How Close Is Close Enough? Language Genetics in the Classroom

Christen M. Pearson, PhD
Thomas J. Spoelhof
Grand Valley State University

Abstract

Using the definitions of genetic relationship and classification of genetic transmission as per Thomason and Kaufman (1991) and Crystal (1997), respectively, this study sought to determine whether ease/difficulty of ESL acquisition, both Basic Interpersonal Communicative Skills (BICS) and Cognitive Academic Language Proficiency (CALP), is influenced by the genetic closeness of the L1 to English, using a large group (N=207) of older internationally adopted children. The children were divided into groups based on how far, genetically and typologically, their L1 was from English. Proficiency of English under four areas was then assessed by parental report one year post-placement: 1) comprehension of *functional* English, 2) production of *functional* English, 3) comprehension of *academic* English, and 4) production of *academic* English. Results of the impact (or lack thereof) of the genetic closeness of the L1 on English acquisition in relation to BICS and CALP are discussed, along with implications of study results for teachers in regular and ESL classrooms.

Introduction

It has been estimated that in the United States, 13% of the 1.6 million adopted children have been born outside of the country; this translates into approximately 200,000 children (Miller, 2005). Parents of these internationally adopted (IA) children often struggle with the varying challenges presented by the ability of their children to acquire comprehension and productivity in both functional and academic English. This study has sought to discern whether or not genetic or typological similarity in the child's first language (L1) to that of the English language is a factor in the acquisition and mastery of English as a second language (L2). Adoptive parents can be frustrated by a slow process of L2 acquisition, due to varying factors to be discussed below, as well as a rapid attrition of the child's L1 proficiency upon severance from contact with the L1. Further compounding the problem is that IA children can "fall through the cracks"; typical primary and secondary educational systems lack the tools necessary to optimally serve IA children from non-English speaking countries with the additional psychosocial and risk factors they pose. Due to a lack of these services, parents may find themselves funding private training for the child's language acquisition, sometimes to the point of financial detriment. The risk factors affecting these children vary widely, and the effects can be staggering to the child and the parents. These risk factors can include: low birth weight, degree of malnourishment, hearing status history, degree of trauma experienced, post-traumatic stress disorder (PTSD), physical and/or emotional neglect, and L1 proficiency, among others.

Parents have described scenarios where their children stopped speaking the L1 almost immediately, yet acquisition of English was slow to emerge. Others describe their children as having shunned speaking or even listening to their L1, further impeding the transfer process and resulting in a 'linguistic limbo'. Sometimes the L1 has been completely lost, even comprehension, in as little as six months. Some have noted an ability to comprehend the intended meaning of their child's speech, yet the syntax of sentence organization is completely out of order. There have also been issues concerning lax usage of pronouns or articles, use of nouns only, difficulty in English vowel pronunciation, sentence fragmentation, and a bevy of grammatical and organizational communicative challenges. In time, these problems of basic articulation or vocabulary can be symptoms of more complex underlying difficulties with conceptual thinking, syntax, or logic.

Because of the above parental concerns, educational implications, and possible theoretical insights, the question we pose is: does IA children's L1 genetic typology contribute or deter from their ability to overcome these peripheral challenges and acquire English usage beyond the medical, emotional, and social factors already identified? If so, what impact does this have for classroom teachers?

Review of Literature

As background, the question of transfer, both positive and negative, has a long history in the field of TESOL. Earlier research has looked at the ease or difficulty in second language acquisition based on degree of difference between the L1 and L2 under investigation, using a contrastive analysis (CA) approach which was originally formulated by Lado (1957) (Larsen-Freeman & Long, 1991). A practical goal of such research has been to provide a basis for development and selection of language teaching materials (Braidi, 1999). Taking the position that an L1 "interferes" with an L2 (Dulay, Burt, & Krashen, 1982), the strong version of the hypothesis seeks to *predict* difficulties (a priori) based on a point-by-point analysis of the phonological, morphological, syntactic, or other system of the two languages in question, whereas the weak version seeks to *explain* difficulties (a posteriori) by the process of error analysis (Robinett & Schachter, 1983). Neither version has been without problems (Dulay, Burt, & Krashen, 1982; Schachter, 1983); however, Ellis (1994) cautions against complete abandonment of the hypothesis, advising instead careful revision and extension.

Since various core areas of language (e.g., phonology, morphology, syntax) may be differentially simplex or complex when comparing a Language A with a Language B, an alternative way of investigating the issue of transfer and ease/difficulty in L2 acquisition is needed, especially in atypical populations, such as post-institutionalized internationally adopted children. This population of children has been found to be challenged by medical and psychosocial problems, which, along with lack of L1 input, exerts an effect on their L2 acquisition (Pearson, 2001, 2003, 2004a,b, 2005ab, to appear). Therefore, using the definitions of genetic relationship and classification of genetic transmission per Thomason and Kaufman (1991) and Crystal (1997), respectively, this study sought to determine whether ease/difficulty of ESL acquisition,

both basic interpersonal communicative skills (BICS) and cognitive academic language proficiency (CALP), is influenced by the genetic and/or typological closeness of the L1 to English, and if so, to what degree.

Specifically, the research question we posed was this: In a special population of ESL learners, that of older internationally adopted children, does the genetic/typological closeness of the child's L1 to English influence the ease or difficulty in acquiring either BICS or CALP? Additionally, we were interested in how this distance might interact with other variables known to impact SLA in this population of children.

Method

This study was an extension to those done previously by the first author (see Pearson 2003, 2004ab, 2005ab, to appear). Differences include a larger number of study participants and additional variables investigated.

Questionnaire

In our current line of investigation, an extensive parent questionnaire, filled out one year post-placement, was used to gather data on medical, psychosocial, and language factors, along with information regarding support services needed within the first year post-placement. Some of the questionnaire material was adapted from Glennen & Masters (2000) and Pollock (2001). As the children and their adoptive families were spread out across the U.S., it was not possible to test the children directly. Even if this had been possible, tests do not exist which have been normed on this population of children (Johnson et al., 1992, 3447). However, previous studies have shown that parent report is a valid measure of children's general language ability, including lexical and grammatical milestones (Fenson et al., 1994; Fenson et al., 1993; Marchman & Martinez-Sussmann, 2002; Rescorla, 1989; Rescorla & Alley, 2001).

Participants

The current study involves 207 children adopted primarily between the ages of three to sixteen years of age from non-English-speaking countries. (Three children were adopted prior to age three years: one at two years five months and two at two weeks short of their third birthday.) One third of the children are male and two thirds are female, which also represents the current demographics of IA children in general (Adoption Institute, 2004). The average age of arrival to an orphanage setting was 2 years 10 months (2;10) with a range of birth to 11;4. The average amount of time spent in an orphanage was three years and seven months, with a range from one month to fifteen years and ten months. The average age of arrival to an adoptive home was six years five months (6;5) with a range of 2;5 to 15;10.

Language Groups Represented

The children in the study were from a multitude of first language backgrounds. Language groupings were devised based on a combination of genetic (historical) and typological (structural) differences between the L1 and English (Comrie, Matthews, &

Polinsky, 1996; Crystal, 1997; Finegan, 2004; Fromkin et al., 2003; O'Grady et al. 2001), as well as cultural distinctions based on languages in contact within the orphanages and surrounding locales. Two methods of grouping were investigated, one broad and one narrower, based on the L1's degree of distance from English, which is an Indo-European (IE) language of the West Germanic branch. The broad grouping involved separating the L1s into three categories: 1) IE West Germanic branch; 2) IE non-West Germanic branch; and 3) non-IE.

The narrower grouping involved dividing the represented L1s into five groups: 1) West Germanic branch of IE (e.g., Krio); 2) Romance/Italic line of IE (e.g., Spanish, Romanian, Portuguese); 3) Balto-Slavic line of IE (e.g., Russian, Bulgarian, Polish, Ukrainian, Latvian); 4) Indo-Iranian line of IE (e.g., Marathi, Hindi—both of Indo-Aryan vein); and 5) non-IE, e.g., Kazakh and Tatar—both Altaic; Mandarin (Sino-Tibetan); Tamil, Telegu, and Kannada (all Dravidian); Georgian (Caucasian); Khmer and Vietnamese (Austro-Asiatic). This latter grouping system was devised to represent an increasing distance from English based not only on genetics and typology, but also on loan words and influence of grammar. This was important as many of the orphanages were near border areas where language contact was significant. For example, a significant number of children were from orphanages where the caregivers spoke both Russian (a Balto-Slavic IE language) and Kazakh (an Altaic non-IE language), interchangeably, both to the children and among themselves.

Based on the above groupings, the following languages were represented: Germanic IE 0.5%, Romanic/Italic IE 8.2%, Balto-Slavic IE 72.5%, Indo-Iranian IE 1.4%, and non-IE 17.4%. In broader terms, 82.6% of the children came from L1s that are IE while 17.4% of the children's L1s are non-IE.

Analyses
The independent variable (IV) was language group (type), defined in two ways, as explained above. The dependent variables (DVs) were four areas of English language acquisition as ascertained from the parent questionnaire: 1) ESL 1 - comprehension of *functional* English (BICS); 2) ESL 2 – production of *functional* English (BICS); 3) ESL 3 – comprehension of *academic* English (CALP); and 4) ESL 4 – production of *academic* English (CALP). Additionally, first language proficiency at time of arrival home was addressed, based on information in the adoption file or obtained soon after arrival to the adoptive home.

Because of the newness of this line of inquiry and the consequential paucity of previous findings upon which to compare/contrast results, three types of analyses were run: 1) correlations between L1 group/type and L2 proficiency across the above four areas, along with previously run correlations between L2 proficiency and medical, psychosocial, and linguistic (L1 proficiency) factors; 2) one-way ANOVAs between L1 group/type and the four ESL variables, as well as between L1 group/type and L1 proficiency at arrival home; and 3) multiple regressions based on L1 group/type and significant correlations found in the previously cited work of which this study is an

extension. Multiple regressions were of the backwards type, a method used in new lines of research, as it is less likely to throw out potentially significant factors.

Results

Results are presented according to type of statistical measure used: correlations, one-way ANOVA, and multiple regressions. A brief summary of results follows at the end of this section.

Correlations

Correlations between L1 type and all four L2 proficiency skills (comprehension and production, BICS and CALP), regardless of L1 type grouping method, were non-significant. Correlations between L1 type and L1 proficiency were non-significant under the broad grouping method. However, a significant negative correlation ($r = -.167$, $p < .02$) exists between L1 type and L1 proficiency under the narrower grouping method that subdivides IE languages based on distance from the IE West Germanic branch.

One-Way ANOVAs

One-Way Analyses of Variance (ANOVA) between L1 type and L2 proficiency showed a trend towards significance for ESL 1 Comprehension of Functional English when using the narrower grouping method, $F(4, 201) = 2.091$, $p = .083$. Trends, though needing to be interpreted with caution, should not be discounted in new lines of research. ANOVAs between L1 type and other areas of L2 proficiency were non-significant. A one-way ANOVA was also performed between L1 type and L1 proficiency, resulting in significance, $F(4, 194) = 2.769$, $p < .03$.

Multiple Regressions

Backwards multiple regressions were chosen as this is a new line of research with many unknown variables. Therefore, we felt it important not to discard any potentially relevant factors, an advantage of this method. Factors used in multiple regressions were based on previous significant correlations in earlier analyses of this study (Pearson, 2005ab). Such factors covered several broad areas, including medical, psychosocial, and linguistic (L1 proficiency) histories. For this reason, each L2 area will be presented separately. There were no differences in results based on grouping method of language typology. Note that differences in degrees of freedom are due to unknown data because of the children's tenuous background situations and resulting lack of data in the files available to parents.

In earlier studies of comprehension of *functional* English (ESL 1), the strongest regression model only needed L1 proficiency at arrival home in order to predict this area of BICS. Adding in L1 typology provided for a significant model, $F(1, 196) = 23.543$, $p = .000$, yet not as strong as L1 proficiency alone, $F(1, 197) = 47.212$, $p = .000$. Therefore, practical significance was deemed null.

Previous analyses investigating production of *functional* English (ESL 2) showed the strongest regression model for predicting acquisition in this area to be L1 proficiency at arrival home and degree of tuberculosis. Adding in L1 type also provided for a strong predictive model, $F(3, 135) = 14.954$, $p = .000$, but was not as strong as L1 proficiency alone, $F(1,137) = 43.505$, $p = .000$. Thus, again, the practical significance of adding in this variable was null.

The strongest predictive model of comprehension of *academic* English in previous work involved L1 proficiency at arrival home along with the amount of time spent in an orphanage setting and degree of neglect, $F(3, 181) = 16.007$, $p = .000$. Adding L1 type into the regression also provided for a strong model, $F(4, 180) = 11.972$, $p = .000$; however, this variable was once again not needed. In fact, with the larger number of children in this particular set of analyses, only L1 proficiency and time spent in an orphanage setting were needed for the strongest predictive model, $F(2, 182) = 22.580$, $p = .000$.

Finally, looking at production of *academic* English, previous regressions had shown L1 proficiency at arrival home, degree of trauma experienced pre-adoption, and age of arrival home to provide the best predictive model, $F(3, 185) = 24.167$, $p = .000$. Once again, although L1 type along with these other variables produced a strong model, $F(4, 184) = 18.348$, $p = .000$, it was not as strong as the already established cluster of variables alone.

Since all of the ESL models included L1 proficiency without exception, a question that arose in our minds was what model might then best predict L1 proficiency. Previous analyses had indicated that the strongest model included the following factors: general medical condition at arrival to the adoptive home, hearing status, degree of neglect experienced in the past, and amount of past emotional deprivation, $F(4,103) = 13.583$, $p = .002$. Adding in L1 type produced the strongest model, $F(5, 119) = 13.111$, $p = .000$.

In sum, looking at the influence of L1 type on L2 acquisition, correlations, one-way ANOVAs, and multiple regressions were all non-significant, except for a trend involving ESL 1 in the ANOVAs. Correlations and multiple regressions were significant in all four ESL areas regarding the influence of L1 proficiency on L2 acquisition. Finally, correlations, ANOVAs, and multiple regressions were all significant when investigating the influence of L1 type on L1 proficiency.

Discussion

In looking at the above results, it becomes evident that language acquisition, both first and second, is especially complex in this unique population of children. First, L1 typology is *not* correlated with L2 proficiency in any area—comprehension or production, BICS or CALP—though a possible trend is indicated for comprehension of functional English in the one-way ANOVAs. Further, although L1 typology was a statistically significant component in the multiple regressions when added to other

factors, these other tfactors alone provided for even stronger models, thus negating any practical significance of typological distance in relation to SLA.

A second main finding is that L1 typology *is* correlated with L1 proficiency, thus indicating a possible indirect relationship between L1 typology and L2 proficiency. This finding is further strengthened by significance in the one-way ANOVAs and multiple regressions; that is, since it holds across analyses, it does not appear spurious. We did not anticipate such a finding. This is of even more interest in that it appears from the negative direction of the correlation that those children whose L1 is most typologically distant from English become the most proficient with their L1. Since the available first language literature indicates that L1s are learned for the most part by age five years, regardless of the specific L1, and since the average age of the participants in our study was six years and five months, we question what else might explain these results. We will discuss our hypotheses shortly. At this juncture, though, we note that although the mean age was over six years, the most frequent age represented (mode) was three years.

The final main finding is that L1 proficiency *is* correlated with L2 proficiency across all four L2 areas: comprehension and production, BICS and CALP. Contrary to the second finding above, this was anticipated as it is well documented in the literature that the stronger the L1, the easier it is to learn an L2. We now know that this holds in this unique population of second language children as well.

What we are left with at this point is that L1 typology impacts L1 proficiency (for unknown reasons at this point), that L1 proficiency significantly impacts L2 proficiency (an expected finding), and that L1 typology does *not* influence L2 proficiency in this population of children. This pattern indicates that although L1 typology does not play a major role in L2 acquisition, it may have an indirect role, though what, specifically, is not known at this point. We can only conjecture that it has a mediating role through the learning of the L1, though we will discuss further on that this may have little to do with the *language structures* per se, but rather has more to do with the *social structures* in place at various orphanages.

Previously, we noted that the theoretical underpinnings of our study were based on the Contrastive Analysis Hypothesis (CAH), a behaviorist view that has two versions: a strong version which seeks to *predict* (a priori) similarities and differences in SLA and a weak version which seeks to *explain* these differences a posteriori. Our data do not support this view. Specifically, we found that L1 typology did not predict the ease or difficulty in acquiring an L2 (strong version) nor did it explain the ease or difficulty of SLA (weak version) in this particular group of children. Due to the uniqueness of this population of children, further investigation is needed in order to be applicable to classroom teachers and school administrators, especially in regards to the strong version of the CAH.

Since our data did not support the CAH, we then considered what an innativist viewpoint (Universal Grammar) might offer. Unfortunately, at this time, our findings in relation to this theory are ambiguous. It is clear that L1 proficiency is significantly

related to L2 acquisition in general, yet we approached this study from a typological perspective. That is, in order to test this theoretical perspective, we would need to specifically study the acquisition of grammatical patterns in this group of children. The issue of a critical period for language acquisition would also need to be addressed, first, because it is a core area of this theory in regards to full/partial access, and second, because of the significant age range our group of children represent (three years to almost sixteen years). Therefore, as we already have some of the data needed to investigate these issues, we will be further exploring this area in the near future.

Since a behaviorist viewpoint is not supported by our data and an innativist account remains ambiguous at this point, we are compelled to ask: What can explain the complex pattern of results found in this study? Of particular interest is the relationship between L1 typology and L1 proficiency—what is going on and why? As discussed in previous work (Pearson, 2001, 2003, 2004a,b, 2005a,b, to appear), the environmental conditions these children have experienced are diverse and wide-ranging. Some children have been raised in families for a period of time, followed by orphanage care; others have spent their entire lives in orphanages. Some children have dealt with significant medical problems; others have been relatively healthy. Some children have experienced severe emotional and/or physical neglect or abuse; others have survived unscathed. Throughout their pre-adoptive lives, varying amounts of interaction and language input have been available. Questions we pose include: What parenting patterns were the children exposed to prior to arrival at an orphanage? What type of verbal input and interactional patterns were accepted within any particular orphanage? Was interaction with adults the primary input, or were children encourage to converse among themselves? Was interaction with adults even possible, given the large numbers of children per caregiver in some orphanages? Was emotional support in place for children who had been seriously neglected, abused, or traumatized? What were the physical conditions at the orphanages? Was enough food and water available? Was medical care present? Were medications and immunizations in supply or scarce?

Putting physical conditions aside, is it possible that interactional patterns between caregivers and children, as well as between older and younger children, were richer in orphanages where the L1 was most typologically distant to English? This is our hypothesis at this point–that the amount and quality of verbal input and interaction in certain orphanages superceded all other factors in increasing the ability of the children to develop age-appropriate first language skills. This solid base in L1 proficiency, in turn, would provide a strong foundation and scaffolding for L2 acquisition in English upon the children's arrival in their adoptive home. If this is so, it would argue in support of a social interactionist theoretical perspective for language acquisition in this population of children.

Conclusion

In conclusion, the research question we originally asked was: within this unique segment of the ESL population, does the genetic/typological similarity of the children's

L1 to English affect their ability to acquire BICS and CALP? The answer is, surprisingly, no. The significant psychosocial, emotional, and medical factors, along with the complex interactions between them, appear to play a more influential role in this acquisition than does the child's L1 typology. Therefore, it is all "close enough" for SLA. Regarding L1 proficiency, however, it may be a different story. Thus, it appears that for classroom teachers and ESL specialists working with these children, the same type of ESL support is appropriate regardless of the child's L1 typology. However, if the child's L1 development itself is significantly delayed, additional measures may be needed in order to support language acquisition in general, especially if past and/or current psychosocial factors put the child at high risk. In this situation, an on-going team approach between the regular classroom teacher, ESL specialist, speech-language pathologist, and resource specialists will most likely be needed.

For teachers interested in the complex interplay of factors that influence both first and second language acquisition, especially in this unique population of children, the following sources may prove useful in an initial exploration of the topic: low birth weight (Tepper, Hannon, & Sandstrom, 2000); hearing (Adamson & Romaki, 1997; Fahey & Reid, 2001; Lue, 2001; Miller, 2005; Owens, Metz, & Haas, 2003; Watkins & Rice, 1994); post traumatic stress disorder (Hoksberger, et al., 2003; Miller, 2005); neglect (Bohannon & Bonvillian, 2005; Miller, 2005; Owen, Metz, & Haas, 2003); learning disabilities and foreign language learning (Grigorenko, 2002; Simon, 2000). A comprehensive text on medical and related issues in the specific population of IA children is that of Miller (2005). Finally, investigations of intervention issues that may be of value to teachers include works by Enge (1998-1999), Meese (1999), and Judge (1999).

Acknowledgments

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