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Why ‘what’ is harder than ‘where’ in Polish-Mandarin bilingualism: Complexity and selective cross-linguistic influence in the development of wh-questions¹

Dlaczego „co” jest trudniejsze niż „gdzie”
w dwujęzyczności polsko-mandaryńskiej:
Złożoność a selektywny wpływ
międzyjęzykowy w rozwoju pytań
szczegółowych

Abstract

This article examines the acquisition of wh-questions in a Polish-Mandarin bilingual child (2;0-3;1) with a focus on how computational difficulty shapes cross-linguistic influence. The analysis draws on a longitudinal corpus of naturalistic interactions and targets the contrast between ‘what’ (Polish *co*, Mandarin *shénme*) and ‘where’

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(Polish *gdzie*, Mandarin *nǎlǐ*) questions in Polish, Mandarin, and Polish-matrix (code-mixed) utterances. Two complexity measures are applied: (1) a movement-based derivational index and (2) a feature-reassembly index that incorporates the feature inventory, constructional markedness, and meaning-form mapping burden. The results reveal a systematic wh-type asymmetry that is not captured by dominance alone. In Polish-directed production, 'what' questions show stronger Mandarin influence, including frequent use of Mandarin wh-lexemes and in-situ configurations, whereas 'where' questions more often display Polish-like fronting even when Mandarin lexical material is used. In Mandarin-directed production, residual Polish influence is more evident in the 'where' domain than in the 'what' domain. These patterns align with the feature-reassembly metric: the Polish 'what' domain imposes a higher mapping burden due to case-conditioned alternants, while the 'where' domain remains morphologically stable. The findings support a complexity-sensitive account of selective cross-linguistic influence in bilingual wh-development.

Keywords: bilingual first language acquisition, wh-questions, computational complexity, cross-linguistic influence, Polish, Mandarin Chinese

Streszczenie

Artykuł dotyczy przyswajania pytań szczegółowych przez dziecko dwujęzyczne polsko-mandaryńskie (2;0–3;1) i pokazuje, jak złożoność kształtuje wpływ międzyjęzykowy. Analiza opiera się na longitudinalnym korpusie naturalnych interakcji. Badanie koncentruje się na kontraście między pytaniami typu „co” (pol. *co*, mand. *shénme*) i „gdzie” (pol. *gdzie*, mand. *nǎlǐ*) w wypowiedziach polskich, mandaryńskich oraz w wypowiedziach z polską ramą zdaniową i wtrąceniami z mandaryńskiego (*code-mixing*). Zastosowano dwie miary: (1) złożoność derywacyjną (liczbę zależności przestawieniowych) oraz (2) złożoność reorganizacji cech (inwentarz cech, markowanie konstrukcyjne i obciążenie relacji znaczenie–forma).

Wyniki pokazują wyraźną asymetrię, której nie wyjaśnia sama dominacja językowa. W wypowiedziach ukierunkowanych na polszczyznę pytania typu „co” częściej przejmują rozwiązania mandaryńskie (wyrazy pytajne z mandaryńskiego i realizacje in situ), natomiast pytania typu „gdzie” częściej zachowują polską strategię frontingu nawet przy użyciu mandaryńskiego materiału leksykalnego. W wypowiedziach ukierunkowanych na mandaryński wpływ polski jest bardziej widoczny w domenie „gdzie” niż „co”. Wzorec ten jest zgodny z ujęciem reorganizacji cech: polska domena „co” wiąże się z większym obciążeniem mapowania (m.in. przez alternację przypadkowe), podczas gdy domena „gdzie” jest morfologicznie stabilna.

Słowa kluczowe: dwujęzyczne przyswajanie pierwszego języka, pytania wh, złożoność obliczeniowa, interferencja międzyjęzykowa, język polski, język chiński (mandaryński)

Introduction

Bilingual development is rarely uniform across the grammar. Even within a single child, some constructions stabilize early and remain robust, whereas others show prolonged variability, non-target options, or systematic cross-linguistic influence (Hulk, Müller, 2000; Sorace, 2011, 2012; Meir, Janssen, 2021). This selectivity raises a general explanatory question for bilingualism research: what determines where bilingual interaction concentrates, beyond the fact that exposure and use are often unequal across the two languages?

One widely used predictor is language dominance, often operationalized via input and output balance. Dominance shifts can coincide with rapid gains, temporary regressions, and changes in mixing frequency, yet dominance is frequently underdetermining for morphosyntactic outcomes (Paradis, 2011; Armon-Lotem, Meir, 2018). This motivates treating bilingual development as shaped by an interplay between language-external factors (including dominance) and language-internal constraints that render some structures more difficult to compute, retrieve, or map to overt forms (Meir, Janssen, 2021).

Even in domains where typology and dominance would seem to favor transfer, the empirical record is mixed: some bilingual and L2/heritage studies report cross-linguistic transfer in *wh*-questions (hereafter, *wh*-transfer) toward the less costly option, while others find little or no transfer under comparable conditions. This has motivated accounts in which dominance and typology create opportunities for cross-linguistic influence, but structural and ecological constraints determine whether transfer is realized and where it concentrates (Strik, 2012; Park-Johnson, 2017; Qi, Di Biase, 2020).

One influential language-internal constraint is computational difficulty. Complexity-based approaches predict selective cross-linguistic influence: when competing grammatical options are available, learners tend to rely on options with lower derivational cost and/or lower feature-mapping burden, especially under competition between languages (Lardiere, 2008, 2009; Slabakova, 2009; Jakubowicz, 2011; Meir, Walters, Armon-Lotem, 2017). Feature reassembly work on child heritage grammars likewise suggests that difficulties in mapping grammatical features onto their overt morphological forms can lead to persistent optionality and mismatches between morphology and syntax (Cuza, Pérez-Tattam, 2016).

This article explores these predictions in a typologically distant pairing (Polish-Mandarin) using a longitudinal corpus of one bilingual child (2;0–3;1). Interrogatives provide a useful diagnostic domain because they combine typological contrasts (e.g., *wh*-placement) with morphosyntactic dependencies that vary sharply across languages and are known to be sensitive to complexity (Jakubowicz, Strik, 2008; Strik, 2009; Jakubowicz, 2011). Earlier work on the same dataset emphasized dominance shifts in the emergence and consolidation of interrogative patterns (Yang, 2025). Here I adopt the same developmental backdrop but reframe the explanatory target: rather than asking whether dominance matters, I ask why two closely related subdomains respond differently under similar dominance ecology.

The analysis focuses on the contrast between 'what' and 'where' questions: Polish *co* vs. Mandarin *shénme*, and Polish *gdzie* vs. Mandarin *nǎlǐ*. These two *wh*-domains are superficially similar (both are *wh*-questions), but they differ in the feature and morphological burdens imposed by Polish, particularly once case-related realizations and lexicalization choices are considered (Lardiere, 2008, 2009; Meir, Walters, Armon-Lotem, 2017). This contrast therefore functions as a minimal test of whether dominance-only predictors suffice or whether a complexity-sensitive account is required.

The paper addresses three questions: (RQ1) How do 'what' and 'where' questions differ in *wh*-position, code-mixing patterns, and the persistence of cross-linguistic influence across three input phases? (RQ2) To what extent can this asymmetry be predicted by dominance measures alone versus by derivational and feature-reassembly complexity profiles of the relevant constructions? (RQ3) Do complexity-sensitive effects manifest similarly at onset and at later maintenance after dominance shifts?

Background

Cross-linguistic influence and the limits of dominance

In bilingual acquisition research, language dominance (often operationalized via input quantity/quality, use patterns, or proficiency measures) is frequently invoked to predict the direction of cross-linguistic influence (CLI) (Deuchar, Muntz, 2003; Yip, Matthews, 2006; Kupisch, 2008). Yet, dominance does not always entail global transfer: bilingual grammars may develop largely autonomously in some domains while showing transfer or optionality in others (Paradis, Genesee, 1996; Hulk, Müller, 2000; Müller, Hulk, 2001). This selectivity has motivated accounts that emphasise structural overlap, interface vulnerability, and processing limitations (Sorace, Serratrice, 2009) rather than dominance alone. More generally, research on bilingual first language acquisition highlights early differentiation alongside the possibility of mixing and co-activation at the level of use (Lanza, 1997; De Houwer, 2009).

The present analysis treats dominance as a necessary but insufficient condition. Dominance can create conditions for dormancy (temporary non-use) or activation (renewed productive use) of constructions, especially when input conditions change (Montrul, 2016). However, the *wh*-type asymmetry discussed below arises within the same time windows and thus calls for a factor that distinguishes 'what' and 'where' beyond the broad dominance profile.

Computational complexity in acquisition

Computational complexity has been used as a predictor of acquisition difficulty in approaches that link grammatical operations to processing demands. In the Derivational Complexity Hypothesis (DCH), structures that require more syntactic operations – especially additional movement dependencies – are expected to be acquired later and to be more vulnerable under demanding conditions (Jakubowicz, Strik, 2008; Jakubowicz, 2011). Work on bilingual *wh*-development has used this logic to motivate selective cross-linguistic influence: when two systems provide competing derivational options, learners may preferentially rely on the derivationally less costly option (Strik, 2012).

A complementary line of work locates difficulty not only in derivation, but in the mapping between features and their overt realizations. In Feature Reassembly approaches, acquisition involves assembling and stabilizing feature bundles and their exponents across non-isomorphic systems (Lardiere, 2008, 2009). Chinese scholarship has proposed explicit ways of quantifying this mapping burden (Dai, 2011; Liu, Dai, Li, 2013; Mao, Dai, 2015; Mao, 2020), and related work links increased computational demands to limits on transfer in interrogative constructions (Yuan, 2017). Such representational challenges have also been invoked in models of heritage and bilingual grammars where reduced input or competing systems affect the stability and accessibility of feature configurations (Benmamoun, Montrul, Polinsky, 2013; Putnam, Sánchez, 2013).

These two perspectives converge on a shared prediction: cross-linguistic influence should be selective, and selectivity may emerge not only between languages, but also

within narrowly defined domains when competing options differ in derivational cost and/or mapping burden.

Wh-questions in Mandarin Chinese and Polish

Mandarin Chinese is typically characterized as a wh-in-situ language: wh-expressions such as *shénme* 'what' and *nǎlǐ* 'where' generally remain in their base positions, with interrogative scope interpreted at the interface (Huang, 1982; Cheng, 1997). Polish, by contrast, is a wh-fronting language: content questions canonically place the wh-phrase clause-initially, and wh-fronting interacts with other clause-structural dependencies, including verb-placement patterns and the positioning of the reflexive clitic *się*.

From a complexity perspective, this contrast suggests a clear derivational asymmetry between the two systems, with Polish requiring additional movement operations. It motivates expecting CLI in bilingual development, but it does not predict within-domain selectivity. To probe such potential variation, the present study focuses on two frequent wh-items: *co* 'what' and *gdzie* 'where'. These are derivationally comparable, as both canonically undergo wh-fronting and may involve similar movement configurations. The crucial difference lies in their morphosyntactic profiles. The *co*-domain is associated with a case-conditioned paradigm (e.g. *co*, *czego*, *czemu*, *czym*), whereas *gdzie* is largely morphologically invariant, yielding a lower mapping burden.

This contrast provides a minimal testing ground for complexity-based predictions: if computational complexity plays a role, differences in feature load and mapping should result in asymmetric susceptibility to cross-linguistic influence, even within the same construction type.

The study

Participant and data

The data come from a longitudinal naturalistic study of one simultaneous Polish-Mandarin bilingual child (pseudonym: M). The child was recorded regularly in home settings between 2;00 and 3;01. The corpus consists of 38 audio/video recording sessions; approximately 20-minute segments with relatively dense and continuous child speech were selected from each for transcription and analysis. The selected segments were transcribed and coded for language (Polish, Mandarin, mixed) and interrogative type.

The participant is the author's daughter. Written informed consent for the recording, transcription and academic use of the anonymized data was obtained from the other parent and other participating family members; identifying information was removed, and recording was discontinued whenever the child was unwilling to participate. The dual parent-researcher role may introduce interpretive bias, although the use of recorded and systematically coded data rather than retrospective observation was intended to reduce this risk.

Across the corpus, 475 interrogative utterances were identified, including 244 wh-questions. Within the wh-domain, the most frequent items relevant to the present analysis are *shénme* ‘what’ (64 tokens) and *co* ‘what’ (56 tokens), as well as *nǎ* ‘where/which’ forms (40 tokens) and *gdzie* ‘where’ (22 tokens). These distributions make it possible to compare ‘what’ and ‘where’ trajectories within the same child and sampling frame.

Dominance profile and developmental stages

Following the dominance-oriented analysis in Yang (2025), the child’s development can be divided into three broad phases based on use patterns and measures of morphosyntactic growth. Stage 1 (approximately 2;00–2;04) is Chinese-dominant; Stage 2 (approximately 2;05–2;09) is Polish-dominant; Stage 3 (approximately 2;10–3;01) shows a return to Chinese dominance. The present paper treats these stages as the macro-context in which wh-patterns unfold, while probing wh-type asymmetries that cut across the same stages.

Coding and analytic focus

Wh-questions were coded for (i) language context (Polish-only, Mandarin-only, code-mixed), (ii) wh-type (‘what’ vs ‘where’), and (iii) wh-placement (fronted vs in situ). The main focus is Polish-matrix code-mixed questions, defined as Polish clausal frames containing at least one Mandarin element (typically a wh-lexeme/phrase). These utterances are analysed as single productions reflecting competition between Polish wh-fronting and Mandarin wh-in-situ options (Goldrick, Putnam, Schwarz, 2016), allowing a direct test of whether the child maintains the frame-language requirement or follows the embedded wh-lexeme’s placement pattern (Yip, Matthews, 2000; Yip, Matthews, 2007).

Complexity measures

This study operationalizes two measures for the present dataset. To model within-domain selectivity, the analysis introduces feature reassembly complexity (RCF), defined as $RCF = NF + CF + MF$. NF is the number of feature types assumed to be active for wh-interrogatives in the relevant system; CF captures construction-level marked requirements; MF captures the mapping burden between morphosyntactic requirements and overt realization (Dai, 2011; Liu, Dai, Li, 2013; Mao, Dai, 2015; Mao, 2020).

Under the feature inventory adopted here, Polish wh-questions involve [+wh], [+Q], [+Focus], [+EPP], [+Case] (NF = 5), whereas Mandarin involves [+wh], [+Q], [+Focus], [+Topic] (NF = 4) (Huang, 1982; Cheng, 1997; Chomsky, 2001; Gębka-Wolak, Walkiewicz, 2013; Hu, 2019). MF is operationalized as the number of distinct overt forms among which a wh-lexeme must select in target production: invariant forms are set to MF = 1 (e.g., *gdzie*; *shénme/nǎli*), while case-conditioned alternations increase MF (here: *co/czego/czemu/czym* → MF = 4). CF encodes configuration-level markedness as an additive measure: CF = 1 for in-situ wh and CF = 2 for canonical wh-fronting. Within Polish wh-fronting, the co-domain receives one additional point because fronting is combined with case-conditioned realization, yielding CF = 3, whereas invariant *gdzie* remains at CF = 2. In tokens with additional coded clause-structural dependencies (V2-like verb displacement and/or non-default się), CF is incremented by +1 in total (tab. 1).

The resulting values are used as an ordinal profile rather than as psycholinguistic magnitudes; they generate the prediction tested in section “Results” that Mandarin-like in-situ placement should be disproportionately attractive in the higher-mapping-load Polish ‘what’ domain (*co*, RCF=12~13) relative to the lower-mapping-load Polish ‘where’ domain (*gdzie*, RCF=8~9).

Tab. 1. Complexity profile of the target wh-constructions (DC and RCF)

Construc- tion	Canonical wh strategy	DC	NF	CF	MF	RCF (approx.)	Notes
Mandarin shénme / nǎlǐ	in situ	1	4	1	1	6	invariant wh; in-situ
Polish gdzie	fronting	2 (+1/2)	5	2 (+1)	1	8~9	invariant wh; fronting
Polish co	fronting	2 (+1/2)	5	3 (+1)	4	12~13	case paradigm increases MF (number of overt alter- nants)

Note: In coded Polish configurations, V2-like verb displacement and/or a coded non-default *się* dependency contribute additional movement dependencies in DC (reflected in the “+1/+2” notation). In RCF, CF increases by +1 in total when such additional dependencies are coded; NF and MF are unchanged.

Source: Adapted from Yang (2026).

Results

Overall wh-placement across language contexts and developmental profile

Across the corpus, wh-placement reflects the typological contrast between the two languages: Polish-only wh-questions are near-categorical in fronting, Mandarin-only questions are predominantly in situ, and Polish-matrix (code-mixed) questions fall between these extremes (tab. 2). The distribution also changes over time. In Stage 1, Polish-directed wh-questions are largely realized as Polish-matrix clauses with embedded Mandarin wh-material (beyond a small set of formulaic items such as *co to?*), and wh-placement is variable in this context. In Stages 2-3, fully Polish wh-questions become productive and show target-like fronting, which provides a baseline for evaluating deviations under Polish-matrix code-mixing. In Stage 3, code-mixing in wh-questions becomes rare, but Mandarin questions still show a wh-type asymmetry, so the comparison can be extended beyond mixed clauses.

Tab. 2. Wh-fronting (movement) rates by language context²

Context	Wh-fronting	Wh in situ	Total
Polish-only	83 (98.81%)	1 (1.19%)	84
Polish-matrix (code-mixed)	8 (33.3%)	16 (66.67%)	24
Mandarin-only	9 (11.39%)	70 (88.61%)	79

Source: Author’s calculations based on data reported in Yang (2026).

‘What’ questions across stages and language contexts

In Polish-only production, ‘what’ questions are overwhelmingly fronted in the Polish-dominant period, establishing a stable target-like baseline. Against this baseline, Polish-matrix (code-mixed) ‘what’ questions show a strikingly different placement pattern. When a Mandarin ‘what’ form (*shénme*) appears in an otherwise Polish frame, the wh-element is retained in situ rather than being fronted. In the present sample, this holds throughout Stage 1–2 for Polish-matrix ‘what’ (Stage 2 alone: 0/11 fronted; pooled Stage 1–2: 0/12 fronted).

Illustrative tokens are given in (1)–(2), where *shénme* is embedded in a Polish clause while wh-placement aligns with Mandarin:

- (1) To *shénme*? ‘What is this?’
- (2) Na nie mówi się *shénme* *ya*? ‘What do you call it?’ (*ya* = part.)

Polish influence is also visible in Mandarin during Polish dominance, but it is limited in the ‘what’ domain. In Stage 2 Mandarin-only ‘what’ questions, wh-fronting occurs in 3/35 tokens (3 fronted vs 32 in situ), as in (3)–(4):

- (3) *Shénme* shì “sweterek”? (2;07.27) ‘What is “sweterek”?’
- (4) *Shénme* shì Mògá (=Mozart)? (2;09.02) ‘What is Moga (=Mozart)?’

‘Where’ questions across stages and language contexts

The ‘where’ domain patterns differently. In Polish-matrix (code-mixed) ‘where’ questions, Polish-like fronting can occur even when the wh-material is Mandarin (e.g., *zài nǎlǐ* ‘at where’). This is already attested in Stage 1: the Polish-matrix ‘where’ subset contains 3 fronted vs 0 in situ tokens. In Stage 2, fronting remains frequent in Polish-matrix ‘where’ questions (5 fronted vs 4 in situ, i.e. 5/9 fronted). Examples are given in (5)–(6):

- (5) *Zài nǎlǐ* Heli jest? ‘Where is Heli?’ (Mandarin wh-phrase + Polish copula)
- (6) *Zài nǎlǐ* oparzyłaś się? ‘Where did you get burnt?’ (Chinese wh-phrase + Polish verb)

² Table 2 reports all wh-questions for which wh-placement could be classified as fronted or in situ; wh-only and subject-wh utterances were excluded (out of 244 wh-questions in the full corpus). The following sections narrow the analysis to ‘what’ and ‘where’.

Polish influence is also visible in Mandarin during Polish dominance in the ‘where’ domain. In Stage 2 Mandarin-only ‘where’ questions, wh-fronting occurs in 25% of all the tokens (3 fronted vs 9 in situ), illustrated in (7)–(9):

- (7) Zài nǎlǐ fàng yì diǎndiǎn táng? (2;05.05) ‘Where (should one) put a bit of sugar?’
- (8) Zài nǎlǐ zǐsè de? (2;08.17) ‘Where is the purple one?’
- (9) Nǎlǐ shì Mòzhā? (2;09.02) ‘Where is Moza (=Mozart)?’

Summary and statistical test of wh-type selectivity in Polish-matrix (code-mixed) utterances

The results show a wh-type asymmetry in Polish-matrix code-mixing: ‘what’ questions favor in-situ placement, whereas ‘where’ questions are more likely to be fronted. Stage 2 provides the most comparable Polish-matrix subset under Polish dominance (tab. 3): ‘what’ shows no fronting (0/11), while ‘where’ shows fronting in 5/9 tokens; a two-sided Fisher exact test confirms an association between wh-type and wh-placement ($p = 0.00813$). Pooling Stages 1–2 yields the same direction (0/12 for ‘what’ vs 8/12 fronted for ‘where’) and remains significant ($p = 0.00135$).

A related domain contrast persists in Mandarin when code-mixing becomes rare. In Stage 3, Mandarin-only ‘where’ questions still show fronting (3 fronted vs 0 in situ), whereas Mandarin-only ‘what’ questions are fully in situ (0 fronted vs 4 in situ). This continuation supports treating the wh-type asymmetry as a property of the system beyond the mixed subset.

Tab. 3. Wh-type selectivity in Polish-matrix (code-mixed) questions (Stage 2)

Polish-matrix (code-mixed) Stage 2	Wh-fronting	Wh in situ	Total
‘what’	0	11	11
‘where’	5	4	9

Source: Adapted from Yang (2026).

Discussion

This study shows that cross-linguistic influence in bilingual wh-development can be sharply selective within a single construction class. Under comparable dominance conditions, the ‘what’ and ‘where’ domains respond differently: Polish-matrix code-mixing favors Mandarin-like in-situ placement for ‘what’, whereas ‘where’ more readily supports Polish-like fronting even with Mandarin wh-material, and the Mandarin data in the later phase preserve the same domain contrast. The implication is straightforward. Dominance and input shifts modulate overall activation and availability of patterns, but they do not, on their own, predict which wh-subdomain will be the primary locus of structural transfer. This framing is consistent with approaches that treat bilingual outcomes as

shaped by an interaction between language-external factors (dominance, ecology) and language-internal constraints on computation and mapping (Armon-Lotem, Meir, 2018; Meir, Janssen, 2021).

Sections “Why dominance alone cannot account for the wh-type asymmetry”, “A complexity-modulated account” and “Relation to previous findings and broader literature” spell out why dominance is insufficient for the observed split, how complexity-based pressures target the right level of explanation, and how the pattern relates to prior wh-transfer findings.

Why dominance alone cannot account for the wh-type asymmetry

The dominance-oriented analysis developed for this child in Yang (2025) captures the macro-trajectory of interrogative development: periods of increased productivity and the activation of constructions coincide with changes in exposure and use. However, the *co/shénme* vs. *gdzie/nǎlǐ* split requires a more fine-grained explanation because it emerges within the same dominance ecology.

Under early Chinese dominance, Polish-matrix ‘where’ already allows Polish-like fronting with Mandarin wh-material, whereas Polish-matrix ‘what’ remains uniformly in situ; later, when Chinese dominance returns, Polish-like influence does not recede uniformly but persists more in Mandarin ‘where’ than in Mandarin ‘what’.

More generally, this kind of underdetermination is not unique to the present dataset: wh-transfer is not automatic even when dominance and typology appear to favor it, and several longitudinal studies argue that additional constraints are needed to predict when transfer surfaces and in which subdomains it concentrates (Strik, 2012; Park-Johnson, 2017; Qi, Di Biase, 2020). The present study adds a complementary contribution: rather than asking only whether wh-in-situ transfer occurs, it demonstrates how bilingual interaction can be partitioned within a single domain, concentrating where the target system demands heavier mapping effort.

A complexity-modulated account

A complexity-based account is designed to explain selective vulnerability under competition between options. Derivational complexity approaches such as the Derivational Complexity Hypothesis (DCH) predict preference for less computationally demanding structures (e.g., fewer movement steps), and have been applied to wh-development and bilingual wh-transfer (Jakubowicz, Strik, 2008; Jakubowicz, 2011; Strik, 2012). This captures the global typological contrast (Mandarin in situ vs Polish fronting, DC=1 vs DC=2~4) but does not explain the within-Polish asymmetry, because *co* and *gdzie* are derivationally comparable (both canonically front). As discussed in Yang (2026), DCH can explain why Polish interrogatives are globally more complex than Mandarin, but it cannot explain why *co* is more difficult/vulnerable than *gdzie* among Polish wh-fronting questions; that finer split motivates a feature-reassembly perspective.

Feature-reassembly complexity (RCF) supplies that finer grain by treating vulnerability as a mapping problem: the burden increases when the learner must stabilize richer feature bundles and less transparent form-meaning correspondences across non-isomorphic systems (Dai, 2011; Liu, Dai, Li, 2013; Mao, Dai, 2015; Mao, 2020). In the present language pair, the main differentiator is mapping load in the Polish *wh*-lexeme: *gdzie* is largely morphologically invariant ($MF = 1$), whereas *co* must be realized through multiple case-conditioned alternants ($MF = 4$ for *co/czego/czemul/czym*), increasing the transparency cost of mapping between morphosyntactic requirements and surface form. This yields the hierarchy in Table 1 (Mandarin < Polish *gdzie* < Polish *co*), which correctly predicts that the Mandarin in-situ option is especially attractive in the higher-mapping-load Polish ‘what’ domain, whereas the Polish ‘where’ domain is more resilient in Polish-matrix code-mixing and can also leave longer-lasting traces on Mandarin later, even under comparable dominance conditions. The important point is not that ‘where’ is “easy” in an absolute sense, but that it is less mapping-intensive than ‘what’ in the Polish system, and therefore less likely to trigger a shift toward the Mandarin strategy when the two systems compete.

Relation to previous findings and broader literature

Interface-based accounts predict selective optionality in bilingual development where syntax interacts with discourse/pragmatics (Hulk, Müller, 2000; Sorace, Serratrice, 2009). The present pattern is compatible with selectivity in general, but it localizes the contrast more narrowly: the crucial split is within *wh*-questions, where vulnerability tracks item-level morphosyntactic mapping burden rather than *wh*-fronting as such.

The argument also complements derivational complexity approaches to bilingual transfer. Jakubowicz’s (2011) formulation treats derivational complexity as a condition on transfer: structures that constitute a computational shortcut are more likely to be introduced under bilingual interaction. In the present case, the shortcut is not simply to avoid fronting everywhere (since Polish fronting is stable in Polish-only questions once productive), but selectively avoid the most mapping-intensive portion of the Polish *wh*-system by retaining the Mandarin in-situ configuration in Polish-matrix mixing for ‘what’.

A final control concerns monolingual baselines. Mandarin content questions emerge early and remain predominantly in situ (Li, 1995; Li, Chen, 1998; Fan, 2012). Polish child data likewise show early fronting of both *co* and *gdzie* in *wh*-questions, although productive control of the richer case morphology relevant to the *co*-domain stabilizes later (Zarębina, 1965; Smoczyńska, 1985). Recent experimental work further illustrates that Polish-speaking children are sensitive to fine-grained properties of *wh*-questions such as exhaustivity and interpretation (Foryś-Nogala et al., 2017). The baseline therefore does not motivate an age-of-onset explanation for the bilingual ‘what-where’ split. Instead, it supports the present inference: selective vulnerability is best located in the mapping demands imposed by the Polish *co*-domain under bilingual competition.

Limitations and directions for future work

This is a single-child longitudinal case study, which gives high developmental resolution but limits generalization. Replication with additional Polish-Mandarin bilingual children

is needed, ideally with different ecological profiles (e.g., different environmental-language support, as highlighted by Qi and Di Biase, 2020). Experimental work could also probe whether production asymmetries track comprehension/processing costs in wh-dependencies. Finally, extending the analysis to additional wh-types (e.g., ‘who’, ‘which’, ‘how’) would test whether mapping burden predicts graded susceptibility across a broader interrogative inventory.

Conclusion

This paper has argued that computational complexity provides an essential ingredient in explaining wh-question development in a Polish-Mandarin bilingual child. Within the same longitudinal study and under the same broad dominance regimes, ‘what’ and ‘where’ questions display systematically different susceptibility to cross-linguistic influence.

The core empirical pattern is an asymmetry: Polish-matrix (code-mixed) ‘what’ questions show strong and stable Chinese influence via wh in-situ, whereas Polish-matrix (code-mixed) ‘where’ questions exhibit earlier and more persistent Polish-like fronting – even when Chinese wh-lexemes are used – and Polish influence remains detectable in Mandarin ‘where’ questions during the later return to Chinese dominance.

These findings support a complexity-modulated view of bilingual development: dominance helps explain macro-level activation and dormancy, but the micro-level distribution of CLI across closely related constructions is shaped by the relative complexity of the target representations and operations. For Polish-Mandarin bilinguals, the higher feature-reassembly burden of the Polish *co*-domain makes Chinese strategies especially attractive, while the lower complexity of the *gdzie*-domain facilitates earlier convergence on Polish movement and greater resilience over time.

From an applied perspective, the findings suggest that support for bilingual development may need to be domain-specific: under comparable exposure conditions, ‘what’ questions can remain more fragile than ‘where’ questions, which resonates with pedagogical discussions of uneven bilingual language skill and targeted support (Szurek, 2018).

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