Building instruments to understand minds and cognition in european schools

Helping Portuguese immigrant students succeed

Figueiredo, S., Alves-Martins, M., Silva, C.

Abstract— **This study will examine the validity and prevalence of specific language tasks to differentiate 108 second language (L2) learners, considering two main factors: the socioeconomic background and the instruction in first language (L1). All the tasks were developed for the first levels of proficiency (A2-B1, according to European benchmarks), and applied to a large sample of diverse Portuguese students (immigrants with origin in several continents). Four tasks administered are incorporated in a 15-test diagnostic. The tasks were administered between 2013 and 2014, in Lisbon schools, and were disposed on paper and on a computer screen one at a time. Data will be presented regarding the following items: verbal analogies, recall task, and cognates. Hypothesis 1: home environment has impact for tasks performance in L2, attending to employment situation and families' economic stability identified through the professional situation of two-parent families and attending to their job skills (graduate and non-graduate). Hypothesis 2: depending on the L1 continued instruction, immigrant students have different cognitive and linguistic output. The results confirmed the hypothesis that students from low-income immigrant families experienced worst performance in general tasks, and individuals with L1 support were good performers compared to other with no home language continued instruction. Implications will be discussed considering that students from limited socioeconomic families, and the additional factor of no L1 continued instruction, have more failure at school and they experience more difficulty to adjust to daily social activities.**

Keywords—*socioeconomic factors, L1 instruction, second language, european schools, evaluation*

I.   Introduction

Migration movements are intrinsically related to socioeconomic situation of new generation of immigrants arriving at schools which determine rates of acquisition and the academic success in new schools. Teaching procedures in foreign language context other than English language will be affected by those rates and also by motivation inherent to socioeconomic status of students and of their families (Hernandez, 2011; Isaac, 2013). Socioeconomic backgrounds

Sandra Figueiredo
Universidade Autónoma de Lisboa
Portugal
sandradfigueiredo@ua.pt
Margarida Alves Martins
ISPA-Instituto Universitário
Portugal
Carlos Fernandes da Silva
Universidade de Aveiro
Portugal

would be diverse concerning cognitive stimulating daily activities which imply more effort and awareness for foreign language teachers (Guendelman et al., 2005).

On the other hand, the diversity might be explained by the home language factor, in two ways of analysis: the variability of home languages among several groups of students and families; and the continued instruction in L1 parallel to second language formal learning at school. Students with additional tuition in their mother tongue would have more cognitive strategies when compared to those who do not receive L1 training. Additionally, parents with no proficiency in L2 would be a factor that constraint a balanced bilingual acquisition in their children. The optimal academic goal for immigrant children is to attain high level of competency in L2, but maintaining their heritage language. The present study confirmed 2 working hypothesis that develop new insights on the immigration inside schools of Europe: socioeconomic factors are available to explain significant differences among students, based on current professional situation of their parents; and students receiving instruction in L1 are better performers in L2 than other with no L1 support, considering three tasks that were adapted for Portuguese population and showed to be reliable.

A.   The socioeconomic constraint: variability in L2 achievement

After careful examination on limited proficiency and diversity of performance levels of minorities there is the possibility of tracking at-risk children and to develop support programs inside schools. Based on a brief review of literature across several databases powered by Scopus we found that socioeconomic factor is not well studied in scientific literature concerning specifically second language learning process. In other perspective, the immigration routes in Europe are different from other population's destinations which will lead to different scenarios of difficulties and polices of school support. In Portuguese context, immigrants from East European, Asiatic and African countries are more economically disfavoured but previous school instruction in the country of origin makes the difference in academic behaviour of those groups at school. Children from East European countries seemed to be more prepared than peers from other countries which reflect in general academic achievement (Figueiredo, Martins & Silva, 2014). Rhythms of those minorities are distinct and disproportionate which is considered an emergent problem in school system, both in second language learning and in overall academic performance (Becker, 2010). Language minority homes should be careful studied in school environment to identify which languages are spoken at home, which culture representations affect dominant culture and language, and which daily

activities are students engaged with. Parent's professional situation determines daily activities and school routines. Jonsson and Rudolphi (2011) developed a recent study on effects in the educational careers of young immigrants immersed in Swedish schools. Non-European students are concluded as having more disadvantages in academic performance which could lead to school drop. Other second-immigrant generation with European origin has different behaviour and choices. In other perspective, parent's involvement in schooling of their children will have impact in immigrant student's attitudes toward figures related to second language learning and to general cultural socialization (Poza et al., 2014). Parents with limited fluency in SL are in disadvantaged position to ensure attitudes of their children toward school and peers (Guendelman et al., 2005). Sociolinguistic profiles of families are important to describe limitations and the expected advances in learning from student's experience at the time of school entry (in arrival country). Family' background, home language, nationality, and age are main predictors to be acknowledged by teachers of foreign languages. Scientific studies focusing socioeconomic background and foreign language learning are scarce while this is widely studied concerning first language acquisition. Family socioeconomic status is a predictor of general academic learning and cognitive strategies improvement (Hoff, 2003). Students whose parents differ in socioeconomic backgrounds are expected to differ also in their school learning activities attending to their language exposure and general cognitive activation. Interaction between students and their families will have repercussion on their academic performance (Mistry et al. 2008). How and to what extent do home interaction and diversity of environments have impact in second language learning situation?

B.   The other factor: the L1 continued instruction and cognitive influences

Language support programs are more prepared and developed in American context since 60s while in the European countries that support is not well structured (Crosnoe & Turley, 2011; Capps et al., 2005). One of the principal concerns is to provide families with educational materials to improve language skills, in L1 and L2 contexts, otherwise it turns in disproportionate achievements and attitudes. Shifrer et al. (2011) studied the disproportionate school behaviours among specific minorities considering sociodemographic variables and the disadvantages for education system disregard the second language learning context. Differences observed in socioeconomic backgrounds are differently perceived by Africans and Hispanics living in America. On the other hand, part of the Asian population in the US has other posture and less difficulty in social adaptation which is favored by economic and political power of China explaining how K-12 American schools are increasing their foreign language programs to promote Mandarin education (Lindholm-Leary, 2011). In Portugal Chinese immigrant population, differently from other Asian linguistic minorities, has significant expression and similar economic reasons are observed in pursuing foreign language programs. Should be noticed that there are different kinds of Asian population, we are focusing here the mandarin speakers

and the Indo-Aryan speakers. In the other hand, the Indo-Aryan speakers (e.g., Urdu and Bengali) present different scenario of limited resources and serious academic difficulties (Giacomin et al., 2011). Frequently studies do not outline this difference among immigrated Asian populations. Similarly to Indo-Aryan speakers (e.g., indian countries), in Portugal, Slavic immigrant population and African newcomers are frequently associated to lower incomes and insufficient home support. Besides the cognitive advantage from interdependence of languages (Cummins, 1992), we are interested here in the other filed: immigrant students whose families have no time expending at home become more difficult to enhance language proficiency in mother tongue. Parental involvement, parents' level of education, home interactions, and L1 maintained instruction, would be the main factors to be observed in order to understand academic behaviours of young students immersed in diverse language programs and in mainstream classrooms. Does home environment and the L1 instruction variables have impact in specific tasks performance, attending to parent's employment condition? Low-income families (identified in cases of unemployed parents or with current unspecialised jobs) might explain low performance in those tasks in Portuguese second language (and applying general academic competencies). Additionally, students with no L1 instruction support will experience more difficulty in second language tasks. Both factors in disadvantageous context might explain a scenario of L2 learners at risk, worldwide.

II.   Method

A.   *Participants*

108 Portuguese second language learners (later arrivals, mainly since 2010), mean age = 13 years old, from basic and high school levels. Almost students were born outside Portugal and first school instruction was mainly in their native countries. All the students came from lower to middle socioeconomic backgrounds (we have identified all the current jobs of parents/tutors). There are no disabled individuals and they are right-handed (laterality was also identified). All students are from portuguese schools. Nationality and Home Language: 23 nationalities and 28 different languages were observed. 33 speakers of mandarin, 32 speakers of romance languages, 14 speakers of slavic languages, 11 speakers of creoles, 10 speakers of indo-aryan languages, 2 speakers of afro-asiatic languages. Only 56 individuals informed the current employment condition of their parents and 18 participants are identified as receiving L1 instruction.

B.   *Procedures*

The collection of data is scheduled between 2013 and 2014 in Portuguese schools. After selection criteria, participants were asked to complete full tests battery during approximately 60 minutes, in classroom evaluation context. All prompts were disposed on paper and on a computer screen one at a time, to listen and register the sounds and texts.

Treatment of data was accomplished by using the SPSS program (version 21).

C.   *Instruments*

- Task 1

Verbal Analogy Task: 6 items (based on Verbal Analogies Test n.º 2 of "Woodcock-Munoz Language Survey-Revised - WMLS-R, 2005) with internal correlation consistency (cronbach's alpha) of .60. Score: 1 point for each correct answer (total score: 6 points). Example of sample items: "Estrela está para céu assim como peixe está para _____" (fill in the missing word by logic association: 'Star is for sky as fish is for ____.').

- Task 3

Recall Task: 36 items (based on the original task of Woodcock-Munoz Language Survey-Revised-WMLS-R, 2005). Students are introduced to different sequence of three written texts and they are asked to write the words that they recall after reading (with no second visual stimuli on the texts).

- Task 4

Cognates: 4 items (based on August et al.,2001) with cronbach's alpha .73. Item 5 was deleted to improve alpha. Score: 1 point for each completed match (total score: 5 points). The cronbach value is higher than the original test consistency (.69). Example of sample items: Palavra: Amizade/ Frase: "Os colegas da escola são meus _____" (Word: friendship/ Sentence: "Colleagues from school are my _____").

III.   **Hypotheses verification**

Hypothesis 1: home environment has impact for the tasks performance in L2, attending to employment situation and families' economic stability identified through the professional situation of two-parent families and attending to their job skills (graduate and non-graduate).

The hypothesis was confirmed. Analyzes of variance (one-way ANOVA) were carried out to examine the association between socioeconomic situation and the performance scores gathered from the four tasks administered (see *Instruments*). The socioeconomic situation was determined by the identification of the current job of immigrant parents. Based on professional conditions and different jobs nature of immigrant families in Portugal, three categories were classified: specialised workers, unspecialised workers, and unemployed (but looking for a job). Respecting the employed workers, the specialization respects parents who are graduated at specific levels and have training to take place in a job category (and currently active in job market, in Portugal). Within the unspecialised workers we found several houseworkers and cleaning related jobs. Students raised in unemployed families contexts showed to have worst performance in majority of the tasks, with statistical difference (p.<05), compared to students whose parents are employed

and related to unspecialised jobs. In the one hand, for the verbal analogy task there were only differences among students from unemployed workers and students from unspecialised workers: $F(2,50)=4,411$; $p=.017$), but the individuals from families with unspecialised jobs were the better performers. On the other hand, for recall task the differences are also between students from unemployed workers and students from unspecialised workers: $F(2,53)=4,180$; $p=.021$), but children from families with specialised jobs were greater. At last, for cognates: $F(2,53)=4,163$; $p=.021$), the scenario was the same. See table I.

(Table I)

Hypothesis 2: depending on the L1 continued instruction, immigrant students have different cognitive and linguistic output.

The hypothesis was confirmed. Considering all the participants, only 18 students receive continued instruction in their home language and significant part are mandarin speakers. These students presented higher positive performance in 3 of 4 tasks administered, with statistical difference (p.<05), compared to students with no home language formal tuition. For the verbal analogy task there were differences among groups: $F(1,98)=4,818$; $p=.031$). For recall task also differences were observed: $F(2,99)=4,073$; $p=.020$). For cognates task, there was no statistical difference. In all the contexts the individuals with continued instruction in their home language were better positioned. See table II.

(Table II)

IV.   **Discussion**

Both hypotheses of our study were confirmed: home environment has impact for the tasks performance in L2, attending to employment situation and families' economic stability. Low-income backgrounds, mainly unemployed condition, constitute a variable to explain Portuguese immigrant students failure in L2 tests; and L1 continued instruction constitutes an additional variable for good cognitive and linguistic output, compared to participants with no L1 instruction.

These results have implications considering young learners who are raised in immigrant families, disregard their country of birth. New generation of immigrant students have differences justified by circumstances related to level of literacy exposure that home backgrounds might offer to their children. The tasks of the presente study displayed results that strongly differentiated the three socioeconomic categories (as determined in our methodology) of participants considering the higher performance of individuals from more stable socioeconomic situation (children of parents with specialised and unspecialised current jobs). Unemployed condition showed to be a negative predictor when we conclude that children of unemployed families presented the lower results in all the 4 tests. Verbal analogy and cognates tasks are more difficult to solve because they are cognitively demanding (verbal reasoning and vocabulary). Improved knowledge of

vocabulary in a second language will determine also positive achievement in the mentioned task, and the vocabulary size will depend on literacy stimulating activities (Lervag & Aukrust, 2010). Limited backgrounds and fragile economic situation of families will compromise that literacy. Additionally to literacy experience factor, diverse home languages could coexist and with no oriented learning environment that enhances the cognitive stimulating and conformity with school goals (De Feyter & Winsler, 2009). Distance between the families and the school routines might be a limitation that requires further examination to understand the impact in education of immigrant new students. Specifically in this empirical study, immigrant children are responding less appropriately to analogies, words recall and cognates decoding, when they have origin in disfavoured family' backgrounds due to job limited conditions (mainly regarding the unemployed immigrant families). Specifically focusing on memory task (text recall) children of specialized workers had the better scores. Higher stimulating activities are predicted by families with origin in specialized professional conditions, once they are aware of school needs and literacy development for their children. Recalling words from L2 texts could be influenced by greater amount of L2 listening input at home. On the one hand, recalling words is related to vocabulary capacity because short-term memory is intrinsically related to vocabulary and less to other abilities such syntax or reading (Abreu, Gathercole & Martin, 2011). On the other hand, Becker's study (2010) achieved that German native students have more advantage than Turkish immigrant peers from input received inside the family, considering the frequency of parental reading to child (in the German case), against the poor proficiency of Turkish parents. Recall ability would be correlated to reading activities promoted by graduate parents (more parental investment). In a second analysis, besides the socioeconomic limitations, these individuals are challenged by insufficient instruction in L1. Participants that received formal instruction in L1surpassed the other participants with no L1 support. Children from lower income families struggle with the differences between the home and the second languages. The consistency of languages is the main factor that explains transference strategies across languages. Maintained instruction in L1 might be a serious advantage that explains how participants with L1 continued tuition exhibited higher positive answers to all tests (Cummins, 2012). Instruction and exposure to both L1 and L2 could diminish the interference effect caused by distance between L1 and L2. Only the cognates task revealed no significant differences between who receive L1 instruction and who do not. We can address two explanations: first, lexical decision task with cognates involved (and mixed other words) are expected to be decoded with long reaction time for less advanced (stage) L2 learners (Brenders, Hell, Dijkstra, 2011). There is the possibility that these groups of learners, irrespective of their L1 instruction, are not familiar with significant lexicon to be differentiated when responding to this task. Attending to the high punctuations observed for both groups we conclude that cognates coding does not affect word recognition for both groups of L1 instruction types, with no significant differences. Second, might be no resemblance across the words between the L2 word presented and the L1

mental lexicon of the several groups of speakers. Concerning orthographies, according to Lervag and Aukrust (2010) the decoding demands more effort in inconsistent orthographies like English and would be faster in languages like Spanish and German. Portuguese language would be identified as a consistent system so the sucess hypothesis would be based in facilitated learning for second-generation immigrant individuals in Portuguese speaking countries. Literacy exposure is required. This exposure does not improve in low-income families with job constrained situation. Language learning depends heavily in "print exposure" provided by textbooks in foreign language (Koda & Zhang, 2008) but the assets (resources such as textbooks for language support) of second language learners could vary depending on conditions and time provided by families, being critical in disfavoured contexts. Valuable research was done on the school readiness of children from poor immigrant families to evaluate the nativity-based factors and the condition of fragility of immigrant students compared to native peers (De Feyter & Winsler, 2009). Other authors (Winsler et al., 2003) analysed outcomes of groups also with origin in low-income families but considering the bilingual skills development of minorities such Spanish speaking children. The attendance to bilingual language programs could differentiate academic and cognitive development between children who attended those programs and others that remain at home. American research context addresses with frequency Spanish speaking children in order to understand the correlation between English limited proficiency and their common poor environments. Fifty-six percent of young children from immigrant families are growing up in poor contexts (Capps, 2005) which lead us to think about diversity of minds and cognitive profiles attending to schools, from different backgrounds and with different L1 instruction opportunities.

1) Tables

TABLE I

	Professional situation of two-parent families					
Tasks	***Unspecialised workers***		***Specialized workers***		***Unemployed***	
	Mean	***P.D.***	***Mean***	***P.D.***	***Mean***	***P.D.***
Verbal analogy	4,3778	1,38644	3,4000	2,30217	2,0000	1,000 00
Recall task	11,96	3,519	12,00	3,536	6,00	2,000
Cognates	2,9167	1,31818	3,0000	1,41421	,6667	1,154 70

TABLE II

Tasks

	Receiving L1 Instruction		No L1 Instruction	
	Mean	P.D.	Mean	P.D.
Verbal analogy	4,8333	,92355	4,0244	1,49877
Recall task	13,33	2,000	10,75	2,000
Cognates	3,8333	1,20049	3,0256	1,59524

Acknowledgment

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