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Conceptual Representation in the Speech Production of Bi- and Multilingual Children

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1. Introduction, theoretical framework

This dissertation investigates cross-linguistic influence and conceptual representation in the spontaneous speech production of early bilingual and multilingual children. Drawing primarily on Pavlenko's Modified Hierarchical Model (2009) of the bilingual mental lexicon and Grosjean's Language Mode model (2001), the study adopts a dynamic, context-sensitive view of bilingual language processing. Its primary focus is the effect of cross-cultural and cross-linguistic differences on language production with particular attention on language choice strategies and CLI phenomena.

1.1. The research gaps and the present study

Although the Language Mode model and the Modified Hierarchical Model have been instrumental in conceptualisations of bilingual language processing, the bilingual lexicon and conceptual representation, these frameworks have rarely been explored in relation to naturalistic speech data and especially in multilingual contexts. The current dissertation aims to bridge this theoretical gap through the analysis of bilingual and multilingual spontaneous speech produced in the course of semi-structured interviews. By applying Grosjean's Language Mode model to spontaneous bilingual speech, the degree of activation of each language can be treated as a contextual variable that helps explain when and why cross-linguistic influence, borrowing, code-switching, and lexical selection difficulties occur. The Modified Hierarchical Model can be useful to interpret how speakers map words in each of their languages onto fully shared, partially shared, or language-specific conceptual representations. Through the analysis of CLI it may be possible to identify differences of category boundaries and culturally specific categories across the participants' languages, as well as to explore how cross-linguistic differences play out in naturalistic speech at the level of conceptual representation in early bilinguals and multilinguals.

Multiple empirical gaps have also been identified from the review of the most relevant literature. These pertain to language combinations, participant populations, methodological approaches and context.

Empirical research into cross-linguistic influence is more extended in relation to certain language pairs than others. Multiple studies have explored cross-linguistic relations, for instance between English and Russian (Marian & Spivey, 2003; Pavlenko, 2002, 2003, 2008, Karasik et al., 2005, as cited in 2009; Pavlenko & Driagina, 2007; Sachs & Coley, 2006), English and French (Grosjean, 1998, 2008), English and Dutch (De Groot & Nas, 1991;

Hermans et al., 2011; Kootstra et al., 2010), English and Spanish (Graham & Belnap, 1986; B. Malt et al., 2003), English and Greek (Athanasopoulos, 2009), or Dutch and French (Ameel et al., 2005). Although several studies in contact linguistics have examined the language use of Hungarian-English bilinguals (Bartha, 1993; Fenyvesi, 2005; Kontra, 1990; Kovács, 2001), their primary focus has been sociolinguistic, particularly on code-switching in the context of language shift, rather than on the psycholinguistic dimensions of bilingual language use. Consequently, English-Hungarian bilingualism and especially English-French-Hungarian multilingualism, has so far been underrepresented in the cross-linguistic influence literature. The current study seeks to contribute to this line of research with empirical data in these language relations. Because of the typological distance owing to the presence of Hungarian, a Finno-Ugric language, in contact with Indo-European languages (English, French, German and Russian), these language combinations may be particularly interesting when it comes to investigating cross-linguistic differences and their manifestations in authentic bilingual and multilingual speech.

A second empirical gap rises from the fact that the majority of studies related to cross-linguistic differences focus on various groups of late bilinguals, while less attention has been directed on early bilingual and early multilingual participant populations. Since the onset and mode of language acquisition, as well as life experience in more than one cultural environment may play a crucial role in a speaker's language development, and more importantly in the development of conceptual representations, the current dissertation contributes to current knowledge with important insight in early bilingual language use. The inclusion of multilingual empirical data is another area that aims to strengthen the originality of the current study.

Finally, much of the existing research on CLI relies heavily on experimental designs, often conducted in controlled laboratory settings. Such experiments were based on tasks such as picture naming and semantic categorisation (Caramazza & Brones, 1980; Chen, 1992; Dufour & Kroll, 1995; McElree et al., 2000), categorisation and sorting tasks (Athanasopoulos, 2009), objects (B. C. Malt et al., 1999), pictures (Athanasopoulos, 2006) or scripts (Sachs & Coley, 2006), various forms of naming tasks (Ameel et al., 2005; Athanasopoulos, 2009), and similarity judgement tasks (Moore et al., 1999). While these studies have yielded important insights, they can sometimes limit the ecological validity of the findings, since everyday language use is deeply rooted in context. In the case of bilingual speech, there is a clear need for more investigations that focus on naturalistic or near-naturalistic language use. The benefits of such an approach are threefold. First, methodologies that allow participants to express

themselves freely provide more valid data, as they capture CLI as it occurs in spontaneous interaction rather than in artificially elicited contexts. Second, naturalistic designs minimise priming effects and other experimental artifacts (Grosjean, 1998; Dörnyei, 2007), thereby producing results that more accurately reflect real-world bilingual communication. Finally, natural speech is accompanied by non-verbal phenomena – gestures, pauses, facial expressions and prosodic cues – that enrich the dataset by offering additional windows into the cognitive processes underlying speech planning and production. By embracing this methodology, the dissertation aims to broaden the scope of CLI research and bring it closer to the authentic practices of bilingual communication.

The theoretical and analytical framework chosen for any study inevitably shapes the methods of data analysis and, by extension, the findings it produces. Since both the Language Mode model and the MHM support a dynamic, context-sensitive view of bilingual processing and performance, the current study wishes to contribute to an underrepresented line of research that relies on naturalistic speech data and adopts an exploratory research methodology. This methodological approach ensures the observation of language use that is more consistent with everyday bilingual and mulitilingual experience.

1.2. Research questions

The dissertation seeks to find answers to the following research questions:

1. How do cross-linguistic differences influence language performance in the speech of English-Hungarian bilingual and English-French-Hungarian multilingual speakers?
2. How are cross-linguistic differences manifested in the bilingual and multilingual mental lexicon and conceptual representations in early multilinguals with lived experience across multiple cultural contexts?
3. In what way is multilingual production different from bilingual production in light of CLI phenomena?

Through the analysis of CLI it may be possible to identify differences of category boundaries and culturally specific categories across the participants' languages, as well as to explore how cross-linguistic differences play out in naturalistic speech at the level of conceptual representation in early bilinguals and multilinguals. The analysis can also facilitate comparison and reveal the main similarities and differences observed across the bilingual and multilingual cases.

2. Methods

The dissertation draws on three case studies designed to investigate conceptual representation in young bi- and multilinguals through an analysis of their speech production. Given the exploratory nature of the research, the study adopts a qualitative methodological framework reflected in data collection, data processing and data analysis which together facilitate a comprehensive examination of authentic bilingual language use.

2.1 Participants

All three participants are children who acquired multiple languages during early childhood and have experienced two distinct cultural environments. The case studies involve two Hungarian-English bilingual siblings (Participants A and B) and one English-French-Hungarian dominant multilingual adolescent (Participant C).

At the time of data collection, Participant A (female) was 11 years old, and Participant B (male) was 8 years old. Both participants were born in the United Kingdom to Hungarian parents residing there at the time. The family adopted a one-language-at-home, another-language-at-school policy during their stay in the U.K. Consequently, the children gained extensive experience of using each language in largely monolingual contexts, with the two languages associated with distinct domains of everyday life. When the children were 10 and 7 years old, the family relocated to Hungary. Data collection took place one year after the relocation.

Participant C is a 13-year-old female multilingual speaker of French, Hungarian and English. She was born to a French father and a Hungarian mother. Her father is a native speaker of French, with a high level of proficiency in English and basic knowledge of Hungarian. Her mother is a native speaker of Hungarian with a very high level of proficiency in English, German and French. Participant C was born in Paris, France. Initially, the family tried to follow a slightly adapted OPOL strategy at home: the father communicated exclusively in French, while the mother used primarily Hungarian and occasionally French from the child's earliest years. In practice, however, maintaining this strategy consistently proved difficult, partly because of the father's limited knowledge of Hungarian. When the participant was 2.5 years old, the family moved to London, the U.K. Over time, English became one of Participant C's dominant language because of her extensive exposure to it at school and in interactions with peers. In addition to English, French and Hungarian, her three most frequently used languages,

she also has acquired basic knowledge of German and rudimentary knowledge of Russian through formal instruction.

2.2. Data collection

Data collection took place in multiple stages using three different instruments: a questionnaire and two types of interviews backed up by audiovisual recordings. In the first stage, the parents completed the parental version of the Language Experience and Proficiency Questionnaire (LEAP-Q) (Kaushanskaya et al., 2020), to gain preliminary information on the participants' language profiles, their language histories, and the language constellation at the time of data collection. In the next stage, two in-depth parental interviews were conducted to build a fuller picture of the children's language acquisition, individual developmental trajectories, as well as family language practices, and parental language and culture related attitudes. For Participants A and B, both parents joined the online interview, whereas for Participant C the interview was conducted in person with the mother only.

Information from the parental interviews was fed into the semi-structured child interviews making sure each child interview is tailor-made and reflects the particular features of the child's experience. Since the theoretical foundation of the interviews was that language production is context dependent and cross-linguistic differences are likely to trigger CLI phenomena, the interview questions were built around culturally primed topics, such as school life, food, and holidays and celebrations, including family events as well as selected national holidays or cultural celebrations. These topics were to be discussed in one language as much as possible. The aim was to collect authentic bilingual and multilingual speech data while the children were asked to retrieve memories gained in one linguistic context and report on them in the other language. Although the participants were asked to use one language at a time, instructions did not categorically disallow the use of the other language(s). The key motivation was to see how the children manage their languages in the bilingual mode.

The semi-structured interviews were carried out and video recorded in seven separate sessions in each of the children's languages (English and Hungarian with Participants A and B; English, French and Hungarian with Participant C).

2.3. Data processing and analysis

Data processing began with the transcription of the child interviews using the Codes for the Human Analysis of Transcripts (CHAT) format (MacWhinney, 2000). CHAT enables linguistic

and paralinguistic features of bilingual speech to be systematically documented, thereby supporting a more comprehensive interpretation of bilingual language phenomena.

Data analysis began with the identification and classification of instances of cross-linguistic influence. These were divided into two broad categories: implicit and explicit CLI. Implicit CLI was further classified according to the linguistic level at which transfer occurred: conceptual, lexical/semantic, and structural. Explicit CLI was classified as either code-switching or borrowing.

Implicit cross-linguistic influence refers to the unconscious or unintentional use of linguistic or conceptual knowledge from one language to another, without an overt shift to the influencing language. This category was divided into three subcategories to account for transfer at different levels of language. Conceptual transfer is defined as the influence of the conceptual categories and representations associated with one language on the use of another. It occurs when speakers interpret, categorise, or describe objects, events, emotions, or experiences according to the category boundaries, prototypes, or conceptual distinctions associated with the non-target language. Lexical/semantic transfer occurs when knowledge of word-meaning relationships in one language influences lexical selection or word use in another. Structural transfer is defined as the influence of the grammatical or formal organisation of one language on the production of another.

Explicit cross-linguistic influence refers to the overt use of elements from one language during production of another, either in intrasentential or intersentential positions. This category is further broken down into code-switching and borrowing, based on the criteria proposed by Stammers and Deuchar (2016). Code-switching is defined as the use of material from both of a bilingual's languages within the same conversation or utterance, whether in the form of a clause, phrase or a single word. Borrowing, by contrast, refers to the incorporation of an item originating in one language into the lexical system of another. Established borrowings may therefore be used even by monolingual speakers of the recipient language.

The overall analytical approach rests on the premise that knowledge derived from case studies is inherently context-dependent (Merriam & Merriam, 1998). Consequently, the interpretation of the findings considers participant-specific and contextual factors, including individual language histories, patterns of interaction between the participants' languages, and the circumstances in which language use occurred.

3. Discussion

3.1. Empirical findings

The key findings indicate that the speech production of early bilingual children varies depending on several factors, such as age, proficiency, topic, language experience and individual language constellation. The data support earlier work (Costa, 2005, 2005; Heij, 2009; Kroll et al., 2006; Navracsics, 2010) that even when participants are instructed to use only one language, all of their languages remain activated. Consequently, all seven interviews contain various forms of speech phenomena and instances of implicit and explicit manifestations of cross-linguistic influence.

CLI phenomena at the conceptual level were observed in the interviews with participant A. Consistent with earlier studies (Ameel et al., 2005; Pavlenko & Driagina, 2007; Sachs & Coley, 2006), these data revealed cross-linguistic differences in conceptual representation both in concrete and abstract domains. In the domain of containers, for instance, conceptual categories show a partial equivalence in relation to what words are associated with various types of receptacles in English and Hungarian. More specifically, while the English *bottle* may be used with reference to containers made of glass or plastic, in Hungarian there exist distinct categories according to material: *üveg* for containers made of glass, and *flakon*, for containers made of plastic and *palack* made of plastic or metal. This partial (non)equivalence therefore can be identified as a case of nesting Type 2 in Pavlenko's categorisation (2009), where the Hungarian category *üveg* is nested within the English category *bottle* which additionally includes plastic containers for beverage or detergents referred to as *flakon*, and *palack* in Hungarian.

The data have also revealed partial non-equivalence in abstract domains. The English category of *choice* subsumes the categories differentiated by Hungarian speakers as *lehetőség* (approximately *option*, referring to a singular item that can be chosen) and *választék* (an array of options, as in a menu for example). This case therefore can also be identified as nesting Type 2 (Pavlenko, 2009).

Other forms of implicit CLI, namely CLI at the lexical/semantic and at the structural level appear in all three cases. Some transfer phenomena occur as a result of lexical transfer. Collocational patterns such as *teach lessons*, *issue a report card* or *do the long jump* have emerged in Participant A's interview in Hungarian, leading to non-target forms ("*tanították az órákat*", "*kiadták a report card-ot*", "*long-jumpot csináltam*"). These instances reveal cross-linguistic differences at the lexical level between expressions such as *teach lessons*, *issue a*

report card or *do the long jump* in English and *órát tartani*, *bizonyítványt kiosztani*, and *távolugrást gyakorolni* respectively in Hungarian. In the multilingual data, lexical extension occurs when the speaker uses the Hungarian "*a házban*" (*at the house*) erroneously when potentially referring to "*otthon*" (*at home*). The analysis revealed that the lexical transfer may have originated from three of the speaker's languages (French, German or Russian), but not English.

The data also contain another type of transfer which reflects a cross-linguistic difference arising from partial semantic overlap between English *listen* and Hungarian *hallgat.* The Hungarian verb *hallgatni* is used with the intended meaning *to pay attention*, assuming that it covers the same semantic range as English *listen.* In Hungarian, however, these meanings are distributed between *hallgat* (listen to/hear attentively) and *figyel* (pay attention). This therefore can be identified as nesting Type 1.

Lexical-semantic extension from Hungarian to English occurs in the non-target phrase "*semi-joint house*" in the interview with Participant A in English: in the English target expression *semi-detached house*, *detached* is replaced by *joint*, reflecting an extension of this element to the domain of housing, based on the salient conceptual feature that the two buildings are joint by a common wall, similarly to the Hungarian concept *ikerház* (twin house). This instance of transfer reveals a cross-linguistic difference at the level of semantic features between English *semi-detached house* and Hungarian *ikerház*.

Implicit CLI do not affect all languages equally. Regarding which languages are more susceptible recipients of transfer at the lexical/semantic level, data suggest that reduced exposure to the relevant language within the specific life domain may be a predictor. For instance, most of the lexical/semantic occurrences in the bilingual data are related to school life. Participant A gained only one year of experience in Hungarian schooling, compared to three years in U.K. schooling. Participant B spent only one year in an English school before moving to Hungary, where he also completed one year of schooling prior to data collection. The relatively short period of exposure to the Hungarian educational context appears to play an important role in occurrences of the lexical/semantic type.

Similarly, Participant C may have limited experience in discussing U.K. festive events in Hungarian, leading to non-target production in this category. These findings are consistent with Grosjean's Complementarity Principle (2015), reflecting the uneven distribution of languages across domains of use.

Structural transfer phenomena were observed in both the bilingual and multilingual speech data. These instances reflect cross-linguistic differences in word order, the use of definite and indefinite articles, inflectional and prepositional marking, number agreement, and grammatical gender. The findings are consistent with previous research demonstrating that cross-linguistic influence can affect multiple domains of morphosyntactic processing, including word order, morphological marking, agreement, and grammatical gender (Bosch & Unsworth, 2021; Jarvis & Pavlenko, 2008; Lanstyák, 2006; Marian & Kaushanskaya, 2007; Unsworth, 2013)

Although the data indicate that structural transfer phenomena may mostly be related to proficiency, there is also evidence to suggest that any language, including those in which a speaker is highly proficient, may remain susceptible to cross-linguistic influence. Participant C's performance supports this observation: although the vast majority of these phenomena affect her production in Hungarian, a limited number of syntactic and morphological CLI instances are also observed in English and French, two languages in which she is highly proficient. This finding is consistent with Van Dijk et al.'s results (2022) who found that the extent and direction of cross-linguistic influence are conditioned by a variety of factors, such as structural overlap, proficiency, dominance and patterns of language exposure and use.

The data confirm the findings of previous studies (Beatty-Martínez et al., 2020; Green & Abutalebi, 2013; Grosjean, 2001) that explicit cross-linguistic influence, particularly code-switching, is best understood as a context-sensitive outcome of bilingual and multilingual language activation rather than as an arbitrary alternation between languages. Across the bilingual and multilingual interviews, code-switching occurred in all language combinations examined, while borrowing was relatively rare. The distribution of switches shows that they were determined by conceptual equivalence, domain-specific language use, cultural specificity, lexical accessibility, and interactional context.

In the bilingual data, code-switching occurred across all types of conceptual relationship in Pavlenko's framework (2009): full equivalence, partial equivalence, and conceptual non-equivalence. Even where translation equivalents were conceptually equivalent, as in *submarine/tengeralattjáró* or *long jump/távolugrás*, switching could still occur when the non-target language item was more strongly activated by the participant's prior experience. School-related concepts were especially likely to trigger English during Hungarian interviews, because many of these experiences had originally been encoded in an English-medium educational context. In such cases, code-switching appears to reflect the interaction of episodic memory,

lexical accessibility, processing economy, rather than a lack of an equivalent target language form.

The multilingual data reinforce these domain-specific patterns. All switches from French into English were predominantly associated with schooling, the domain in which English was regularly used, while switches from English into French were largely restricted to culture-specific French food terms. This pattern closely reflects Grosjean's Complementarity Principle (2015), according to which bilinguals' languages become associated with different domains of life. For Participant C, French and Hungarian were primarily home languages, whereas English was associated with school; code-switching consequently followed these functional distributions.

Conceptual non-equivalence proved to be a particularly strong motivation for switching. In the bilingual data, British educational concepts such as *term*, *Reception*, and *report card*, and Hungarian food items such as *mákos tészta* and *főzelék*, lacked direct conceptual counterparts in the other language. Code switching therefore fulfilled an interpretive function, allowing participants to recur to a culturally specific lexical concept directly rather than provide a lengthy or imprecise explanation. The multilingual data display the same tendency: French cuisine items such as *ravioles*, *viennoiseries*, *boeuf bourguinon*, and *blanquette de veau* were retained in French during English production, while English school-system terms such as *year nine* and *grammar school* appeared in French discourse. These findings support previous research on the interpretive or emphatic function of code-switching (Bartha, 1993; Lanstyák, 2006; Németh, 2002; Pavlenko, 2009)

Partial equivalence presents a more complex situation. Translations equivalents overlap with respect to certain components but differ in category boundaries or cultural content. Examples include *Religious Education* versus *hittan*, and *high school* versus *középiskola*. Consistent with the findings of previous research (Marian & Neisser, 2000; Pan et al., 2021; Pavlenko, 2009), data suggest that code-switching in these cases may be favoured because the concept was originally acquired or experienced in one language and because culturally specific features make that representation more salient.

The findings also show that code-switched items can vary considerably in their degree of morphosyntactic integration. Some switches function as independent interpretive insertions, while others are fully embedded in the matrix language. In the multilingual Hungarian data, English-origin items such as *trick-or-treat, blush puff pot*, and *dogsit* receive Hungarian derivational and inflectional morphology, including verb-forming, infinitival, object, and

tense/person suffixes. The phonological form of these suffixes follows Hungarian vowel-harmony and morphophonological rules, providing strong evidence that the switched lexical items are structurally integrated into the base language, in this case, Hungarian clauses. These findings converge with evidence found in previous studies (Lanstyák, 2006; Stammers & Deuchar, 2012)

Affective and phonological factors further contribute to switching. In the bilingual interviews, emotionally charged topics including fear, embarrassment, food preferences and strong opinions, frequently prompted switching into the emotionally dominant language. Proper names also acted as phonetic triggers, temporarily increasing activation of the associated language and occasionally leading to nearby function-word switches. These shifts were sometimes accompanied by pauses, repairs and restarts, suggesting increased processing demands during transitions between language systems.

The multilingual findings add further support for a connection between code-switching and lexical selection difficulty. In the *global warming* example, the participant first retrieves only part of the Hungarian expression, pauses, and then switches to English after unsuccessful lexical search. The continuation contains additional repairs and repetitions, suggesting that heightened activation of English may have contributed to sustained processing difficulty. Fatigue and reduced experience discussing the topic in Hungarian may also have played a role.

Borrowing, in contrast, appears much less frequently and is associated with lexical items that have become relatively conventional in youth and digital discourse. Examples include *random*, *sleepover* and *chatelünk*.

In sum, both the bilingual and multilingual datasets point to a consistent pattern: implicit CLI appears to be particularly sensitive to language dominance and proficiency, whereas explicit CLI through code-switching functions as a more flexible bilingual and multilingual resource, reflecting differences in domain-specific lexical accessibility and communicative demands and, in some cases, allowing speakers to retain language and culture-specific shades of meaning. These findings are broadly consistent with previous research (Argyri & Sorace, 2007; Bartha, 1993; Beatty-Martínez et al., 2020; Lanstyák, 2006; Németh, 2002; Pan & Jared, 2021; Tulloch & Hoff, 2023).

3.2 A comparison of bilingual and multilingual findings

The comparison of the bilingual and multilingual case studies reveals greater similarity than difference in the types of cross-linguistic influence observed. In both datasets, non-target

language remains available during single-language production and may influence lexical selection, semantic mappings and morphosyntactic formulations. The same broad grammatical domains, including word order, article use, inflectional marking and agreement, are susceptible to cross-linguistic influence in both bilingual and multilingual speech. The principal difference lies not in the nature of the phenomena themselves but in the complexity of the multilingual system within which they arise.

In the bilingual data, the source of transfer can generally be identified by comparing the two languages involved. In the multilingual case, by contrast, several languages frequently provide compatible semantic or structural mappings, making the source of influence indeterminable. Some findings further suggest convergent influence: a non-target Hungarian form may correspond to the pattern shared by several other languages in the participant's repertoire. Multilingual CLI may therefore be better conceptualised not exclusively as transfer from one identifiable source language, but as an effect of multiple simultaneously available linguistics representations.

A second major pattern concerns language dominance. In Participant C's data, implicit CLI is overwhelmingly concentrated in Hungarian, the least dominant of the three languages used in the interviews, whereas English and French display comparatively few implicit non-target forms and these are consistently followed by immediate repair. A similar, though less pronounced, relationship between relative proficiency and the presence of CLI can be observed in the bilingual data. These results suggest that dominance and proficiency affect both susceptibility to implicit CLI and the efficiency with which competing representations can be monitored. and repaired.

Explicit CLI displays a different pattern. Code-switching is not confined to the less dominant language and, in Participant C's case, is relatively evenly distributed across the three languages. Instead, its occurrence is closely associated with the functional and cultural distribution of the languages in the participants' lives. English is strongly activated by school-related topics, French by French cultural and culinary concepts, and Hungarian by Hungarian family, cultural and food-related experiences. Comparable domain effects occur in the bilingual data, where British school experience facilitates English activation and Hungarian cultural and affective contexts promote Hungarian activation. The findings therefore suggest that explicit language switching is more strongly regulated by language mode, domain and contextual factors than by proficiency.

Overall, the case studies point to two interacting dimensions of CLI. The first is representational: differences in lexical-conceptual and grammatical organisation create opportunities for transfer. The second is activation-based: dominance, language experience, topic, cultural context, interlocutor and momentary processing demands determine which representations become sufficiently active to influence production. The multilingual findings extend this account by showing that activation need not be restricted to two language systems; several languages may simultaneously support, inhibit or reinforce a particular representation. Thus, while bilingual and multilingual CLI appear to rely on broadly comparable mechanisms, multilingualism increases the number of potential source languages, making the direction and extent of influence more complex and variable. This aligns with Allgäuer-Hackl and Jessner's (2019) observations about the multidirectional and unpredictable nature of CLI in trilingual production, as well as the findings of other studies on the subject (De Angelis, 2007; Hammarberg, 2018; Wei, 2003)

3.3 Theoretical evaluation

The findings indicate that Pavlenko's Modified Hierarchical Model (2009) and Grosjean's Language Mode model (2001) offer complementary explanations of the CLI phenomena observed in the data. The MHM is particularly useful for accounting for the representational basis of transfer. Its distinction between fully shared, partially overlapping, and language-specific lexical concepts provides an explanatory framework for conceptual transfer and for distinguishing conceptual from lexical-semantic influence. Instances such as *mosogató folyadék üveg* and *választék* demonstrate that bilingual production may reflect category boundaries and conceptual features associated with the non-target language, while polysemy-based examples such as *tűzijáték kirakat* illustrate transfer at the level of word-concept mappings. The multilingual data further suggest that such influence need not originate from a single language, since several languages may contain equivalent semantic mappings capable of reinforcing the same non-target form.

Grosjean's Language Mode model, by contrast, has greater explanatory value for the contextual distribution of CLI. The interview data show that relative language activation varies with topic, language history, emotional involvement, and the linguistic context in which particular experiences were acquired. This is particularly apparent in code-switching involving fully equivalent lexical concepts, where representational symmetry cannot itself account for language choice. School-related topics consistently increase the accessibility of English, culturally specific food-related topics activate Hungarian in the bilingual and French in the

multilingual speakers, and proper names may locally prime the associated language. The knowledge that the interviewer is multilingual further appears to maintain a degree of activation of the non-target language even in single-language interviews.

In sum, the two frameworks suggest that cross-linguistic influence emerges from the interaction between representational structure and contextual activation. Pavlenko's model helps identify what aspects of lexical-conceptual knowledge are susceptible to transfer, whereas Grosjean's model helps explain when and under what interactional conditions these representations become sufficiently activated to influence production. The data therefore support an integrated approach in which cross-linguistic differences create the potential for transfer, while language mode, dominance, experience, and communicative context regulate whether and how this potential becomes observable in spontaneous speech.

4. Conclusion, significance and implications of the study

A key contribution of this dissertation is that it aims to explore the explanatory potential of psycholinguistic theory through the study of authentic speech data. By adopting an exploratory approach, the research design is particularly tailored to examine CLI and conceptual representation in spontaneous bilingual speech. The focus on early bilingual children as well as the inclusion of the multilingual perspective provides further opportunities for extending existing knowledge on language production. Finally, the study also provides empirical evidence on cross-linguistic differences in so far underrepresented language combinations.

Beyond its theoretical relevance, the systematic analysis of cross-linguistic phenomena also has practical implications for parents and educators. Because bilingual language production inevitably reflects interaction between a speaker's languages, cross-linguistic effects should be understood as a normal outcome of bilingual operation rather than as errors or indicators of language deficit. A clearer understanding of the factors that regulate such phenomena can support more informed responses in home and school settings, enabling parents and teachers to tailor language practices and pedagogical approaches to the needs of bilingual children.

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