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978-1-107-04449-4 - Language Dominance in Bilinguals: Issues of Measurement and Operationalization

Edited by Carmen Silva-Corvalán and Jeanine Treffers-Daller

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# 1 Digging into dominance: A closer look at language dominance in bilinguals

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*Carmen Silva-Corvalán and Jeanine Treffers-Daller*

## 1.1 Introduction

Bilinguals differ widely from each other because some grow up with two languages from birth, while others start learning a second language later in life. They also generally use each of their languages for different purposes and with different people (Grosjean, 1985, 1998, 2008), which means the knowledge they develop of their languages is tied to the use they make of each. A central theme in the study of bilingualism is therefore how these differences between bilinguals can be best described, and how useful notions such as language dominance and language proficiency are to capture the bilingual experience. Many researchers use the term language dominance, but they do not always explain what exactly it means in linguistic terms (Treffers-Daller, 2011). It is also common to distinguish between dominant and balanced bilinguals. Li Wei (2000: 6), for instance, defines a *balanced bilingual* as “someone whose mastery of two languages is roughly equivalent” and a *dominant bilingual* as “someone with greater proficiency in one of his or her languages and uses it significantly more than the other language(s).” These two types of bilinguals (among other types) have traditionally been acknowledged, but a more in-depth exploration of the construct of language dominance and its operationalization are urgently needed if we are to advance our understanding of what it means to be bilingual. This is also crucial because, as Grosjean (1998: 132) has pointed out, conflicting results in studies of bilinguals “could have been lessened, if not avoided, had close attention been paid to methodological and conceptual issues.” In this article, language dominance is mentioned in particular as one of the constructs that has been given insufficient attention (see also Hulstijn, 2012). The current volume aims to further our understanding of the construct of language dominance, and of ways in which it can be measured, which we hope will be helpful for researchers working with bilinguals in the coming years.

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It has been pointed out that balanced bilinguals who are highly proficient in both languages appear to be the exception (Baker & Prys Jones, 1998, and see various chapters in this volume), but in the absence of a common understanding of the meaning of balance and dominance in relation to bilinguals it is hardly possible to draw such conclusions. In fact, the notion of “balanced bilingualism” itself is highly controversial as it is “premised on the false assumption that bilinguals consist of two monolinguals” (Romaine, 2010: 29). While many researchers adhere to Grosjean’s (1989) famous statement that a bilingual is not two monolinguals in one person, it is still very common to measure bilinguals and L2-users (Cook, 2002) with the yardstick of monolinguals (see Ortega, 2014, for a detailed discussion). Making comparisons between bilinguals and monolinguals can be useful if we want to get a better understanding of what makes the bilingual experience unique, but we should avoid describing behavior, processing, or proficiency of bilinguals as “deficient” by comparison with monolinguals, or conclude that the bilinguals in our studies have “failed to reach monolingual norms.” We agree with Cook (1994) that the knowledge of more than one language in the same mind, for which Cook coined the term multicompetence, should not be described with reference to monolingual norms, because language processing is fundamentally different in monolinguals and bilinguals (Grosjean, 1989, 1998).

Even when two languages are acquired simultaneously from birth, children are often found to demonstrate a more advanced level of proficiency in one of the languages or in a given aspect of the language in comparison with monolinguals in each language or with other children acquiring the same language pair. A child is said to be “more dominant in language A” (compared to language B), or to be more proficient than another child in language A or B.

Although dominance and proficiency have been used in many studies of bilingual production and comprehension as explanatory factors of differing acquisition outcomes and directionality of crosslinguistic interaction (Bernardini & Schlyter, 2004; Bonnesen, 2009; Gathercole & Thomas, 2009; Kupisch, 2007; Lanza, 2004; among many), not all researchers are convinced it is a useful explanatory construct. De Houwer (2011), for example, argues that given that the relation between young bilinguals’ two languages is very unstable across time (i.e., “dominance” swings fairly rapidly between the languages), proposing a “stable cognitive mechanism (‘dominance’)” that somehow controls the relation between languages is unjustified. In their study of object omissions in the speech of bilinguals acquiring a Romance and a Germanic language, Müller and Hulk (2001) do not discard the notion of dominance but argue against its importance in predicting crosslinguistic influence versus structural causes that make a domain of grammar vulnerable to interaction.

Meisel (2007) also disputes the validity of the notion based, in part, on the observation also made by De Houwer (2011) that dominance changes

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repeatedly over the lifespan of a bilingual (usually as a function of the amount of input received in one of the languages). This observation does not seem to be incompatible with the view of a shifting relation between the competencies in the languages of a bilingual that may still be called “dominance,” which in any case would need to be clearly characterized. More serious is Meisel’s criticism that the concept implies only partial success in the grammatical development of one of the languages and thus limitations to the language-making capacity resulting in *incomplete acquisition*. Meisel argues that the criteria used to justify that a language is weaker or non-dominant in simultaneous bilingual development do not refer to the nature of the underlying knowledge of the speakers but to quantitative differences in the children’s linguistic knowledge and, in our opinion correctly, that incomplete acquisition cannot be defended as an end state in the case of developing bilinguals. Rather, Meisel suggests that the quantitative differences identified in comparisons between bilinguals and monolinguals and across bilinguals could be due to the bilinguals’ failure to inhibit morphosyntactic activation of one language while processing the other language. However, some of the quantitative and qualitative differences identified in the weaker language of developing bilinguals are shown to be characteristic of some heritage language grammars (see, e.g., Montrul, 2002; Polinsky, 2006). These differences could thus be attributed not to online activation failure, but rather to stable variation. While it appears to be the case that both languages are activated when bilinguals are in a bilingual context such that online interaction phenomena do occur (e.g., spontaneous language switches, word blends (Yan & Nicoladis, 2009), this doesn’t explain the asymmetrical degree of influence attested in so many studies that have shown that the “weaker” language is affected much more frequently. Moreover, Matthews and Yip (2011) argue persuasively that quantitative differences may reflect crosslinguistic influence at the level of knowledge representation, that is, of language competence. These authors define dominance primarily in terms of the mean length of utterance (MLU) differentials between the two languages of a bilingual in comparison with the differentials obtained for other bilinguals developing the same language pair. Their work shows that some constructions that evidence influence of Cantonese on English, e.g., object omission (as in *You put 0 on your face*), *wh-in-situ* (*You want what?*), occur more frequently among Cantonese-dominant children with a greater MLU differential during periods of Cantonese dominance and extend into periods of English dominance.

Similarly, Silva-Corvalán and Montanari (2008) show that language dominance plays a central role in predicting the directionality of transfer in the acquisition of some complex lexical constructions involving copulas in English but not in Spanish: the dominant language influences the non-dominant one (see Kupisch, 2007; Silva-Corvalán, 2014: ch. 6; Yip & Matthews, 2007).

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Researchers working with adult bilinguals often show that there are important differences in proficiency between the two languages of bilinguals. Bialystok, Craik and Luk (2008) show that the bilinguals in their study differed significantly in self-ratings for each language and Kupisch and van de Weijer (this volume) found significant differences in the performance of adult French–German bilinguals on a cloze test and an accent rating. However, this does not mean that these adult bilinguals had incompletely acquired their two languages. Rather, the differences in proficiency are a reflection of the fact that half of the informants lived in Germany and the other half in a French-speaking country and the two groups of bilinguals used each language to different degrees. This illustrates the fact that proficiency as well as use need to be considered in evaluating language dominance in bilinguals, as is clear in Li Wei’s (2000) definition of language dominance, cited earlier. In fact, a complex phenomenon such as bilingualism is necessarily multidimensional: any description of bilinguals should therefore minimally involve a description of proficiency *and* usage (Fishman & Cooper, 1969; Luk & Bialystok, 2013).

Clearly, the debates are to a large extent theory-driven and will continue to inspire research for years to come. In this section, we propose definitions of dominance, based on the notions of proficiency as well as language use. *Proficiency* is generally used to refer to a specific aspect of language ability, namely grammatical knowledge (see also the conclusion to this volume, for a fuller discussion). Other constructs imply a relationship between languages: *predominant language*, *dominant language*, *weaker and stronger language*.

We propose *predominant* as a property of a language at the societal level. One may speak of the predominant language nationally, locally, or within a family (and, synonymously, as “the main language” in country X, community Y, or family Z). This is similar to Meisel’s (2007: 499) definition of dominant as “the predominant of the ambient languages in a given setting,” but we reserve “dominant” and “dominance” for properties of the languages of individuals.

The *dominant language* of a bilingual frequently coincides with the national predominant language or “majority language.” Language dominance, important in studies of 2L1,<sup>1</sup> and child and adult L2, has been defined and measured in many different ways. Here, we define dominant language, a relative notion, as that in which a bilingual has attained an overall higher level of proficiency at a given age, and/or the language that s/he uses more frequently, and across a wider range of domains.

Language dominance can manifest itself across a wide range of language levels and be measured using morphosyntactic, lexical, phonetic, and

<sup>1</sup> The abbreviation 2L1 refers to acquiring and having two languages as first languages, and L2 stands for a second language learned after the acquisition of a first language.

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phonological variables, to name but a few possibilities. Researchers have, for example, focused on picture naming (Gathercole & Thomas, 2009; Mägiste, 1992; Gollan, Weissberger, Runnqvist, Montoya, & Cera, 2012), ability to translate (Flege, MacKay, & Piske, 2002), mean length of utterance (MLU; Yip & Matthews, 2006), lexical diversity/richness (Daller, Van Hout, & Treffers-Daller, 2003; Treffers-Daller, 2011), fluency, speed, and automaticity (Segalowitz, 2010), MLU averages (Yip & Matthews, 2006), etc. As explained earlier, language dominance is also clearly linked to contextual factors, in particular domains of use. Language-external factors that can help explain language dominance include (but are not limited to) preference for using language X when the conditions permit language choice, amount of exposure to and use of each language, and rate of acquisition.

In studies of 2L1, it has been shown that amount of input and frequency of use of a language are crucial determinants of dominance and proficiency (Gathercole & Thomas, 2009; Hoff et al., 2012; Unsworth, this volume; La Morgia, this volume; Schmeißer et al., this volume). Thus, a bilingual who uses language A and language B can be dominant in either language A or language B, or vice versa, depending on amount of input and use of these languages, which in turn result in different levels of proficiency in specific structures. It must be kept in mind, however, that a bilingual's dominance may shift depending on the ecology of the languages and the tasks, as is shown in Bahrck, Hall, Goggin, Bahrck, and Berger's (1994) longitudinal study over 50 years among bilingual Hispanic immigrants to the United States, although Kupisch and van de Weijer (this volume) show that dominance is less likely to shift in adulthood. The language in which bilinguals are dominant and globally more proficient is often referred to as the *stronger* language, while the *weaker* language is frequently seen as the one in which they are overall less proficient. The weaker language is expected to evidence, among other features, more errors of production and more frequent use of structures that parallel one in the stronger language, to the detriment of alternatives attested in the input, as is explained in detail in Nicoladis' (this volume) overview of the relationship between language dominance and crosslinguistic influence. Schmeißer et al. (this volume) also look into this relationship but conclude that dominance does not explain crosslinguistic influence in their data. In addition, there is possibly a link between language dominance and code-switching (Treffers-Daller & Korybski, this volume).

We view proficiency as a component of dominance, but do not consider these constructs as synonymous (Montrul, this volume; Silva-Corvalán, 2014: ch. 1). Indeed, proficiency refers to advancement in the knowledge of a specific aspect of language. Of course, researchers choose very different aspects of language to measure proficiency, as is illustrated in the current volume, and a single measure cannot represent the multidimensional construct of dominance. How

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two languages develop and interact in a bilingual mind and how this development can be measured, therefore, is key to our understanding of the bilingual experience. Language dominance is, then, a scalar notion (see also Birdsong, this volume): at any given age, a developing bilingual may be more or less proficient in a specific aspect of one or both languages compared to other developing bilinguals or monolinguals in those languages at an equivalent age or MLU. How differences in proficiency can be measured across typologically different languages is a highly complex problem for which authors in this volume have proposed several approaches (e.g., Schmeißer et al.; Treffers-Daller & Korybski), albeit in the awareness that it is not possible to completely solve this problem (see also Daller et al., 2011, for detailed discussions).

It is in principle possible for a child to have attained earlier control of a certain structure at a given age in his/her weaker language. Silva-Corvalán (2014: ch. 3) offers a concrete example involving the acquisition of questions in English and Spanish: English *wh*-questions that do not question the subject and require *do*-support are more complex than the corresponding Spanish structures, as seen in this example: *¿Dónde pongo tu libro?* ‘Where do I put your book?’ Given this structural difference, some English–Spanish bilinguals acquire these *wh*-questions at an earlier age, that is, they are more proficient in the use of these structures in Spanish despite being dominant in English.

In sum, bilinguals may have the same stronger and weaker languages but may differ in the degree of proficiency they attain in aspects of these languages. The ensuing chapters will show that the differences tend to correlate with dissimilar amounts of language input and use of the languages. The different contributors to the current volume approach the issue of language dominance from different theoretical perspectives, which means they interpret the notions of proficiency, competence, and language dominance in different ways, as explained by the authors. In addition, a wide range of different measurements are used in these chapters. We believe that bringing together these different approaches is helpful to further our understanding of language dominance, and hope our readers agree with us.

## 1.2 Overview of the chapters

In Chapter 2 Montrul examines the challenging question of the relation between the concepts of language dominance and language proficiency. Contrary to earlier treatments of language proficiency and language dominance as equivalent, she reasons that linguistic proficiency is one of the three dimensions of dominance, the other two being an external component (input) and a functional component (context and use). Linguistic proficiency is globally defined as linguistic ability and fluency in a language, whereas language dominance refers to the relative weight and relationship of the two languages of a bilingual in terms

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of language use and degree of proficiency. The dominant language is often the language to which the bilingual receives more exposure, as corroborated in Unsworth's study (this volume), and it is also the language the bilingual uses more frequently in specific contexts. While proficiency can be operationalized as the cognitive and linguistic component of dominance, measured in terms of actual language knowledge and linguistic behavior in one or two languages, Montrul notes that there are no standardized measures of dominance as she defines it. She discusses a number of language proficiency measures widely used in first and second language acquisition research, and in the study of adult heritage speakers of minority languages (early bilinguals) to assess grammatical development, fluency, complexity, accuracy, and communicative competence in a given language. She points out the problems involved in the use of available proficiency measures to compare different groups of bilinguals; in particular, some issues concern the specific reliability of these measures in light of the fact that heritage speakers and second language learners have very different language acquisition profiles that impact the suitability of the measures. Despite the difficulties, Montrul argues that rather than estimating dominance solely on the basis of background variables, language dominance could be more reliably measured by obtaining measurements of language proficiency in the two languages of the bilinguals, as also suggested by Grosjean (this volume), in addition to administering a language background questionnaire that allows quantifying information on degree and context of use of the two languages. Chapter 2 contributes importantly to clarifying the meaning of language dominance and proficiency, their relationship, and their measurement.

Schmeißer et al., in Chapter 3, bring a new element into the discussion by separating the constructs of proficiency and competence. In this chapter, the term *competence* is used to refer to the linguistic competence of a bilingual child or adult with respect to single grammatical domains (e.g., the use of *ser* and *estar* in Spanish). The term proficiency, by contrast, refers to the overall linguistic ability from a more general perspective. In this study, proficiency is operationalized as the MLU as measured in words. After having defined and operationalized proficiency in this way, the authors define *language dominance* as the difference in proficiency in a bilingual's two languages. The study is based on longitudinal data from 24 bilingual children as well as cross-sectional data from 98 bilingual children focusing on the acquisition of French, German, Italian, and Spanish in different combinations. The authors propose an innovative solution to the problem of the comparability of MLU scores across the different Romance and Germanic languages spoken by the children in their study, and a new way to compute average MLU values across the respective recordings for each child in the longitudinal part of the study. Schmeißer et al. then investigate to what extent it is possible to predict the occurrence and the amount of crosslinguistic influence in different grammatical domains on the

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basis of their operationalization of language dominance, and study the impact of the language of the wider community and the method of raising a child with two languages on language dominance in young bilingual children. They conclude that it is not language dominance but the proficiency level in the influenced language and the degree of complexity of the syntactic derivation that can predict the degree of influence: the more proficient the child is in this language, the lower is the degree of the influence from the language with the less complex derivation. Furthermore, they conclude that if children have a dominant language, it is generally the language of the wider community. Finally, they show that the “one parent, one language” method is neither a necessary nor a sufficient condition to become a balanced bilingual.

Chapter 4, by Grosjean, discusses empirical evidence in support of his Complementarity Principle (CP). The Principle states that bilinguals usually acquire and use their languages for different purposes, in different domains of life, with different people. That is, different aspects of life require different languages. The level of fluency in a language will depend on the bilingual’s need for that language and will often be domain-specific. In consequence, bilinguals can be dominant or balanced in a language for specific domains of life but dominant or balanced in another language for other domains. Clearly, the CP presents a challenge to the measurement of dominance inasmuch as it highlights the need to evaluate dominance taking into account different contextual domains of use of the languages involved. Grosjean describes in detail two studies, one of first-generation English–German bilinguals and one of second-generation French–Italian bilinguals, that provide numerical data showing that different aspects of life of individual bilinguals do indeed require different languages. For instance, by means of a Complementarity Index (CI), these studies found that most topics were categorized as related either to one language or to the other, as hypothesized by the Principle, and the dominance of bilinguals, at the lexical and other language levels, depended on the topics talked about. Grosjean also takes a look at a number of psycholinguistic studies pertaining to language perception, language production, memory and language acquisition in which the impact of the CP is an important factor. Based on these studies, Grosjean argues cogently that bilinguals’ competencies should be studied in terms of their total language repertoire, and the domains of use and the functions of their various languages should be taken into account in measures of language dominance. Language dominance is a complex concept that needs to include several factors. Clearly, the CP should be one of them.

The contribution by Birdsong represents a highly innovative view of language dominance as a construct that can be differentiated into *dimensions of dominance* and *domains of dominance*, and which is in this sense comparable to handedness. In Chapter 5, Birdsong details certain foundational considerations for assessing dominance in bilingualism. Among these are the

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dimensions and domains by which dominance is measured, the calculus of indices of dominance, statistical methods applied to dominance as a participant variable, and quantitative aspects of balanced bilingualism. As in other chapters of this volume, Birdsong highlights the multidimensional character of language dominance, indicating that it can be operationalized along a wide range of different dimensions. Importantly, he points out that these dimensions are inherently *gradient* or *continuous*, which corresponds particularly well to Luk and Bialystok's (2013) view of bilingualism outlined earlier. The author proposes to calculate a language dominance index using a formula from the field of handedness. This handedness index is computed on the basis of a ratio of (Difference in Scores) / (Sum of Scores). Thus, instead of choosing *either* a difference approach (subtracting scores for language A from scores for language B) *or* a ratio approach (dividing scores for language A by scores for language B), as many authors in the field of bilingualism do, the new index formula is based on a combination of both. This formula can be applied to a dimension-based as well as a domain-based approach to language dominance, and Birdsong suggests that in the interest of accuracy and granularity it may be preferable to keep these separate. Birdsong proposes *not* to impose an artificial categorization on language dominance (e.g., "balanced" or "dominant" bilingual), because this results in a loss of information about the average, range, and standard deviations of values in a sample distribution, as well as a loss of statistical power. Dominance is a matter of relativity as much for an individual bilingual as between bilingual individuals. Domains of language dominance, i.e., where one language is used preferentially, is what Grosjean examines in Chapter 4 in support of the Complementarity Principle. Domains, unlike dimensions, are situational or volitional in nature. The comparison of manual dominance with language dominance indices is original and highly instructive. It leads to valuable insights about measurements of global bilingual dominance that consider separately the dimension-based versus domain-based results for a given individual or participant group.

Treffers-Daller and Korybski (Chapter 6) propose to operationalize language dominance on the basis of measures of lexical diversity, as computed, in this particular study, on transcripts of stories told by Polish–English bilinguals in each of their languages. They compute four different Indices of Language Dominance (ILD) on the basis of two different measures of lexical diversity, the Index of Guiraud (Guiraud, 1954) and HDD (McCarthy & Jarvis, 2007). They compare simple indices, which are based on subtracting scores from one language from scores for another language, to more complex indices based on the formula Birdsong borrowed from the field of handedness, namely the ratio of (Difference in Scores) / (Sum of Scores). Positive scores on each of these Indices of Language Dominance (ILD) mean that informants are more English-dominant and negative scores that they are more Polish-dominant. The

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authors address the difficulty of comparing scores across languages by carefully lemmatizing the data. Following Flege et al. (2002), they also look into the validity of these indices by investigating to what extent they can predict scores on other, independently measured variables. They use correlations and regression analysis for this, which has the advantage that the dominance indices are used as continuous variables and arbitrary cut-off points between balanced and dominant bilinguals need not be chosen. However, they also show how the computation of z-scores can help facilitate a discussion about the appropriateness of different cut-off points across different data sets and measurement scales in those cases where researchers consider it necessary to make categorical distinctions between balanced and dominant bilinguals. Treffers-Daller and Korybski correlate the ILD scores with four other variables, namely length of residence in the UK, attitudes towards English and life in the UK, frequency of usage of English at home, and frequency of code-switching. They found that the indices correlated significantly with most of these variables, but there were clear differences between the Guiraud-based indices and the HDD-based indices. In a regression analysis three of the measures were also found to be a significant predictor of English language usage at home. They conclude that the correlations and the regression analyses lend strong support to the validity of their approach to language dominance.

De Houwer and Bornstein also choose vocabulary to operationalize language dominance in Chapter 7. They compare young bilingual children's lexical comprehension and production across two languages. The authors do so by examining data at two separate time points (ages 13 and 20 months) and longitudinally (between 13 and 20 months). The data rely on Dutch and French adaptations of the MacArthur Communicative Development Inventory (CDI) collected for 31 young children exposed to these two languages from birth. The main finding of this study points to extensive variability, both for within-domain (within comprehension and within production) and cross-domain (comparing comprehension and production) CDI data, and for contemporaneous and longitudinal comparisons. This variability held across the board, that is, when children were compared to each other for one particular measure, when different measures were considered for one particular child, when different domains were considered, and when different ages were considered. It was rare for children to understand or produce similar numbers of words in each of their languages; instead, children tended to understand and/or say more words in one language than the other. The variable balance patterns found in this study raise doubts about the appropriateness of characterizing either of a young child's languages as being "dominant" overall, a point also made by Grosjean in this volume. Rather, a more fine-grained approach is needed that takes into account the variable nature of inter-linguistic relations. De Houwer and Bornstein attribute this variability to the complex interplay among children's