cool', 'cowabunga', 'dude', etc.). The source for slang words is usually older teenagers, TV programs, and music (Danesi, 1994). Nevertheless, the use of such words does not follow a particular pattern; the group might pick and choose words or phrases from a variety of sources and use them as sign of their intra-group solidarity and distinct identity.¹⁶ Hence, children may use words from TV programs (i.e. 'cowabunga' from the Ninja Turtles), from other children (i.e. 'cool', 'fresh', 'nerd', 'dweeb' see Tarone & Swain, 1995), or they might make up their own. Nevertheless, this is a code that is likely to change once they reach their middle-school years where polarization into different groups (like 'jocks' and 'burnouts' Eckert, 1984 and 1991) will make them adopt more regular and systematized linguistic patterns. In their search for their own identity, pre-adolescents may try different identities through imitation of the target group dynamic, hair style, and form of speech. According to Erikson (1959), while pre-school children take their identities from their parents and other authority figures, school children start to realize that adults are not perfect and that they will not be able to solve all of their problems. Hence, children begin a quest for an independent identity and existence—which is too frightening to be undertaken individually. In this sense, the peer group serves as a reference point and a place of refuge.

Older middle-years children tend to function with a **group identity**. At this age it is important is to be considered a member of the group (Kerns, 1996, p. 141; Buhmester, 1996, p. 162; Rubin, 1980, p. 96; Labov, 1972). In this sense,

Children are concerned with finding companions and avoiding isolation from the peer group (Gottman & Mettetal, 1986; Sullivan, 1953). Children work to develop a sense of solidarity with peers in order to be accepted by the larger peer group (Gottman & Mattetal, 1986). (Kerns, 1996, p. 141).

This need to belong to a larger group of peers translates into

...exclusive associations, [*of which*] the codes of dress and behavior that grow out of them become more broadly influential. At school, children who deviate are often rebuffed by their peers: "kissing up" to the teachers, wearing the wrong kind of shirt or shoes, tattling on classmates, or carrying a strange-looking lunch box are grounds for critical glances until the child's behavior is brought in line with the groups expectations. (Berk, 1993, p. 471)

¹⁶ For a study that looks at how different linguistic codes are used to signal intra-group solidarity in teenagers see Cheshire, 1982, 1991; Rampton, 1995, 1996.

In this sense, being accepted by the peer group translates into an awareness of how children are perceived by the rest of the group. According to Buhrmester (1996, p. 164) some of the central themes in middle childhood are to be accepted by peers, to avoid rejection, and 'self-presentation' (how the child believes others view him/her). In this sense, popularity becomes a central issue, 'classifying other children into "acceptable" in-group or the "unacceptable" out-group' (Buhrmester, 1996, p. 172; Ames et al., 1988, p. 71; Rubin, 1980, p. 97).¹⁷ In sociolinguistics, Labov (1972b) coined the notion of 'Lame' which is defined as a peripheral member of the group who does not show the same linguistic behavior (among other extralinguistic characteristics such as clothes, hair style, etc.) as other members who belong to the peer-group. Issues of peer group acceptance¹⁸ become important during this age period.

Specifically, the concept of peer group acceptance or popularity is defined as the degree to which a specific child is liked by members of his or her peer group. Thus, relations between a child and a peer group may differ depending on the sentiments that group members develop toward a child, and the degree to which these sentiments are shared by group members or become consensual. (Ladd & Kochenderfer, 1996, p. 326)

Hartup (1996) states that an added dimension that goes beyond acceptance by the peer group is the role of friendship between peers. Specifically, Hartup found that in the classroom,

friends engage in more extensive discourse with one another than non-friends do during problem solving, offer suggestions more readily to one another, and are more supportive as well as more critical in these interactions. (Hartup, 1996, p. 228)

Linguistic Characteristics of Older Middle-year Children or Preadolescents

Metalinguistic awareness

Although metalinguistic awareness, or the ability to think of language as a system, is present in early childhood, it is in middle childhood that it flourishes (Berk, 1996, p. 374). Metalinguistic ability is observed in older middle-year children in their increasing awareness of the phonemes of a language, the spelling of words, the meaning of words, as well as the grammatical correctness of sentences (Berk, 1996, p. 374). This shift usually starts around the ages of 10-14 and coincides with Piaget's "formal operations" (Long, 1991). In preparation for formal operations, as children grow their ability to deal with word meanings changes dramatically. Six-year-old

¹⁷ At this stage children are also dealing with ethnic identity issues (e.g. prejudice may be reinforced through the peer group) (Powlishta et. al., 1994).

¹⁸ Eckert (1988, 1991), Rampton (1995, 1996), Labov (1982) looked at peer acceptance and rejection in different groups of adolescents and the impact of this on language use.

children's definitions of words are characterized by very concrete descriptions of either function or appearance; while eleven-year-olds can deal with a word on 'a solely verbal plane' (Berk, 1993, p. 437, 1996, p. 359).

According to Berk (1993, 1996), Dickinson (1984), and others the older children's ability to reflect on and analyze language allows them to grasp the many meanings of words.

....they recognize that a great many words, such as "sharp" or "cool," have psychological as well as physical meanings: "What a cool shirt!" or "That movie was really neat!" this grasp of double meaning permits 8- to 10-year-olds to comprehend more subtle metaphors than they could at earlier ages, such as "sharp as a tack," or "spilling the beans,".... It also leads to a change in children's humor. In middle childhood, riddles and puns requiring children to go back and forth between different meanings of the same key words are common [*example*] "Hey, did you take a bath?" "No! Why, is one missing?" (Berk, 1993, p. 437, 1996, p. 359)

This ability to further understand multiple meanings of words and the ability to describe words solely on a verbal plane, allows older children to arrive at a more refined understanding of metaphors and humor (Berk, 1996, p. 373; Ames et al., 1988, p. 62). As children reach the adolescent years, they are able to understand both 'abstract' words (i.e. philosophy, incredible, etc.) and subtle non literal word meanings (i.e. irony, sarcasm, etc.) (Berk, 1996, p. 373).

In conclusion, in order to describe L2 and L1 use by fifth graders (10-year-olds) it is important that we also take into account their developmental characteristics. If, as the previous review suggests, children are developing their identity, a sense of the self, are becoming polarized into different peer-groups, are using slang, are more aware of how others see them, and show an increase in their metalinguistic ability, we should expect some of these issues have an impact on L2 use. Specifically, do they choose to use the L1 or the L2 in order to express any or all of these developing characteristics?

Research Questions

From the observations which surfaced during the pilot study and the ideas set forth in the review of the literature, the following two research questions for the present study were formulated.

Question 1. What languages (English L1/Spanish L2) are used by students in peer-peer and peer-teacher interactions in a fifth grade immersion classroom? Do any of these factors have any systematic effect on the choice between Spanish and English?

Question 2. What languages (English L1/Spanish L2) are used by students while carrying out academic content tasks in a fifth grade immersion classroom? Do any of these factors have any systematic effect on the choice between Spanish and English?

An underlying issue that surfaced given the observations carried out in the pilot study and the review of the literature is: What factor or factors could account for the fact that older children (e.g. fifth graders) do not seem to speak exclusively in the L2? If fifth grade children have attained the maximum amount of L2 that the program offers, why do they seemingly choose to use the L1 more than third grade children who have not acquired as much L2? Years of exposure to L2 do not seem to result in an increase in the use of the L2. On the contrary, the more years the child has spent in the program, the more L1 students are reported to use.

The fact that fifth graders are pre-adolescents could play a role in the L1 use observed at this site and in upper grades in other immersion programs (Blanco-Iglesias, Broner, & Tarone, 1995; Tarone & Swain, 1995). Therefore, a third research question was formulated:

Question 3. Is there evidence of older middle-year or pre-adolescent characteristics in the language use of fifth grade immersion children? Specifically,

- I. Do these children use vernacular words/phrases?
 - *If they do, are they in Spanish or English?*
- II. Do these children use words/phrases which refer to the outside pre-adolescent culture?
 - *If they do, are these references in the L1 or the L2?*
- III. Do these children show evidence of metalinguistic function?
 - *If they do, is it in Spanish or English?*

METHODOLOGY

In this section I will describe 1) the immersion school, 2) the classroom and the teachers, 3) the role of the researchers, 4) the participants, 5) the data collection techniques, and 6) the data analysis.

The Immersion School

There are several full immersion schools in this Midwestern city. Two of these are Spanish full immersion schools, one a K-5 and the other a K-6. This study was carried out in the K-5 school which is located in a northern suburb of the city. The school was selected based on feasibility and the willingness of the staff to allow this study to be carried out.¹⁹ It was decided to approach the school following Round's model of the researcher as an anthropologist entering a 'new and exotic world' (1994, p. 4). It took a period of three months to build the necessary trust with the school staff and administrators to successfully obtain permission to carry out the research project.

All the necessary legal permissions were obtained from the Human Subjects Committee of the University of Minnesota, the school administration and staff, from the children and their parents.²⁰

Participation in this immersion school is voluntary for residents in the district. Children come from home backgrounds that represent a wide array of socioeconomic levels. The vast majority of the children attending this school come from monolingual English-speaking families, and the school is located in an area that is not near a Spanish speaking community so the children who attend this school generally do not have opportunities to speak Spanish outside the school.

All curricular instruction—including reading and language arts—is in Spanish in kindergarten and first grade. English is introduced for the first time in second grade when English language arts are taught for half an hour a day. As in other immersion schools, the amount of time devoted to English reading and language arts increases from 30 minutes in second grade to approximately 60 minutes in third and fourth to 90 minutes in fifth. Fifth grade is the end of elementary education at this immersion site.

Teachers in this school are bilingual, either native speakers of Spanish or English. The same bilingual teachers teach both the Spanish and the English curricula from second grade onwards.

¹⁹ See Blanco-Iglesias and Broner 1997 for a full report. Blanco-Iglesias (in progress) studied the third grade in an identical research design.

Teachers also ‘team-teach’ several subjects in order to expose children to different teaching styles as well as different Spanish dialects. This school hires native speakers from Spanish speaking countries who work as aides throughout the school year. These aides are usually young energetic native speakers who come to the United States through the AMITY²¹ school and stay during one academic year living with a family with children enrolled in the school. Most of these aides are studying or have recently finished their studies in their home countries.

Once the school year started, I spent the first two months in constant contact with the fifth grade teacher during her free time. During that period, I came to know her teaching style, and her teaching schedule.

Mrs. Johnson²² had been teaching at this grade level for several years. She was a native speaker of English from the Midwest, but was considered one of the best non-native Spanish speakers by her peers. She had lived in the South of Spain for several years and her dialect was from that region. She always spoke Spanish to the children in and outside of the classroom unless it was English language art period. She rarely made any L2 mistakes when modeling language usage to her students.

Her teaching style was student centered and incorporated classroom tasks where desk and group work were emphasized. She believed in developing critical thinking abilities in her students and looked for opportunities to incorporate these throughout daily activities. This teacher also ‘team-taught’ with the other two fifth grade teachers. She was in charge of science for all three fifth grade classrooms.

She seemed to truly care about the well-being of her students. Students respected her and liked her. She was strict but fair and never put children on the spot. This was a class in which laughing was accepted because the teacher encouraged children to have fun while learning.

At the time of the study, the teacher was in the process of getting her Minnesota Teaching Certificate and was doing a Masters in Education at a nearby university.

Role of the Researcher

Since I was interested in looking at naturally occurring data—language behavior as it occurred during regular classroom time—I decided to take the role of a non-participant observer.

²⁰ For examples of the consent forms signed by the children and their parents, see Broner (2000).

²¹ AMITY is an exchange program in which persons from other countries come to the U.S. to work as teacher aides during a period of time (generally a whole school year). They usually come to the U.S. to study English.

To minimize the effect of the Observer's Paradox (Labov, 1972, p. 209), I allowed the children to get used to my presence. I carried out observations inside the classroom under study from September to November, 1994 before I actually chose three participants. Then, time was needed to allow parents to sign and return all the parental consent forms.

Both researchers (Blanco-Iglesias and I) were present in each classroom throughout the whole data gathering period. The researchers sat at the back of each room and one of us would take notes. Children were used to this kind of presence since they constantly had many observers come into their classrooms throughout the year. The children were aware that the researchers were there to observe them as they went about their daily activities. Our interactions with the children always took place in Spanish. The children seemed to view the researchers as teacher figures and never spoke English to me or my colleague in or outside of the classroom.

Description of Participants (The Unit of Analysis)

The three fifth graders selected for this study, Leonard, Marvin and Carolina,²³ were all 10 years old at the beginning of the school year. Several criteria were used in selecting the three children. At first, I was interested in analyzing the linguistic behavior of only ONE child as he or she interacted with other children in the classroom. Nevertheless, since the University of Minnesota Human Subjects Committee and the TESOL guidelines on human subjects treatment permit any subject to withdraw from a particular study at any time (Tarone, 1980), I needed to tape other children in case one of them withdrew. Second, the original design did not include the analysis of gender differences but I wanted to collect data on male/female interactions (partly to be able to carry out future research on this). Hence I decided to tape a girl and a boy. Leonard and Carolina were picked with the teacher's help based on their overall grades. Both were good students and both were talkative children who were active participants in all class activities. The third participant, Marvin, was picked by the researchers because his linguistic behavior seemed to be different than that of the rest of the children in the class. Marvin was the only child who consistently spoke in the L2 even when he was outside the classroom. His behavior did not fit our preliminary observations of the other children in fifth grade who tended to use both languages in the classroom and English outside the classroom (e.g. during recess).

²² This is a pseudonym. We have limited personal information about Mrs. Johnson due to constraints imposed on our study by the administration of the school.

²³ In order to protect the children's identities their names were changed as well as the names of the other children in class with whom they interacted throughout the school year.

The three children came from households in which English was the native language and did not have Spanish-speaking ancestry. All three children had siblings who either attended or were attending the school at the time of the study. Marvin had a twin brother in the other fifth grade class with whom he tended to play during recess. All three children were planning to attend the middle school Spanish maintenance program after they graduated from this school.

Individual Characteristics

Leonard

At school, Leonard was a well-liked child by both the teacher and the class. The teacher referred to him as “the best mannered child” in her class. Leonard was respectful of the teacher and the classroom rules. He was very bright and had the highest grades of the three children. He was in advanced math and in chess club. Leonard often got bored because he finished classroom tasks before other children did. He was extroverted, talkative and rarely stayed still. He was always busy doing something, such as singing, drawing, making noises, or making Origami figures. He had a great imagination, creating interesting play situations for himself and for those around him. He was well liked by other children, although he was not considered the most popular child in class. He had many friends who were mostly boys, but he played well with the girls too. Leonard played the viola in the orchestra and also liked to play basketball.

Leonard’s parents were from the Midwest and his ancestral nationalities include German, English, Italian, and Polish. Both parents had attended college. His parents chose this school as an enrichment school for their children because they thought that Spanish had become an important language in the United States and would open more opportunities to their children. They believed that the

cultural aspects of language immersion are as equally important to our children’s education. Hopefully it will expand their world view and all its possibilities (written questionnaire).

Carolina

At school, Carolina was also well-liked by both the teacher and her fellow students in the classroom. The teacher referred to her as “a very nice girl.” Carolina was respectful of the teacher and the classroom rules. She was intelligent but her grades were lower than Leonard’s. Carolina was usually ‘on-task’ but was ready to join in the fun when a situation arose (especially if the goal was to ‘bug’, tease, or make fun of the boys). In desk or group work, she was always the one who took the initiative in getting the task done. She was most comfortable with girls (although she got along with the boys).

Carolina played the clarinet in band and loved sports, especially soccer, which she often talked about. She had also been a mediator at school, someone who helps children solve conflicts through talk and not violence.

Carolina's father was from the Midwest and her mother from the West Coast; both were of German origin. Both parents had had at least some college background. Her parents chose this school for their children because they believed that Spanish had become an important language in the United States and learning it would open more opportunities to their children.

Marvin

At school, Marvin was well liked by the teacher. The teacher referred to him as "the nicest boy." Marvin was respectful of the teacher and the classroom rules, especially the rule which stated that children should always use Spanish. Marvin was also intelligent and his grades were comparable to Carolina's, but lower than Leonard's. He was almost always "on-task" and was usually critical of children who were playing or were "off-task". In this sense, he fit the "lame" category (Labov, 1972, p. 255) in that he seemed to show a behavior different from the rest of the children. He was not only always on-task, but he was also the only child in the class who consistently spoke Spanish. When you asked any child in the class, or in the school for that matter, about Marvin, children typically said "Oh, yeah, he's the one who always speaks Spanish."

Observations suggested that Marvin was not very popular with other children although he was not a complete outcast either. Children tended to pick on him or just ignore him, but this did not seem to bother him. The fact that he was chosen to be one of the three subjects resulted in him becoming more popular although he was still picked on on many occasions. Marvin generally played with his twin brother during recess although he did have a group of close male friends from another class. Marvin played in the orchestra and liked to play baseball. He also took part in the Odyssey of the Mind contest at school.

Marvin's father was from Canada and his mother from the Midwest. His ancestral nationalities included German, English, Welsh, Scottish, Irish, and Eastern European. His mother had attended college and his father a technical school. Through the mother's personal experience with learning a second language she suggested

...that once a second language is learned, new languages are easier to assimilate, I also felt that having a second language would be beneficial to my children in many aspects of their lives (written questionnaire).

In sum, all three children were respectful of the teacher and classroom rules, and worked well together in group or pair work. Socially, they were not best friends with each other although they could work together.

Data Collection

Data were collected in the form of notes by the non-participant observer and tape recording of the speech of the three children as they went about their daily interactions inside the fifth grade classroom.

Triangulation of the Data

I employed a variety of data collection techniques in order to comply with what research on methodology refers to as triangulation or confirmability.

Assuming that the data collected are representative of second language behavior and that they are retrievable for continued inspection, confirmability is concerned with the ability of the researcher to confirm findings, either by re-inspection or by demonstrating the same findings through different sources. ... While in theory, triangulation sounds feasible it is not always possible to collect the same second language data using different sources. ... Data drawn from observation or manual transcription could be confirmed by data drawn from video or audio tapes made at the same time as the observation. (Seliger & Shohamy, 1989, p. 105)

For this study the three types of triangulation used were a) *investigator* b) *data source* and c) *methodological* triangulation (Johnson, 1992; Stakes, 1995).

Investigator Triangulation

The decision was made to carry out all observations and data gathering with a colleague, Susana Blanco-Iglesias. This implied spending double the amount of time to carry out the research project, but provided some insurance against bias. Susana and I held weekly post data-gathering sessions to compare notes on the data we gathered. I also sought the help of other professors and teachers to look at the same phenomena I was observing. Periodically, I sought the teachers' and other staff members' comments on the observed data. I met with Professors Carol A. Klee and Elaine Tarone on a weekly basis, seeking their opinion and guidance.

Data Source Triangulation

The phenomena under study should also be observed in other contexts (Stakes, 1995). I observed fifth graders inside the classroom, and also outside of the class, at recess, during lunch, in

the hallway, in the library, and during gym class. These observations also included children from other fifth grade classrooms.

Methodological Triangulation

I gathered data through an array of techniques: observations of child interactions (untaped), notebook data, taped data, interviews, and surveys.

Observations and Notetaking

Observations were made once a week²⁴ over a period of 23 weeks between October 1994 and May 1995. These observation periods allowed the researcher not only to observe the linguistic behavior of the three subjects inside and outside the classroom during an extensive period of time but also provided rich data on the overall linguistic behavior of many other children in the school.

Observation periods ranged from half a school day—both in and outside of the classroom—to a full school day. Researchers usually arrived between 8:30 and 9:00 a.m. and stayed until after lunch. Daily observations included: a) observations of children's interactions, teachers' responses and classroom management procedures, and information about the physical context of both classrooms throughout each taping session; b) observations of interactions and other contextual features in the hallways before and after entering the classrooms; c) observation during the lunch hour where the researchers sat with either the third or the fifth grade class; and d) observations of particular activities that were happening during our visit on a particular day, such as concerts, special presentations, gym, library, computer class, and a fire safety evacuation test.

There were two special observation days in which we followed the two classes (11-08-94 for third grade and 11-09-94 for fifth grade) throughout the whole school day. The data for these two days were collected using notebook data, since at that point we had not started taping.

Taped Recorded Data

Audio tape recorded data²⁵ were obtained from each of the three children under study during the data collection sessions. The length of the taping sessions varied from 25 minutes to 80 minutes. Taping time depended on several factors such as what activities were planned for that day; for example, we did not tape English Language arts. There were also unplanned circumstances such

²⁴ Before we started taping, we observed twice a week 3 times out of the first 8 weeks.

²⁵ Originally, the intention was to gather videotaped data, but this was abandoned because videotaping would disturb the classroom's activities. I was present every week and on many occasions I had to enter the class at the beginning, middle, or end of a particular class period. Setting up the video equipment for such an extended period of time was not possible in this particular class setting.

as a fire drill, and the absence of one of the two teachers which allowed us to stay longer in the other class.

I taped 15 sessions with lapel microphones from January 18 to May 25, 1995. This study is based on 13 sessions in which at least two of the three children were present.²⁶ The researcher provided each child with a small lapel wireless microphone and a transmitter (Telex). Transmitted data were recorded on 3 Marantz (model PMD101) tape recorders that were positioned in a different classroom. Before each taping session the researchers carried the three tape decks and the three receivers into a contiguous room.²⁷ This made transition to taping as unobtrusive as possible since it took about 15 minutes to set up all the wires and connections. Once the equipment was set up and checked, both researchers would enter the actual classrooms with only the three small wireless transmitter boxes²⁸, one for each subject connected to a lapel mike. The children usually pinned the lapel mikes on their shirts and placed the transmitter on their belt, or left it on top of the desk. The children used their mikes throughout the class period and as they moved around the classroom. Once the children had their mikes, both researchers would sit at the back of the room for the whole taping/observation period. The researchers took notes throughout the taping sessions on the context of the various interactions. For example, they noted who was present, what the children were doing at particular moments and other contextual cues, which would help in the transcription and analysis of the data. Generally, one researcher took notes and the other observed. At the end of each taping session, the researchers would go over the written notes and added any missing information.

Lapel taping was usually carried out every Monday²⁹ at approximately the same time (between 9:00 a.m. and 12:00). This school operates on a six day curricular cycle. Every subject was taught on a particular cycle day, instead of a day of the week. This system guarantees that the children do not miss a subject due to a school holiday. The rotation meant that I did not necessarily tape the same type of activity every Monday. The fact that I always taped on the same day and approximately the same time, allowed for the successful completion of the taping schedule since interruption was minimized.

²⁶ In one session Marvin and Leonard were absent and in another Carolina was absent.

²⁷ It was fortunate that there were two "general purpose" rooms located right by the classrooms in which the studies were carried out.

²⁸ The transmitter boxes were approx. 5 x 3 x 1 inches. They had a lapel microphone, about half an inch, attached to them by a long wire. Each rectangular box had an On/Off switch with a red control light on one end, and a little flexible antenna (8 inches long) on the other end.

²⁹ The 13 sessions were usually taped on Mondays except for two sessions. Due to scheduling conflicts we went on different days of the week on 1-18-95 (Wednesday), and 5-16-95 (Tuesday).

I never asked the fifth grade teacher to change her daily class plans to accommodate my needs. I did have to ask for two special accommodations due to the nature of the consent forms that had been signed. First, I had to ask that the research subjects sit with children from their own classrooms while I was taping, since children from other classes had not signed consent forms. Second, due to the recording devices used, the subjects needed to sit together as a group. These were the only two special arrangements needed to carry out the study.

I recorded language interactions that took place during different classroom activities occurring between 9:00 am and 12:00 p.m. on Mondays. The recording sessions with lapel mikes were:

Session 1	Date: Wednesday, January 18, 1995 Total time: 25 minutes Activity: Creative writing: Group narrative (Sabía que iba a ser un día horrible cuando....)
Session 2	Date: Monday, January 30, 1995 Total time: 80 minutes Activity: Reading/Creative writing: Group play (based on "El juicio a Peter Zenger")
Session 3	Date: Monday, February 6, 1995 Total time: 30 minutes Activity: Creative writing: Valentine's Day poem
Session 4	Date: Monday, February 13, 1995 Total time: 45 minutes Activity: Arts and Crafts: Valentine's bag
Session 5	Date: Monday, February 27, 1995 Total time: 30 minutes Activity: Math: Median, mean, and mode
Session 6	Date: Monday, March 6, 1995 Total time: 70 minutes Activity: Reading and creative writing: Childhood memories Math: Graphs
Session 7	Date: Monday, March 20, 1995 Total time: 30 minutes Activity: Science: Electric circuits
Session 8	Date: Monday, March 27, 1995 Total time: 35 minutes Activity: Science: Electric circuits
Session 9	Date: Monday, April 3, 1995 Total time: 35 minutes Activity: Science: Electric circuits, wrap-up Social Studies: Stereotypes
Session 10	Date: Monday, April 18, 1995 Total time: 45 minutes Activity: Reading: Vocabulary
Session 11	Date: Monday, April 25, 1995 Total time: 25 minutes Activity: Math: Area and perimeter
Session 12	Date: Monday, May 1, 1995 Total time: 35 minutes Activity: Science: Conductivity
Session 13	Date: Tuesday, May 16, 1995 Total time: 50 minutes Activity: Math: Volume

Interviews with Children and Teachers

Throughout the academic year we carried out several informal interviews with the teacher. These sought confirmation or comments on what had been observed in class. Teacher interviews occurred through informal conversations outside the classroom, during breaks, lunch, or in the hallways. Other informal interviews/conversations with students were carried out during lunch time when the researchers sat with different groups of students. These were always in the L2.

At the end of the year, after our taping sessions had ended, we formally interviewed each of the three participants. Interviews were carried out in the L2. The interviews were of short duration and were performed during a non-critical activity. These interviews were tape recorded and consisted of general questions about the school, the teachers, their overall experience at this school, plans for the future, and their self-report on Spanish and English language use. These questions were:

- Who were your teachers?
- Who were/are your favorite teachers?
- What did you like best about him/her?
- What's your favorite part of school?
- What's your least favorite part of school?
- Favorite subject? Why?
- Least favorite subject?
- Best friends?
- Who is the most popular student?
- Who is the least popular?
- Where and when and for how long do you speak Spanish outside of class.
- Do you do any extracurricular activities which require Spanish?
- Have you ever traveled to a place where Spanish is spoken?
- Where is your family from?
- Will you go to the maintenance program after you graduate from this school?
- What is the program like?
- Under what circumstances do you use Spanish and/or English when you are in school? Why?

Once the data were gathered, they were transcribed. Due to the nature of the data—children speaking at the same time and lots of background noise, among other considerations—I

used a variety of data transcription coding conventions, adapted from Liu (1991, p. 235), Edwards and Lampert (1993), and others, which best suited my needs. The conventions used in my transcriptions are summarized in table 1.

Table 1
Transcription conventions used in this study

• Numbering of tapes:	Month, Day, year/grade/tape number/child
	Example: Jan.18, 95/3.1.1
• Symbols:	
1•	<...> <u>unintelligible</u>
2• _____	<u>approximate</u> transcription.
3• (italics)	<u>context</u> of the situation
4• [
]	<u>interrupted</u> utterance/turn
5• [
]	<u>Overlapping turns</u> . Speakers talk at the same time.
6• Bold	<u>English</u>
7• (Silence, pause)	<u>Silence</u> between utterances
8• xx-	<u>cut off</u> or unfinished word or sentence
9• *	<u>public</u> speech.
10• ?	<u>rising intonation</u> contour
11• .	<u>final intonation</u> contour
12• ,	<u>flat intonation</u> contour
13• !	<u>exclamation</u> , excitement, surprised intonation contour.
14• ::	<u>lengthening</u> of a sound
15• /.../	<u>approximate phonetic</u> transcription
16• @	speech that is in <u>microphone range</u> . not public/whole class speech. (@T means that the teacher is known to be in microphone range but not necessarily at the children's group).
17• ! L	when the <u>microphone</u> is an interlocutor (for Leonard)
18• L:	(Indented within a sequence of turns.) When an interaction takes place while the teacher or other interlocutors are engaged in an interaction which is not part of a previous turn.
19• *T:(...)	
L: (...)	Leonard is saying something while the teacher is speaking. Leonard's interaction is pertinent to the classroom topic but he is not addressing an interlocutor. It could potentially be overheard by the teacher or other classmates.
20• =L	Two conversations are taking place at the time. Leonard is conversing with Marvin; Carolina is talking with a Girl
-C	
=M	

Data Analysis

For the purpose of the data analysis, the interactions of the children were transcribed according to turns. A turn is completed when the turn is the first part of an adjacency pair (Sacks, Schegloff, & Jefferson, 1974); when the interlocutor stops talking and thus enables another interlocutor to initiate a turn; when the interlocutor allows another interlocutor to self-select; or when the interlocutor is interrupted by another interlocutor who initiates another turn (Levinson, 1983, p. 303; Ellis, 1994, p. 579; Coates, 1986, p. 97).

Relevant notebook data were included in the transcription in parenthesis or in italics in order to provide pertinent context when required. Data from the notebooks were incorporated in the transcriptions to describe of the context of each interaction.

Rationale for Categories Used in the Data Analysis

The data analysis focused on patterns of first and second language use which emerged from the children's verbal interactions. Four linguistic codes, the dependent variables, were identified as being present in this classroom: Spanish, English, Mix-Spanish Base, and Mix-English Base. The research questions explore several conditions which may be systematically related to the use of these linguistic codes in the classroom. The conditions were: interlocutor (Research Question I), task (Research Question II), as well as presence of slang words, references to age related activities from the outside-of-school-culture, and metalinguistic function (Research Question III).

Both qualitative and quantitative analyses were performed. A Chi square test for independence was performed on these data. The data were also analyzed quantitatively using a Binomial Variable Rule Analysis, or VARBRUL, which is useful for situations of multidimensional variation (Young, 1991). In order to characterize the patterns of language use which emerged from this classroom, some measurable linguistic and non-linguistic units were analyzed using VARBRUL. The linguistic units were: turn, utterance, complexity of the utterance, and style. The non-linguistic units were interlocutor and task.

VARBRUL or variable rule analysis was first developed as a statistical tool for the analysis of language variation in sociolinguistics (Sankoff, 1988). Although our study is not concerned with the actual formulation of a variable rule (Labov, 1972, p. 230), we are interested in describing under what conditions (interlocutor, and task) each participant is most likely to use Spanish or English. In this sense, although VARBRUL was developed "as a quantitative extension of generative phonological analysis and notation" (Sankoff, 1988, p. 984) as in Poplack (1980), Cedergren and Sankoff's (1974) sociolinguistic studies, its value as an analytical tool has been extended to other

areas (Young, 1991, p. 27). The methodology has been used, to some extent, in second language acquisition studies such as those carried out by Linares (1990), Young (1991), Bayley and Preston (1996), and Tajika (1999) among several others.

VARBRUL as a statistical tool will be used, in this study, to identify which factors contribute consistently to the use of the L1 and the L2 in the speech of children attending a full immersion program. The program then calculates a weight for each factor and assigns each a value ranging from 0.00 to 1.00.

That range indicates the degree to which a factor promotes the operation of the tested rule (the higher the value, the greater the influence). ... 0.50 [is] a 'watershed' between those weights which 'enhance' the likelihood of application and those which do not. (Preston, 1996, pp. 10-11)

In this study, if a factor has a weight of more than .50 it is assumed that this factor promotes L2 use. If the weight is less than .50, then it promotes less L2 use.

Further description of the linguistic and extralinguistic context in which first and second language use occurs was also carried out using a qualitative/ethnographic approach (Ellis, 1994, p. 569). The purpose was to describe those aspects also present in the children's verbal interactions which could not be fully captured by the quantitative analysis alone. These were based on the analysis of the children's verbal interactions according to interlocutor, topic, task, use of vernacular language and their relationship to pre-adolescent cultures from both English and Spanish contexts, and their metalinguistic ability in both Spanish and English.

Research questions I and II will be answered using VARBRUL and chi-square while Research III will be answered using a qualitative analysis.

Analytical Procedure in Classifying the Data

Linguistic units

1. Utterance. For the quantitative analysis (VARBRUL, chi-square, percentages), 4843 utterances drawn from the children's classroom language use were analyzed. For the purpose of this study an **utterance** is defined as a stretch of language being bounded by pauses, under one single intonation contour, and generally a single semantic unit (Chaudron, 1988, p. 45). Interrater reliability was important in defining an utterance's boundary. Two raters were asked to code a portion of the data, achieving 94% and 95% interrater reliability.

Each utterance was coded as

- fragment
- *si/yes*
- 1 s-node (One verb clause)
- 2 s-node (2 or more verb clauses)

An utterance was considered to have more than one s-node when the additional /s-node/s were related to the main clause by parataxis such as ‘and’, ‘but’, hypotaxis (e.g., ‘because’, ‘if’) or embedding (e.g., complement to main verb or relative clause) (Klee, 1984, p. 11). Furthermore, utterances were coded as either being target-language like, non-target language like, or English.

2. Turns. As explained in the transcription section, interactions of children were transcribed into turns. This higher discourse level was needed to further characterize the context of particular utterances.³⁰ Each turn was also coded as English, Spanish, Mix-Spanish-based or Mix-English-based. Sequential positioning of turns was also coded to characterize the turn as either following a previous Spanish turn, a previous English turn or other, which includes “self select,” meaning the turn was not in response to a previous turn, and “response to name,” which was when a child responded to someone calling out his or her name and thus the previous turn could not be categorized as being English or Spanish.

Non-linguistic units of analysis

1. Interlocutor/s. According to Jakobson (1984), Bell (1984), Labov (1972), Allwright (1991, 1996), and many others, the interlocutor has an impact on language choice. Research Question I explores the effect of the interlocutor on the language choice of these children. For the purposes of this study, the interlocutor is defined as either a student, a teacher, an aide or any other person taking part in an interaction, overhearers, self, and “microphone”.

2. Task. Research Question II seeks to find relations between the language used and the type of task the children were engaged in. Task is defined following Pica, Kanagy & Falodun (1993), as “a [goal oriented] activity which participants themselves must carry out”. Each task had a goal and a content and students could either be “On-task” or “Off-task”.³¹ Task goals were:

³⁰ There were instances in which an all Spanish utterance was embedded in a Mix-code turn. Hence, turn and utterance were considered important notions in order to gain a full description of the language used by these children.

³¹ It is important to mention the difficulty in characterizing an utterance as being On-task or Off-task (Yonge & Stables, 1998). Ambiguous cases were treated as follows: if the children were carrying out the task even though they joked about it, they were considered to be On-task. If the children were carrying out a task and they made an aside (e.g., referred to a movie, a commercial, or a song, etc.) than the latter was considered Off-task.

directions, main activity-desk work, main activity-whole class, follow-up, and review. Content of the task could be math, science, creative writing, social studies, arts and crafts, etc.

Approach to Quantitative Analysis

Coding for VARBRUL, Chi-square, and Percentage Analysis

After all linguistic and extra-linguistic variables were defined, each utterance was coded on an Excel spreadsheet. The coding strings, or tokens, were then transported to a Goldvarb 2.0³² token file for analysis. The following section lists all the factor groups coded in the Goldvarb token file.

Dependent variables. Language units.

The dependent variables were coded as

- Spanish (s)
- English (e)
- Mix <Spanish base> (m)
- Mix <English base> (x)

Independent variables

Thirteen (13) factor groups and (56) factors were considered in the analysis of the use of the L1 (English) or the L2 (Spanish) in the classroom. These factor groups were divided into linguistic contexts and non-linguistic contexts.

Linguistic contexts:

1. Clause Type (utterance)
 - 1-S node (1)
 - 2-S nodes (2)
 - Fragment (f)
 - Sí <sí, yes> (s)
2. Accuracy (coded for Spanish only)
 - L2 target like (t)
 - L2 non target like (n)
 - English (/)
3. Style³³

³² Goldvarb 2.0 is the VARBRUL version for the MacIntosh computer developed by Rand and Sankoff (1990).

³³ Style was based on Jakobson's (1983) notions of cited—that is, not one's own—or spontaneous speech style. Utterance styles were further characterized as being productive, as in spontaneous oral and written speech, or non-

- Spontaneous (s)
 - Reading (r) <non productive speech>
 - Writing (w)
 - Repetition (p) <non-productive> (within two turns)
4. Sequential Positioning of turn
 - Response to Spanish (s)
 - Response to English (e)
 - other (o) (Includes self initiation, response to name)
 5. Previous-Context of turn (Overall language use in the previous 3 turns).
 - English (e)
 - Spanish (s)
 - Mix (m)
 - other (o)
 6. Affective function
 - Positive (p) (Oh, boy, Cool, solidarity, etc.)
 - Neutral (n)
 - Other (a) <, teasing, arguing, etc.>
 7. Metalinguistic function³⁴
 - Language related (m)
 - (non-metalinguistic) (n)
 8. Poetic function
 - Poetic (p) (Rhymes, word play).
 - Non poetic (n)

Non-linguistic contexts:

9. Task Activity
 - Transition (t)
 - Directions (d)
 - Follow-up (f)
 - Main Activity (m) (Desk Work, i.e. group, pair, individual work).
 - Whole class (c) (review)
 - other (/)
10. Task Content
 - creative writing (c)
 - other (v) (i.e. student's birthday)
 - arts and crafts (a)
 - science (s)
 - math (m)
 - social studies (e)

productive, as in reading, and repetition or cited speech. Also, categories 3 through 8 were included because Appel and Myusken (1987) have suggested these functions may trigger codeswitching.

³⁴ Based on Swain and Lapkin's (1998) notion of Language Related Episode (see Chapter IV, section 5.3), and Jackobson's (1983) metalinguistic function.

reading (r)
Transition to a task (n)
other (/), etc. (depending on the session)

11. Task: On/Off

ON task (n)
OFF task (f)

12. Interlocutor

Self (s)
Teacher (t)
Peer (p) (one or more, identifiable)
Overhearer (peer, non-identifiable) (v)
Carolina (c)
Marvin (m)
Leonard (l)
Aide (a)
Other adult (o)
Unknown Interlocutor (u)
Microphone (h)
public/whole class (w)

13. Teacher in the vicinity. (@ coded in transcript) when the teacher is at their group or is the interlocutor to someone in the group. Previous 2 and following 2 turns.

Yes (y)
do not know (n)

Procedure Used in Applying VARBRUL

The first run of VARBRUL included the dependent variables and all the factor groups, or independent variables and factors, or values for each variable, and provided the percentage data used later in the qualitative and quantitative analysis. After the first run was performed and all knockout³⁵/singleton³⁶ groups were deleted, a binomial up-and-down run for Spanish and English rule application eliminated all groups except three as being significant factors conditioning Spanish and English language use in the classroom: Interlocutor, Task: content, On/off task. I will report first on the percentage data and chi-square analysis for each research question and then on the VARBRUL analysis.

³⁵A knockout is a factor with a categorical effect.

...that is, whenever that contextual factor occurs, a certain value of the dependent variable is either always or never present. Such knockout [...] must be eliminated [...] since VARBRUL cannot calculate weights of the other factors in a factor group, one of whose members is exerting a categorical effect. (Young & Bayley, 1996, p. 273)

³⁶A singleton group is a factor group which only contains one factor. "The singleton factor group must be removed from the analysis since it is meaningless to calculate the factor weight of the single factor" (Young & Bayley, 1996, p. 273).

RESULTS

The Research Questions for this study were:

Question 1. What languages (English L1/Spanish L2) are used by students in peer-peer and peer-teacher interactions in a fifth grade immersion classroom? Do any of these factors have any systematic effect on the choice between Spanish and English?

Question 2. What languages (English L1/Spanish L2) are used by students while carrying out academic content tasks in a fifth grade immersion classroom? Do any of these factors have any systematic effect on the choice between Spanish and English?

Question 3. Is there evidence of older middle-year or pre-adolescent characteristics in the language use of fifth grade immersion children? Specifically,

- I. Do these children use vernacular words/phrases?
 - *If they do, are they in Spanish or English?*
- II. Do these children use words/phrases which refer to the outside pre-adolescent culture?
 - *If they do, are these references in the L1 or the L2?*
- III. Do these children show evidence of metalinguistic function?
 - *If they do, is it in Spanish or English?*

For research question I, percentage, survey, interview data, and chi-square analysis will be presented as well as a qualitative analysis of the data. For research question II, percentage data and chi-square analysis will be presented as well as a qualitative analysis of the data. After these data sources are reported a VARBRUL analysis will be reported for both research questions. The VARBRUL analysis will be reported separately because this tool analyzes the significance of all of the variables explored in each research question at the same time.

For research question number III, percentage data, survey data, interview data, and a qualitative analysis of the data will be reported.

General Patterns of L1 (English) and L2 (Spanish) Use in the Classroom

Before I report on the findings for each research question, I will present the general pattern of first and second language use for these three children. These tabulations will help characterize the data as a whole. The analysis is based on 13 sessions containing 4843 tokens, with one token being one utterance as defined in Chapter III. There were 3055 Spanish tokens which account for 63% of the data. There were 1682 English tokens which account for 35% data. Only 106 tokens were mixed, with either a Spanish base or an English base, accounting for less than 2% of the data. These

mixed tokens will not be included in further statistical analysis. Before we look at the effect of interlocutor and task type on language choice in the classroom, it is important to describe the overall language use for Marvin, Carolina, and Leonard. The three children differed from one another in their L1 and L2 use in the classroom as seen in Table 2.³⁷

Table 2
Spanish (L2) and English (L1) tokens
produced by each participant

		L2	L1	Total	Total %
Marvin	N	662	68	730	15%
	%	91	9		
Leonard	N	1482	1052	2534 ³⁸	53%
	%	58	42		
Carolina	N	911	562	1473	31%
	%	62	38		
Total	N	3055	1682	4737	
	%	64	36		

As we can see from Table 2, Marvin used proportionally more Spanish than Leonard and Carolina. This result confirms the children’s perception reported earlier that Marvin is more consistent in his use of Spanish than his peers. Typically Marvin spoke less frequently than his peers producing only 15% of the data in this study but when he did he used more Spanish than his peers.

What needs to be further analyzed is what variables correlate with each child’s use of Spanish and English in the classroom context.

Research Question 1: Effect of the Interlocutor

Question 1. What languages (English L1/Spanish L2) are used by students in peer-peer and peer-teacher interactions in a fifth grade immersion classroom? Do these interlocutor factors have any systematic effect on the choice between Spanish and English?

The first research question focuses on interlocutor as a conditioning factor for language choice in the classroom. Table 3 summarizes L1 and L2 use when the children are speaking to an adult and when they are speaking to a child.³⁹

³⁷ The unit of analysis (tokens) for all tables are utterances as defined in the Methodology section.

³⁸ Note that there are many more tokens (2534) produced by Leonard than by Carolina (1473) or Marvin (730). Leonard was the most talkative of the three children and this is reflected in the total number of tokens.

³⁹ Data were drawn from the individual percentage tables. See Broner (2000) for complete tables.

Table 3
Spanish (L2) and English (L1) tokens produced by
Leonard, Carolina and Marvin
according to interlocutor: Adults vs. Peers.⁴⁰

		Adults			Peers ⁴¹			TOTAL
		L2	L1	Subtotal	L2	L1	Subtotal	
Leonard	N	336	7	343	1066	1011	2077	2420
	%	(98%)	(2%)	(17%)	(51%)	(49%)	(86%)	
Carolina	N	216	4	220	689	548	1237	1457
	%	(98%)	(2%)	(19%)	(56%)	(44%)	(84%)	
Marvin	N	140	0	140	514	67	581	721
	%	(100%)		(34%)	(88%)	(12%)	(81%)	
Total Row	N	692	11	703	2266	1626	3895	4616
	%	(98%)	(1.5%)	(15%)	(58%)	(42%)	(84%)	

Table 3 shows that when the interlocutor is an adult or when an adult is present the three children use Spanish 98% of the time. When the interlocutor does not include an adult the children as a group use Spanish 58% of the time. The table also shows the individual differences in language use. Leonard and Carolina use Spanish and English about half of the time when addressing peers and Marvin uses Spanish 88% of the time with peer interlocutors. I will comment in more detail on these individual differences in the following sections.

Table 3 also shows that only 15% of the total tokens were addressed to an adult while 84% of the tokens were addressed to another peer. These results suggest that the teacher was directly exposed to less than 15% of the total language produced by the three children during the taped sessions. The children produced many more tokens with each other and these were produced in both the L1 and the L2.

Tables 4-6 shows the percentages of Spanish and English used by each child with each type of interlocutor.

⁴⁰ None of the tables for research question I include unknown tokens and microphone tokens.

⁴¹ Includes tokens from Leonard, Carolina, and Marvin talking to each other. (see Table 9).

Table 4 ⁴²
 Individual Spanish (L2) and English (L1) tokens produced by
 Leonard, Carolina, and Marvin when talking to an adult. ⁴³

	Teacher			Whole Class			Other Adult			TOTAL
	L2	L1	Subtotal	L2	L1	Subtotal	L2	L1	Subtotal	
Leonard	N 88 % (98%)	2 (2%)	90 (26%)	229 (98%)	4 (2%)	233 (68%)	19 (95%)	1 (5%)	20 (6%)	343
Carolina	N 83 % (98%)	2 (2%)	85 (39%)	126 (98%)	126 (98%)	128 (56%)	7 (100%)	0	7 (3%)	218
Marvin	N 28 % (100%)	0	28 (20%)	112 (100%)	0	112 (80%)	0	0	0	140

According to Table 4, when the interlocutor was the *teacher* (that is, a teacher or aide) the three children spoke almost exclusively in Spanish (100% for Carolina and Marvin, 98% for Leonard); only 4 of 203 tokens were uttered in English when the interlocutor was the teacher. When the students addressed the *whole class* we see that Spanish was used 98% by Leonard and Carolina, and 100% by Marvin. This fact is interesting because it provides evidence that these children were basically not diverging from expected public linguistic behavior in the classroom. Using English in these situations was only appropriate in a limited set of circumstances, e.g. when the children did not know a particular word in the L2. An example of permissible public use of English appears in Example 1:

Example 1. Session 9. Content: Social Science. Context: Whole class discussion: Introduction to Stereotypes.

1. *Teacher: puedes explicarme lo que es un estereotipo? (p) Carolina?
[Can you explain what a stereotype is? Carolina?]
2. *Carolina: es como cuando ehm: hay un hay un [
[it is when hum, there is an is an]
3. *Boy: [equipo
[team]
4. *Teacher: habla fuerte. habla muy fuerte.
[speak louder, speak very loud]
5. *Carolina: hay un hay un 'grandma'::
[there is a "grandma"::]

⁴² The results are presented as percentages of tokens (utterances).

⁴³ This category does not include Unknown tokens and microphone tokens.

6. *Teacher: un qué?
[a what?]
7. *Carolina: un un abuela. que. y ehm muchos abuelos, abuelas
son, hay y:: ehm como en ‘cartoons’ y ‘comics’ y esto hay
ehm: hay como un ‘granny’ que está sentando en un en un
en un ‘rocker’,
[a a grandmother, that and hum many grandparents,
grandmothers, are and hum, like in ‘cartoons’, and ‘comics’ and
this are hum, there is like a ‘granny’ that is sitting on a on a
‘rocker’]
8. *Children: (giggle)
9. *Teacher: silla mecedora, no?
[rocking chair, right?]
10. *Carolina: sí un <...> tiene como un ehm: una **blanqueta**:: que
estar cubriendo y:::
[yes, one <...> has like a hum, a ‘blanket’::: that is covering
and:::]
11. *Teacher: [una manta? [a blanket?]

In Example 1 the teacher has asked for an example of a stereotype. Carolina provides an example using some words in English. In this context we can see how the teacher tolerates the use of some words in English. Although all of Carolina’s utterances in this example were coded as Spanish mix, overall there were very few utterances of this type in the speech of these three children throughout the 13 sessions. Using English allows Carolina to communicate a message to the rest of the class. Notice, however, that the teacher does not completely accept the use of English words, as is evident in turns 6, 9, and 11 where she either asks for clarification (i.e. Carolina should have known the word for Grandmother) or provides the word in the L2.

Another situation in which the presence of the teacher has an effect on the children’s use of the L1 or the L2 is when the teacher is in the vicinity.

Table 5
Spanish (L2) and English (L1) tokens produced by
Leonard, Carolina, and Marvin when the teacher is in
the vicinity during desk work

		L2	L1	Total
Leonard	N	225	74	229
	%	75%	25%	
Carolina	N	156	34	190
	%	82%	18%	
Marvin	N	105	1	106
	%	99%	1%	

According to Table 5, in desk work activities, when the teacher is walking around the room, checking answers, etc. the children produce at least 75% of their tokens in Spanish. It is important to note that when the teacher overheard them speak English, there were consequences as illustrated in turns 4 through 6 of Example 2, in which the children were building an electric circuit following a blue-print.

Example 2. Session 8. Content: Science.

- | | |
|-------------|--|
| 1. Mary: | yeah, we need two <...> |
| 2. Teacher: | qué haces hablando en inglés? [<i>What are you doing, speaking in English?</i>](Note: <i>The girl did not realize that the teacher had approached the group. The teacher is very strict in pointing out to children that they should not speak English during class.</i>) |
| 3. Mary: | <...> |
| 4. Teacher: | Mary? |
| 5. Teacher: | una vez más y te saca al pasillo. como hace una semana?
[<i>one more time and I will take you out to the hallway. Like last week.</i>] |
| 6. Mary: | ok? |
| 7. Leonard: | tsk, tsk (<i>sort of telling her that she had done a no, no</i>) |

In Example 2, the children were building an electric circuit. In this session the group used much English as they were carrying out the task. In this particular excerpt the teacher caught Mary speaking in English and warned her that she would have to leave the classroom if she spoke in English one more time. After this exchange, the children continued in English and Mary stayed in Spanish.

When the interlocutor was *another adult*,⁴⁴ Leonard used Spanish 95% of the time and Carolina 100% of the time. When the two researchers were the interlocutors, the children always spoke Spanish. The only token in English in this category was not addressed to the researchers but to a teacher training observer who was present in one session and asked one of the participants a question in English. (Note that this behavior throws some light on Heitzman's 1993, Parker et. al. 1994 that when an adult addresses the children in English, the children will speak in English to them).

⁴⁴ Other adult included the researchers and any adult person who interacted with the children during the taping sessions who was not the teacher or the aide. There were no observed frequencies for Marvin in this category.

Table 6
Individual Spanish (L2) and English (L1) tokens produced by
Leonard, Carolina and Marvin when talking to a peer

		Other Peers			Self			TOTAL
		L2	L1	Subtotal	L2	L1	Subtotal	
Leonard	N	779	830	1609	47	62	109	1718
	%	(48%)	(52%)	(83%)	(43%)	(57%)	(6%)	
Carolina	N	497	409	906	30	23	53	959
	%	(55%)	(45%)	(87%)	(57%)	(43%)	(6%)	
Marvin	N	211	28	239	32	5	37	276
	%	(88%)	(12%)	(70%)	(86%)	(14%)	(13%)	

According to Table 6, when the interlocutor is *another peer*, there is more variation in language choice. When the interlocutor is a peer, Leonard uses Spanish 48%, Carolina uses Spanish 55%, and Marvin uses Spanish 88% of the time. With peers, Spanish is favored over English by Marvin, whereas Leonard and Carolina only use Spanish in approximately 50% of their utterances addressed to peers. When the interlocutor is another peer, other factors in addition to interlocutor seem to be conditioning language choice. Many variables may be involved in interactions with peers. These may include, but are not limited to, the following: the relationship between the different peers, whether the interlocutor is a boy or a girl, the language of the previous turn, the type of task they are carrying out, the content of the task, reference to the outside world, whether they are on task or off task, the use of vernacular words, and the cognitive load needed to carry out a particular task, to name a few. An of the variation which is present when these children are interacting with a peer is shown in example 3. In this example, the children had to decide whether they were going to write a script to perform in front of the class or whether they were going to write a narrative/tale.

Example 3. Session 2. Juicio a Peter Zenger. Content: Creative writing .

1. Ally: y luego. [*and then*]
2. Carolina: **and the winner is** (*like in T.V. shows*).
3. Don: teatro:: [*theater. (meaning play)*]
4. Carolina: teatro. (p) [*theater*]
5. Ally: quién <...> obra de teatro. [*who <...> theater play*]
6. Girl2: y tiene que haber como dos papel [*and there has to be like two paper*]
7. Carolina: **[but, but still, still if you do it all cuento. [*story*]you still have to do it. like.. you have to say what the people said. you just can't say "oh", and then "blah, blah, blah."**

8. Leonard: **you can do this.** puedes hacer este en un cuento también.
[*you can do this in a story too*]
9. Don: **yeah. do it.** obra de teatro y pones todo narrador.
[*theater play and put everything as narrator*]
10. Carolina: sí (giggles) [yes]
11. Don: **why wouldn't the people want to do** [
12. Leonard: [huh?
13. @Teacher: (*teacher can be heard near the group*)
14. Don: okay. dame ese papel. okay. si eso: [o.k. give me that paper.
O.k. if that] (*shows one side of the paper*).
si ese: toca <...> ustedes dos, [
if that one turns out <...> you two]
15. Leonard: [yeah. y si este.
[...and if this]
16. Ally: sí [yes]
17. Leonard: okay. dos tres dos **out of** tres. el somos.
(*they spin*)
[*O.k. two three, two 'out of' three. The are*]
18. Don: [oh!
19. Leonard: [oh!
20. Ally: oh, sí. [Oh, yes]
21. Girl2: cuento. [*story*]
22. Leonard: cuento. [*story*]
23. Carolina: **Leonard don't like cuento,** [*story*] **though.**
24. Don: **yeah. but still. we did it fair and square.**

In this example we see that interlocutor alone does not predict language use. All children are using the L1 and the L2 at different points in the excerpt.

Another interlocutor factor which was coded was *self*. These were utterances which occurred in those cases when the children were speaking out loud to themselves using private speech. According to Table 6, the pattern of language use for *self* is similar to *other peer*. Spanish is used 43% by Leonard, 57% by Carolina and 86% by Marvin. Leonard was the only one who used more English than Spanish in this context (57%). Example 4 illustrates several instances of children speaking to themselves in Spanish as they are carrying out specific tasks. In this excerpt the children are finishing up their assignment on figuring out volumes of prisms.

Example 4. Session 5. Content: Math.

- 1.-M: Carolina, podemos usar un papel?
[*Carolina, can we use a paper?*]
- 2.-L: Carolina por favor, por favor, por favor
[*Carolina, please, please, please?*]
- 3.C: uno, dos, tres, cuatro, cinco, seis, siete, ocho, nueve, diez,
once, doce, trece, catorce, quince, dieciseis, diecisiete.
(*counting from eight to seventeen to herself, whispering. She is counting the cubes*).

- hay dieciocho cubos.
[*there are eighteen cubes*]
- 4.-M: Andy, podemos usar un papel?
[*Andy, can we use a paper?*]
- 5.-Andy: o:key (*grumbling*)
- 6.-M: gracias, Andy. gracias, gracias.
[*thank you, Andy. Thank you, thank you*]
- 7.-Andy: no dices gracias una vez más.
[*do not say NT thank you again*]
- 8.C: este es el que estaba en mi grupo.
[*this is the one that was in my group*] (to Andy)
- 9.-M: augh!!
- 10.L: gracias? [*thanks?*]
- 11.Sonia: (...)
- 12.L: este es. agh! [*this is, augh*]
13. C: uno, dos, tres, cuatro, cinco, seis, nueve,
(*counting one through nine*)
hay dieciocho en este. (*whispering*).
[*there are eighteen in this*]
- 14.L: he:y! **cool**. paper! (**Note:** *Teacher is still in the vicinity*)
- 15.@-Ch: este es? [*this is?*]
- 16.@-T: sí este es. [*yes, this is*]

In turns 3 and 13 Carolina is counting the cubes she needs out loud to herself. It is important to note that this private speech is not prompted by any interlocutor but emerges naturally as the children are working out problems or tasks on their own (cf. Vygotsky, 1978, p. 27, 1986, p. 33). The percentage of self tokens produced by the three children when they were carrying out math problems parallel the overall L2 use for all “self” tokens as evidenced in Table 7, although Carolina does seem to use slightly more English in this context.

Table 7
Individual Spanish (L2) and English (L1) tokens produced by
Leonard, Carolina and Marvin when speaking to self overall and during math

		Self ⁴⁵			Self during math		
		L2	L1	Subtotal	L2	L1	Subtotal
Leonard	N	47	62	109	10	13	23
	%	(43%)	(57%)		(43%)	(57%)	
Carolina	N	30	23	53	14	16	30
	%	(57%)	(43%)		(47%)	(53%)	
Marvin	N	32	5	37	19	4	23
	%	(86%)	(14%)		(83%)	(9%)	

⁴⁵ Here we have repeated the tokens reported in Table 7 for ease of comparison.

Talking to each other

Since the three children interacted often with each other, it was decided that their role as interlocutors to each other should also be explored. The results of the interactions among the three children are summarized in Table 8.

Table 8
Individual Spanish (L2) and English (L1) tokens produced
by Leonard, Carolina, and Marvin when talking to each other ⁴⁶

Spanish	Leonard as interlocutor			Carolina as interlocutor			Marvin as interlocutor			TOTAL	
		L2	L1	Subtotal	L2	L1	Subtotal	L2	L1		Subtotal
Leonard	N	—	—	—	104	71	175	136	48	184	359
	%				(59%)	(41%)	(49%)	(74%)	(26%)	(51%)	
Carolina	N	94	76	170	—	—	—	68	40	108	278
	%	(55%)	(45%)	(61%)				(63%)	(37%)	(39%)	
Marvin	N	193	7	200	78	27	105	—	—	—	305
	%	(97%)	(3%)	(66%)	(74%)	(26%)	(34%)				

Table 8 shows that Leonard uses more Spanish (59%) than English (41%) when he is speaking to Carolina and much more Spanish (74%) than English (26%) when addressing Marvin. Note that the percentage of Spanish language use with Carolina and Marvin is higher than when Leonard interacts with other peers (as illustrated in Table 6). Carolina also speaks more Spanish (55%) than English (45%) when she interacts with Leonard. Carolina's Spanish use with Leonard is close to her percentage of L2 use with other peers (56% in Table 6), but she uses more Spanish (63%) with Marvin than with other peers. Hence, both Leonard and Carolina seem to accommodate to Marvin by using more Spanish with him. When Marvin is interacting with Leonard and Carolina he tends to use less Spanish (74%) when he interacts with Carolina compared to his L2 language use (87%) with *other peers*. In this way, Marvin also seems to accommodate to the language of the interlocutor to some degree. Marvin's Spanish language use increases from 87% when interacting with other peers to 97% when interacting with Leonard. So Marvin uses even more Spanish with Leonard than he does with other peers. This behavior suggests that Marvin may be non-accommodating (diverging) to Leonard's language use pattern. Marvin may be more aware of his Spanish language use when he is speaking with Leonard because they are being taped. However, we would expect him to behave in a similar way towards Carolina but this is not the case as he speaks less Spanish with her. What is clear from the data is that all three children are having an effect on each others' L2 use. They seem to be accommodating their L2 use to each other's speech patterns.

Table 9
Spanish (L2) and English (L1) tokens produced by
Leonard, Carolina, and Marvin when talking to “other”

		Microphone			Unknown			TOTAL
		L2	L1	Subtotal	L2	L1	Subtotal	
Leonard	N	69	25	94	11	9	20	114
	%	(73%)	(27%)	(82%)	(55%)	(45%)	(18%)	
Carolina	N	1	3	4	4	6	10	14
	%	(25%)	(75%)	(29%)	(40%)	(60%)	(71%)	
Marvin	N	—	—	—	8	1	9	9
	%				(89%)	(11%)	(100%)	

Table 9 shows the percentage data for the last two factors, *microphone* as interlocutor and *unknown* interlocutor. We can observe that there are relatively few utterances in which the interlocutor was the *microphone* or an *unknown* interlocutor. Utterances were coded as *unknown* when there were not sufficient contextual clues to know who the interlocutor was. The pattern of L1 and L2 use parallels “other peers” and “self”. L2 use accounted for 55% of the tokens produced by Leonard, 40% by Carolina, and 89% by Marvin.

The last factor which I wish to comment on is *microphone* as interlocutor. This factor emerged from the data itself and it was not decided *a priori*. At some point in the recording sessions I noticed that Leonard was talking to the microphone directly. Table 9 illustrates that most of these examples come from Leonard’s data (94 tokens). Examples 5 and 6 illustrate some of the functions that the microphone played when it was the interlocutor. In example 5 the teacher was following-up on the concept of electric coils.

Example 5. Session 12. Content: Science.

- *T: sabes qué es lo que:: está diciendo que cuanto más grueso
qué?
[do you understand what he is referring to when the widest it I
the?
cuanto más grueso e:::l alambre, qué pasa?
[the widest the wire, what happens?]
- M: más brillante: es.
[the shinier it is]
- !L: **he’s on a role.** está diciendo que:: cuando más grueso
cuando más grueso el alambre, qué pasa.

⁴⁶ does not include Unknown tokens and microphone tokens.

- [he is saying that the wider it is the wider the wire, what happens] (He uses the microphone as another interlocutor, holding it in his hand and talking directly into it)
- *C: más ilu::m, más ilumi:n el bombilla. (p) está má:s.
[the shinier, the light bulb is shinier. (p) it is more]
- *M: más brillante es.
[it is shinier]
- *T: más brillante, no?
[shinier, right?]
- !L: 'más brillante, no?'
[shinier, right?]
- *T: por qué se pone más brillante?
[why is it shinier?]
- !L: 'por qué se pone más brillante' (repeating the question right into the microphone). con un alambre más grueso.
[with a wider wire?]
- *T: ...con un alambre más grueso? sobre todo el de cobre, sí?
[with a wider wire. Specially the copper one?]
- !L:sobre todo el cobre.
[specially the copper]
- *B2: más electricidad puede pasar [
[more electricity can go through][
- *T: [exacto, exacto. [exactly, exactly]
- !L: 'más electricidad puede pasar, exacto, exacto'.
[more electricity can go through, exactly, exactly]

Example 5 shows an instance in which Leonard uses the microphone as an interlocutor. Leonard is repeating what the teacher has just said presumably so that the researchers can hear. One possibility is that Leonard is rehearsing what the teacher is saying for some future production (cf. Vygotsky, 1987). Yet another possibility is that Leonard is using the microphone to communicate with the researchers, but notice that the percentage of Spanish is less (75%) than when the interlocutor is the researcher (100%).

Another example of the use of the microphone by Leonard is illustrated in example 6. In this example the children have been working on a geometry assignment where they have to calculate the volume of prisms.

Example 6. Session 13. Content: Math.

- !L: **Katy just has announced that she is going to hit me again now probably.** (laughing)
- !Katy: (makes noise into the microphone)
- !L: **yes, that was very interesting now more from Andy.** (speaking to the microphone)
- Katy: **Leonard, you are getting that all over your butt.**
- L: (tries to get to Katy)
- !Katy: **hi, my name is Katy Daley.**

- \$K: okay. (*she finished the computation*).
- M: (*sings*) (*we wish a Merry Christmas and a happy New year*)
oh, oh. Jerónimo!!! (*to himself*) (*starts to sing again*)
- !L: **now, wasn't that spectacular.**

In Example 6 Katy and Leonard are off-task teasing each other. They are using the microphone as a prop in their game. Earlier Leonard had been pretending that he was the announcer in the TV program *Biography* using the microphone as a presenter would use it.

These examples show how Leonard incorporates the microphone as one more interlocutor which we could presume, at least in some occasions, could be the researchers. Notice that Leonard is not accommodating to the researchers when he is speaking directly into the microphone. Leonard seems to be using the microphone as a safe space where he can speak the L1 and get away with it (cf. Rampton, 1996).

After analyzing the data in Tables 6 through 9 we can conclude that “other peer” and “self” pattern in a similar fashion for each child. The L2 is still used more than the L1 by Marvin and Carolina but the L1 is favored by Leonard with these interlocutors. When the children are speaking to each other they all accommodate to the interlocutor’s L2 use. “Microphone” was an interesting category in which the children, especially Leonard, seems to be addressing the researchers although they do not use the L2 exclusively in this case. Last, L2 language use increases for all three children when there is an adult presence—direct or indirect—as in the case of “teacher, other adult and whole class”.

Research Question I: Findings from the Fifth Grade Surveys

The survey asked several questions related to the language children use at school. In this section I will report on the answers fifth graders provided to the following question about the language used with teacher and peers as interlocutors:

- When you are in class, what language do you normally use?
- With the teacher?
- With your classmates?

The responses from the students in Carolina, Leonard, and Marvin’s classroom are summarized in Table 10 below.

Table 10
Students' self-reported language use in
Leonard's, Carolina, and Marvin's fifth grade immersion classroom.⁴⁷

	Spanish	English	Spanish/English	
with teacher	18 (95%)	0	1 (5%)	total:19
with classmates	4 (21%)	4 (21%)	11 (58%)	total:19

According to Table 10, when children in this fifth grade classroom reported that when they were speaking to the teacher inside the classroom, 95% of them reported they used Spanish only. With classmates, Table 10 shows more variation; 21% reported they use only Spanish with their classmates and 21% reported they used only English. More than half reported that they spoke both Spanish and English with their classmates inside the classroom. Our three subjects' responses to these same questions were as follows: with the teacher, all three children self reported that they used only Spanish; with other classmates Marvin reported that he used only Spanish, Leonard reported that he used both and Carolina reported that she used Spanish but changed into English when she was bored with Spanish. Notice that there is some disparity between the self-reported data from Leonard, Carolina, and Marvin and the observed data reported in tables 6-9, specifically with Marvin's self-report that with other peers he only uses Spanish. According to the data analyzed so far this is not the case.

The responses from the other fifth grade classroom are summarized in Table 11.

Table 11
Students' self-reported language use in other fifth grade immersion classrooms
at Leonard, Carolina, and Marvin's school

	Spanish	Mostly Spanish	English	Spanish/English	
with teacher	20 (91%)		0	2 (5%)	total:22
with classmates	5 (23%)	1 (5%)	5 (23%)	11 (50%)	total:22

When Tables 10 and 11 are compared we see that there is a similar pattern of self reported language use according to interlocutor for all three fifth grade classrooms surveyed (based on the returned questionnaires only). In general, more than 90% of the fifth graders reported using only Spanish with the teacher while in the classroom. When the interlocutor is another peer we see more

⁴⁷ When the percentages from Carolina, Leonard, and Marvin's responses were taken out the percentage change was not-significant.

variation. Half, or more than half reported that they used both Spanish and English with peers in the classroom. More than 20% reported that they used only Spanish or only English with peers.

These results provide further evidence of differences in language use according to interlocutor which parallels but does not exactly duplicate the data reported for our three subjects in Table 3. The language behavior of the three children in this study seems to be very similar to the self-reported behavior of other peers in the three fifth grade classes.

Data from the follow-up interview and the questionnaires to the three participants also help explain the observed behavior. Marvin reported that he always spoke Spanish in class with other peers while Carolina and Leonard self-reported that they used more English than Spanish when talking to another peer. In other contexts Leonard and Marvin self-reported the following regarding language use with peers.

Leonard

Researcher: *Cuando estás en el colegio, ¿Cuándo usas español y cuándo usas inglés? y ¿por qué?*

Leonard: En recreo y almuerzo hablo inglés porque es más fácil pero en la clase hablamos español porque a los profesores y tal como eso, ellos hablan español. Podemos hablar español con ellos. También podemos hablar español como, con los amigos pero no hablamos (*giggles*) español con ellos.

Researcher: *¿Por qué?*

Leonard: Yo no sé. muchos, sólo hablan inglés, no sé.

[*English translation*]

Researcher: *When you are at school, when do you use Spanish and when do you use English? And why?*

Leonard: I speak English at recess and lunch because it is easier, but in class we speak Spanish because the teachers and the like, they speak Spanish. We can speak Spanish with them. We can also speak Spanish with friends but we don't speak (*giggles*) Spanish with them.

Researcher: *Why?*

Leonard: I don't know. Many only speak English, I don't know.

Here, Leonard analyzes when he speaks Spanish and English according to interlocutor. His answer reflects his awareness that he uses Spanish with the teacher. With other peers we can appreciate some of the variation present in the reported data. He can speak Spanish to the other peer but chooses English. When asked, "Why?", Leonard answers that he does not know. He speculates that most children just speak English. Marvin, in the example below, gives a different answer than Leonard.

Marvin

Researcher: *¿Y cuándo usas inglés?*

Marvin: Durante recreo.

Researcher: *Y cuando usas inglés, ¿Por qué lo usas?*

Marvin: Porque mis amigos no le gustan mi. Quieren que yo hablo en inglés.

Researcher: *No les parece chévere, hablar en español*

Researcher 2: *¿Por qué?*

Marvin: Ellos no le gustan hablar en español y.

Researcher 2: *Pero en inglés sí, ¿no?*

Marvin: Sí.

Researcher 2: *¿Y por qué crees que no les gusta hablar en español?*

Marvin: Porque:: inglés es su idioma de /origuene/. y ellos no les gusta mucho el español.

[English translation]

Researcher: *When do you use English?*

Marvin: During recess.

Researcher: *And when you use English, why do you use it?*

Marvin: Because my friends don't like me. They want me to speak English.

Researcher: *They don't think it's cool to speak Spanish?*

Researcher 2: *¿Why?*

Marvin: They don't like to speak in Spanish and

Researcher 2: *But they do in English, right?*

Marvin: Yes.

Researcher 2: *¿And why do you think they don't like to speak in Spanish?*

Marvin: Because:: English is their language of /origin/ and they don't like Spanish too much.

Marvin is aware that he uses English in contexts outside the classroom (e.g. recess). He also states that he uses English in this context because his friends (other peers) don't like it when he uses Spanish in that context. He also says something about his social standing: other children do not like him and do not like him speaking in Spanish. This bit of data sheds light on our observations that Marvin is somewhat of an outcast in this class.

Research Question I: Chi-square Analysis

Based on research question one, the variables Interlocutor and language choice were tested for independence (using a chi-square test) with the level of significance set at $p < .05$. The null hypothesis is that

Null Hyp. 1 • language choice is independent of interlocutor in the linguistic output of Leonard, Carolina, and Marvin.

Table 12 shows the results of the application of a chi-square test for independence between the variables 'Language choice' (Spanish and English) and 'Interlocutor' for each subject.

Table 12
Summary table for language choice with interlocutor.⁴⁸

Data	Chi-square	p<0.05	Significance	Cramer's Phi	DF	Total Tokens
Leonard	333.53	16.92	0.0001	0.36	9	2534
Carolina	152.10	16.92	0.0001	0.32	9	1471
Marvin	62.05*	14.07	0.0001	0.29	7	730

*There are no tokens for "microphone" or "other adult " for Marvin.

The chi square test was performed on each individual data set and the null hypothesis was significantly rejected at the $p < .0001$ probability for all three children. Hence, for these particular children, interlocutor is not independent of language choice for these data. Interlocutor and language choice are significantly related in this classroom.

Table 13 shows the results of the application of a chi-square test for independence between the variables Language choice (Spanish and English) and "The subjects as interlocutors" for each participant. We have seen that the children seemed to use more L2 with each other than with other peers.

Table 13
Summary table for language choice with "The subjects as interlocutors"

Data	Chi-square	p<0.05	Significance	Cramer's Phi	DF	Total Tokens
Leonard	8.51	3.84	0.0036 (dep)	0.15	1	359
Carolina	1.60	3.84	0.2055 (ind)	0.08	1	278
Marvin	34.71	3.84	0.0001 (dep)	0.34	1	305

The chi square for independence test was performed on each individual data set and the null hypothesis was rejected at the $p < .05$ level for Leonard and Marvin, while the null hypothesis could not be rejected at the $p < .05$ level for Carolina. Hence, Carolina uses the same proportion of L2 and L1 when speaking to Leonard and/or Marvin as when speaking to another peer. Leonard however used more L2 when speaking to a member of the participant group than when speaking to other peers. Marvin will speak less Spanish when speaking to Carolina, but more when speaking to Leonard than when he is speaking to other peers.

⁴⁸ All Chi-Square cross tabulation tables for research question 1 are in appendix 4, in Broner (2000).

Because the chi-square cannot reveal what other factors affect language choice in the classroom, or how much Spanish and English the children are using with each type of interlocutor a VARBRUL analysis was also performed (see section 4).

Research Question II: Effect of Task

Question 2. What languages (English L1/Spanish L2) are used by students while carrying out academic content tasks in a fifth grade immersion classroom? Do these task factors have any systematic effect on the choice between Spanish and English?

The second research question is concerned with languages used by the three children while they are carrying out classroom tasks. For the purpose of this analysis, **task** was divided into three dimensions: task-activity, task-content and whether students were ‘Off’ or ‘On’ task. The frequencies of occurrences were analyzed for each language for the three children in order to find out: 1) whether classroom activity plays a role in language choice; 2) whether there is a measurable relationship between the content of the task and the language choice; and 3) whether there is differential language use when these three children are ON or OFF task.

L1 and L2 Use in the Classroom According to Task-Activity

For the purpose of this study, task-activity was defined as those activities present during the opening, instructional, or closing phase (Mehan, 1979) of each taped lesson. Tables 14-16 summarizes first and second language use according to activity for each child.

Table 14
Leonard’s Spanish (L2) and English (L1) use
according to the classroom activity

		L2	L1	Total	Total %
transition	N	204	214	418	16%
	%	49%	51%		
directions (whole class)	N	85	35	120	5%
	%	71%	29%		
main activity (desk work)	N	875	596	1471	58%
	%	59%	41%		
main activity (whole class)	N	89	62	151	6%
	%	59%	41%		
follow-up (whole class)	N	229	145	374	15%
	%	72%	28%		
Total	N	1482	1052	2534	
	%	58%	42%		

Table 15
Carolina's Spanish (L2) and English (L1) use
according to the classroom activity

		L2	L1	Total	Total %
transition	N	95	147	242	
	%	39%	61%		16%
directions (whole class)	N	55	14	69	
	%	80%	20%		5%
main activity (desk work)	N	621	353	974	
	%	64%	36%		66%
main activity (whole class)	N	19	10	29	
	%	66%	34%		2%
follow-up (whole class)	N	121	38	159	
	%	76%	24%		11%
Total	N	911	562	1473	
	%	62%	38%		

Table 16
Marvin's Spanish (L2) and English (L1) use
according to the classroom activity

		L2	L1	Total	Total %
transition	N	107	22	129	
	%	83%	17%		18%
directions (whole class)	N	19	2	21	
	%	71%	29%		3%
main activity (desk work)	N	369	36	405	
	%	91%	9%		55%
main activity (whole class)	N	44	7	51	
	%	86%	14%		7%
follow-up (whole class)	N	123	1	124	
	%	99%	1%		17%
Total	N	662	68	730	
	%	91%	9%		

Tables 14-16 show the allocation of L1 and L2 tokens produced by Leonard, Carolina, and Marvin in the various class activities which took place during the taped lessons. It is important to note that the tokens in Tables 14-16 have not been calculated with respect to interlocutor; hence the interlocutor could be anyone.

Based on the information presented in Tables 14-16, we see that desk work elicited 58% of all of Leonard's coded tokens, 66% of Carolina's and 55% of Marvin's. In teacher fronted activities, which includes directions, follow-up, review, and whole class activities, Leonard produced 26% of all tokens, Carolina 17%, and Marvin 27%. Finally, in transitions between activities Leonard and Carolina produced 16% of their tokens, Marvin 18%.

These percentages suggest that tokens were allocated similarly for each type of activity for all three children, though Leonard and Marvin contributed slightly more tokens in whole-class activities than Carolina. Leonard and Marvin tended to raise their hands often when the teacher asked for volunteers.

According to Table 16, Marvin seems to have used more Spanish than English regardless of activity, while Carolina and Leonard apparently used more Spanish than English in all activities except transitions where they used more English. In transition, Carolina used English a total of 61% of the time but Leonard used English a little over half of the time (51%). Note that transition was also the context in which Marvin used the least Spanish compared to the rest of his activities.

In *directions*, the Spanish language use percentages were allocated as follows for each child: Leonard 71%, Carolina 80% and Marvin 90%. For *whole class discussion* Leonard used Spanish 59% of the time, Carolina 66%, and Marvin 86%. Finally, for *follow-up* Leonard used Spanish 61% of the time, Carolina 76% and Marvin 99%.

Despite individual differences, all three children apparently used more Spanish than English in the activities of directions, whole class discussion and follow-up. It is worth noting that these are activities in which the teacher is addressing the whole class and the children are paying attention and responding to the teacher's questions. According to these data, when the activity is teacher-fronted the children do not speak exclusively in Spanish. However, we have seen that when the interlocutor is the teacher, they use Spanish more than 98% of the time (see Tables 3-5). This suggests that while the teacher is addressing the whole classroom there are instances in which all three children are using the L1. Example 7 shows one of those instances. In this example the teacher is reminding them of a visitor they had had in class.

Example 7. Session 10. Content: Reading.

1*T:	<u>ustedes os</u> recordáis ehm:: a la persona que tuvimos en [do you remember hum, the person that we had] Thompson de::: Don <...> el que fue a [[Thompson...from Don <...> who went to] [
2*L:	[sí! [yes!] (this really caught his attention)
3*T:	[African trail,

4*L:		aha!
5*T:		[Soviet
	trek y todo eso? [<i>an all that</i>]	
6*Chn:	no!	
7*L:	remember it.	
8*Ch:	sh!!!	
9*T:	había:: : [un artículo del periódico [<i>there was::: an article in the paper</i>]	
10L:	[a biker dude.	
-11*T:	...ahí colgado mucho tiempo porque estaba en:: [<i>pinned there for a long time</i>] (<i>pointing to a board by the blackboard on which an article on this biker had been up some time ago</i>)	
12*Chn:	sí. [yes]	
13*L:	sí. [yes]	
14*T:	y: todavía está en en 'Maya Quest' haciendo 'Maya Quest', no? [<i>and he is still in in 'Maya Quest' doing 'Maya Quest', right?</i>]	

Example 7 illustrates how the children sometimes use English when there is a whole class discussion as in turns 7 and 10. These comments are “asides” and are not necessarily directed to the whole class.

Tables 14-16 also summarize language use in the *desk-work* activity, in which the children are working on their own, in pairs, or in groups. During desk work, Leonard uses Spanish 59% of the time, Carolina 64%, and Marvin 91%.

Note that at least 55% of all tokens produced by these three children come from desk work activities; this accords with our direct observation that this teacher promotes group work in her class. The percentages of individual language use reported above indicate that when children are carrying out activities such as desk work they seem to choose to use more Spanish than English. One might think that the opportunity to speak English is greater in desk work when compared to whole class activities because the teacher has more control over classroom speech. However, given the distribution of tokens, it is clear that activity alone does not help us categorically predict Spanish and English language use.

Research Question II: Chi-square Results for Task-Activity

Previous research and the descriptive data analyzed in section 14-16, point to task as an extra linguistic variable which influences the use of L2 and L1 in the classroom. Based on research question two, the variables task-activity, and language choice were tested for independence (using a chi-square test) with the level of significance set at $p < .05$. The null hypothesis for the first variable, activity, is that

- Null Hyp. 1 • language choice is independent of task-activity in the linguistic output of each child.

Table 17 shows the results of the application of a chi-square test for independence between the variables Language choice (Spanish and English) and task-activity for each subject.

Table 17
Summary table for chi-square results between language choice and task-activity for Leonard, Carolina and Marvin.⁴⁹

Data	Chi-square	p<0.05	Significance	Cramer's Phi	DF	Total Tokens
Leonard	25.45	9.49	.0001	0.10	4	2534
Carolina	77.17	9.49	.0001	0.23	4	1473
Marvin	21.79	9.49	.0003	0.17	4	730

The chi square for independence test was performed on each individual data set and the null hypothesis was significantly rejected at $p < .0003$ probability for all three children. Hence, for these particular children, the activity during which they are carrying out a particular academic task is not independent of language choice for these data. For these children, activity was significantly related to language choice in this classroom.

When we take a closer look at the percentage data for all three children (see Tables 14-16) it can be seen that these three children all speak more Spanish during all activities except during *transition*. Marvin is the only one of the three children who speaks primarily in Spanish (83%) during this type of activity; Carolina and Leonard use Spanish less than 50% (39% and 49% respectively). It should be noted that even Marvin has a lower percentage of tokens in Spanish than normal in transition. In order to determine whether *transition* was the factor responsible for the significance, a second chi-square test was performed on the data omitting the factor *transition* to further explore the effect of the different kinds of activities on language preference.

Table 18
Summary table for chi-square results between language choice and task-activity for Leonard, Carolina and Marvin without the factor transition

Data	Chi-square	p<0.05	Significance	Cramer's Phi	DF	Total Tokens
Leonard	6.23	7.81	.1008 (ind.)	0.05	3	2132
Carolina	15.20	7.81	.0017 (dep)	0.11	3	1231
Marvin	11.83	7.81	.0081 (dep)	0.14	3	601

⁴⁹ For complete summary tables for Research Question II see Broner (2000).

The chi-square for independence test was performed on each individual data set and the null hypothesis was significantly rejected at $p < .05$ probability for Marvin and Carolina. Hence, for these particular children, the proportion of language use is still significantly related to these activities (follow-up, directions, whole class discussion, and group activity). However, notice that these dependencies are not as strong as in Table 18. For Leonard, when the factor *transition* is omitted, the null hypothesis cannot be rejected at the $p < .05$ level. This means that for Leonard, language use in the classroom is constant regardless of activity. For Leonard, language use may be dependent on other variables but not “task-activity” when those tasks do not include “transition.”

The differences noted in both chi-square tables show that the proportions contributed by the inclusion or omission of the factor *transition* are relevant to the value of each chi-square. We can conclude that all three children use significantly less Spanish during “transitions”.

L1 and L2 Use in the Classroom According to Task-Content

For the purpose of this study, task-content was defined as the overall content of each taped lesson. Depending on the taping schedule, some sessions included more than one content. Tables 19-21 summarize first and second language use according to content for each child.

Table 19
Leonard’s Spanish (L2) and English (L1) use
 according to the overall content of the task

		L2	L1	Total	Total %
creative writing	N	567	169	736	
	%	77%	23%		29%
arts and crafts	N	89	159	248	
	%	36%	64%		10%
math	N	189	207	396	
	%	48%	52%		16%
reading	N	138	98	236	
	%	58%	42%		9%
science	N	406	283	689	
	%	59%	41%		27%
social studies	N	14	13	27	
	%	55%	45%		1%
no content (transitions)	N	53	106	159	
	%	33%	67%		6%
other	N	26	17	43	
	%	60%	40%		2%
Total	N	1482	1052	2534	
	%	58%	42%		

Table 20
Carolina's Spanish (L2) and English (L1) use
 according to the overall content of the task

		L2	L1	Total	Total %
creative writing	N	443	134	577	
	%	77%	23%		39%
arts and crafts	N	10	34	44	
	%	23%	77%		3%
math	N	177	57	234	
	%	76%	24%		16%
reading	N	86	48	134	
	%	64%	36%		9%
science	N	167	204	371	
	%	45%	55%		25%
social studies	N	2	0	2	
	%	100%			0%
no content (transitions)	N	15	75	90	
	%	17%	83%		6%
other	N	11	10	21	
	%	52%	48%		1%
Total	N	911	562	1473	
	%	62%	38%		

Table 21
Marvin's Spanish (L2) and English (L1) use
 according to the overall content of the task

		L2	L1	Total	Total %
creative writing	N	49	0	49	
	%	100%			7%
arts and crafts	N	31	1	32	
	%	97%	3%		4%
math	N	218	37	255	
	%	85%	15%		35%
reading	N	111	3	114	
	%	58%	42%		16%
science	N	213	14	227	
	%	94%	6%		31%
social studies	N	0	0	0	
	%				0
no content (transitions)	N	24	11	25	
	%	69%	3%		5%
other	N	16	2	18	
	%	89%	11%		2%
Total	N	662	68	730	
	%	91%	9%		

Due to the variation present for each child, I will comment on each table and then I will summarize the patterns that emerge for all three children.

Table 19 summarizes Leonard's language choice according to the content of the lesson. Leonard uses the most Spanish (77%) when the content is *creative writing* and uses the most English when there is *no academic content* in transitions between lessons (67%). When the content is *science* and *other*, Leonard uses more Spanish (58% and 59% respectively) than English, and speaks a little over 50% in the L2 in *social studies*. When the content is *math*, Leonard uses slightly less Spanish (48%) than English. In *arts and crafts*, Leonard also chooses more L1 (64%) than L2. For Leonard content of the task seems to have an influence on his language choice.

Table 20 summarizes Carolina's language choice according to content. Carolina also uses more Spanish (77%) when the content is *creative writing*⁵⁰ and uses more English when there is *no content*, in transitions between lessons (83%). In *math*, Carolina uses more L2 (76%) than in other contents except for *creative writing*. In *reading*, Carolina uses Spanish 64% of the time. When the content is *other*, Carolina speaks a little over 50% in the L2. When the content is *science*, Carolina uses slightly less Spanish (45%) than English. In *arts and crafts*, Carolina uses the L1 (77%) more than L2. For Carolina content of the task also seems to have an influence on her language choice.

Finally, Table 21 summarizes Marvin's language choice according to the content of the lesson. According to Table 19, Marvin uses more Spanish than English no matter what the task content. Nevertheless, there are a few percentages worth commenting on. As seen in Leonard's and Carolina's data, Marvin also uses the most Spanish (100%) when the content is *creative writing* and uses the most English when there is *no content* in transitions between lessons (31%). Marvin uses the L2 97% of the time in *arts and crafts*. When the content is *math*, Marvin uses less Spanish (85%) than in any other content

Despite the variation present in the percentage data for each individual child, some apparent patterns of language use surfaced for all three children. The percentage data from Tables 19-21 shows that all three children used the most Spanish when the content was *creative writing* while *No content* was the factor in which the most English was used by the three children. When the general content of the section is *math*, these children tended to use less Spanish than in *creative writing*. A note of caution is needed here, since Marvin and Leonard produced fewer Spanish tokens in *math*, but Carolina's number is almost as high as for *creative writing*. These results need further analysis to be able to fully account for the differential language use according to content.

According to Tables 19-21 *creative writing* is the content where the most Spanish is used by all three children. It is possible that when studying this content the children are more focused on using their second language because they need to use the L2 to actually carry out the task (e.g. to write a narrative in the L2), as the following excerpt in example 8 of a *creative writing* task shows.

Example 8. Session 1. Content. Creative writing. “Sabía que iba a ser un día horrible” (I knew it was going to be a terrible day when....).

- | | | | | |
|--------------|---|---------------------------|-----------------------------|--|
| 1.-Leonard: | yo: fui a ca:sa: pa:ra: cambiar (<i>speaking slowly, while writing</i>)
[I went home to change] | | | |
| 2.-Boy: | splash | | | |
| 3.-Girl1: | me salpicó. [<i>I was splashed</i>] | | | |
| 4.-Girl1: | (<i>laughs</i>) | | | |
| 5.-Boy1: | qué? [<i>what?</i>] (<i>wondering why the girl is laughing</i>) | | | |
| 6.-Leonard: | fui a casa para cambia:r mis (p).
[I went home to change my
cómo dices clothes ? [<i>How do you say ‘clothes?’</i>] | | | |
| 7.-Boy1: | ropa! (<i>in disbelief</i>) | | | |
| 8.-Leonard: | oh! (p)cambiar mi ro:pa:. puedo decir ahm, yo cam-yo fui a
mi casa para cambiar mi ropa (p) y encontré.
[(p) <i>change my clothes: I can say hum I chan-I went home to
change my clothes (p) and I found NT</i>] | | | |
| 9.-Girl1: | encontré. [<i>found</i>] (<i>correcting him</i>) | | | |
| 10.-Leonard: | qu-encon-encontré. gracias [<i>th-fin-found, thanks</i>](<i>changing
the spelling</i>) que no tenía pantalones. [<i>that I didn’t have
pants</i>] | | | |
| 11.-Girl1: | sí. que mi-ninguno de mis pares de pantalones
[<i>yes. that my-none of my pairs of pants</i>]
estaba ahm (s) hm, cómo se dice? [<i>were ahm (s) hm, how do you say?</i>] | | | |
| 12.-Leonard: | [no, que mi [<i>no that my</i>]
perro comiólos. [<i>dog ate them NT</i>] | | | |
| 13.-Boy1: | [ah! limpios
[<i>oh! Clean</i>](<i>answering to the girl</i>). | | | |
| 14.-Girl1: | sí, que mi [
[<i>yes, that my</i>] | | | |
| 15.-Leonard: | [que [
16.-Girl1: | [que mi [
17.-Leonard: | [que, que mi:
18.-Girl1: | mi perro los [
[<i>my dog it</i>] |
| 19.-Leonard: | [pe-rro:: | | | |
| 20.-Girl1: | las comió. [<i>ate them NT</i>] | | | |
| 21.-Leonard: | las comió. [<i>ate them NT</i>] | | | |

⁵⁰ The highest percentage of Spanish use by Carolina was in social studies. I will not comment on this due to the small number of tokens (2) she produced during the social studies lessons.

Las comió mis pantalones. comió todos, todos [(laughs)
[ate all my pants NT. Ate all, all]

In this example, the goal of the task is to write a group narrative. The teacher has written on the board the first line of the narrative “Sabía que iba a ser un día horrible cuando...”*I knew it was going to be a terrible day when....* The children take turns coming up with sentences which contributed to the group narrative. In the previous example we can observe several instances of scaffolding in the L2 while the children are constructing a group narrative, providing alternative vocabulary, helping with spelling, and/or a linguistic form, and providing new ideas. We can observe that in this excerpt there is very little use of the L1. There are only two instances in turns 2 and 6, respectively.

1) “splash” and

2) “¿Cómo se dice clothes”.

The first one is produced by a boy in the group and a girl provides the translation. The second one is produced by Leonard as a Spanish-base mix token with a metalinguistic function. All other tokens are produced in Spanish. It seems plausible that the increased use of Spanish is due to the goal of the task,⁵¹ which is to write a group narrative in the L2, and this fact alone could account for the increase in the use of Spanish. On the other hand, the children could have chosen to translate from the L1 to the L2 while carrying out the same task. It seems that since they have to focus more on the language, the children use more L2 than in other general content areas such as math or science in which the final goal of the task itself, for example, building an electric circuit, or solving a math problem, may not require the use of L2 to actually carry out the task. See Example 9 for an instance of a science lesson, where much more L1 occurs. The children are building an electric circuit. They have to follow/interpret a blueprint.

Example 9. Session 8. Content: Science.

- | | |
|--------------|---|
| 1. Girl: | two bulbos? [<i>light-bulbs</i>] |
| 2. Leonard: | I know. |
| 3. Carolina: | no, it won't work. I know that. |
| 4. Leonard: | I was just trying it. see I didn't hook it up? (p)
pum, paran, paran, paran. (<i>starts to sing one of his habitual tunes</i>) |
| 5. Carolina: | we need one more lightbulb. |
| 6. Mary: | yeah, we need two <...> |
| 7. Teacher: | qué haces hablando en inglés? |

⁵¹ It would be interesting to see if the same increase in L2 language use occurs if the children have to write a report in the L2 on a science or math topic. This is an issue that should be explored in a future study since there were no sessions which included such a task.

- [What are you doing speaking English] (**Note:** The girl did not realize that the teacher had approached the group. The teacher is very strict in pointing out to children that they should not speak English during class.)
8. Mary: <...>
 9. Teacher: Mary?
 10. Teacher: una vez más y te saco al pasillo. como hace una semana?
 [One ore time and I'll send you to the corridor like last week]
 11. Mary: ok?
 12. Leonard: **tsk, tsk** (sort of telling her that she had done a no, no)
 13. Mary: <...>

 14. Carolina: **hey you guys, we are supposed to work together on this one.**
 15. Mary: oh. estás terminado tú? [are you done? NT]
 16. Leonard: /nou./
 17. Carolina: **our light-bulbs don't work.**
 18. Leonard: “trabaja con tus compañeros para ver cuántos bulbos”
 [“work with your partner to see how many light-bulbs”]
 (Leonard is reading the instructions and is mocking a ‘reading’ style) **but what if it blows up.**
 19. Carolina: **if it blows up, then it will be funny.**
 20. Leonard: **that won't be funny. what if it blows up in your face.**
 21. Carolina: **Elena, we are supposed to work together.**
 22. Elena: no
 23. Mary: si hablas en inglés vas a:.
 [If you speak in English you are:](pointed to the lapel)

In this example we can observe more use of the L1. The children are working with a handout which asks them several questions they need to answer based on their observations of the behavior of the circuit they are building. We can observe that both Carolina and Leonard use the L1 to carry out the task, as in turns two through four. Furthermore, we can also observe that the use of English is penalized by the teacher who overhears Mary, as in turns eight through eleven. Mary then remains in Spanish while the other children continue in English once the teacher leaves the group. In Example 9, the L2 is not needed to carry out the goal of this particular task, and children do not necessarily use the L2 to do so. In example 9, the L2 is used when the teacher is nearby or, as in the case of Mary, when students have been “caught” violating a classroom rule.

A characteristic of math is that children tend to work out problems out loud as Carolina is doing in the next example.

Example 10. Session 11: Math (geometry, area and perimeter).

Carolina: <...> by eight divided by four plus <...> zero times eight. divided by four. plus nine equals <...> eight times zero divided by four (C is doing calculations on the calculator. She is talking to herself)

This excerpt is typical of these types of activities in which the children speak out loud to themselves as they are working out problems. In this example Carolina is trying to figure out the area of a figure and in the process she talks to herself out loud in the L1. The next two examples illustrate Carolina using the L2 as she works out a math problem.

Example 11. Session 13: Math (Volume of prisms).

1. Carolina: uno, dos, tres, cuatro, cinco, seis, siete, ocho, nueve, diez, once, doce, trece, catorce, quince, dieciseis, diecisiete. [counts from one to seventeen](to herself. She is counting the cubes).
hay dieciocho cubos. [there are eighteen cubes]

(several minutes later)

2. Carolina dos, tres. un ancho es tres. [two, three, a width is three] (Carolina is talking to herself while she is figuring out the problem)
el otro: (p) e:s dos, cinco. y::: el largo e:s (Thinking) [the other (p) is two, fives, and::: the length is]

(several turns later)

3. Carolina: cuarenta y cinco. [forty five] (to self)

Examples 10 and 11 seem to illustrate the use of the L2 and the L1 to carry out the same type of cognitive function. In both examples the complexity seems to be equal because in both examples she is doing a mental calculation of the problem. In both examples Carolina is saying out loud a series of numbers, in the L1 in example 10 and in the L2 in example 11. What seems to be different for examples 10 and 11 is that she uses the L1 to express basic math “operations” expression or verbs, like *divided by*, *plus*, *times* while in the L2 she verbalizes the numbers but with a gap for the operation expression or verb. She does use some vocabulary *ancho* (width), and *largo* (length) which had been learned for this lesson. These data seem to support some of the observations made by Heitzman (1993), Cohen (1994), and Parker et al. (1994) regarding the use of the L2 and the L1 in math tasks. It also illustrates the use of verbless tokens in the L2 (see Table 23 below).

One difference noted between *creative writing* (CW) and other types of content such as *math* (M) is the complexity of the tokens produced. Table 22 illustrates the sentence complexity for each token produced in sessions in which the content was *math* compared to *creative writing*.

Table 22

Spanish utterance complexity according to content.

Data is presented as the percentages of verbless, 1 and 2 s-nodes tokens produced by Leonard, Carolina and Marvin in creative writing (CW), science (S) and math (M)

		No verb (includes Fragment + si)			1s-node			2+s-nodes		
		CW	S	M	CW	S	M	CW	S	M
L.	%	34%	44%	53%	60%	53%	42%	6%	3%	5%
	tokens	(196/567)	(178/406)	(102/189)	(338/567)	(215/406)	(77/189)	(33/567)	(13/406)	(10/189)
C.	%	40%	38%	45%	50%	57%	52%	10%	5%	3%
	tokens	(178/443)	(63/167)	(80/177)	(223/443)	(96/167)	(92/177)	(42/443)	(8/167)	(5/177)
M.	%	27%	38%	52%	57%	62%	44%	14%	.5%	1%
	tokens	(13/49) ⁵²	(81/213)	(118/218)	(28/49)	(131/213)	(97/218)	(7/49)	(1/213)	(3/218)

Table 22 shows that there appear to be more verbless tokens produced in *math*⁵³ than in *science* or *creative writing*. In *creative writing* the children seem to produce a larger percentage of tokens which contain two or more verb nodes. Carolina produced more than 10% of her tokens with 2+s-nodes and Marvin 14% in this content. Leonard produced 6% of tokens with 2+S-nodes (but the percentage is close to the 5% produced in math). In the 1+s-node category, there are no clear findings since there is more variation in the data. Given the distribution of sentence complexity, there seems to be greater complexity in *creative writing* and less complexity in *math*, at least for Carolina and Marvin (3% and 1% respectively). *Science* seems to fall somewhere in the middle (more 1+s-nodes for Carolina (57%) and Marvin (62%). Utterance complexity alone does not seem to provide an explanation for the increased use of Spanish in some content areas. There are other variables which must also play a role in the increased use of Spanish.

Research Question II: Chi-square Results for Task-Content

The null hypothesis for the second variable, content, is that

- Null Hyp. 2 • language choice is independent from the content of the task in the linguistic output of each child.

⁵² Marvin was absent one of these days. There are therefore fewer tokens for him in this content.

⁵³ This increased use of verbless tokens may be due to the nature of math tasks in which children tend to talk out loud while working out problems (Tarone, personal communication).

Table 23 shows the results of the application of a chi-square test for independence between the variables Language choice (Spanish and English) and the content of the task for each subject. All contents were included in this analysis.

Table 23⁵⁴
Summary table for language choice with content of the task

Data	Chi-square	p<0.05	Significance	Cramer's Phi	DF	Total Tokens
Leonard	182.88	12.59	.0001	0.29	6	2115
Carolina	126.46	12.59	.0001	0.32	6	1230
Marvin	3830	11.07	.0001	0.25	5 ⁵⁵	595

The chi-square for independence test was performed on each individual data set and the null hypothesis was significantly rejected at $p < .0001$ for all three children. Hence, for these particular children, the content of the task is not independent of language choice for these data. For these children, content has a significant impact on language choice in this classroom.

L1 and L2 Use in the Classroom According to On-Task and Off-Task

According to Research Question II, the last aspect pertaining to the study of task was whether there was a differential use of the L1 and L2 when the children were “On” or “Off” task. Tables 24-26 show the percentage of tokens that the three children produced in the L1 and the L2 while they were “On task” and “Off task”.

Table 24
Percentage of Spanish (L2) and English (L1) use
when **Leonard** was On-task or Off-task

		L2	L1	Total	Total %
On-task	N	1213	440	1653	
	%	73%	27%		65%
Off task	N	269	612	881	
	%	31%	69%		35%
Total	N	1482	1052	2534	
	%	58%	42%		

⁵⁴ This table does not include transition tokens and *no-content* tokens.

⁵⁵ There are no tokens in Social studies for Marvin.

Table 25

Percentage of Spanish (L2) and English (L1) use
when **Carolina** was On-task or Off-task

		L2	L1	Total	Total %
On-task	N	836	393	1229	
	%	68%	32%		83%
Off task	N	75	169	244	
	%	31%	69%		17%
Total	N	911	562	1473	
	%	62%	38%		

Table 26

Percentage of Spanish (L2) and English (L1) use
when **Marvin** was On-task or Off-task

		L2	L1	Total	Total %
On-task	N	584	26	610	
	%	73%	27%		84%
Off task	N	78	42	120	
	%	65%	35%		16%
Total	N	662	68	730	
	%	91%	9%		

When we look at language choice in relation to whether students were **On-task** or **Off-task**, the hypothesis put forth by Tarone and Swain (1995) that upper grade immersion classrooms are diglossic seems to be supported only for Leonard and Carolina. When the children were **On-task**, Leonard used Spanish 73% of the time, Carolina 68%, and Marvin 73%. Note that despite individual differences, Leonard and Marvin use Spanish when they are “on-task” 73% of the time while Carolina uses Spanish only slightly less (68%). When they were **Off-task**, Leonard and Carolina spoke Spanish 31% but Marvin spoke Spanish 65% of the time. While Marvin uses less Spanish when “Off-task” than when he is “On-task” it is not as much less. Figure 1 shows the language shift pattern for the three children.

11. T : este grupo ha terminado. este grupo:::
[*this group has finished. This group*]
12. L : huh?
13. C : casi. casi. [*almost, almost*]
14. T : casi.
15. A: casi.
16. T : okey. cinco minutos? [*O.K. five minutes?*]
17. Don: podemos ir a justicia otra vez. y Harrison va ir a cárcel y
Peter. va a hacer, ajá.
[*we can go to trial NT again. And Harrison goes to jail and
Peter is going to go, aha!*] (*Don is trying to wrap the script up*)
18. C : Harrison saca un cuchillo, cuchillo y. y: mata: a: Susana.
[*Harrison takes out a knife, knife and and: kills Susana*]
(*reading as she writes*).

The excerpt provides evidence of tokens which are both clearly “On” and “Off-task”. The turns encompassed in lines 1 through 9 illustrate instances in which the children are “Off-task” where Leonard makes a reference in English to a soft drink television commercial. These tokens, illustrated in Example 12 are tokens in which the children are not carrying out the assigned task; they are playing. The following turns (10 through 18) include examples of “On-task” language use in which the children are speaking about and are engaged in the assigned task. Notice that most of the turns in the “Off-task” tokens are produced in the L1, while the “On-task” turns are produced in the L2. Example 12 also illustrates how the children switch from “Off-task” behavior to “On-task” and to the L2 when teacher approaches the group in turns 10 and 11.

An example which illustrates On and Off task behavior in English is illustrated in Example 13. In this session the children are writing a Valentine’s poem on a hand-out that has a heart shape painted on it. The children can also decorate the heart once they have written down their poem.

Example 13. Content: Creative Writing.

1. Leonard: **hey Don could I look at them?**
2. Don: **no, no, no**
3. Leonard: **yes. or I’ll kill you.** (*silence*) (*starts to sing the Lion King
tune, again. This time he sounds like an Alpine singer*)
4. Damián: **ricola:** (*singing in the same tone of voice as the Ricola cough
drops commercial*)
5. Don: ricola.
6. Leonard: **ricola** (*pause*) **tricola** (*repeating after Damian*)
7. Don: no es tricola es ri [
[*it’s not ‘tricola’ it’s ‘ri’*]
8. Leonard: **[I know-but I can say whatever I
want to.** (*pause*)
9. Leonard: **what? what? you got these kinds.** (*referring to a particular
kind of markers*)

In example 13 the children are clearly “On-task” in English on turns 1 through 3 and 9 since they are talking about the markers they are using to decorate the poem they have just written. In lines 4 through 8, Damian is singing the cough drop commercial “ricola.” These tokens are all in English except for Don’s in turn 7 which is in Spanish. Note that Leonard interrupts Don in turn 8 in English. Leonard’s last turn, 9, is another example of “On-task” tokens in English. Turns 4 through 8 are problematic in coding for “On-task” and “Off-task” because there weren’t enough contextual clues to determine whether the children had stopped coloring/drawing when the “ricola” exchange occurred. Leonard’s turns were coded as “On-task” English because in turn 9 he makes a remark about the markers and it was decided that he was probably drawing (On-task) in the previous turns. In this excerpt the limitations of recorded data are evident since video taped data could have provided more contextual cues.

At this point a tentative conclusion based on the percentage data might be that when these three children are “On-task” and when the content of that task is language related, the tendency is to use more Spanish. “Off task” seems to be a strong conditioning factor in the direction of less Spanish use. As we can see in some of the examples, when the children are “Off-task” they seem to make more use of the L1.

Research Question II: Chi-square Results for Task: On-Off

The null hypothesis for the third variable, “On/Off-task”, is that

- Null Hyp. 3 • language choice is independent of children’s “On-task” or “Off-task” behavior.

Table 27 shows the results of the application of a chi-square test for independence between the variables Language choice (Spanish and English) and “On/Off-task” behavior for each subject. The table does not contain *transition* tokens.

Table 27
Summary table for language choice with “on/off” task

Data	Chi-square	p< 0.05	Significance	Cramer’s Phi	DF	Total Tokens
Leonard	408.30	3.84	.0001	0.44	1	2116
Carolina	97.77	3.84	.0001	0.28	1	1221
Marvin	107.25	3.84	.0001	0.42	1	601

The chi-square for independence test was performed on each individual data set and the null hypothesis was significantly rejected at p<.0001 for all three children. Hence, for these particular

children, being “On/Off” task is not independent of language choice for these data. For these children, the fact that they are on-task or off-task is significantly related to language choice.

Research Questions I and II: VARBRUL Results

The chi-square test is useful in claiming a statistical significance between the independent variables and language choice for these three children. The chi-square test is limited telling us which particular factors within each variable accounted for the observed behavior. Because language use is multivariate, the chi-square is limited because it only allows us to test one variable at a time. Furthermore, the chi-square test does not allow us to know what other factors are also present when the L1 and the L2 are used and we have no principled way of knowing how a particular variable will behave in the presence of another. In order to achieve a model of language use in the classroom which takes into account all of the independent variables at the same time a VARBRUL analysis was performed on the data. VARBRUL was used to calculate factor effects and significance levels of factor groups. The factor effects combine to give the probability that a single token will be in Spanish or in English.

The values of the dependent variable were identified as English and Spanish. Mix was not considered for two reasons: (1) the Mac version of VARBRUL does not allow more than two values of the dependent variable, and (2) there were very few tokens of mix in the data (106/4737). The four factor groups which served as independent variables included the factors which were included in *Research Question I* Interlocutor, and *Research Question II* Activity, Content, and “On” or “Off” task. A VARBRUL analysis was performed on the coded data for each child. After the initial run, VARBRUL did not discard any factor groups or factors for Leonard, which suggests that all factors play a role in his rule application, or use of Spanish and English. VARBRUL discarded the factor group *activity* for Marvin and Carolina. The results which will be reported in this section represent the statistical model which best fit the observed variation in the data for each child. In other words, the model includes the smallest list of contextual factors which contribute significantly ($p < .05$ level at the least) to the observed variation. This model is also the most parsimonious (Young, 1996, p. 278) in which all interaction has been eliminated.⁵⁶

⁵⁶ It is important to recall at this point that VARBRUL assumes that all factors are independent (Young 1991, Sankoff 1988). One of the problems with social/extralinguistic variables such as the ones I am looking at is that some may interact (Sankoff, 1988, p. 992).

The null Hypothesis which was tested for each child was:

none of the factors examined (interlocutor, content, and task) has any systematic effect on the choice between Spanish and English for each child.

Leonard

After all interaction was eliminated, and factors were grouped, 3 modified factor groups remained as conditions promoting Spanish rule application for Leonard. These groups were content of the task, “on/off” task, and interlocutor. Table 28 shows the significant variables and the rule application weights for each factor.

Table 28
VARBRUL Model which best fit the data: **Leonard**

Input probability: 0.536			
Group: Factor	Weight	App/Total	Input & Weight
1: Language Related (including writing and reading)	0.690	0.70	0.72
	Non-language Related (includes science, social studies, math, and arts and crafts)	0.343	0.39
2. On-task	0.657	0.69	0.69
	Off-task	0.255	0.27
3. Talking to a peer (includes self, peers, and Carolina)	0.463	0.51	0.50
	Marvin	0.825	0.78
	Talking to an adult	1.00 ⁵⁷	0.84

Cell	Total	App'ns	Expected	Error
mnp	472	227	235.568	0.622
mnm	117	101	98.806	0.313
mfp	430	73	65.108	1.127
mfm	32	14	15.776	0.395
cnp	588	482	475.947	0.404
cnm	11	11	10.545	0.475
cfp	251	103	108.426	0.478
cfm	6	4	4.834	0.740

Total Chi-square = 4.5546, Chi-square/cell = 0.5693, Log likelihood=-1044.910

⁵⁷ This factor is a knockout with a categorical effect.

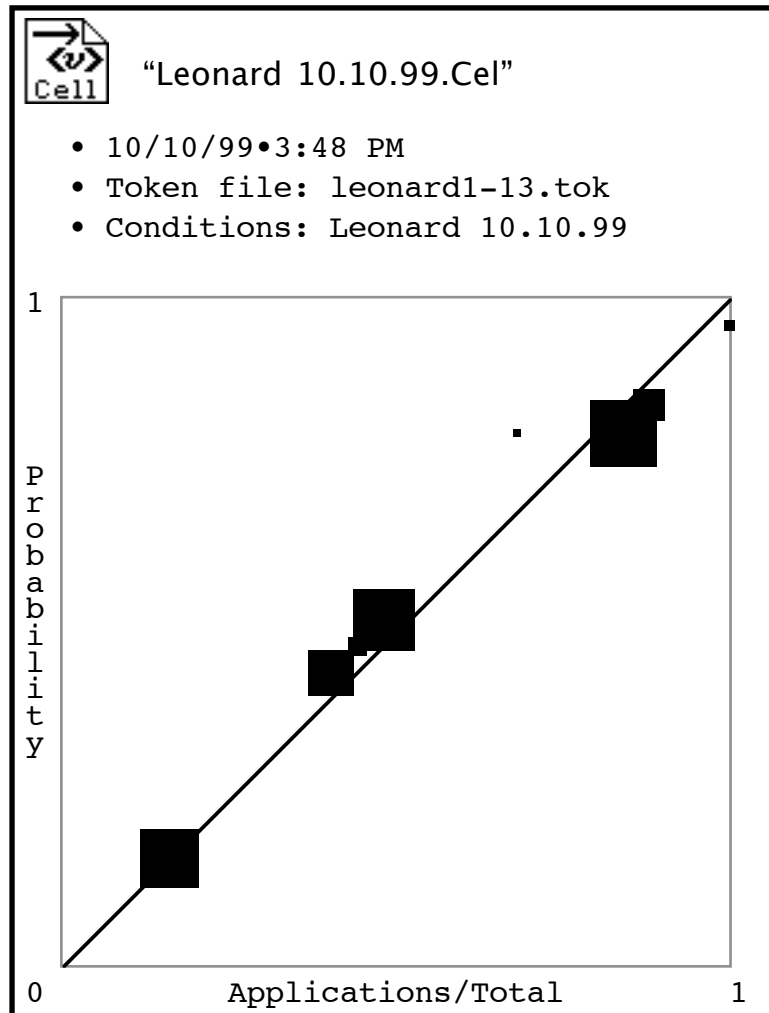


Figure 2.
Scattergram for data in Table 28

Table 28 and Figure 2 show the model that best fit Leonard's data. The model reflects several recodes which were necessary in order to attain a model in which interaction among factors was eliminated. These recodes were tested for significance. I will refer to the rationale behind each recode when I present the results for each factor group.

The set of numbers on the right of each factor in Table 28 shows the effect of each factor on Spanish rule application. The effect of each factor is expressed as a probability ranging between 0.00 and 1.00. As Preston (1996) explains "the higher the value, the greater the influence." The input probability of any factor being significant is $\pi=0.536$, or 53.6% that Spanish will be used independent of any factor present. All the groups were significant at the $p<.001$ level at the least.

Task

According to Table 28, the task that Leonard is engaged in conditions the use of the L2. **Language-related** contents have the strongest task effect ($\beta=.690$), while **non-language related** contents (science, math, social studies, and arts and crafts were combined in this factor) have an inhibiting effect on Spanish rule application ($\beta=.343$). This is the factor that most inhibited the use of Spanish and in which more English⁵⁸ was used.

The decision to recode math, science, arts and crafts and social studies under one new factor **non-language related** was based on a theoretical and a statistical decision. Given that extralinguistic data tends to interact (Sankoff, 1988, p. 992) several recodes were required in order to arrive at a parsimonious model that would include the smallest number of factors which would account for the observed data. Based on the observations and the nature of the content, two natural categories (Guy, 1988, p. 133) emerged for content: those contents where the goal was language related, and those that were not. Math, science, social studies and arts and crafts were all content areas in which the main goal of the activity was not language-related and hence were grouped as members of the new factor **non-language related**. Furthermore, in earlier VARBRUL runs all of these factors behaved in a similar fashion: none promoted Spanish rule application. Finally, from a statistical point of view, the new factor group was justified since the test for significance applied to the Log likelihoods of each VARBRUL run, one with the old set of groups, and one with the new group, was not significant ($p>.25$). Hence, the original distinction between the factors was irrelevant (Guy, 1988, p. 133). The new grouping of these factors into one new factor was independently motivated from a theoretical as well as a statistical point of view.⁵⁹

Creative writing was coded with reading because several of the creative writing activities stemmed from reading activities. In earlier runs the two groups were kept separate. The final decision was to group these two factors into one new factor because both activities had language as their main goal. Furthermore, earlier runs in which the two factors were separate yielded a .50 rule application for reading, which is usually treated as the watershed mark which neither promotes nor

⁵⁸ The VARBRUL analysis for the same factor groups and factors but with English as the application rule yielded exactly the opposite model. Hence we can infer English rule application from the report on Spanish rule application.

⁵⁹ Note that this is the best case scenario given the fact that we are dealing with several extralinguistic factors. In other cases, decisions to recode are based on the theory only. As Young states
Recodes may be necessary for other reasons as well. One good reason to recode is to create as parsimonious a model of variation as possible by eliminating factors and even whole factor groups that do not contribute substantially to the observed variation (Young, 1996, p. 273).

inhibits rule application (Preston, 1996, p. 11). Hence, the adding of this factor to the factor group did not have a significant effect on the group.

There were two factors which were removed, **unknown** and **non-content**. These were tokens which were hard to code in one of the more clearly defined contexts. The elimination was significant in arriving at a better model, in that the chi-square per cell was lowered and error was eliminated.

Table 28 also shows that On/Off task was also a conditioning factor in Spanish rule application. When Leonard was **on task** the tendency was to favor Spanish ($\pi=.657$). The factor that inhibited Leonard's use of Spanish in the classroom the most was **off task** ($\pi=.255$), thus off task utterances were most likely to be carried out in English. Also note that the factor **talking to an adult** was a knockout. This means that every time Leonard talked to the teacher, he used Spanish.

Activity of the task had to be eliminated at some point in the analysis due to large errors. Eliminating the group had a significant effect on the model. The model could not converge when this factor was present. A further VARBRUL analysis was performed on the data with a combined **content** and **activity** factor group but would only converge when the main group **activity** was included. Even though the model converged, error could not be eliminated to below the acceptable level (2.0 or less) (Preston, 1996, p. 11).

Interlocutor

Table 28 shows that interlocutor also plays a role in Leonard's Spanish rule application model. When the interlocutor is **talking to a peer**, Spanish rule application is inhibited ($\pi=.463$). When the interlocutor is **Marvin**, Spanish rule application is promoted ($\pi=.825$). Several recodes were necessary to arrive at a parsimonious model which eliminated error and interaction among factors.

First, teacher, aide, whole class, and other adult were grouped as one factor **talking to an adult**. A test of log-likelihood comparisons proved non significant, meaning that the grouping formed a natural class. Nevertheless, the new group was eliminated at some point in the analysis since the distribution of the tokens was skewed beyond an acceptable level (Guy, 1988, p. 129); one rule (i.e., the use of Spanish) applied to over 98% of the data in that group. In other words, the factor was a virtual knockout with a categorical effect (Young, 1996, p. 273). Every time the interlocutor was the teacher, another adult, or the whole class (where the teacher is included)

Leonard would categorically speak Spanish. Since VARBRUL assumes variation, the model could not converge until the factor was eliminated.

Two other factors were eliminated from this group, **unknown** interlocutor and **microphone**. The model which resulted after these eliminations also helped arrive at a more parsimonious model. The decision to eliminate **unknown interlocutor** was a logical one from the perspective of coding and the limitations of my methodology (no videotaped data). The second, **microphone**, did not fall into either natural category peer or **talking to an adult**.

After these eliminations were carried out, the **interlocutor** factor group consisted of **peer**, **self**, **Carolina**, and **Marvin**. In earlier VARBRUL runs peer ($\pi=.328$), and self ($\pi=.388$) had similar weights. These two factors were recoded in a modified group, **talking to a peer**. A test of likelihoods proved non-significant, hence these factors could be grouped. Nevertheless, a further recode was needed in order to arrive at a model which converged. In looking at the rest of the members in the interlocutor factor, Carolina had a weight of ($\pi=.424$) and Marvin a weight of ($\pi=.68$). Since Carolina inhibited rule application much as the other factors in **talking to a peer** while Marvin promoted rule application, the logical choice was to group Carolina with the **talking to a peer** factor and leave Marvin as a non-typical **peer**. Carolina's inclusion in talking to a peer allowed the model to converge, eliminating all interaction, and error. This model also seems to reflect the observed data that just as Marvin used the L2 in a non-typical fashion, he affected his peers' L2 use in a non-typical fashion.

Table 28, thus, shows that for Leonard the **talking to a peer** factor inhibits Spanish rule application ($\pi=.463$), while talking to Marvin promotes rule application ($\pi=.825$). Note that the factor "Marvin" has the highest weight compared to any other independent factor.

The model

Table 28 also shows that the model converges. Interaction, or high errors, has been eliminated, and only the smallest set of factors has been retained. The model is also significant ($p<.05$ at the least), and the results tell us that the remaining factors consistently affect Spanish language use marking rates. The model of Spanish rule application not only provides information on what factor groups and factors affect rule application, but we can also calculate the probability of Spanish use for a single token. Hence, from the information presented in Table 28, we can calculate the probability that Leonard will speak Spanish in the classroom when a particular set of factors is present. For example, when the interlocutor is **Marvin**, the content is **language related** and

Leonard is **on-task**, the following formula is used to calculate the probability of Spanish use for a single token (Preston, 1996, p. 12):

$$p = \frac{P_0 \times \dots \times P_n}{[P_0 \times \dots \times P_n] + [(1-P_0) \times \dots \times (1-P_n)]} = \frac{.2004624}{.2090963} = .96$$

Hence, there is a .96 probability that Leonard will use Spanish when he is speaking to Marvin, he is on task and the task is creative writing. In contrast, the probability that Leonard will speak Spanish when he is **on-task**, speaking to **another peer** and carrying out a **non-language-related** task (e.g. math) is $p=.49$.

Carolina

As with Leonard, after all interaction was eliminated and factors were grouped, three modified factor groups remained as conditions promoting Spanish rule application for Carolina. These groups were content of the task, “on/off” task, and interlocutor. Table 29 shows the significant variables and the rule application weights for each factor.

Table 29
VARBRUL Model which best fit the data: **Carolina**

Input probability: 0.602			
Group: Factor	Weight	App/Total	Input & Weight
1: Language Related (including writing and reading)	0.640	0.71	0.73
Non-language Related (includes science, social studies, math, and arts and crafts)	0.342	0.46	0.44
2. On-task	0.566	0.65	0.66
Off-task	0.206	0.33	0.28
3. Peer 1 (includes Leonard, Marvin)	0.637	0.64	0.73
Peer 2	0.447	0.58	0.55
Talking to an adult	1.00		

Cell	Total	App'ns	Expected	Error
snp	294	137	133.102	0.209
snl	151	94	97.087	0.275
sn/	1	0	0.507	1.030
sfp	53	6	7.487	0.344
sfl	37	10	9.756	0.008
sf/	1	1	0.170	4.880 ⁶⁰
cnp	433	316	319.993	0.191
cnl	78	71	67.112	1.613
cfp	49	19	17.652	0.161
cfl	49	26	26.985	0.080

Total Chi-square = 8.7916, Chi-square/cell = 0.8792, Log likelihood=-690.297

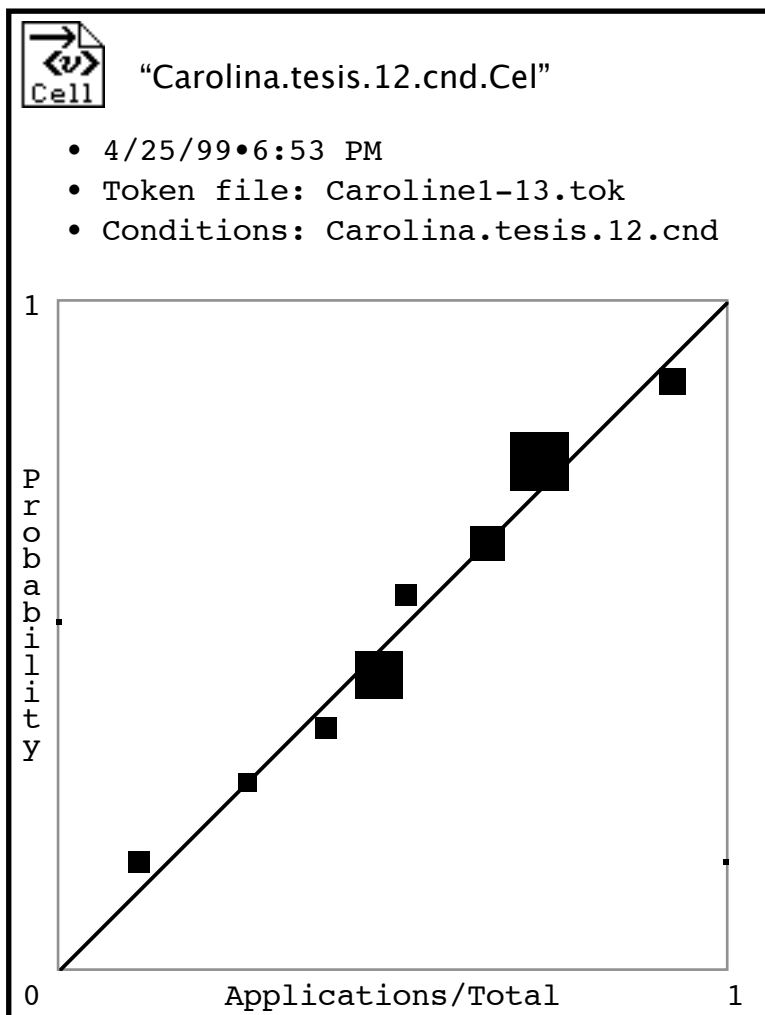


Figure 3
Scattergram for data in Table 29

⁶⁰ Guy (1988, p. 134) we can ignore this high error because the cell contains only one token.

Table 30 and Figure 3 show the VARBRUL model that best fit Carolina's data. The model also reflects several recodes necessary to attain a model where interaction among factors was eliminated. The model in Table 29 is also the most parsimonious with the fewest factors accounting for the observed data and where all error was eliminated. As mentioned earlier, after the first VARBRUL run, **activity** was rejected by the program as a non-contributing factor group.

The input probability of any factor being significant for Carolina's data is $\pi=0.602$, or 60% that Spanish will be used independent of any factor present. All the groups were significant at the $p<.001$ level at the least. These groups can be interpreted as described below:

Task

According to Table 29, the content of the task Carolina is doing conditions the use of the L2. **Language-related** has the strongest promoting effect ($\pi=.640$), while **non-language related** activities (science, math, social studies, and arts and crafts were combined in this factor) have an inhibiting effect on Spanish rule application ($\pi=.342$).

As reported for Leonard, there were some recodes necessary for Carolina which were based on both theoretical and statistical decisions. The first decision was to make two new factor groups **language related** and **non-language related**. Creative writing and reading were coded under the language related category and the test of Log likelihoods was non-significant, meaning that the grouping could be done. Science, and arts and crafts also yielded a non-significant regrouping under the new factor "non-language related". Math was originally left as a separate factor given the high percentage of Spanish rule application reported in Table 16 above. Nevertheless, the model did not provide explanatory power until the factor was regrouped in the "non-language related" factor. As with Leonard's model, "unknown" and "no-content" also needed to be removed.

On/Off task is also a conditioning factor in Spanish rule application for Carolina. When Carolina is **on task**, this promotes the use of Spanish ($\pi=.566$). The factor that restricts the use of Spanish in the classroom the most is **off task** ($\pi=.206$); thus off task utterances are most likely to be carried out in English regardless of the presence of other factors.

Interlocutor

Table 29 shows that interlocutor also plays a role in Carolina's Spanish rule application model. For Carolina, who she is talking to will have a measurable impact on Spanish and English rule application. When the interlocutor is **peer 1**, Spanish rule application is favored ($\pi=.637$). When the interlocutor is **peer 2**, Spanish rule application is inhibited ($\pi=.447$).

Several recodes were necessary to arrive at a parsimonious model which eliminated error and interaction among factors. First, teacher, aide, whole class, and other adult were eliminated because these were all knockouts with a categorical effect and favor L2 use. Since VARBRUL assumes variability, it could not run with these factors. But, every time the interlocutor is the teacher, another adult, or the whole class (where the teacher is included) Carolina will always speak Spanish.

Unknown interlocutor and **microphone** were also eliminated. The decision to eliminate **unknown interlocutor**, and **microphone** follows the case made in the discussion of Leonard above.

After these eliminations were carried out, the **interlocutor** factor group consisted of two new groups, peer I which included Leonard and Marvin; and **peer II** which included other **peers** and **self**. The decision to group factors into these two categories were motivated by the factors' similar weights in earlier VARBRUL runs. A test of likelihoods proved non-significant; hence these factors could be grouped and these new groups were the only ones which yielded acceptable errors.

Table 29, thus, shows that talking to a **peer II** factor inhibits Spanish rule application ($\pi=.447$), while talking to a **peer I** promotes rule application ($\pi=.637$). It is important to mention that peer II included interlocutors who were clearly girls. The other factor "peer I" group comprises Leonard, and Marvin. When Carolina was not working with either Leonard or Marvin, she always sat with girls and favored working with them. Hence we can speculate (based on the observations and the transcriptions) that many of these tokens which were coded originally under **peer**⁶¹ most likely include a large number of girls.

The model

Table 29 also shows that the model converges. Interaction (high errors) has been eliminated, and only the smallest set of factors has been retained. Notice that even though the Total chi-square is 8.7916 and hence we should have rejected the null hypothesis, VARBRUL accepted the null hypothesis because it ignored the **sf/ cell** which yielded a large error. According to Guy (1988, p. 134) we can, safely ignore the 4.880 error because it is a cell with only one token.

The model is also significant (at $p<.05$), and the results tell us that the remaining factors consistently affect marking rates. The model of Spanish rule application not only provides

⁶¹ Note that this study did not seek to study language use differences among girls and boys. Hence when the data were coded, this variable was not taken into account. This is a study which will be carried out in the future.

information on what independent factor groups and factors affect rule application, but as for Leonard, we can also calculate the probability of Spanish use for a single token.

For example, when Carolina is talking to a peer I (Leonard or Marvin) and she is carrying out a task with a non-language related content, and is On task, the probability of Spanish rule application is p=.64 as calculated with the following formula:

$$p = \frac{P_0 \times \dots \times P_n}{[p_0 \times \dots \times p_n] + [(1-p_0) \times \dots \times (1-p_n)]} = \frac{.0742298}{.1154875} = .64$$

Recall that when the interlocutor is **talking to an adult**, the result is a knockout. Hence, Carolina always uses Spanish when the interlocutor is an adult.

Marvin

As with Leonard and Carolina, after all interaction was eliminated and factors were grouped, three modified factor groups remained as conditions promoting Spanish rule application for Marvin. These groups were content of the task, “on/off” task, and interlocutor. Table 30 shows the significant variables and the rule application weights for each factor.

Table 30
VARBRUL Model which best fit the data: **Marvin**

Input probability: 0.928			
Group: Factor	Weight	App/Total	Input & Weight
1: Language Related (including writing ⁶² and reading)	0.846	0.97	0.99
Non-language Related (includes science, social studies, and math)	0.343	0.80	0.87
2. On-task	0.107	0.54	0.61
Off-task	0.633	0.93	0.96
3. Peer (includes peer and self)	0.591	0.90	0.95
Carolina	0.277	0.72	0.83
Leonard	1.00 ⁶³		
Talking to an adult	1.00		

⁶² In an earlier run, creative writing was eliminated because it was a knockout factor with a categorical effect.

⁶³This factor is a knockout with a categorical effect.

Cell	Total	App'ns	Expected	Error
mnt	139	132	131.214	0.084
mnc	58	47	47.391	0.018
mfp	35	19	18.894	0.001
mfc	19	4	4.507	0.075
cnt	67	66	66.626	1.053
cnc	12	12	11.751	0.254
cfp	10	9	9.253	0.092
cfc	7	6	5.365	0.322

Total Chi-square = 1.8987, Chi-square/cell = 0.2373, Log likelihood=-102.063

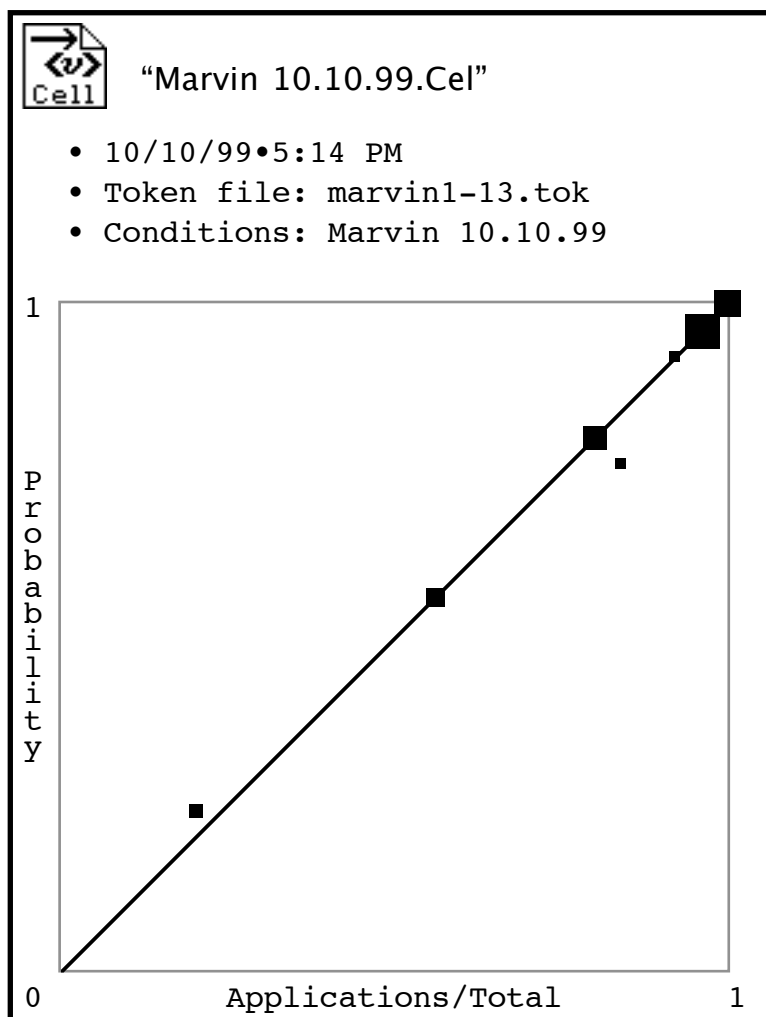


Figure 4
Scattergram for data in Table 30

Marvin's model must be interpreted with some caution given that the input probability of any factor being significant for his data is $\pi=0.928$. Notice that the input probability is higher than any weight reported in Table 30 above. This means that all rule application values for Marvin need to be interpreted with this high input probability in mind. The input probability confirms the observed behavior that Marvin stays in Spanish most of the time independent of any factor.

Table 30 and Figure 4 show the VARBRUL model that best fits Marvin's data. The model also reflects several recodes necessary to attain a model in which interaction among factors was eliminated. The model in Table 30 is also the most parsimonious with the fewest factors accounting for the observed data and where all error has been eliminated. Before VARBRUL could run, several knockout factors needed to be eliminated. Other factors which had to be eliminated were virtual knockouts with a highly skewed distribution.⁶⁴ Also, as with Leonard's and Carolina's data, after the first VARBRUL run, the factor group **activity** was rejected by the program as a non-contributing factor group. The VARBRUL test was performed on those remaining groups with an acceptable token distribution (ones which showed variation). These groups were significant at the $p<.001$ level at the least. The interpretation of Marvin's data is not **what** factor contributed to Spanish rule application (since he used Spanish 93% of the time) but **which** factors inhibited the use of Spanish, when compared to the input probability.

Task

According to Table 30, **non-language related** (arts and crafts, science, math, and social studies were combined in this factor) has the lowest content effect on Spanish rule application ($\pi=.343$). **Language-related** (which includes reading and creative writing tokens) has a $\pi=.846$ which promotes Spanish language use.

The only recodes which were necessary for Marvin were to include science, arts and crafts, and social studies under the **non-language related**. A test of Log likelihoods was non-significant, confirming that the grouping could be done. Math was added later and the test of likelihood was significant because in earlier VARBRUL runs, the factor inhibited Spanish rule application ($\pi=.226$). Hence, the decision to add math to the **non-language related** was based on theory and large error numbers (due to interaction) which needed to be eliminated. After math was added to the new group, the model converged. In an earlier run, creative writing was a knockout with a categorical effect. These tokens were combined with reading in the reported data in Table 30 as a

⁶⁴ I will comment on each knockout when I report each factor group.

member of the **language related** group. As with Leonard's and Carolina's model, **unknown** and **no-content** also needed to be removed.

Just as for Leonard and Carolina, On/Off task is a conditioning factor in Spanish rule application for Marvin. **On task** promotes Spanish rule application ($\pi=.633$), while **off task** promotes less rule application ($\pi=.107$). Hence, if Marvin is ever going to use English the likelihood that he will do so when he is **off task** is greater than when he is **on task**. Here we see a clear illustration why performing a VARBRUL test yields a more accurate outcome than just reporting percentages because the program can calculate the weights of each factor independently of the presence of other factors. With percentages, this is not possible and the results may not accurately reflect the effect of each factor on Spanish rule application. In Table 27 percentages of language use according to on/off task were reported for Marvin. According to those data, Marvin used more Spanish whether he was On or Off task (73% and 65% respectively). If we had based our analysis of Marvin's use of Spanish solely on the percentage data we would have reached the wrong conclusion regarding his use of Spanish in off-task situations. The VARBRUL analysis suggests that Marvin's behavior resembles that of Leonard and Carolina. On-task favors Spanish rule application while Off-task promotes it less.

Interlocutor

Table 30 shows the role that interlocutor plays in Marvin's Spanish rule application model. Interlocutor is also an independent factor that has a measurable impact on Spanish rule application. When the interlocutor is **peer** (which includes self and peer) Spanish rule application is more highly promoted (.591) and when the interlocutor is **Carolina**, Spanish rule application is not so highly promoted (.277).

Several recodes were necessary to arrive at a parsimonious model which eliminated error and interaction among factors. First, teacher, aide, whole class, other adult, and Leonard, were eliminated because these were all knockouts with a categorical effect. Hence, every time the interlocutor is the teacher, another adult, the whole class (where the teacher is included), or Leonard, Marvin will speak Spanish. **Unknown** interlocutor was eliminated.

After these eliminations were carried out, the **interlocutor** factor group consisted of two new groups, **peer** which included self, and other peer, and **Carolina**. The decision to group self and peer into one new factor was motivated by the fact that these all behaved as peer (not as adults) and the factors' similar weights in earlier VARBRUL runs. A test of likelihoods proved non-significant, hence these factors could be grouped. The other interlocutor factor was Carolina. The

weight of this factor was much lower than that for the other factors combined, hence it was decided to keep Carolina separate.

Table 30, thus, shows that Spanish rule application is $p_i=.277$ when the interlocutor is **Carolina**, and $p_i=.591$ when the interlocutor is talking to a **peer** (which includes talking to self). Again, in light of the high input probability, **peer** whether it is Carolina or other peer promotes less rule application (since both weights are much lower than the input probability).

The model

Table 30 also shows that the model converges. Interaction, or high errors, has been eliminated, and only the smallest set of factors has been retained. The model is also significant (at least $p<.05$), and the results tells us that the remaining factors consistently affect marking rates. As we did for Leonard and Carolina, we can also calculate the probability of Spanish use for a single token. Hence, when Marvin is talking to a peer (self or peer) and he is carrying out a task with a non-language related content, and is On task, the probability of Spanish rule application is $p=.94$ as calculated with the following formula:

$$p = \frac{p_0 \times \dots \times p_n}{[p_0 \times \dots \times p_n] + [(1-p_0) \times \dots \times (1-p_n)]} = \frac{.1190784}{.1261788} = .94$$

But when Marvin is talking to Carolina and is carrying a non-language related task and is on task the probability that he will do so in Spanish is $p=.81$. However, if he were speaking to Carolina, off task and carrying out a non-language related task, the probability of Spanish language use for Marvin would be $p=.24$.⁶⁵ It is worth mentioning that that factors **creative writing**, **Leonard**, and **talking to an adult** are all knockout factors. When Marvin speaks to Leonard or an adult, he will do so in Spanish. When Marvin is doing a creative writing activity, it will be in Spanish.

In summary, the VARBRUL test successfully modeled the linguistic behavior for all three children. Despite individual differences, language use is conditioned by the same factors for all three children. The three models also showed that in most cases the same set of factors and factor groups promoted and/or inhibited Spanish rule application.

⁶⁵ Note that the incorporation of one of the knockout factors into the formula will yield a result of 1.00 (100% rule application).

Research Question 3: Behavioral Characteristics of Older Middle-Year Children

Question 3. Is there evidence of older middle-year or pre-adolescent characteristics in the language use of fifth grade immersion children? Specifically,

- I. Do these children use vernacular words/phrases?
 - *If they do, are they in Spanish or English?*
- II. Do these children use words/phrases which refer to the outside pre-adolescent culture?
 - *If they do, are these references in the L1 or the L2?*
- III. Do these children show evidence of metalinguistic function?
 - *If they do, is it in Spanish or English?*

In the previous sections I have reported on these three children's language choice in the classroom according to interlocutor and task. As mentioned in the review of the literature, older middle-year children or pre-adolescents have age-appropriate interactional characteristics—such as the use of slang, the presence of more metalinguistic awareness (Long, 1991), and reference to preadolescent themes. The issue is whether any of these developing characteristics are present in the L1, the L2 or both. Frequencies of occurrences for each language for each child were analyzed according to vernacular words or phrases, and language related episodes (Swain & Lapkin, 1998).

Vernacular Words and Phrases

As mentioned in the methodology section, “vernacular” includes words such as *cool*, *awesome*, and phrases such as *oh, my gosh* which are not considered part of the standard academic style used inside the class. Expressions such as *duhh* and *yeah* were also included as vernacular English words.⁶⁶

The following vernacular words and phrases were identified in 13 hours of taped data for each child.

Leonard

Table 31 includes those tokens in the L1 which occurred at least 4 times in Leonard's speech during the taped sessions.

⁶⁶ Expressions such as *wow* and *okay* were not counted as tokens since it was difficult to determine if these were in Spanish or in English.

Table 31
L1 vernacular words or phrases produced by **Leonard**

yeah (includes, “oh, yeah” and, “yeah, right”, “yep”, “yeaw!”)	38 tokens
Cool (includes “hey, cool”, it’s cool”, “that’d be cool”)	17 tokens
Gosh (includes “Oh, gosh”, “gooshba”)	11 tokens
Oh, God!	9 tokens
Oops (oopsies)	9 tokens
Duhh	6 tokens
Yes!	5 tokens
Oh, man. (includes “wow, man!”, “man!”)	5 tokens
Stupid	4 tokens
A’ right!	4 tokens
Total	55 tokens

According to Table 31 above the most frequent vernacular words or phrases produced by Leonard are *Yeah!* and *cool!* The following is an example in which Leonard and Carolina used the vernacular words/phrases: *cool*, *a’right*, and *yeah*.

Example 14. Session 8. Content: Science. The children are building an electric circuit from a blueprint.

- C: did you get more? maybe these ones will work. (*showing Elena some wires*).
- G: necesitas ir a ‘b’ ahora. (*you need to go to ‘b’ now*)
- C: here are some light bulbs, (*hands the light bulbs*) I got a bunch of ‘em.
they’re no use to us (*she offers them to Leonard*)
- L: **cool. a’right!** are these the ones you used before?
- C: **yeah,**
- L: why would I want them? (*C was complaining that these weren’t working properly*)

Leonard also produced the following L1 vernacular tokens, three times or fewer:

Table 32
Vernacular tokens produced three times or fewer by **Leonard**

1 token:	nope, cute, damn, spooky, messy, ditto, so!, dull, guys, stuff, awesome, you’re so gross!, major pow-wow, no way!, so, who cares!, so what!, I don’t wanna, no kidding, get out!, sock it to..., nut case, fooley-poo, ain’t that nice (Southern accent), back-off, darn it!, this is dumb, oh, great!, peek-a-boo, c’est chick.
2 tokens:	shoot!, dink, sneaky, dude, this one’s neater, oh, boy!, oh, dear, okey-dokey/okoly-dokoly, shut-up!, you are weird.
3 tokens:	yuk/yuky, gees/gee, thanks, just a sec, Oh, goody!

These total 61 tokens. The total number of L1 vernacular tokens was **106** out of **1052** total L1 tokens (words and phrases). Hence, 10% of the tokens produced by Leonard in English include a non-standard, and/or vernacular word or phrase.

Leonard used only four words in the L2 which could somewhat resemble a vernacular or slang form: one token of *sí* (pronounced as /sip/), —like *yep* but in Spanish—, one token of *estúpido*, and two tokens of *chistoso* (funny). This word was also used by the teacher, as illustrated in the following example:

Example 15

Teacher: si es *chistoso* es mejor. *sí*.
(if it is “funny”, it’ll be better)

Here the teacher is giving out directions for a creative writing task in which the children need to carry out a group writing on the following theme *Sabía que iba a ser un día horrible cuando...* (I knew it was going to be a horrible day when...). Even though the meaning of the word *per se* is not vernacular these children seemed to have adopted the word in the same way they adopted *cool*.

In the interview data, Leonard commented on the use of vernacular words.

Researcher: y, por ejemplo. Ustedes han aprendido palabras, ehm palabras de niños de español? o son todas palabras de adultos. O sea, por ejemplo en inglés. Qué se yo, los niños dicen “cool”, “awesome”,
Leonard: oh, sí!
Researcher: ese tipo de palabras, de eso no has tenido?
Leonard: no.
Researcher 2: te gustaría saber decir eso en español?
Leonard: sí.
Researcher: ¿sí? y tú crees que si tu supieras ese tipo de palabras, ¿hablarías más español, ¿quizás? o ¿no sabes?
Leonard: no sé. tal vez. tal vez, no.

[English Translation]

Researcher: and, for instance. Have you learned words, ehm, children’s words? Or are they all adult words. That is, for example. Kids say “cool” and “awesome”.
Leonard: Oh, yes!
Researcher: Have you learned/had that kind of words?
Leonard: no.
Researcher 2: Would you like to be able to say those (those) in Spanish?
Leonard: yes..
Researcher: yes? And do you think that if you knew those types of words you would speak more in Spanish, perhaps? or maybe you don’t know?
Leonard: I don’t know. Maybe. Maybe not.

According to Leonard, they have not learned vernacular words in the L2 and this is reflected in the very few tokens produced in the L2.

Carolina

Table 33 includes those tokens in the L1 which occurred 4 or more times in Carolina’s speech during the taped sessions.

Table 33
L1 vernacular words or phrases produced by **Carolina**

yeah (includes “oh, yeah”, “yeah, right”, and “yep”)	13 tokens
Cool (includes “hey, cool”, “it’s cool”, “that’d be cool”)	7 tokens
Cute! (includes “Oh, gosh”, “gooshba”)	6 tokens
Oops (oopsies)	4 tokens
You guys!	5 tokens
Total	35 tokens

Carolina produced the following L1 vernacular tokens, three times or fewer, for a total of 23 tokens:

Table 34
Vernacular tokens produced three times or fewer by **Carolina**

1 token:	yummy, stupid, dorkiest kid, stuff, my ass, oh, my God!, nice going! what the heck!
2 tokens:	duhh, dumb (that’d be dumb/I’m not that dumb), naughty
3 tokens:	yuk, ding!, oh, my gosh

According to Table 34 above the most frequent vernacular words or phrases produced by Carolina were also *Yeah!* and *cool!*. The total number of vernacular L1 tokens for Carolina was **58** out of **562** total L1 tokens. Just as for Leonard, 10% of the tokens produced by Carolina in English include a non-standard and/or vernacular word or phrase.

Carolina produced only 7 vernacular tokens in the L2: one token of *sí* (pronounced as /sip/),—like *yep*, but in Spanish—three (3) tokens of *chistoso* (funny), 2 tokens of *estúpido*, and one (1) *escoge yo!* (pick me!),

Marvin

Marvin only produced 5 vernacular tokens in English: *a total nerd* (1) and *those are so radical* (1), *get ’em* (2), *wanna* (1) as illustrated in the next examples.

Example 16

-M: **those are so: radical <...>**
-B: **I've got two of those at home.**

In this example, Marvin is referring to the vases another child brought as gifts to his classmates from his trip to Mexico. In the next example, Marvin uses the other vernacular words and phrases *nerd*, the expression *get 'em*, and *don't wanna*. Notice that all of the three out of the five total vernacular words that Marvin used occurred during one excerpt with Carolina. This excerpt is also Marvin's longest exchange (of any kind) with Carolina, and Marvin used more English in this excerpt than at any other time during the taped sessions. In the following exchange, Carolina and Marvin are calculating a geometry problem written at the board:

Example 17. Session 11. Math. Content: Review of math concepts: area and perimeter.

M: one fifty six
C: nine and what?
M: nine and what.
C: nine and six.
M: no, it's six and four. six, four.
C: oh, oh I see it now.
M: six, four. are your eyes bad?
C: yeah.
M: you may be needing glasses?
C: yeah, I already knew that a long time ago.
M: then, why don't you **get 'em**?
C: cause I don't wanna get 'em right now.
C: no I can get 'em whenever I want.
M: I can't because I have perfect eyes, but I could **get 'em** if I wanted to.
C: I can get 'em whenever I want.
M: and I can wear his whenever he wants. **I look like a total nerd in**
M: cause you **don't wanna:: glasses.**
C: I could get 'em in the year two thousand if I wanted to.
M: I could get my driver's, I<...> chance to get my drivers license in the year two thousand one.
C: two thousand one you have a chance to get your driver's license.
M: I'm allowed to. If I take and pass the test.
C: I could get my driver's license before that. (*raising tone*)
M: so?
C: your parents don't let you?
M: no. I'll be sixteen. July twenty third in the year two thousand.

In this example, Marvin and Carolina are working together on a math problem. The conversation, which is entirely in the L1, starts when Carolina is not able to see the numbers written on the blackboard. This prompts an off-task conversation about wearing glasses and other topics like getting a driver's license. In this example we can also observe other instances of vernacular words or phrases used by Marvin and Carolina, such as the contraction *get 'em* and *wanna*. Furthermore we can also appreciate the interaction dynamic between Marvin and Carolina where there is playful rivalry.

Out of Marvin's very limited English language use (68 tokens total), he uses very few L1 vernacular words (3%) in the classroom. In Spanish he used **one** instance of *estúpido*.

Other Children

Table 35 includes those vernacular tokens in the L1 which occurred 4 or more times during the taped sessions and were produced by children⁶⁷ other than Leonard, Carolina, or Marvin.

Table 35
L1 vernacular words or phrases by **other children**

yeah (includes "oh, yeah", "yeah, right", "yep", and "yeaw!")	22 tokens
Cool (includes "hey, cool", "it's cool", "that'd be cool")	26 tokens
Guys (includes "(hey), you guys")	7 tokens
Stupid (includes "call me stupid," "you stupid")	9 tokens
Dingaling	4 tokens
Duhh!	4 tokens
Total	72 tokens

The most frequent English vernacular words or phrases produced by other children were *Yeah!* and *cool!*. These two appear to be the most popular vernacular words produced by children in this fifth grade class.

The other children also produced the following L1 vernacular tokens, three times or fewer, for a total of 48 tokens:

⁶⁷ It is important to mention that the tokens included here are only the words that these children produced which were picked up by the participants' microphones.

Table 36Vernacular tokens produced three times or fewer produced by **other children**

1 token:	crap, butt, crazy, so!, whatever!, awesome, sissy, sneaky, boy, you're a pain!, that's not fair!, nice one, nut head!, sore losers, shut-up, Oh, Jesus!, what the heck!, way to go!, sock it to ..., get real!, oh, ding!, check it out, no way!, he rocks!, gross, this is dull, okey-dokey.
2 tokens:	dumb, gosh/oh, my gosh, messy, yucky, goody, Oh, God!,
3 tokens:	geez, oopsies, a'right.

The following vernacular tokens were produced by the other children in the L2: one (1) token of *sí* (pronounced as /sip/), two tokens of “*chistoso*” (funny), 1 token of *estúpido* and one of /estuped/, and one made up word “*cooles*”. In our notes we also observed two instances of *si!*⁶⁸ followed by the arm movement which often accompanies of the English expression *Yes!*. Last, there were 2 tokens of “*fantástico*” (which is the written in the paper tickets children receive when they are speaking Spanish).

References to Pre-Adolescent Culture

The following section deals with the second part of Research question III.

- *Do these children use words/phrases which refer to the outside ‘pre-adolescent culture’?*
- *If they do, are these references in the L1 or the L2?*

These tokens were only counted once—the first time the children mentioned each particular theme. Note that it is difficult to categorize a particular mention being a pre-adolescent theme or not, hence all mentions invoking the wider Anglo popular culture were categorized under several headings (see Broner 2000 for a complete list of themes). From these, several broad categories surfaced from the data which were judged to refer to Anglo preadolescent themes: 1) TV programs,⁶⁹ 2) movies, 3) comics/cartoon characters, 4) music/songs/singers, 5) commercials, 6) accents, and 7) preadolescent social themes/concerns. Table 37 includes a summary of all the categories which included a preadolescent theme made by any of the three children as well as other children in the class during the taped sessions. All were English language mentions. I will illustrate some of the categories with examples taken from the data.

⁶⁸ It is interesting to note that the use of the same expression followed by the same arm movement was noticed in a TV advertisement in Spanish Peru (Klee, personal communication Sept. 25, 1999).

⁶⁹ Includes tunes from different television programs.

Table 37⁷⁰

Summary of all Anglo popular culture: English language mentions

<i>TV programs/ radio</i>	8 mentions
<i>Movies</i>	11 mentions
<i>Comics/cartoon characters.(includes imitations of)</i>	10 mentions
<i>Music/songs/tunes/singers</i>	21 mentions
<i>Commercials/references to products/stores</i>	9 mentions
<i>Accents: Imitation of stereotypical accents</i>	4 mentions
<i>Preadolescent social themes/concerns</i>	7 mentions

As can be observed from Table 37 the children made reference to popular culture themes in this class. The following are examples of some of these categories.

Movies

As can be seen in the following example these children made the most mention of movies which are rated G or PG.

Example 18. The Lion King (Leonard, boy, Carolina); Pagemaster (Carolina, girl).

- Carolina: qué es el video más popular. como hacen (p) **Lion King**
(what is the most popular video. [lit] How do they do)
- Ally: como **Pagemaster**
- Carolina: **Pagemaster**
- Leonard: Can you feel the love tonight *(singing)*
- Don: tonight *(also singing)*

The only PG-13 movie which was consistently mentioned throughout the school year was “Grease” since it had been re-released that year. This category summarizes the developmental stage these children are in; on the one hand they are still children and can only (should only) watch G or PG movies, on the other they are entering the preadolescent world and are interested in more adolescent topics (i.e. Grease). This constant shift between the child and adolescent world is evident in all categories. Some further examples include references made to music which included clear cases of songs that were aimed at the pre-adolescent population. There were eight mentions of these types of songs, such as the following example:

Example 19. I will do anything...Boyz-2-Men. (Leonard, boys)

- L: **tonight it’s supposed to be our night. we’re gonna celebrate.** *(he is singing a Boyz-2-Men song)*
- B: **to:night** *(also singing)*

⁷⁰ See appendix 6 in Broner 2000 for a complete list of references to preadolescent themes as well as other cultural topics.

L: [is supposed our night. we are gonna celebrate o:
o:: oo:: (singing) I'm
<...> I submit to you [tonigh::t
B: [tonight.
L: [I will do any::thing for you:::
B: [I will do anything for you::::
L: I don't know why I'm singing
B: tonight.
L: I know. I'm just gonna (p) contradictinality.

This category also included songs that were not necessarily geared to a preadolescent population. There were 11 mentions of these types of songs as illustrated in the next example.

Example 20

G: hey ho, anybody home. ? (singing the English round)
L: no!
G: no drink no money have I none (English round)
G2: that makes no sense

Another category that included clear cases of popular culture themes is Commercials/references to products/stores. The children referred to several popular TV commercials throughout the year. The following example illustrates one such instance.

Example 21. Budweiser commercial-frogs. (Leonard, Carolina, boy)

L: bud, bud, bud (to the sound of the Bud light tune (the frog commercial))
D: bud, light
L: the <...>
C: (giggles)
D: [bud-wei-ser.
L: [bud-wei-ser. (laughs)
D: entro. (come in)
C: [bud, bud, bud, bud, bud. (laughs)
D: [bud, bud, bud, bud, bud. (laughs)
L: [bud, bud, bud, bud, bud. (laughs)
L: okay. necesitamos escribir.
(O.k. we need to write)

These children also used different stereotypical accents to mock, insult, or have fun. These were categorized as preadolescent topics because they seem to illustrate some of the features of preadolescents mentioned in the Child Development section. Here children use different voices that represent different identities. The children in this class made several such references. These were:

Example 22

- Jamaican Rasta accent (boy)
- Indian accent (Leonard, Carolina)
- Baby talk (Leonard, Marvin, boys)
- Southern accent (Leonard). Example:

Leonard: now, ain't that biatifal (Southern accent)

Finally, the children talked about several topics that dealt with social dimension of preadolescent themes. These ranged from talk about girlfriends/boyfriends to drivers' licenses (see Broner 2000 for a complete list). The following example refers to talk about boyfriends and girlfriends.

Example 23

Leonard: hey Don, (p) did you see Jazmine's diary too.
(referring to a diary Erin found)
C: **oh, cool there's really lots of stuff.**
Don: **no, what did it say.**
Leonard: **well it said her and Jeff kissed on Jaz-uhm New Year's Eve.**
Don: **yeah, I'm sure, (doubtful)**
Leonard: **aha! that's what Erin says. (silence)**
Don: **Jeff, do you approve of this? (pretending he is asking Jeff).**
Ally: **didn't they kiss on New Year's Eve?**
Leonard: **shut up Ally.**

As it can be seen from the examples above, all of these references relate to the broader outside culture in which these children live. All of the above were produced in the L1 or referred to the outside Anglo culture, beliefs, trends, hobbies, etc. From the above list (see Broner 2000 for an extended list) we get a glimpse of the different topics children are interested in and talk about or refer to during class time. It is important to note that since I elicited natural data, these are the themes that surfaced during the taped sessions. There are probably many more that were not taped.

Of our three participants, Leonard made reference to the largest number of such topics although all three contributed in each category. Hence, even though these children are in class, doing class-work, they find occasions to talk about topics that refer to the outside Anglo culture which interest them. When they do so, they use the L1.

There were no references to any preadolescent topic in Spanish (see Broner 2000 for a list of references made to the outside world in the L2).

Metalinguistic Function: Language Related Episodes

The third part of Research Question III looks at the ability of these three children to talk and reflect about language (L1 or the L2). As mentioned in the review of the literature section, there is an increase in metalinguistic ability in older middle-year children. Hence, this question explores whether Leonard, Carolina, and Marvin

- *show evidence of metalinguistic function*

Metalinguistic function will be examined using the notion of Language Related Episodes (LRE's) as defined by Swain and Lapkin, 1998.

A language related episode (LRE) ... is defined as any part of a dialogue where the students talk about the language they are producing, question their language use, or other-or self correct (Swain & Lapkin, 1998, p. 20)

There are two kinds of LRE: *Lexis Based* (LB) which focuses on vocabulary or different competing words, and *Form Based* (FB) which focus on any of the following aspects: spelling of words, morphology, discourse, or syntax (Swain & Lapkin, 1998, p. 20).

One hundred and twenty eight (128) LRE's were identified in 13 hours of taped data. An LRE was counted if at least one of our participants made a metalinguistic contribution in the LRE. The shortest LRE consisted of one turn with one token as in the following example:

Example 24

Leonard: cómo sabía si era /c-a-r-l-l-y-n/
(*how did he know if he was /c-a-r-l-l-y-n/*
[spelling out-loud in English])

In example 24 Leonard is spelling the name of a character in a book in English but there is no follow-up to this turn, either by Leonard or any other child. The longest LRE in these data consisted of 49 turns as illustrated in Example 25, where the children are developing ideas for a script:

Example 25. Session 2. Juicio a Peter Zenger. Content: Creative writing based on a reading.

1-D: dos años <...> (*two years*)
2-C: estaba:, (s) cómo se dice? **he was still in the business.**
 (*he was:, (s) How do you say?*)
...
3-C: **he was still.**
...
4-C: **he was still in the, ehm, business. he was still in the**
printing business. no sé cómo decir esto en español. (*I*
don't know how to say this in Spanish?)

- 5-D: qué? (*what?*)
 6-C: estaba? (p) (*was?*)

 7-C: **he was still in the printing business, how'd you say that?**
 8-D: **what?**
 9-C: **he was still in the printing business.**
 10-L: (*takes a deep breath*) ooh. (*he realizes he knows how to say the word C is looking for*)
 11-D: él estaba: (*he was*)

 12-L: ella está diciendo. (*she is saying*)

 13-C: **he was in the printing business, how do you say that?** (*impatient*)
 14-D: él estaba: él estaba /publiciando/[(*he was:, he was /publishing NT⁷¹/*)
 15-C: [él (*he*)
 16-D:]el /poblano/
 (*NT. makes another hypothesis*)
 17-L: /poblano/? (*laughs*) (*populating*)
 18-C: él estaba /publiciando/, /publano/ (*writes it down*)
 (*he was /publishing/, /mix of publishing and -ing Spanish ending. NT*)
 ...
 19-L: /publano/ no es un palabra. (*/publano/ is not a word. NT, agreement error*)
 20-L: (*looks it up in the dictionary*) (*silence*) imprime. él imprime el papel.
 (*prints. He prints the paper. NT. Literally, paper not newspaper*)
 21-D: no:::
 22-C: él imprime el papel. él lo estaba /imprimando/ (*he prints the paper, he was publishing it. NT*).
 23-D: /publiciando/? (*NT attempt with the word "publish"*)
 24-L: no. es imprime. (*No, it is "prints"*)
 25-D: yo sé, pero <...> (*I know, but...*)
 26-L: tú dice /publiciando/? (*you say NT /publishing/ NT*)
 ...
 27-L: a-huh?
 28-C: **I don't know what else to say?**
 29-D: qué es? (*what is it?*)
 30-C: estaba /imprimando/. (*he was /printing/NT*)

⁷¹ In the translation or gloss, NT means "non-target-like form."

- 31-L: /imprimie:-imprime/. /imprimé/ el papel. (*attempts several endings. All are NT*)
- 32-D: él está imprimiendo. (*he is printing*)
- 33-L: nó, él imprimí el papel. (*no, he printed NT the paper NT*)
- 34-D: eso tiene sentido pero no sé. (*that makes sense, but I don't know*)
- 35-L: no nece-[(*you don-*)
- 36-C: [para el papel (*for the paper NT*)
- 37-L: [cómo estaba él él estaba: (*how was he, he, he was.*)
- 38-D: él estaba /imprimando/. (*he was /printing/NT*)
-
- 39-C: esta:ba conti-estaba continuando: (*was, continued, was continuing*)
- 40-L: conti-conti-continuó. continuó. (*cont-cont-continued. Continued*)
- 41-A: con-continuó. continuó. (*cont-continued. continued*)
- 42-L: a imprimir el papel. (*to print the paper NT*)
- 43-C: sí. el periódico. (*yes. the newspaper*)
- 44-L: continuó a imprimir el periódico. (*continued to print the paper. NN⁷²*)
- ...
- C: **oh, cool!** tara tara tara.
- 45-L: continuó. cont- (*continued. cont-*)
- D: <...>
- 46-L: **Aubrey is pretty fast.** (p) a continuó a a imprimir. imprimir. (*dictating*) (*to continue to to print. print*)
- 47-A: el papel. (*the paper NT*)
- 48-L: el papel. (*the paper NT*)
- 49-C: el papel. el periódico. (*the paper NT, the newspaper*)
- D: qué es después de éste? (*what is after this? NT*)
- L: tú hablas. (*you speak*)

The children had been reading the story *El juicio a Peter Zenger* and the task was to write a continuation of the story to present to the rest of the class. This particular group, in which both Leonard and Carolina were present, had decided to write a play. Carolina took the role of the leader and expert throughout this task. Here, they had just started to come up with ideas on how to start the play.

In this example Carolina is asking about the expression *He was still in the printing business*. The LRE starts in turn 2 where she says *¿Cómo se dice?* and ends in turn 49. According to Swain and Lapkin (1999) an LRE is counted as one as long as the participants are working on a particular metalinguistic problem. The LRE illustrated in example 25 is a lexis based LRE because Carolina is

⁷² NN means near-target-language form.

looking for the Spanish equivalent to the expression *he was still in the printing business*. Within the LRE there are different types of metalinguistic tokens produced by the children. In turns 16, 17 and 18, Carolina and Leonard produce three form-based metalinguistic tokens as they formulate hypothesis on different interlanguage forms for the target form *publicando* (*publishing*). In turns 19 and 20 we have three tokens produced by Leonard which are lexis-based where Leonard looks up the word *to publish* in the dictionary. These metalinguistic tokens are part of the original LRE. They were not counted as different LREs because they refer to the original metalinguistic problem posed by Carolina in turn two. In turns 42 to 49, there is another lexis-based LRE for the word *el periódico* (*the paper*) within the original LRE.

Note that in this example all children are taking part in constructing the LRE. Both the L1 and the L2 are used, although there is no intrasentential code mixing. The LRE ended when the children had tested out different possibilities, had checked the dictionary, and agreed on a final form in turn 44 *continuó a imprimir el periódico* which is near target like. The children never sought the help of the teacher to help confirm their hypothesis, but relied on each others' judgments to reach their final conclusion. It is worth noting that when the children stood up in front of the class to read their paper, Leonard read *continúa-continuó a imprimir el periódico*. The teacher did not comment on these or any other words uttered by the children. After the children finished the teacher congratulated the group for their performance.

Not all LREs were as long as the one presented in Example 25. Examples of shorter, more typical LREs, are illustrated in examples 26, 27, 28, and 29 below. Table 38 shows the breakdown of the 128 LREs into number of turns:

Table 38

Number of turns per language related episode (LRE) produced during the 13 taped sessions in which at least one of the three children made a contribution.

Number of turns	<3	3-5	6-10	10+	Total
	44	45	24	15	128
Percentage	34%	35%	19%	12%	

Table 38 shows that more than half of the data involves LREs which were between three and ten turns long. This suggests that these children go beyond one of the simplest forms of LRE, the metalinguistic formula:

Example 26

Carolina: María, cómo se dice **boat**?
 (María, how do you say "boat?")
 María (Aide): bote. (boat)

Table 39 shows the number of LREs produced during different classroom contents. It is worth noting that 69% of the total number of LRE's took place while the children were studying language-related subjects such as creative writing (67/128) and reading (22/128), as illustrated in Table 39.

Table 39

Number of turns per language related episode (LRE) produced during the 13 taped sessions in which at least one of the three children made a contribution by school subject.

Number of Turns	>3	3-5	6-10	10+	Total	%
Math	8	9	4	1	22	17%
Science	8	3	1	0	12	9%
Arts and Crafts	3	2	0	0	5	4%
Creative Writing	15	26	17	9	67	52%
Reading	10	5	2	5	22	17%
Total row	44	45	24	15	128	100%

Table 39 also shows that more, and the longest LREs, also occurred when the subject of study was language related—as opposed to math, science, and arts and crafts. Fourteen out of the fifteen examples of LREs which were longer than ten turns occurred in creative writing and reading, while only one occurred in math. An example of the type of LRE present in math is the following example where the children are reviewing different types of lineal graphs and providing examples of each. The teacher had asked them to discuss possible examples for different types of graphs and had asked them to write these down on a piece of paper.

Example 27. Session 6. Part 2. Math (Statistics).

- C: el el lineal usan para el **stock market**.
[the, the, lineal. Use for the “stock market” NT]
- M: yo iba a decir ese. [I was going to say that NT]
- C: yo dije. [I said]
- C: tienes un papelito? [do you have a little/piece of paper?]
- M: voy a escribir. [I am going to write]
- 1-D: cómo dices **stock market**? [How do you say “stock market”?]
- 2-L: /marqueto **stock**/. [/market stock/]
- Don: **Leonard, do you want this?** (addressing Leonard)
- Leonard: **no**.
- *C: ahm, señora Johnson? señora Johnson? señora Johnson.
[ahm, Mrs. Johnson, Mrs. Johnson, Mrs. Johnson?]
- @T: (Teacher comes to the group)
- 3-C: cómo dices **stock market**? [how do you say “stock market”?]
- 4-T: oh, la bolsa. (teacher approaches the group) [oh, stock market]
- 5-D: la bolsa. [stock market]. (teacher leaves the group)

In this example Don (D) wants to know the word for *Stock Market* in Spanish. This Lexis based LRE consists of 5 turns and the first metalinguistic token is produced by D in turn 1. Note that in math the children used more Lexis Based LREs of the type *Cómo se dice....* and fewer Form Based LREs as illustrated in example 25.

The number of tokens produced during LREs by each of our participants was counted in order to further characterize the data. Table 40 shows the total number of metalinguistic **tokens** produced by Leonard, Carolina, and Marvin.

Table 40
Number of metalinguistic **tokens** produced by
Leonard, Carolina, and Marvin.

	L2 (Spanish)	L1 (English)	MS (Mix Span.)	ME (Mix Eng.)	Total
Leonard	96 64%	38 25%	12 8%	4 3%	150 53%
Carolina	55 56%	29 28%	15 15%	3 3%	102 36%
Marvin	30 97%	0	0	1 3%	31 11%
Total	181	66	27	8	283

As we can observe in Table 40, Leonard and Carolina produced many more tokens with a metalinguistic function than Marvin. Leonard produced 150 tokens with a metalinguistic function (53%) and Carolina produced 102 tokens (accounting for 36% of all metalinguistic tokens). Marvin produced only 31 tokens (11% of the data). Carolina and Leonard show a similar pattern of L1 and L2 language use in metalinguistic functions while Marvin stays in Spanish almost 100% of the time. It is interesting to note that when the three children are talking or reflecting about the linguistic code in a particular LRE they do so in the L2 more than in the L1.

Some examples of metalinguistic tokens included in Table 40 are short, with fewer than three turns, as in the following:

Example 28

Marvin: /iscupir/ [/spit/NT]
Carolina: escupir

where Marvin mispronounces the word *escupir* (to spit) and Carolina corrects him by modeling the correct pronunciation. This excerpt was counted as one Form Based LRE with one metalinguistic token for Carolina. Marvin's token was not counted as a metalinguistic token because he is making an error in the L2 and he does not seem to be aware of it. The LRE only occurs when Carolina

provides the correct answer where it is clear that she IS aware of Marvin's error. Longer examples include the following exchange between Carolina and the teacher aide.

Example 29. Session 6. Reading and creative writing. Content: Creative writing based on personal anecdote.

- | | |
|---------|--|
| 1-C: | cómo se dice pet ? [how do you say 'pet'??] |
| 2-Aide: | mascota. [pet] |
| 3-C: | no, no. pet , como I pet [no, no. pet. like I pet] ("to pet a dog". she tries to do the action. Note: The Aide does not know very much English) |
| 4-Aide: | pet ? |
| 5-C: | pet como ahm. como si él está petting ehm, el libro. ["pet, like hm, like if he is "petting: hm, the book] (Carolina "pets" the book to show the action to the aide) |
| 6-Aide: | él está qué? [he is what?] |
| 7-C: | petting el libro? ["petting" the book] |
| 8-Aide: | ah, uhm, no sé. acariciando. [ah, hm. I don't know. "caressing"] |
| 9-C: | okay. |

In this example, the children had just read out loud a family story in Spanish and the aide asked them to write a family anecdote. The aide had stressed that it should be written in a style that resembled spoken style. Carolina is trying to come up with words for a story about her little brother. This lexis-based LRE has 9 turns where Carolina is searching for the verb *to pet*. She initiates the LRE with the formula *cómo se dice pet*? What is interesting about this example is that Carolina starts as the novice learner in the dyad and the aide the expert, since Carolina is looking for a verb in Spanish she does not know. The expert/novice role is reversed when the aide (who was still learning English) did not understand the word in English and provides the answer *mascota* which is the noun *pet*. It is then that Carolina needs to go beyond the formula *Cómo se dice* and make use of other extralinguistic cues such as actually "petting" a book to prompt the verb she is looking for *acariciar*.

Table 40 also shows a use of code mix when children are referring to any aspect of the linguistic code. Recall that in the overall database, only **106** tokens were mixed. Thirty five of these (accounting for 33% of all mixed-code tokens) relate to a metalinguistic function. The vast majority of these mix-code metalinguistic tokens were the formulaic expression *Cómo se dice* _____. Other mixed-codes included examples such as turns 3, 5, and 7 in example 29 above.

Each token produced by each of the three participants was further classified as either Lexis-Based token or Form-Based token and then coded as all Spanish, all English, MixS (Spanish Base), or MixE (English Base). The next table displays the results of this analysis:

Table 41
Number of Form-based and Lexis-based tokens produced by
three fifth grade immersion students.

	Lexis Based Tokens					Form Based Tokens				
	L1 (English)	L2 (Spanish)	MS (Mix-Span)	MS (Mix-Eng)	Total	L1 (English)	L2 (Spanish)	MS (Mix-Span)	MS (Mix-Eng)	Total
Leonard	31 31%	54 55%	11 11%	3 3%	99	7 14%	42 83%	1 2%	1 2%	51
Carolina	29 35%	37 45%	14 17%	3 4%	83	0 —	18 95%	1 5%	0 —	19
Marvin	0 —	27 100%	0 —	0 —	27	0 —	3 75%	0 —	1 25%	4
Total	60 29%	118 56%	25 12%	6 3%	209	7 9%	63 85%	2 3%	2 3%	74

Table 41 shows that the three children produced more Lexis Based tokens (209 total) where the focus was the search for a word than Form Based tokens (74 total). The table also shows that in Lexis Based tokens, Carolina and Leonard use the L1 (29%) more than in Form Based tokens where all three children use the L2 more than 85% of the time. Again, note that Leonard's and Carolina's behavior is similar in the use of the L1 and the L2 in the Lexis Based tokens.

The following example illustrates both Lexis-Based tokens and Form-Based tokens. The children are arguing about the word *brain* as in *You don't have a brain*.

Example 30. Session 2. Juicio a Peter Zenger. Content: Creative writing based on a reading. (Note: *the children are on-task. They are proposing lines that the characters can say*).

- C: y si y si: yo tengo cerebro. Don, si yo no tengo cerebro, qué tienes tú?
[and if, and if: I have a brain. Don, if I don't have a brain, what do you have?]
- D: nada. [nothing]
- L: no me sé. [me don't know]
- C: una rata? (giggles) [a rat?]
- D: él tie-él tiene aire [he ha-he has air, (in his head)]
- L: aire! (really loud). [air!]
- C: okay. tú puedes escribirlo. (to Don)
[O.k. you can write it]
yo no soy muy buena en escribiendo. [I'm not very good at NT writing]
- L: y qué vas a escribir niño [and what are you going to write child?]? (with a grown up voice)
- D: sí. yo:: no:: ten:go:: [if. I::don't::ha:ve::] [
- L: [/naw/comida. [[
- [/noth/ food] [

1-D:	[cerebro:. celebró. [[brain:. I celebrate](writing what C had proposed Harrison would say).
2- C:	[cerebro [brain] (correcting Don).
3-D:	cerebro? [brain?]
4-C:	cerebro. you know the thing in your heads.
5-L:	si yo no tengo /celebro/. [and if I don't have one, /I celebrate/]
6-A:	you don't have one.
7-C:	(giggles).
8-D:	es. es. 'ce-e-ele' (spelling outloud) /celebro/. [it is. It is. 'c-e-l']
9-C:	no. it isn't. that's ahm, that's ahm: you celebrate. that's celebrate.
10-D:	no. celebrar. [no. to celebrate]
11-C:	de celebró. celebró. celebró mi cumpleaños [from I celebrate. celebrate. I celebrate my birthday]
12-L:	celebró (emphasis on the accent). no es celebró. celebró mi cumpleaños. [I celebrated. It is not I celebrate. I celebrated my birthday]
13-D:	celebro- [I celebrate-]
14-L:	[hay un /accente/ en celebró! y::: celebró no es un palabra. (giggles) [there is an /accent/NT in I celebrated!. and:: I celebrated in not a NT word]
15-D:	dahh!
16-A:	yo cele- [I cel-] [
17-L:	[celebro sí. celebró. por eso [[I celebrate yes. I celebrate. Because [

In this session the children were writing a play about the story they had read earlier *El juicio a Peter Zenger*. Here they are coming up with lines for each character. In this particular excerpt Carolina proposes a line for one of the characters *si yo no tengo cerebro, qué tienes tú?* (If I don't have a brain, what do you have?). Here again we see Carolina and the children taking turns at novice/expert roles in the interaction. Obviously, Carolina was the expert in this case since she knew the right word *cerebro*. In this LRE there are instances of both Lexis-Based and Form-Based tokens as well as examples of the use of the L1 and the L2.

Turns 1 through 6 provide a clear example of a Lexis Based LRE where the children are deciding between two competing lexical item *scerebro* (brain) and *celebro* (to celebrate). Here, as noted in Table 41, there are instances of Lexis Based tokens in the L1, as illustrated in turns 4, 6, and 9 in Example 30, above. Turns 11 through 14 are examples of Form Base tokens where the

children are referring to the morphology (preterit versus present) and spelling (where to accentuate). Note that there are two LREs in this excerpt. One is a Lexis-Based LRE that starts in turn 1 and ends in turn 17 where Leonard is still convinced that *celebro* is the right word for brain. The second lexis-based LRE is in turns 9 through 12 where Carolina tells D and Leonard that *celebrar* means *to celebrate*.⁷³

The data reported here reveal that these children use more L2 than L1 when they refer to and reflect on the linguistic code itself. The children co-constructed Lexis-Based and Form-Based LREs in dialogue with the help of other children present at the time of interaction. The data also show that these children are moving beyond formulaic expressions such as *Cómo se dice ___?* to a situation in which they are testing hypotheses about their interlanguage, expanding their existing knowledge about the language, proposing new alternatives and reaching conclusions about their knowledge of the language. Also, the children not only sought out knowledge from teachers and other children about language but took turns providing knowledge to other children and even the teachers (as illustrated in Example 29).

⁷³ Note that turns 9 through 12 are still included as part of the first LRE because this LRE is still part of the original discussion started in turn 1 (c.f. Swain & Lapkin, 1998, p. 329).

DISCUSSION AND CONCLUSIONS

Discussion

The primary purpose of this study was to describe the classroom use of the L1 and the L2 by three fifth graders attending a fifth grade full immersion class. Unlike previous studies on language use in immersion classrooms, the methodology was based on systematic observations and recording of naturally occurring classroom speech. The data analysis had three layers: an overall description of percentages which was used to make comparisons with results reported by other authors (Broner, 1991; Heitzman, 1993; Parker et al., 1994; Blanco-Iglesias et al., 1995; Chan, 1996), a chi-square analysis, and a VARBRUL analysis.

Based on the results reported in Section 4, we established through the analysis of percentages, and the chi-square tests that second language use is **not** independent of the variables of interlocutor, activity, content, and on/off task. Furthermore, the VARBRUL analysis allowed us to reject the null hypothesis that none of the factors of interlocutor, content, and task have any systematic effect on the choice between Spanish and English language use for each child. The VARBRUL analysis showed that interlocutor, task-content, and on/off task **consistently** affected L2 and L1 marking rates. Therefore, we can conclude that language use for these three children **is** a function of these three independent variables. The VARBRUL weights reported in Tables 28-30 showed the degree to which each significant factor group and factors was associated with L2 use for each child. An interesting result that emerged from the VARBRUL analysis is that despite individual differences, language use is conditioned by the same factor groups for all three children. This suggests that they are all members of the same speech community, as reported in Preston (1989), even though Tarone (1992), in a review of Preston's work, suggested that the notion of speech community "in the sociolinguistic sense of the term" (p. 398) was not a feasible construct in SLA classrooms. Our data suggests otherwise at least for these three children in this immersion classroom. This is an important result in light of the presence of a student such as Marvin who was perceived to be a "lame" in this classroom. Marvin's L1 and L2 is *also* conditioned by the same set of factor groups as Leonard's and Carolina's L1 and L2 use. The three models also showed that in most cases the same set of factors promoted more or less L2 and L1 use for each of the three children. The factors that most strongly encouraged L2 use were: the teacher, Marvin, Leonard, language related content, and on-task behavior. The factors which promoted less L2 use were: other peer, Carolina (for Marvin), non-language related content, and off-task.

Our results confirmed some of the observations made by other scholars (Broner, 1991; Heitzman, 1993; Parker et al., 1994; Tarone & Swain, 1995, etc.). Our results were also statistically validated. To the best of our knowledge, this has not been done before for this type of data.

Discussion Pertinent to Research Question I

The first research question examined the role of the interlocutor in the language choice of Leonard, Carolina, and Marvin inside the classroom. Specifically, information was obtained on 1) the frequency of occurrence of utterances in Spanish and English according to each type of interlocutor, and 2) the relationship between type of interlocutor and language choice (Spanish vs. English). The results showed that type of interlocutor is significantly related to children's use of Spanish and English in the classroom. The results also showed that despite individual differences, the three children used fairly similar percentages of the L1 and the L2 when speaking to each type of interlocutor.

Talking to an adult

Teacher as an interlocutor had a categorical effect on the data. When the interlocutor included an adult (teacher, whole class, and other adult) the three children always used the L2. This finding was not only observed but also shown to be statistically significant. This result confirms the observations made by Heitzman 1993, Parker et al. 1994, and the pilot study (Blanco-Iglesias et al., 1995) that when the children address the teacher or the whole-class they prefer to use Spanish. These results for the three children were also consistent with self-reports elicited in questionnaires from other children attending fifth grade in this school.

Furthermore, the study showed that the teacher was exposed to relatively few of the tokens produced by the children. This indicates that the children's interactions with the teacher were infrequent compared to their interactions with other children. Four percent of the tokens (202/4843) occurred in interactions in which the children were talking directly to the teacher or aide. Overall, interactions in which the teacher was present (in whole-class, directions, and teacher-child interactions) only accounted for 14% of the speech produced by these three children during the taped sessions. This finding suggests that the teacher is exposed to relatively little direct output from the children while 84% of the children's output is addressed to other children. By the same token, it would seem that the children receive most of their input from other peers. This finding confirms reports made by Swain and Lapkin (1995), Lyster (1987), among others, that children are

exposed to speech (output) from other immersion students and that this may account in part for the non-native like proficiency of immersion students.

Not talking to an adult

When the interlocutor did not include an adult the results showed more variation in the use of English and Spanish for each child.

Other peer

Despite the difference in individual language usage, the results show that these children **do** use Spanish with other peers at least some of the time, although for Leonard and Carolina the factor *peer* promotes less Spanish usage in the classroom ($p=.46$, and $p=.44$ respectively). This result does not accord with the finding of Heitzman (1993) and Parker et al. (1994) that children only “very occasionally” spoke Spanish with peers (Parker et al., 1994, p. 13). It is also inconsistent with Chan’s (1996) finding that the children in the program she studied spoke very little L1 in the classroom (less than 3% of the time). These authors’ findings relied on self-reported data and non-participant observations (from Heitzman, 1993; Parker et al., 1994; Chan, 1996) and might have failed to capture instances of L2 and L1 use that could have been identified in more systematically obtained taped data. Here, we can see the benefit of tape recording natural data from children, instead of basing results on heavily prompted elicited data (Heitzman, 1993; Parker et al., 1994) or direct observation, simply noting salient words in the discourse (Broner, 1991; Blanco-Iglesias et al., 1995; Chan, 1996).

Self was a variable which was different from overhearer because contextual clues provided evidence that the children were speaking to themselves, as when working out a problem out loud, and the volume of their voice was lowered, almost whispered. Again, there was variation in Spanish language use in these data (Leonard 43%, Carolina 57%, and Marvin 86%).⁷⁴

Recall that in Table 7 the percentage of tokens addressed to *self* produced during math tasks was similar to the overall percentage of self tokens in general. Heitzman’s (1993), Parker’s et al. (1994), and Cohen’s (1994) work in the area of language use in the performance of cognitive tasks suggested that

Learners oftentimes seemed to perform much of the cognitive processing of problems in English, especially numeric problems. If learners began processing problems in Spanish they tended to switch over into English if they ran into any difficulty...With word problems, learners sometimes used Spanish to refer back to

⁷⁴ These tokens were recoded as peers for the VARBRUL analysis.

essential ideas of the problem, but seemed to do much of the planning for the problem in English. (Heitzman, 1993, p. 47)

Their results were based on elicited data obtained after the researchers asked the children (in English) to work the problems out loud. In the data presented here, those tokens in which children worked out problems out loud were not elicited but rather instances of private speech (Vygotsky, 1978) which surfaced naturally while the children were working on different tasks. Our data suggest that while the children were working on math problems out loud the children *did* use the L2. Hence, our results are not consistent with Heitzman's (1993), and Parker et al.'s (1994) claim that the children used English almost exclusively in private speech about math. This difference may be due to several reasons. First in their study data were often prompted in English. This fact alone could account for their observation that these math operations were carried out in English. Furthermore, our results are based on naturally occurring data, and theirs were not. Even if the children in previous studies used the L2 to carry out math problems out loud, the authors were not able to record them due to the methodology used. The present study did not seek to analyze private speech with relation to the performance of cognitive tasks but a future study looking at natural data could provide more evidence to evaluate some of Cohen's and his associate's findings.

These results provide evidence from immersion classrooms for Bell's theory of audience design (1984) and for Beebe and Giles' accommodation theory (1984) because the three children adapted their use of Spanish and English depending on who was the interlocutor as evidenced in Tables 28-30. For Leonard the factor that promoted the most L2 use was *Marvin as an interlocutor* ($p=.82$). By the same token, for Marvin a factor that also promoted more L2 use was "Leonard as an interlocutor". For Carolina, both Marvin and Leonard promoted more L2 use ($p=.637$).

Marvin used as much L2 when interacting with Leonard as when the interlocutor was an adult. We already know from the observations, the self-reported data, and the interviews that Marvin was a "non-typical" speaker. He himself reported that the children did not like him, and did not like the fact that he used the L2 in contexts in which Spanish was not socially accepted by the peer group, such as during recess, off-task, etc. He further reported that he used Spanish even though he was very aware that the other children did not like him and did not like speaking Spanish. If at this age children are making social comparisons and there is a need to be accepted by the larger group, why did he choose to use the L2? There may be many answers to this question. First, recall that Marvin has a twin brother with whom he is best friends. They are not in the same class but they play together during recess. Marvin self-reported that when the twins were at home they used the L2 among themselves as a secret code when they did not want their mother to

understand what they were talking about. This result would confirm Broner's (1996) claim that children who use the L2 in social contexts outside the classroom self-report that they use more L2 inside the classroom. If this is the case, this could be one reason why Marvin uses more L2 than other children. For Marvin and his brother, the L2 is already playing an important age appropriate social function. Spanish is an intra-group code for Marvin and his brother, which may not be the case for other children in the class.

Another reason for the increased use of the L2 by Marvin may be the fact that he stayed much more on-task than off-task than the other children in the class. We have already shown that off-task behavior promotes less use of Spanish even for Marvin.

Nevertheless, Marvin had a very clear impact on both Leonard's and Carolina's L2 use in the classroom. Both of them spoke significantly more L2 when Marvin was present. Hence, even though Marvin was clearly a "Lame" in this classroom, his presence affected Leonard's and Carolina's L2 use. Another interesting issue which arises from the presence of Marvin is that although he was not popular, he had a positive impact on L2 use in the classroom. When children were interacting with him they accommodated, at times, to his norm.

Analyzing the impact of the presence of children like Marvin in immersion schools is important because it provides researchers with data that is oftentimes missed when reporting group data, as is the case in many studies. Obviously, the social standing of each child in the classroom may potentially have an effect on the amount of the L2 produced in a particular classroom. In this case even though Marvin is a social outcast who does not have many friends in the class, he still has a positive impact on L2 use in the classroom. On the other hand, it would be interesting to analyze the impact on language use in an immersion classroom of more popular children.

Marvin's L2 use with Leonard was as high ($p = 1.00$) as when he spoke to the teacher. This result is interesting because not only did Marvin use the L2 consistently but when Leonard was the interlocutor he used the L2 even more. Leonard was clearly accommodating to Marvin's L2 use norm but it is not clear why Marvin spoke even more L2 with Leonard than he usually did. Accommodation theory (Beebe & Giles, 1984) would predict that Marvin would also accommodate to Leonard's more-English-use-norm-with-peers unless he was purposely diverging from Leonard's norm given the data from Marvin's self-report. Recall that Marvin self-reported that he knows that children do not like it when he speaks Spanish, so he uses the L2. Perhaps this increased use is intended to annoy other children (c.f. Rampton, 1995). This analysis is speculative at best and there may be other reasons which could account for his behavior with Leonard. One obvious reason is that Leonard and Marvin were subjects for this study and this factor alone could

account for the increased use of the L2 when they were interacting with each other. Both wore lapel microphones, both sat together during taped lessons, and both carried out the different classroom tasks, assigned by the teacher, while we were taping. Despite this obvious fact, Leonard spoke the L1 often when he was interacting with other children during those same taping lessons. So why is there an increase when interacting with Marvin and especially, why vice versa? One possible explanation is that Marvin and Leonard produced most of their interactions while they were on-task rather than off-task and this fact alone may account for the increase in L2 use. Another explanation could be due to the fact that Leonard and Marvin were not friends. They did not play together during recess and did not have a common set of friends. They were classmates who needed to work together. According to Hartup (1996, p. 228), interactions among friends tend to be different than among non-friends. The former tend to include more extensive discourse, more suggestions, more laughter, and more support. Some of these characteristics were present in Leonard's interactions with other children but did not seem to be present when he was interacting with Marvin. Future research should analyze in more detail the difference between Leonard's interactions with Marvin and his interactions with other peers who were also his friends.

Another peer, Carolina, had an impact on Marvin's use of the L1. He accommodated to the L1 use pattern of Carolina despite his personal preference to stay in Spanish (as evidence in the self-reported interview data). When Marvin was speaking to Carolina, he used very little Spanish (p=.27). In these interactions we can further describe the social relationship between the interlocutors. Carolina did not like Marvin and made a point of provoking him every time she had a chance, especially if there were other girls around her. Many of their interactions followed a pattern of Carolina teasing Marvin in English to which Marvin responded in Spanish until he reached a point where he switched to English. One possible reason for the switch is that he did not have the words in Spanish to defend himself against Carolina's repeated attacks. Nevertheless, we need to be cautious when we analyze data such as these, because we do not have a principled way of knowing what Marvin's feelings were at the time of the interaction.

We have already commented in the results section that it appears that when Carolina was not interacting with Leonard and Marvin she often sat with other girls. Hence, there is the possibility that gender is playing a role in language use for Carolina. In these interactions she used more L1 than with Marvin or Leonard. Thus, it is possible that the fact that she had to interact with these particular boys who were also wearing microphones—and this fact alone could account for the observed behavior—had an impact on her L2 use. Again, we need to explore the role of the

interlocutor further in a future study in which we analyze whether Carolina's interactions with boys differ in other ways from Carolina's interactions with girls.

Discussion Pertinent to Research Question II

Task content

We can conclude that content of the task affects L2 and L1 use in the classroom. All three children used more Spanish in *language related* contents (especially creative writing) and used less Spanish in *non-language related* contents (i.e. math and science) as the results suggest in Tables 28-30.

Despite individual differences, all three children used significantly more Spanish when the content of the session was *creative writing*. Creative writing included the following activities: writing group narratives, plays, poems, etc. There may be several reasons which could explain the observed behavior. First, in *creative writing* the final goal of the task was a to produce some type of written manuscript such as in the group narrative *I knew it was going to be a terrible day when...*, or the script based on the *Peter Zenger* story, or *the Valentine poem* and this fact alone could account for the increase use of the L2 in this content. But recall that the taped data from which tokens were counted included all verbal interactions which took place during these activities in order to arrive at the final written product. The taped data included **all** interactions, both On-task and Off-task, as well as those which included negotiation of meaning for a word, phrase, idea, which was going to be written down for the final assignment. Hence, the final written product alone may be part of the answer to why the children consistently used more L2 than L1 in language-related contents such as creative writing.

Another reason for using more L2 in creative writing may be that during these activities the children not only had to work together to achieve the final product, but they had to **focus** on the L2 to be able to carry out the task. This may be the primary reason why the children consistently used more L2 during these types of contents.

Why is it important that the children used more or less L2 depending on the content being studied? The goal of immersion is to deliver the curriculum through an L2 without jeopardizing cognitive development and the ability to use the L1. Subject matter (math, social science, etc.) is taught in the L2 and the children are expected to use the L2 to achieve curricular goals. Hammerly (1989) criticized the immersion experience as producing students with less than acceptable L2 proficiency or "immersion speech" as reported in Lyster (1990).

The L2 as a goal was also present in other contents such as *reading*, although in this study there were fewer L2 tokens than for *creative writing*. So what is different in creative writing? During

creative writing the children must produce the L2 more frequently as evidenced on the overall percentage of L2 use. There were more L2 utterances with at least two S-nodes although the difference may not be statistically significant (see Table 22). In creative writing there were more and longer language related episodes (LRE's). These interactions between children were performed for the most part in the L2. These results provide evidence for Swain's (1995) output hypothesis. In creative writing the children were *forced* to produce more L2 output in order complete the task.

Furthermore, in these contents there seemed to be more instances of scaffolding (Vygotsky, 1978) in the L2, more instances of poetic language use, of language play, and more negotiation of meaning than in any other content areas. These characteristics of the children's language will be explored in a future study.

One of the characteristics of the verbal output of Leonard, Carolina, and Marvin while working out math problems was an increased use of verbless tokens (see Table 22). This may be due to the fact that during these activities there were many tokens which were produced during directions, whole-class, and follow-ups to an activity in which children tended to give a one or two word answer. In these cases the teacher held the floor and allocated turns. During math, the teacher-centered activities were longer than in creative writing, as exemplified in the next example, in which the teacher is reviewing math terms and teaching how to calculate the area of a triangle.

Example 31. Session 11: Math (area and perimeter).

1. *Damian: **sesenta metros cuadrados.** [*sixty square meters*]
2. *T: Damian, de esa figura. [*Damian. From that figure*]
3. *T: un momento, Damian! [*one moment, Damian*]
tienes que levantar la mano. [*you need to raise your hand*]
(*Damian raises his hand*) Damian.
4. *Damian: **sesenta metros** [*sixty meters*]
5. *T: [no, no te he llamado. Courtney? [*no, no.*
I did not call on you. Courtney?]
6. *Damian: **you said Damian!** (*upset*)
7. *Girl: **sit.** (*to Damian*)
8. *T: (*to Courtney*) el área de esta figura. de este rectángulo.
[*the area of this figure, this rectangle*]
9. *Courtney: **sesenta? (sixty?)**
10. *T: sesenta. largo, diez. por ancho, seis. seis por diez sesenta
metros cuadrados, okey? y el área de este rectángulo? ahm::
Carolina?
[*sixty. Length, ten. By width, six. Six times ten. Sixty square
meters, O.K.?*] (*[while making the calculations] uhm:::*
Carolina?)
11. *C: (s) (*takes time to think of the answer*) **doce.** [*twelve*]
12. *T: correcto, doce. para: calcular el área de este rectángulo:
tienes que saber el ancho: y el largo, no?

- [right. Twelve. To: calculate the area of this rectangle: you need to find out the width: and the length, right?]
13. *C: **aja.**
14. *T: okey. tú tienes el ancho ya puesto ahí, no? hemos calculado que eso es tres, no?
[O.K. you have the width placed there, right? We have calculated that this is three, right?]
15. *Chn: **[sí.**

Turns 1, 4, 6, 7, 9, 11, 13, 15, and 16 were all produced by the children and only one of them (7) included a conjugated verb. Another possibility for the presence of verbless tokens may be due to the fact that the children do not know the L2 math verbs as suggested by Cohen (1994). In the previous example the teacher uses the verb “*calcular*” (to calculate) and we can assume that the children know or at least understand the meaning of the verb. The data suggests that the children do not need to use the verb *calcular* in this excerpt to answer the teacher’s questions. Verbless answers seem to suffice in order to arrive at the correct answer. Although, recall that in example 10 Carolina uses two math verbs or expressions in English *to add*, *to divide*, and *to multiply* although for the last two she uses the alternatives *plus* and *times*. Whereas in example 11 Carolina carries out the math task in Spanish omitting such verbs. It would be useful to study if there is a relationship between the lack of math verbs or expressions and the use of the L1 in immersion classrooms. This is beyond the scope of this study. According to Cohen (1994) this would allow us to understand the use of the L1 in these types of classrooms. Notice, however, that math tokens do not account for all the interactions which take place in this classroom. Math tokens accounted for only 16% of Carolina’s and Leonard’s total tokens (36% for Marvin’s). Hence, math is only one of the variables that play a role in L2 and L1 use for these three children.

Furthermore, Carolina and Marvin self-reported that their favorite subject in class was math. But while Carolina used more L2 in math, Leonard and Marvin did not. Hence, it seems that motivation alone cannot account for the differential language use. The difference in language use may be best illustrated by Leonard’s own reflection on when he uses the L2 and the L1 in the classroom.

- Researcher:** Y cuando estás trabajando en la clase, alguna vez hablas inglés?
- Leonard:** ajá, algunas veces.
- Researcher:** ¿Cuándo? por ejemplo, ¿en qué situación?
- Leonard:** cuando ahora, cuando hay trabajo que está muy aburrido. y hablamos ahí, pero no deben. y::: ahm:::
- Researcher 2:** y los otros niños de tu clase también, hacen eso cuando aburren?

Leonard: sí. ajá.
Researcher 2: hablan inglés, ¿verdad?
Leonard: sí.

[English translation]

Researcher: And when you are in class, do you ever speak in English?
Leonard: Yup, sometimes.
Researcher: When? For instance, in what situation?
Leonard: when now, when there is work that is very boring. And we speak there (in that situation), but they (us) shouldn't. And , uhm.
Researcher 2: Do the other children in your class also do that when they are bored?
Leonard: yes. ahum
Researcher 2: They speak English, right?
Leonard: yes.

Leonard's words "*cuando hay trabajo que está muy aburrido*" (when there is work that is boring) may in part explain his use of L1 in math.⁷⁵ But both Leonard and Carolina were in MIDE—a pull-out advanced math class that was offered in the L2. According to Leonard's words, it is likely that he gets bored during math sessions where he either needs to repeat a unit which has already been covered in MIDE (this happened once during the taped sessions) or he may need to spend less time on-task to process a math task. This is important contextual information because in every immersion class there will be children like Leonard who will have time during class to be off-task because the task may be too easy for them. Hence, although content seems to be important in explaining L2 and L1 use, it is not the only factor.

On and Off task was the third factor considered to play a role in L2 and L1 production. The results in Tables 28-30 showed that on task and off task are good predictors of L2 and L1 use. Despite individual differences, all three children used less L2 off task than on task. This is an interesting result because it provides evidence for Tarone and Swain's (1995) hypothesis that a diglossic situation may be developing in the upper grades in immersion program, with more L2 for academic contents and more L1 for non-academic contents (Tarone & Swain, 1995, p. 173). Our data support this hypothesis even in Marvin's case. But knowing that on and off task are good predictors of L2 and L1 use *per se* is not very helpful because this categorization can only be done *post hoc* after the children have produced an utterance. An added difficulty in using on and off task as sole predictors of language use is the difficulty of defining on and off task (Yonge & Stables, 1998, p. 69). Binary on vs. off decisions may not be easy to make given that children are

oftentimes multitasking (Tarone, 2000). The lack of video taped data is a further limitation for categorizing on task and off task data especially in arts and crafts contents where children could have been making an off task remark but still be drawing (thus on task).

Concluding that language use is related to on/off task behavior has limited use in curriculum development. What may be more useful for teaching methodologies is to describe what other circumstances, such as interlocutor and content are present when children are on-task. Teachers may be able to control content and activity, such as group work, if they know that one type or the other will yield more L2 use.

How can L2 and L1 use in these types of activities benefit L2 teaching methodology? If we can observe data that are not accessible to teachers, as in peer-peer group work, and are able to describe when and under what circumstances children use the L2 and the L1, then we can provide tools for teachers to use to maximize the use of the L2 in these contexts. Teachers usually have access to very little data from different contents; a great deal of the data in this study occurred in peer-peer interactions where teachers provided little input. Naturally occurring data from these contents may help clarify L2 use and acquisition issues.

Discussion Pertinent to Research Question III

The third research question looked at the presence of some preadolescent characteristics in the speech of Leonard, Carolina, and Marvin. Specifically, information was obtained on frequencies of occurrences for each language for each child and these were analyzed according to the presence of vernacular words or phrases, some preadolescent themes, and language related episodes. The results found that while instances of both of these categories were present in the speech of the three children, not all were carried out in the L2.

Discussion pertinent to category one: Use of vernacular words or phrases.

As observed in the results section, Carolina, Leonard and Marvin (as well as the other children in the class) used vernacular words or phrases in the L1 and to some extent in the L2.

The most frequent vernacular words produced by Leonard, Carolina, and the other children in the class, except for Marvin, were *yeah!* and *cool!*. This observation seems to support Ames et al. suggestion that 10-year-old-children use slang in the form of isolated words and phrases (1988, p. 62).

⁷⁵ Although in his comment he may not be referring about math in particular.

Regarding the use of vernacular words in Spanish, the results section shows that there were very few vernacular words in the L2. The only true L2 vernacular word which was used by all children was *estúpido*. This was used in a variety of contexts and all uses were pragmatically correct.

The other L2 word that could be categorized as semi-vernacular was *chistoso*. Even though the meaning of the word *per se* is not vernacular, these children seemed use the word in the same way they use *cool*. What is interesting to note about *chistoso* is that the children adopted the word after it had been introduced in the teacher's input. The teacher used it several times during the course of the taped lessons and the children used it after it was introduced by the teacher (see example 15). It is interesting to note that the first time that the teacher used the word⁷⁶ was when she introduced the creative writing activity "I knew it was going to be a horrible day when..." as illustrated below.

Example 32

Teacher:	Yo lo hice con adultos y salió muy <i>chistoso</i> . [I did this with adults and it was very funny]
Carolina:	con adultos!! [with adults?] (Naughty tone)

According to Leonard's interview data, they did not learn vernacular words in the L2. It is unrealistic for the children to use words if they have not been exposed to them. Leonard's words echo Suzannah's remark that while she was in immersion she did not learn slang; she learned an academic style but not a colloquial one (Tarone & Swain, 1995, p. 173). An added problem in acquiring vernacular words is that the source usually lies outside the adult realm. These children are only exposed to L2 input from the teachers and the teachers aide and these individuals are unlikely to use vernacular words with the children. Even if they did, it is not clear that the children would actually use them. Furthermore, this school is located in an area with little Hispanic influence and thus students do not receive vernacular input from outside the school. In this sense it would be interesting to obtain data on children attending two-way immersion schools or children who attend programs in which there is a larger Hispanic presence in the community outside the school.

By actually counting how many vernacular words the children uttered we were able to conclude that the children did not use many. Only 10% of the L1 tokens produced by Leonard or Carolina included a vernacular word or phrase. Hence, these children do not use slang extensively

⁷⁶ It is possible that this word had been used before in other contexts and by other teachers/children).

in class.⁷⁷ The very saliency of vernacular words is itself important. The fact that they account for a small percentage of the data does not mean that they are not highly influential in the children's perception of these words as suggested by Ashton-Warner (1963). If as suggested by Ashton-Warner, children tend to remember and recognize vernacular words more than other words, we could hypothesize that children would use more L2 if they were exposed to more of these vernacular words in the L2, as evidenced with the use of the word "estúpido", but this issue remains an open question.

Discussion pertinent to category two: Evidence of pre-adolescent themes or references to the outside culture.

Not only did these children use vernacular words primarily in L1 in the classroom but, as observed in the results section, the three children made reference to preadolescent and popular culture themes throughout the thirteen hours of taped data. Most mentions were in the L1 and reflected a variety of topics. As mentioned in the Child Development section in Chapter 2, children at this age begin the process of leaving childhood and start to become adolescents. In this period we can and should expect mentions to both the childhood world they are starting to leave behind and the adolescent world they will enter in Middle School. These children made ample mention of elements from both worlds. On the one hand there were clear references to children's themes such as the movies *The Lion King*, *Pagemaster*, etc. On the other, there were clear instances of preadolescent themes such as in the mentions of the *Boyz-to-Men* song, the different commercials, the movie *Grease*, as well as different topics such as boyfriends and girlfriends.

The data also provided evidence of other aspects that are typical of this age range such as the use of voices to try out different identities (cf. Tarone, 2000; Broner & Tarone, 2001). These voices were manifested in a variety of ways: one was the imitation of cartoon voices and other voices that came from TV and movies, while the other was the imitation of stereotypical accents which are attached to particular ethnic groups, such as a *Rasta*, *Indian*, and *southern* accent. The second type resembles the type Rampton (1995, 1996) studied in adolescents in England. Rampton found that the use of different minority accents with different interlocutors asserted the adolescents' identity, relationship with the interlocutor, and ideology.⁷⁸ In the data reported here, it is difficult

⁷⁷ Although we cannot rule out the possibility that other less polite children in the classroom may use them more than Leonard, Carolina, and Marvin.

⁷⁸c.f. Fordham (1998) for an interesting view of the use of standard English by speakers of BEV where the standard is treated as the vernacular. The standard is stigmatized as one way of acting white, this Discourse cannot be owned; it can only be rented for instrumental purposes (Fordham, 1998, p. 214).

to state that these children used these accents to assert their identities, especially because they do not belong to any of the groups attributed to each accent. But we can speculate that the children already have some knowledge of the cultural/ethnic/bias connotations that each accent embodies. What is interesting is that these children never used a *Hispanic* accent in either the L1 or the L2.⁷⁹ There is a need to gather data from other types of programs which are in communities with a larger Hispanic presence to see if there is evidence of use of stereotypical accents in the speech of the children.

These data also showed that although there were some cultural references made in the L2 none of these seemed to include a pre-adolescent theme. The data provide empirical evidence for the hypothesis formulated in the literature that the children used the L1 because they did not know how to talk about pre-adolescent themes in the L2 (Broner, 1991; Heitzman, 1993; Parker et al., 1994; Blanco-Iglesias et al., 1995; Tarone & Swain, 1995; Chan 1996). Furthermore, of all the cultural references carried out in the L2 none referred to a Spanish/Hispanic related topic. Obviously, these children do not have access to activities, music, etc. outside of class in the L2. Perhaps this will change in the future given that several Hispanic pop stars (e.g. Ricky Martin, Enrique Iglesias, etc.) are becoming mainstream and are using the L2 as a medium in some of their popular lyrics.

Discussion pertinent to category three: Evidence of metalinguistic function.

As observed in the results section, Carolina, Leonard and Marvin talked about and reflected on the linguistic code itself in the L2 and in the L1. According to the data reported in the results section, these children used the L2 when they were referring to a metalinguistic function. This result is important given the fact that at this age children start using their verbal abilities to talk about language itself. Hence, these children seem to have attained this cognitive maturation stage in the L2.

In our analysis of the presence of a metalinguistic function, we found instances of Language Related Episodes (LREs) in the output of these three children. These data are interesting because they provide evidence of LREs present in naturally occurring data from real ongoing classrooms. Our data also indicate that content of the task had an impact in the production of LREs. LREs were longer in language-related contents such as creative writing, and shorter in non-language related contents, such as math. Our data further characterize the results for research question 2 that

⁷⁹ However, these data were gathered before the *Yo quiero Taco Bell* craze. It would be interesting to gather data from more recent students to see if this accent was incorporated into the children's speech.

content of the task has a measurable impact on L2 used because in language related contents there were more opportunities to talk about the language itself. When the children did so, the LREs produced were longer than in other content areas. It is also worth noting that in content areas such as math, we further observed that the children produced some LREs when the children had to negotiate the meaning of a word. These seemed to be carried out in the L2 more than the L1. The presence of LREs in math contents can help to further characterize L2 use for these particular contents.

We further analyzed the LRE's by counting the metalinguistic tokens produced by Leonard, Carolina and Marvin present in each LRE. We found that the three children used more L2 than L1 when they were talking about or reflecting on the linguistic code. Another interesting result was that a third of the mixed tokens produced by these three children had a metalinguistic function. The vast majority of these included the formulaic expression *Cómo se dice....?*. But our data showed that the use of this expression was limited in the speech of these three children. Their metalinguistic tokens went beyond this formula. The children produced lexis-based metalinguistic tokens and form-based metalinguistic tokens. The children tested hypotheses about a linguistic problem, confirmed or rejected a hypothesis about their interlanguage, helped other children (and sometimes other adults) in the process of arriving at conclusions about a metalinguistic problem. These results provide evidence for Swain and Lapkin's theory that dialogue should be viewed as both the means of communication and a cognitive tool (1998, p. 333), although proving this claim was not part of this study.

What is interesting about these metalinguistic interactions is that the children tended to carry out these discussions in the L2 more than in the L1. The fact that they were able to carry out these functions in the L2 suggest that these children seem to have attained a maturational stage in which they are able to refer to the linguistic code solely on a verbal plane by using the L2. This maturational stage was particularly evidenced in Carolina's output which often included the role of the more experienced partner in a dyad. Carolina provided the correct answers or alternatives more often than Leonard and much more frequently than Marvin. Marvin's metalinguistic contributions were fewer, this could be due to several reasons. First we have already pointed out that Marvin made fewer contributions in language-related contents than Leonard or Carolina and this fact alone could account for the difference in percentages. We could also speculate that Marvin has not reached the same level of maturity as either Leonard or Carolina and therefore does not produce as many metalinguistic tokens as other children at this age. More research should be carried out to

further explore the role of development in the production of metalinguistic tokens in the L2. It would also be important to compare data from different grade levels to further explore this issue.

Last, it is important to mention the role of the teacher in these types of interactions. As evidenced in the data reported in this study most metalinguistic interactions occurred among peers. The role of the teacher was limited in helping the children arrive at the correct output. In many cases, as illustrated in example 25, the children had to decide by themselves whether the hypothesis formulated about a particular linguistic item was correct or not. We also showed that sometimes children arrived at the correct answer, sometimes they didn't and sometimes they used a made-up word. From a pedagogical point of view, the type of data reported here provides evidence to teachers of the type of linguistic sophistication the children are able to achieve when interacting with peers and which is often missing in the output teachers receive from children. In our observations and in the taped data, when the children could not agree on the solution to a particular metalinguistic problem, they would seek the teacher's help by using the expression *¿Cómo se dice...?* However, the teacher was not exposed to the kind of collaborative output evidenced in the data reported in this study. This sophistication echoes Wells' (1996, p. 10) position that in these collaborative tasks, the children can rise above their individual capacity to reach a conclusion that "no single member envisaged at the outset of the collaboration."

Conclusions

Findings from this study led to the following conclusions:

1) *Despite other reports in the literature, these three immersion fifth graders use the L2 more than the L1 in their classroom.* Only looking at salient features (as evidenced in Broner, 1991; Heitzman, 1993; Parker et al., 1994; Blanco-Iglesias et al., 1995; Chan, 1996) in the discourse gives the impression that the choice between Spanish and English is discrete: more L2 in academic contexts and more L1 in social contexts. We were able to show (by systematically looking at the children's natural discourse), that there are many more variables involved in the choice of the L2 and the L1.

2) *Children in this fifth grade classroom DO speak the L2 both with the teacher and when speaking with other children.* Interlocutor alone predicted language use when it was the teacher, but other variables also came into play when the interlocutor was another peer.

3) *Language choice for these three children is a function of interlocutor, content, and being on/off task.* The VARBRUL program allowed us to reach a significant model of language use for the three children while a more qualitative analysis of the data, allowed us to further describe the data.

The crucial factors to predict use of the L1 or the L2 were: the teacher, the subjects as interlocutors, content of the task and on and off task behavior.

4) *Type of task has a measurable effect on first and second language use, providing evidence that when the goal of the task includes focusing on the L2, as well as the content, children use the L2 to a greater extent.* Further analysis of those tasks showed that children were doing more than just 'getting the job done' and/or focusing on the L2. The three children used more Spanish in language related contents (especially creative writing) and used less Spanish in non-language related contents (i.e. math and science).

5) *Language use is a multilayered continuum that goes from all L2 when the teacher is the interlocutor to all L1 when there are a series of other factors present (e.g. transition, peer and off task).* VARBRUL allowed us to achieve a model of language use which allowed us to predict the position in the continuum of a particular set of factors for any given token.

6) *These three children used some vernacular words but to a lesser degree than previously thought.* The use of slang seems to support the claim in Child Development theory that children at this age use slang but not systematically. From a methodological point of view, this result is important given the saliency of vernacular words for learners and researchers when uttered inside a classroom. Counting the occurrence of each vernacular word or phrase allowed us to reach an accurate picture of their use. Assessment of their salience for learners is beyond the scope of this study.

7) *Some pre-adolescent themes encourage L1 use in the classroom. There were **no** references to the preadolescent culture in the L2.*

8) *These children use the L2 to talk about and reflect on the linguistic code.* This result is important given the fact that developmentally at this age children show an increase in their metalinguistic ability. Hence, these children's cognitive maturation is revealed both in the L1 and the L2.

9) *Despite individual differences, the same set of factors account for the L2 and L1 use of all three children. This suggests their membership in a single speech community.* Hence, we can speculate that language use for other children in the class will be a function of these same variables. Nevertheless, because this was a case study, more data are needed that look at the behavior of more than just three children to validate this claim. Notwithstanding, we feel that looking at the individual in a more in depth fashion provides evidence that is otherwise lost.

Implications for Teaching and Future Research.

By looking at naturally occurring data we were able to describe contexts of L1 and L2 use which are often missed or overlooked when employing other types of data gathering techniques. This type of data can allow teachers to elaborate classroom tasks which can maximize the L2 output of the children. From the results reported here, we would propose that teachers include many opportunities for group creative writing activities throughout the curriculum to increase students' L2 use in the classroom. It would be interesting to examine the use of creative writing activities using non-language related content such as math and science to determine if the L2 increase is due to the type of activity (focus on language) or the content alone.

Another issue is the role of individual differences in the make-up of group work. Given our results on the effect of different interlocutors on L2 use, teachers should take this variable into account. Interlocutors will affect other children's L2 output and pairing different kinds of interlocutors may help increase the overall L2 output in these classes. If teachers have individual information on each child's language use, they may be able to elicit more overall L2 in their classrooms.

Future research that stems from this study is to look in more detail at the difference between the L1 and L2 use of girls vs. boys to see whether L1 and L2 use is related to creating and defending gender boundaries. Other research that should be undertaken is the study of the linguistic features present in the output of these three children. In the current study, the emphasis was more on the extralinguistic variables present at the time of language choice, but in the future I plan to analyze the use of the indicative and the subjunctive as well as the use of the imperfect and preterite as evidenced in the interlanguage of these three children. A type/token analysis (Bardovig-Harley, 1994) as well as a VARBRUL analysis (following Tajika, 1999) will be performed on the preterite/imperfect data. A more detailed analysis of the verbs used in math (following Cohen, 1994) should also be explored to shed light on the issue of language use in the classroom.

Furthermore, the analysis of the notion of language play (Cook, 1997; Tarone, 2000; Broner & Tarone, 2001) will be further explored to see if the presence of this function promotes more the use of the L1 or the L2.

Another issue that needs to be explored further is a microanalysis of the discursive features present in the interactions of the three children. If, as Swain and Lapkin suggest (1998), in dialogue both the process and the product of language acquisition is evidenced, then it would be worthwhile to focus our attention on this area.

Limitations of the Study

Because this was a case study we are not able to generalize results to other populations. Hence, there is a need to carry out more studies of this kind in other types of immersion programs. In this study the socio-cultural context was important in determining L2 use in the classroom. Hence, other studies based on different kinds of populations (i.e. populations where the children have more access to the L2 in the wider community) will most likely yield different results. In this sense, there is a need for this kind of study in dual-immersion programs, where the impact of the two student populations on L2 and L1 use may be different than in a population like the one studied here.

Furthermore, since developmental features had an impact on language use it is important to also look at the issue of L2 and L1 use in late immersion programs. Most students in late immersion programs have reached adolescence and if part of being an adolescent is the search for an identity, it is important to study how this issue can affect L2 and L1 use in the classroom.

Another limitation of the study is that we used tape-recorded data. Many contextual features were lost because we did not have access to video-taped data. Hence, in the future, it would be desirable to use both kinds of data gathering techniques.

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*The Center for Advanced Research
on Language Acquisition
University of Minnesota
140 University International Center
331 - 17th Avenue S.E.
Minneapolis, MN 55414*

*Telephone: (612) 626-8600
Fax: (612) 624-7514
E-mail: carla@umn.edu
Web: www.carla.umn.edu*

*This CARLA working paper is available for download from the CARLA Website.
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