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Semantic functions of trilingual code-switching: Evidence from Maghreb Arabic, French, and English in a study-abroad context

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ABSTRACT

Research on codeswitching (CS) has largely focused on its grammatical, pragmatic, linguistic, and sociocultural functions. Semantic functions, however, have received less direct attention and are often treated within broader categories such as topic, lexical need, evaluation, or cultural association. As a result, it can be difficult to establish when a switch primarily contributes lexical or conceptual meaning, especially in trilingual interaction where current switches must also be distinguished from established borrowings. The present study addresses this issue in Maghreb Arabic (MA)–French–English interaction among 29 North African university students studying in Hungary. The dataset comprises 5.12 hours of group discussion, together with metalinguistic interviews. The analysis combined qualitative content analysis, comparison across speakers and contexts, participant comments, and a borrowing audit. Of the 2,183 CS functions identified in the broader dataset, 535 (24.51%) were classified as semantic. Four recurring patterns emerged: domain-linked terminology in business, technology, and power; experiential frame differentiation; reflective and abstract framing; and lexicalized evaluation. The findings suggest that semantic CS is better understood in terms of recurring lexical and conceptual choices than as evidence that particular languages are tied to whole semantic domains. They also show the importance of considering speakers' language experience and the borrowing status of individual items. The four semantic functions were not independently second-coded, however, and the sample was small, highly educated, predominantly Tunisian, and based in a study-abroad setting. Further research is therefore needed to test the proposed taxonomy in other multilingual groups and contexts.

KEYWORDS: codeswitching, trilingualism, semantic functions, content analysis, frame semantics, listedness

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1. Introduction

North Africa is a complex setting for multilingual language choice. Maghreb Arabic (MA) is used alongside Amazigh languages, Standard Arabic, French and, increasingly, English. Their present roles reflect colonial history, language policy, education, migration and international mobility (Alalou, 2023; Daoud, 2001; Sayahi, 2007, 2011). French continues to be widely used in education and public institutions across much of the region, while English is increasingly prominent in higher education, science, technology, and international communication. Among educated speakers, the use of MA, French, and English goes beyond Arabic–French bilingualism supplemented by occasional English words. Instead, each language occupies a distinct place in speakers' repertoires, shaped by different histories of learning and use.

CS research has long shown that switching is patterned and meaningful rather than evidence of limited language ability (Auer, 1984, 2007; Gumperz, 1982; Woolard, 2004). Much of this work has examined grammar, conversational organisation, identity, stance and speaker relations. Semantic choices, however, are often treated under broader headings such as topic, lexical need, conventionality, evaluation or cultural association. Referential and social meanings can also overlap: a word may make an utterance intelligible while at the same time carrying a social effect (Slotta, 2025). The analytical issue, then, is how to identify a semantic contribution without depending solely on the researcher's judgement.

Trilingual data make this distinction more difficult. In an MA turn, a French or English expression may be a current switch, an established borrowing, a recently learned item, a shared label, or a deliberate lexical choice. It may also do more than one job. An adjective can express an evaluation and emphasise the speaker's stance. A technical term can name a professional concept and point to education or international experience. If every such item is coded as semantic, the category becomes too broad. If all familiar items are treated as borrowings, useful contrasts are lost.

Work on multilingual switching also warns against treating a three-language repertoire as a bilingual system with an extra language attached. Exposure, status and patterns of activation differ across the three languages (Parafita Couto et al., 2023). French and English must therefore be examined separately, even though both occur within MA-dominant talk.

The present study analyses the semantic part of a corpus of MA–French–English interaction. The broader project placed CS functions in one of four broad categories: pragmatic, semantic, linguistic or sociocultural. A separate article used the same recordings to study pragmatic functions such as contrast, highlighting, qualification, listing and discourse boundaries. This article examines only the 535 cases placed in the semantic category. It also explains how those cases were separated from the other three categories. The recordings are shared with the earlier article, but the coded cases, questions, findings and argument are different.

The study describes semantic patterns in a trilingual group that has received limited attention. Its method brings together content analysis, comparisons across speakers, comments from participants and a borrowing audit. Usage-based linguistics, frame semantics and Cultural Linguistics were used to explain patterns after they had been found in the data; they were not imposed as a fixed coding scheme. The claim is not that French or English is naturally more precise, intellectual or powerful than MA. The aim is to explain why particular forms were repeatedly used for particular meanings in this corpus.

Two research questions guide the analysis:

- What recurrent semantic functions of CS can be identified within the 535 functions assigned to the semantic domain?
- What combination of discourse evidence, cross-participant comparison, participant reflection and borrowing controls supports a semantic interpretation rather than a pragmatic, linguistic, sociocultural or borrowing-based account?

2. Literature review

Recent research demonstrates growing attention to the interaction between meaning, lexical choice, pragmatic function, and linguistic innovation in Arabic, including semantic structures, contextual interpretation, colloquial usage, lexical variation, and technology-mediated neologism formation (Alkarazoun & Riziq, 2025; Ammari & Al-Ahmad, 2023; Hammouri, 2025; Ja'afreh, 2023; Meqdad et al., 2023; Riziq & Hamdan, 2023). More

broadly, studies of Arabic language development, language education, digital technology, accessibility, and culturally situated language use highlight the changing sociolinguistic and technological environments in which contemporary multilingual practices occur (Aburahme, 2021; Fraihat, 2024; Khatatbah & Ashour, 2024; Masoud, 2025; Naib, 2025).

2.1. Semantic work in multilingual interaction

CS is commonly defined as the use of material associated with more than one language within the same interaction or utterance (Deuchar, 2020; Muysken, 2000). That broad definition describes mixed-language discourse, but it does not explain the function of a particular alternation. Conversation-analytic and interactional work interprets switches in their sequential setting; they may signal contrast, quotations, side sequences, shifts in footing, or boundaries between discourse units (Auer, 1984, 2007; Gumperz, 1982). Sociolinguistic accounts focus more on identity, authority, accommodation and the social values associated with a code. Psycholinguistic and production-oriented research can instead address accessibility, inhibition and word retrieval. In actual talk, these explanations may apply to the same stretch of interaction.

For this study, semantic function was defined more narrowly. A case was treated as semantic when the selected form contributed mainly lexical or conceptual meaning. The form might name a specialised process, present a referent from a particular point of view, express an abstract idea, or carry an evaluation in the lexical item itself. Pragmatic effects could also be present, but the semantic contribution had to be clear and central to the local context.

Because grammar, information structure and discourse context interact in mixed-language speech, the local context was central to the analysis (Muntendam & Parafta Couto, 2024). Conclusions from contact data can also depend on corpus design, transcription choices and which speakers are represented (Vanhaverbeke et al., 2025). A single striking example was therefore not sufficient. A semantic interpretation was better supported when the same pattern recurred across speakers or recordings, close alternatives could be compared, and participant comments were consistent with the transcript.

2.2. Usage, frames, and cultural conceptualisation

From a usage-based perspective, language knowledge develops through repeated exposure and experience (Backus, 2015; Diessel, 2017). A multilingual speaker may know an MA equivalent yet use a French or English form because that form has occurred frequently in education, work or technology. This does not imply that MA lacks an equivalent or that the switch was consciously planned. The main point is that some forms may be more readily accessible than others.

Frame semantics treats words as cues to scenes of experience rather than as simple dictionary definitions (Fillmore, 2006; Geeraerts, 2006). Two close equivalents may refer to the same thing but highlight different aspects of the experience. A term for a cooking space, for example, may evoke a family home, a shared dormitory kitchen, or domestic work. The referent may remain similar, while the perspective associated with it changes. In multilingual interaction, a particular form may therefore activate a frame linked to a specific setting or history of use.

Cultural Linguistics extends this view by considering knowledge shaped through shared cultural experience (Sharifian, 2011, 2017). Multilingual speakers do not necessarily draw on separate conceptual systems for each language. Rather, their schemas, categories, and metaphors develop through experience across different communities and institutions. This is relevant to the present study because the participants' linguistic experience spans both the Maghreb and Hungary. However, associations found repeatedly within this group should not be taken as representative of an entire language or speech community.

These perspectives serve different purposes in the analysis. Content analysis identifies recurring functions, usage-based approaches help explain why some forms are more readily accessible, frame semantics addresses differences in construal, and Cultural Linguistics links these patterns to social and historical experience. The transcript itself, however, remains the main source of evidence.

2.3. Codeswitching, borrowing, and listedness

Distinguishing CS from borrowing is particularly difficult in the Maghreb. Because of long-term contact with

French, an established MA item may still closely resemble its French source. The status of the same form may also differ across Tunisian, Moroccan, and Algerian Arabic: a word that is ordinary in one variety may be unfamiliar in another. In addition, no single dictionary covers all the MA varieties represented in this corpus (Sayahi, 2011).

Length alone does not provide a reliable criterion. A single word may represent a current switch, whereas a longer expression may already be established in local usage. Phonological and grammatical integration are also insufficient on their own to determine whether a form should be treated as borrowing or CS.

A new form may take Arabic morphology, whereas an older borrowing may retain French pronunciation (Myers-Scotton, 2006; Stell & Yakpo, 2015). Treffers-Daller's (2025) Simple View gives priority to *listedness*. A borrowing is stored and accepted as part of the recipient-language lexicon, whereas a current switch draws on the donor language during speech. Chan (2025) likewise shows that grammatical integration may not settle the status of an item and that the boundary can be gradual. Listedness is tied to entrenchment, but the written or spoken form alone cannot reveal whether an item is stored in a speaker's lexicon.

The analysis therefore uses *other-language item* (OLI) as a neutral first label. An OLI is material transcribed as French or English in an MA-dominant turn before its status has been decided. Foreign origin alone does not make it a current switch. Borrowing decisions drew on two kinds of evidence. The first was community-level evidence from Post (2015), Sayahi (2007), Mosteghanemi (2020) and Oueslati (2021). Their inventories and analyses cover distribution in the community, dictionary status, sound adaptation, Arabic morphology and changes in meaning.

The second source was participant-specific evidence. During stimulated-recall interviews, nine participants listened to selected parts of their own recordings and discussed particular language choices. Their comments showed whether a selected form felt habitual, familiar, part of their Arabic variety, or more readily available in French or English. For example, several participants described French discourse markers as part of their ordinary Arabic speech rather than as switches. Such comments provide evidence of listedness or entrenchment for that speaker, but they are not a formal test of the mental lexicon.

The two sources were considered together. The published inventories were not treated as complete or interchangeable, and a Tunisian classification was not automatically applied to a Moroccan or Algerian speaker. Participant comments were used when the relevant item had been discussed in an interview. Items strongly supported as established MA forms were removed from the semantic CS counts. An item absent from an inventory was not automatically accepted as a switch: its recurrence, local alternatives, grammar, speaker background and discourse context were also checked. If the evidence remained uncertain, the form stayed under the neutral OLI label and was not used by itself to establish a semantic function. This procedure lowers the risk of counting established foreign-origin words as current semantic choices.

3. Methodology

3.1. Participants and corpus

The corpus consists of eight group discussions recorded between November 2023 and March 2024. Twenty-nine MA–French–English trilinguals studying at five Hungarian universities took part. One participant joined two sessions, giving 30 participation slots. Participants were 20–29 years old ($M = 24.20$, $SD = 2.92$); 21 were Tunisian, five Moroccan and three Algerian. Nineteen were women and ten were men. All had Arabic-speaking parents, described themselves as habitual codeswitchers and reported positive attitudes towards language switching. The sample was deliberately selective rather than representative of North African trilinguals.

Language-background information was collected through a Multilingual Language Profile adapted from the Bilingual Language Profile (Birdsong et al., 2012) and the Bilingual Code-Switching Profile (Olson, 2024). The instrument documented language history, self-rated proficiency, switching practices and attitudes. It was used for participant screening and description, not as an externally administered proficiency examination.

The recorded discussions lasted between 30 and 53 minutes and totalled 5.12 hours. Manual transcription produced a corpus of approximately 36,780 words: 28,792 MA words (78.3%), 3,966 French words (10.8%) and 4,022 English words (10.9%). MA was the majority language in every topic, an important counterweight to any claim that French or English replaced MA at the level of whole discussions.

Table 1: Corpus Profile

Characteristic	Description
Participants	29 unique speakers; 30 participation slots across eight groups
Background	Tunisia 21; Morocco 5; Algeria 3
Age	20–29 years; $M = 24.20$, $SD = 2.92$
Gender	19 women; 10 men
Recording design	Eight familiar-peer group discussions; two to five speakers per group
Duration	5.12 hours in total; approximately 36,780 transcribed words
Corpus languages	MA 28,792 words; French 3,966; English 4,022
Study setting	Five universities in Hungary

3.2. Data collection and metalinguistic interviews

The recordings were made in participant-selected, familiar spaces. A Tunisian trilingual research assistant moderated the sessions and participated sufficiently to reduce the distance associated with external observation (Nortier, 2008). Participants were told that the project concerned multilingual interaction but were not told that CS functions were the specific focus. At the start of each session, the moderator offered five possible topics: daily routine, travel, technology and communication, cultural celebrations, and women’s rights. Participants chose which topics to discuss and were explicitly free to use any language. Six groups discussed all five topics; one omitted daily routine and another omitted cultural celebration.

The shared prompts made the discussions comparable without making them identical. They could also prime certain words. A technology discussion is likely to contain technical terms, while a discussion of women’s rights is likely to contain legal and evaluative language. A topic was therefore treated as an opportunity to use a lexical field, not as proof that one language was specialised for it.

Nine participants, covering all eight groups, later completed individual metalinguistic interviews. The sessions lasted about an hour and took place online or in person. Each participant listened to selected parts of their own discussion and explained particular language choices. For selected expressions, these explanations served as participant-specific checks of listedness. The notes recorded whether a form was described as habitual or familiar, whether it was regarded as part of the participant’s Arabic variety, and whether an MA alternative was known. The interviews were held soon after the recordings because recall weakens over time (Dörnyei, 2007). The researcher documented the interviews in detailed notes rather than audio-recording them because the expected answers were brief. These comments were used only as supporting evidence: they could clarify a participant’s familiarity with an item, but they did not override the transcript or establish an unconscious motive.

3.3. Transcription and borrowing audit

The initial transcripts were prepared by a native MA speaker who was proficient in French and English. A second MA–French–English trilingual checked them against the recordings, and the first author then completed a final review. Clause units were identified following Berman and Slobin (1994), although the extracts below are presented as complete turns for readability.

The borrowing audit was completed before functional coding. French- and English-looking material in MA-dominant turns was first entered on an OLI list. Each candidate was then checked against the regional studies described above. For items discussed during stimulated recall, the relevant participant comments were also consulted. A participant’s description of a form as habitual, part of their Arabic variety, or not experienced as switching was treated as speaker-level evidence of listedness. Established and probable borrowings were then removed from the CS dataset. Items that remained unresolved were kept as OLIs and examined in relation to local context, grammar, recurrence and available alternatives. Arabic morphology was informative but not decisive. Tunisian Arabic *t-connecter*, for example, combines an Arabic verbal prefix with a French stem, illustrating why grammatical form alone cannot yield a simple yes-or-no classification. Appendix A lists the 96 items classified in the corpus as established or probable borrowings and excluded here as online switches.

Table 2 summarises the decision rules. The audit combined community-level evidence from published

studies with participant-specific stimulated-recall comments when these were available. Since not every item was checked with every participant, this limitation is discussed later.

Table 2: *Borrowing and Semantic-Coding Safeguards*

Analytical risk	Decision rule	Purpose
Foreign origin treated as automatic CS	Use OLI as the first label and require supporting contextual and listedness evidence.	Stops origin from deciding the analysis.
Established MA borrowing counted as a switch	Check the relevant regional inventories and exclude forms supported as established or probable borrowings.	Stops borrowed vocabulary from increasing semantic counts.
Community classification applied to every speaker	Where interview evidence is available, check whether the participant described the item as habitual, familiar, or part of their Arabic variety. Keep OLI status when the evidence conflicts.	Adds speaker-level evidence without treating one regional list as universal.
Topic word treated as semantic specialisation	Require recurrence, an attested alternative, a contrastive context, or participant evidence of domain-linked access.	Separates an opportunity created by the topic from a semantic pattern.
Participant comment treated as conclusive	Use interview notes as one source of evidence alongside the transcript and published work.	Limits the weight placed on retrospective reports.
MA absence treated as lexical deficiency	Report zeroes as absence from this corpus, not from MA.	Avoids deficit claims about MA.

Note. OLI = other-language item.

3.4. *Content analysis and category development*

The first stage used qualitative content analysis (Graneheim & Lundman, 2004; Vaismoradi et al., 2013). The transcripts were read several times, meaning units were marked, and each CS function was placed in one of four broad categories. Pragmatic coding covered the organisation of talk, foregrounding, contrast, qualification and discourse boundaries. Linguistic coding covered fluency and economy of expression. Sociocultural coding was used when identity, values or cultural distancing was the main function. Semantic coding was used when lexical or conceptual meaning was central.

The semantic cases were then reviewed for recurring patterns. A function was kept only when several forms of evidence supported it. These included recurrence across speakers or recordings, comparable alternatives in the corpus, a clear role in the local turn, a contrast within or across speakers, and supporting interview comments. One isolated OLI was not enough.

Comparisons across participants helped separate shared patterns from personal habits. Contrasts produced by the same speaker were particularly useful because part of the speaker's language history remained constant. Interview comments helped explain which forms felt readily available and what participants associated with them. Usage-based linguistics, frame semantics and Cultural Linguistics were brought in only after these patterns had been identified.

When a case had more than one function, coding followed the main job it performed in that turn. A switched adjective was classified as semantic when the judgement came from its lexical meaning, even if the switch also made the speaker's stance more salient. If the judgement was already clear and the switch only made it more noticeable, the case was pragmatic. A technical OLI used during hesitation was linguistic when repair was more important than technical reference. An item was sociocultural when it mainly signalled education, prestige or cultural alignment, even if it also carried domain content.

3.5. *Intercoder reliability: Procedure and scope*

Reliability was tested for the four broad categories on 390 cases, or about 17.9% of the functional dataset. After training, an external MA–French–English trilingual coder independently coded the selected transcript. Coder 1 assigned 132 cases to pragmatic, 125 to semantic, 43 to linguistic and 90 to sociocultural functions. Coder 2 assigned 123, 117, 35 and 115 cases, respectively. They agreed on 318 decisions, giving Cohen's $\kappa = .7432$ for the broad coding frame (Cohen, 1960; O'Connor & Joffe, 2020). The first author then coded the remaining transcripts with that frame.

This result has a limited scope. It shows agreement on the distinction among pragmatic, semantic, linguistic and sociocultural cases. It does not show agreement on the four semantic functions in this article. The first author developed those functions through content analysis, comparisons across participants and interview evidence. No second coder independently classified the four semantic functions. This remains an important limitation.

3.6. Unit of counting and quantitative reporting

The count was based on functions, not individual switched words. Several forms that worked together for one function in a turn were counted once. For example, **update**, **installé** and **latest version** in one account of a software problem formed one domain-linked semantic instance. Two clearly different functions in the same turn were counted separately. This rule stops heavily mixed turns from receiving more weight simply because they contain more switched words.

The full dataset contained 2,183 CS functions. Differences among recordings or semantic functions were not tested statistically. The sessions varied in length, number of speakers and topic coverage, and cases were grouped within speakers and discussions. The reported counts and percentages describe this corpus only.

3.7. Ethical Approval

Ethical approval for this study was obtained from the Research Ethics Committee of the Doctoral School, University of Pannonia, Veszprém, Hungary (**Approval No. 2023/04**) on May 4, 2023. The Ethics Committee reviewed and approved the research plan and granted permission for the study to be conducted. All participants were provided with information regarding the purpose and procedures of the study prior to participation. Participation was entirely voluntary, and written informed consent was obtained from all participants before data collection and recording. To ensure confidentiality and anonymity, pseudonyms were used in all reported extracts, and no personally identifiable information was disclosed.

4. Results

4.1. Position of semantic functions in the broader coding frame

Semantic functions appeared in all eight recordings and made up 535 of the 2,183 CS functions (24.51%). Sociocultural functions formed the largest broad category, followed by pragmatic, semantic and linguistic functions. The semantic share ranged from 18.78% in Recording 5 to 32.05% in Recording 8. These differences cannot be linked to one cause because recording length, topics and speakers varied across sessions.

Table 3: Broad Functional Categories Reported in the Parent Thesis

Functional category	<i>n</i>	%
Pragmatic	654	29.96
Semantic	535	24.51
Linguistic	158	7.24
Sociocultural	836	38.29
Total	2,183	100.00

Note. Aggregate counts and percentages follow the broader project analysis, which is the primary record for this secondary analysis.

The analysis found four recurring semantic functions. Table 4 indicates the evidence used to identify each function and the main alternative explanation considered during coding. Frequencies are not given for these functions because they were not independently reliability-tested. They are reported as a qualitative taxonomy.

Table 4: Semantic Taxonomy and Diagnostic Boundaries

Semantic function	Included when	Main competing account
Domain-linked terminology in business, technology and power	After the borrowing checks, an OLI names a process, object or institutional relation needed for the explanation.	Conventional borrowing, topic priming or sociocultural indexing

Semantic function	Included when	Main competing account
Experiential frame differentiation	Close equivalents present a referent through different experiences or cultural frames.	Simple translation choice or personal wording
Reflective and abstract framing	An OLI helps the speaker explain, reason about a social issue, or name an abstract idea.	Register, educational identity or word-retrieval difficulty
Lexicalised evaluation	The chosen word itself carries the main judgement in the turn.	Pragmatic highlighting or stance marking

In the examples, MA is in plain roman type, French is underlined, English is bold, and established or probable borrowings are italicised. The translations retain these distinctions when they matter to the analysis.

4.2. Domain-linked terminology in business, technology, and power

The first pattern consisted of terms used in business, digital technology, administration and authority. The interpretation is based on recurring contrasts among lexical alternatives rather than on isolated foreign-looking words. Table 5 presents selected lexical sets that remained after the borrowing audit. The figures represent raw word occurrences, not the functional counts reported in Table 3. They show how often particular alternatives occurred within a lexical field and should not be interpreted as frequencies of the four semantic functions.

Table 5: Selected Lexical Alternatives in Domain-Linked Discourse

Lexical set	MA	French	English
tax	0	0	11
payment	0	2	3
interview	0	0	6
meeting	0	0	6
budget	1	11	11
communication	1	1	6
account	0	7	4
contact	0	8	2
application	0	15	0
search	0	6	2
technology	27	26	10
influence	0	6	1
impact	0	0	2
control	0	4	3
authorization	0	4	0

Note. Values are raw lexical occurrences, not CS function counts. A zero indicates that a form did not occur in this corpus; it does not mean that the form is absent from the language.

The lexical sets do not provide equally strong evidence. *Tax* and French *application* show the clearest contrasts. **Budget**, however, shows a different pattern: the French and English forms each occur 11 times, whereas the MA form occurs only once. Here two familiar resources compete; neither donor language dominates. Technology provides an important counterexample. MA *tiknawlawğya* occurs 27 times, close to French *technologie* (26) and more often than English **technology** (10). Participants did not move technology talk as a whole into French or English. The pattern concerns particular words and their histories of use.

In the next extract, Rashed uses several items while explaining how remote work operates.

Example 1: Remote work infrastructure (technology and communication discussion)

Rashed: ḥaṭīr ma‘nāh fammak ‘il-**virtual machine** lī ma‘nāh tconnecter ‘alayhā du coup ‘inta gā‘id tiḥdim ma‘hum w-inta ḡūst min *blāṣtak* fid-dār, voilà.

Gabriel: exactement.

Rashed: ya'nī 'il-hājāt lī (ā:h) t'as besoin bāš tiḥdim bil-ḥaqq bāš tiḥdim ya'nī wa'andak présence wa wrāq wa kaḏā. miš *ḡūst* ma'nāhā bāš ti'mal **meeting**. lā lā bāsh tiḥdim tiḥdim **literally**. ma'nāhā *ḡūst* andak connexion internet – c'est ça.

Example 1: translation

Rashed: Because there is the **virtual machine**, which you connect to, so you are working with them while you are *just* at *home*, that's it.

Gabriel: Exactly.

Rashed: It means having everything you need to actually work—presence, paper, and more. It is not *just* about holding a **meeting**; no, it is about truly working, **literally**. All you *just* need is an internet connection, and that's it.

The analysis does not assume that every OLI in this turn is a current switch. The sequence **virtual machine**, *connecter*, **meeting** and *connexion internet* explains the remote-work arrangement by naming its system, access procedure and work activity. By contrast, common discourse markers such as *du coup*, *voilà* and *c'est ça* do not support the semantic classification.

Example 2 gives a short illustration of the counting rule. Maria describes a software problem.

Example 2: A software repair sequence (technology and communication discussion)

ḥattā 'anī mā fhimtiš 'lāš hiyyah mā bgāš yiḥdimhā. dirnā **update** 'il-bāriḥ. wi 'āwadat installé kil šī mi-l lawwal. wi ṭil'at 'il-latest version.

Example 2: translation

Even I do not understand why it is not working for her. We did the **update** yesterday, and she installed everything from the beginning and got the **latest version**.

The three target expressions describe one technical procedure, so they were counted as one semantic instance. Treating the three expressions as separate instances would give greater weight to turns containing more extensive language mixing.

The interview notes also support a usage-based account. Participants often associated business and finance with English or French, and some reported that words from these languages came to mind more readily or seemed more expressive in such contexts. One participant, for example, described the French term *influence* as stronger than its Arabic counterpart.

These comments do not show that one language is naturally more capable than another. They point to experience: education, work, software and international communication had made certain forms easier to access.

Terms linked to power needed extra care. **Influence**, **impact**, *contrôler* and *autorisation* can name authority, but they can also suggest the prestige of French or the international role of English. A case stayed in the semantic category only when the term named the relation under discussion. If the main effect was to present the speaker as educated, international or Western-oriented, it was coded as sociocultural.

4.3. Experiential frame differentiation

The second function concerns close equivalents that present the same referent through different experiences. The clearest evidence is a contrast in context, especially when it comes from the same speaker (Shaher). **Kitchen** and *kūḡīnā* provide such a contrast.

Example 3: A shared dormitory kitchen (daily-routine discussion)

'aqrā – 'a'mal résumé lil-article hāḏā. wim-ba'd 'āh nasīt maḥṭartiš lāzimnī nimšī nṭayyib. timšī lil-**kitchen**, talqāh

sā'a ma'byah bil-les africains wil-hnūd. tqulhum salām 'alaykum. tarġa' ma'nāhā muš lāzim nākul.

Example 3: translation

I read and make a summary of this article. And then, oh, I forgot to have breakfast. I need to cook. I go to the **kitchen** to find it crowded with Africans and Indians. I say “good bye,” and then I go back. I do not need to eat.

Here **kitchen** refers to the crowded shared cooking area in a student residence. In the interview notes, this kind of space was described as cramped and unlike a domestic kitchen. The same speaker used *kūġinā* elsewhere when discussing household duties.

Example 4: Kitchen as part of domestic life (daily-routine discussion)

li-'annū ni'raf fī: – personnellement fil-'āyiah tā'ī, ni'raf škūn tkammil fid-duktawrāh tā'hā. wa kif kif 'umm li-des enfants. *dawnk* taṣawwar 'int bayn 'il-study tā'hā wil- *kūġinā* wil-house.

Example 4: translation

Because I know. In my family, I personally know someone who is completing her PhD. And at the same time, she is a mother of children. So, imagine her balancing between her **study**, the *kitchen*, and the **house**.

The two forms occur in different experiential contexts. **Kitchen** is used when referring to temporary student accommodation, whereas *kūġinā* appears in discussions of household work and family life. This contrast is particularly informative because both forms are produced by the same speaker, and their different associations are supported by the surrounding context rather than inferred from a single isolated occurrence.

A similar pattern can be seen with **Friday** and *ġum'ah*, although cultural associations are more salient in this case. Both forms refer to the same day. In MA, *ġum'ah* may evoke communal prayer and the religious significance of Friday, whereas the English form may function as a more neutral calendar label when those associations are not relevant.

Example 5: Friday as a travel date (travel discussion)

Rawan: qult laha nhibb. qālat lī, 'iḥnā *stāġ* mtā'nā minimum trois mois. qult laha rāhū 'anā ṣa'īb 'alayyah yāsir. 'anā biš nrawwaḥ 'il-Friday 'il-jāyyah.

Example 5: translation

Rawan: I told her I was interested. She told me their *internship* was a minimum of three months. I told her it was really hard for me because I was going back home next **Friday**.

In Example 5, **Friday** is used simply to indicate a travel date. This does not imply that **Friday** is never culturally meaningful or that *ġum'ah* always carries religious associations. The interpretation is based on the immediate context and on comparison with MA uses in discussions of religion. The contrast is therefore contextual rather than an inherent feature of either lexical form.

4.4. Reflective and abstract framing

Not all instances of CS appear to serve a deliberate conversational purpose. Riehl (2005) notes that some switches may occur unintentionally and may reflect underlying cognitive processes rather than a specific function in the immediate interaction. This possibility is relevant here because participants repeatedly switched from MA to French or English for words related to thought, reasoning, and planning, including **notion**, **concept**, **idea**, **plan**, **think**, **know**, **mentality**, **conscious**, **process**, **logical**, **rational**, and **awareness**. Sharifian's (2011, 2017) view of the relationship between language, culture, and thought provides one way of interpreting this pattern. For these speakers, French and English may have been more readily accessible for expressing certain abstract or reflective concepts.

Example 6 illustrates this pattern in a discussion of women's rights. The research assistant asked whether Tunisian women had already achieved their rights or whether further advocacy was still needed. Hana responds that legal rights alone do not address problems rooted in social attitudes and everyday behaviour. She illustrates

this point by referring to women's safety when walking outside at night.

Example 6: Explaining social attitudes (women's-rights discussion)

'ammā waqt lī timšī li-tūnis wit-'iš fī tūnis ma'nāha wi-tikūn muwāṭin tūnisī. ḥāṭir fammā ḥājāt mahīš matā' qānūn. fammā ḥājāt fil-mentalité wil-conscience tā'il-li'bād lī lāzimha titbaddal. ḥāṭir maṭalan fī tūnis ... maṭalan hnā tawwā naḡmū naḡuruḡū maṭalan fil-lil. mani'raf waqtāš bil-lil mit'aḥḥar. wi maḥḥissiš rūḥak makš en sécurité. ḥāṭir rūḥak tamšī win-tī 'āmnah fiš-šāri'.

Example 6: translation

When you go to Tunisia and live there as a Tunisian citizen, you realize that there are issues that are not about laws. There are aspects of people's mentality and conscience that need to change. For instance, in Tunisia ... On the other hand, here (in Europe), we can go out at night—no matter how late—and not feel insecure. You feel like you can walk completely safe on the streets.

Hana's turn is otherwise predominantly in MA, but she uses the French terms *mentalité* ('mentality') and *conscience* ('conscience'). Neither switch has an obvious local conversational role such as quotation or clarification. Instead, the two forms fit the broader pattern in which participants draw on French and English when discussing reasoning, awareness, and abstract thought. In terms of Sharifian's (2011, 2017) account of language, culture, and conceptualization, this pattern may reflect an association, within this group, between these languages and some forms of abstract or reflective discourse.

The metalinguistic interviews also suggest that some of these choices were relatively automatic. Participants explained them in different ways: "Because of making a logical explanation, I found myself talking in French and English," "I like to use French and English for these words," "I have no reason," and "These words always come first to me in French or English." The comments suggest that the switches were not always consciously planned to achieve an immediate conversational effect. For some concepts related to thinking, reasoning, and planning, French and English terms may simply have been more readily accessible. Taken together, these recurring choices point to a possible relationship between language selection and conceptual framing. It does not imply that these concepts cannot be expressed in MA or that French and English are necessarily the participants' primary languages of thought.

4.5. Lexicalized evaluation

The fourth function covers cases in which the switched word itself expressed an assessment. Evaluation is a recognised function of CS (Halmari, 1993), but it can be semantic or pragmatic. The rule was simple: if the OLI supplied the judgement, the case was semantic; if the switch only emphasised a judgement already stated, it was pragmatic.

Example 7: Evaluating a wedding practice (cultural-celebrations discussion)

Rose: *dawnk* – ḥinnā ḥādī impossible kāynaf fī dzāyir. wa ḥādī bqāt ...

Yaser: dābā wa ḥādī hiyya-l **solution** lī laqāw. lhādā-s sabab ḥādā lī huwwa **best solution**.

Angela: ḥatta 'ihnā impossible tšir fī tūnis. baš tkūn bizarre 'al-aḥar.

Example 7: translation

Rose: So, for us, this is impossible in Algeria. And this has become ...

Yaser: Now, this is the **solution** they found. For this reason, for me, this is the **best solution**.

Angela: Even for us, it is impossible to happen in Tunisia. It would be really strange.

French *impossible* and *bizarre* and English **best** carry the evaluations. **Solution** alone is neutral; **best** turns it into an assessment. These choices also emphasise stance and invite agreement, but the judgement depends on the meanings of the words themselves.

Not every switched evaluation was coded as semantic. In some turns, the speaker made the evaluation in MA and then repeated or translated a key word in French or English. If the second form mainly added emphasis, the case was pragmatic. Negative concepts expressed in French or English to create cultural or emotional

distance were coded as sociocultural or pragmatic unless the selected word itself carried the assessment being analysed.

4.6. Borderline and excluded cases

The exclusions are as important as the positive examples. Travel and education terms such as **flight**, **assignment** and *les examens* occurred often, but they usually served as familiar shared labels. The pragmatic article discussed such forms under conventionality because they eased processing and helped speakers understand one another. A familiar domain alone was not enough to move them into the semantic category.

Example 8: Conventional labels rather than semantic specialization (travel discussion)

Amanda: mil-’awwil kunnā māšyīn – mil-’awwil kunnā māšyīn stawkhawlm. ḥāṭir laqīt stawkhawlm nafs’ il-**flight**. ma’ nāhā’ il-**cheap flight** kīma kīma brawksil wakull šay. nafs-il *hawstilkīfkīfrhīṣ* – bya’ ṭī **free breakfast**.

Dania: ‘anā kūn mašī ‘andī **assignments** wa les examens. kūn rānī **join**-atkum.

Example 8: translation

Amanda: From the beginning, we were planning ... From the beginning, we were planning to go to Stockholm. Because I found that the **flight** to Stockholm was just as **cheap** as the **flight** to Brussels, and everything else was the same. The *hostel* price was also similar—cheap—and it offers **free breakfast**.

Dania: If I did not have **assignments** and exams, I would have “**join**-atkum” (join you all).

The terms name travel and study referents, but the local evidence points mainly to familiar, easy-to-access labels. Conventionality has semantic effects, so the boundary is not absolute. In this turn, however, ease of shared understanding is the main function, and the case remains pragmatic.

Borrowing status led to further exclusions. French-origin discourse markers supported as established by regional inventories and, where available, by participant comments were removed before semantic analysis. Names of applications, countries, restaurants and people were also excluded when they could not be assigned reliably to one language. A single item with no contrast, recurrence or participant evidence could not establish a semantic function.

5. Discussion

5.1. What the semantic taxonomy explains

The results support semantic CS as a separate but overlapping area of multilingual meaning. It was not rare, and it was not used as a label for unexplained cases: the broader project identified 535 semantic CS functions across all eight recordings. The present study separated these cases into domain-linked terminology, experiential frame differentiation, reflective and abstract framing, and lexicalised evaluation. It did not assign new frequencies to those four functions.

The four functions are not identical. Domain-linked terminology concerns access to institutional and technical words. Frame differentiation concerns close equivalents that belong to different scenes of experience. Reflective framing helps speakers build explanations and abstract ideas. Lexicalised evaluation carries judgement in the selected word. In each case, lexical or conceptual meaning is more central than discourse organisation, fluency or identity.

The findings do not assign whole fields to one language. English does not “own” technology, and French does not “own” business. MA was the main language in every topic, and the MA form for technology was common. The differences are limited to selected lexical sets within MA-dominant talk. Reflective framing likewise does not imply that intellectual thought belongs to French or English. Most of the reasoning in Example 6 is in MA; the OLIs label specific ideas that had become familiar through education.

5.2. Why listedness changes the analysis

Borrowing cannot be determined simply by checking a published list. A form that appears French may already be established in MA, and forms differ in how firmly they are established. Treffers-Daller’s listedness criterion is useful because it does not treat length, frequency, or formal integration as decisive. Chan (2025) similarly

shows that single items may be integrated to different degrees across constructions. In this study, listedness was assessed using two sources: regional inventories provided community-level evidence, while stimulated-recall comments provided speaker-specific evidence for selected forms.

Participant comments added information that regional inventories could not provide. Speakers could indicate that a form felt habitual, belonged to their Arabic variety, or was not experienced as a switch. They might also know an MA alternative but find the French or English form easier to access. These comments therefore helped distinguish individual familiarity from community-level classification. However, they were considered together with the transcript and published sources rather than treated as decisive on their own.

When the available sources were absent or produced conflicting evidence, the form was retained under the neutral OLI label. This allowed it to remain part of the discourse analysis without making a stronger claim about its historical status than the evidence justified. The label was particularly useful for grammatically mixed forms and for items whose status may differ across Tunisian, Moroccan, and Algerian Arabic. This procedure may exclude some genuine current switches, but it reduces the risk of treating an established borrowing as a new semantic choice.

Listedness also affects the interpretation of Table 5. The table is not simply a list of switches; it presents lexical distributions after the borrowing audit, and the rows vary in evidential strength. *Tax* and *application* provide the strongest contrasts, *impact* is included only as an illustrative case, and technology shows why an entire domain should not be assigned to a single language. A zero in the MA column means only that the form did not occur in this corpus. It does not mean that MA lacks an equivalent or that another language is better suited to the concept.

5.3. Relation to pragmatic, linguistic, and sociocultural functions

The four broad categories were used as analytical distinctions. Pragmatic functions concern the organisation of information and interaction; semantic functions involve lexical or conceptual content; linguistic functions relate to production pressure; and sociocultural functions concern how speakers position themselves in relation to identities and values. These distinctions are useful for coding, although more than one function may operate within the same turn. As Slotta (2025) also notes, semantic and social meaning are closely connected in multilingual practice.

Lexicalised evaluation makes the overlap especially clear. A French adjective can express a negative judgement while also drawing attention to the speaker's stance. Under the main-function rule, the case was semantic when the adjective itself supplied the assessment; it was pragmatic when the switch mainly drew attention to an assessment already expressed. Technical terms created a similar coding boundary. A term was semantic when it named the process under explanation and sociocultural when it mainly displayed expertise, prestige or an international identity.

The pragmatic article examined how switching organised discourse, marked stance and provided familiar shared labels. This article studies a different set of cases: terms that named domain relations, separated experiential frames, helped formulate reflection or carried judgement. The studies share participants, recordings and the broad coding framework, but they use different coded cases and answer different questions. Stating that relationship openly avoids presenting shared data as a new corpus.

5.4. The study-abroad setting

The Hungarian setting probably affected the language balance. Participants reported greater exposure to English in study and work, while French usually had a stronger role in their home-country repertoires. English words may therefore have been easier to access in employment, software and university talk. The English patterns in this corpus should not be assumed to represent MA–French–English talk in Tunisia, Morocco or Algeria.

The setting also shows a repertoire in change. French and English compete in several lexical sets instead of dividing meanings neatly. **Budget** occurs equally in both languages; **account** and **contact** favor French; **tax**, **interview** and **meeting** favour English. These patterns fit different histories of institutional use, but colonial history and globalisation are not the only explanations. Current study and work experience also matter.

A future study could compare these students with similar speakers in the Maghreb. Matching groups by country, field of study and age, and using the same topics in both settings, would show whether the four functions

recur but draw on different languages. A systematic listedness task for every target item and participant would also separate a stable semantic function from the language used to perform it.

6. Conclusion

The analysis found four recurring semantic functions in MA–French–English talk: domain-linked terminology in business, technology and power; experiential frame differentiation; reflective and abstract framing; and lexicalised evaluation. The speakers used their three languages to name institutional processes, present referents from different viewpoints, build social explanations and express judgement.

The method is as important as the four labels. Borrowing decisions drew on regional inventories and, for selected forms, comments from the speakers themselves. Examples were compared with other speakers and contexts, and the boundaries with pragmatic, linguistic and sociocultural functions were stated in advance. These checks do not remove uncertainty, but they show where it remains.

The four functions describe this corpus; they are not a universal list of semantic CS. They were not independently second-coded, the participants' language use was shaped by study abroad, and listedness was checked with participants only for selected items. Within those limits, the data show recurring semantic uses without treating one language as superior or assigning a whole domain to it.

The main limitation concerns reliability. Cohen's $\kappa = .7432$ applies only to the four broad categories. No second coder independently placed the 535 semantic cases into the four functions reported here. Recurrence across participants, interview evidence and clear decision rules improve the analysis, but they do not replace subcategory-level ICR. The four functions should therefore be read as an author-coded qualitative account that needs replication, not as a reliability-confirmed distribution.

The borrowing audit used both published inventories and participant-specific checks, but neither source was complete. The published work is stronger for Tunisian and Moroccan Arabic than for the Algerian variety in this corpus. Only nine participants were interviewed, and they commented on selected items from their recordings. The study did not test all 96 excluded forms with every participant. Some unresolved OLIs may already be stored as ordinary words for particular speakers, while an excluded item may still be used as a current switch in some contexts.

The sample is small, highly educated and mainly Tunisian. The participants were proficient trilinguals who switched languages often and reported positive attitudes towards switching. Speakers with different abilities or attitudes may show other patterns. Gender, field of study and national background may also affect lexical access, but this corpus cannot support subgroup comparisons.

Study in Hungary may have increased exposure to English and changed its balance with French. The prompts also gave some lexical fields more opportunity than others, and the sessions differed in length, number of speakers and topic coverage. Differences among recordings were therefore not tested statistically.

The interviews covered nine participants and were recorded in written notes rather than audio. They provide useful speaker-level evidence, including evidence about selected items, but they remain selective and retrospective. The counting unit is also a function rather than a raw word. The percentages describe coded work in this corpus; they are not a full lexical frequency profile or population estimates.

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Appendix A

Loanwords in Maghreb Arabic Found in the Corpus

Loanword	Origin	IPA	English meaning
وتاج	French	/ġātū/	Cake
اروتسر	French	/rustūrā/	Restaurant
اساورك	French	/kurwāsā/	Croissant
ريدي جيرف	French	/friḡidayr/	Fridge
يتي غابس	Italian	/sbāḡitī/	Spaghetti
سومريت	French	/tirmus/	Thermos
تيني ل	French	/linayt/	Glasses
جور	French	/rūḡ/	Red
تيلموأ	French	/’ ūmlayt/	Omelette
نوط	French	/ṭun/	Tuna
موتسوك	French	/kustūm/	Suit
زني ج	English	/ġīnz/	Jeans
شولع	Berber	/’ allūš/	Lamb
قوالقب	Turkish	/baqlāwah/	Baklava
يسكسك / سكسك	Berber	/kuskusī/ /kuskus/	Couscous
ان ي جوك	Italian	/kūḡīnā/	Kitchen
وغيب/وريب	French	/bīrū/ /bīḡū/	Office
يبالبل	Turkish	/lablābī/	Traditional chickpea-soup dish
وقوقز	Berber	/zgūgū/	Aleppo pine seeds
قلومرش	Spanish	/šarmūlah/	Traditional Sfaxian dish
قزولب	Italian	/blūzāh/	Traditional blouse
نطفق	Turkish	/quṭṭān/	Caftan
قوقرب	Berber	/barqūq/	Traditional Maghrebi dish
كيرب	Turkish	/brīk/	Turkish pastry
قبروش	Turkish	/šūrbah/	Soup
هيلجنأ	French	/’ unglayh/	English
ويسكينيوك	French	/kūniksyaw/	Internet connection
كاف	French	/fāk/	Faculty
سنسيل	French	/līsuns/	Bachelor’s degree
رتسام	French	/māstar/	Master’s degree
جاسم	French	/masāḡ/	Message
هيس هيب	French	/pay say/	Computer
ريفوش	French	/šūfayr/	Driver
وغتيم /ورتيم	French	/mitrū/ /mitḡū/	Urban rail
يسكت	French	/taksī/	Taxi
ارت/اخت	French	/trā/ /tḡā/	Train
غاق ال	French	/lā gāḡ/	The station
هيج غاشيليت	French	/tilīšāḡḡayh/	To download
ازيف	French	/vīzā/	Visa
اتسيف	French	/fīstā/	Jacket
سنوكاف	French	/vakawns/	Holidays
جايوف	French	/vuyāḡ/	Trip
تسيسار	French	/rāsīst/	Racist
اجيد	French	/dayḡā/	Already
كنود	French	/dawnk/	Thus
ونيس	French	/sīnaw/	If not
تسوج	French	/ḡust/	Just
يم	French	/may/	But
غوي اد	French	/da yawḡ/	By the way
يي اس	French	/sā yay/	That’s it
سولبأ	French	/’ u plūs/	Moreover

Loanword	Origin	IPA	English meaning
مهم وك	French	/ku maym/	Even so
اكوت أ	French	/ʔ u tū kā/	Anyway
ابوروا	French	/ʔ awrawbbah/	Europe
لارينيج أ	French	/ʔ u ġīnīrāl/	In general
نوفيلت	French	/taylīfawn/	Telephone
ليتو أ	French	/ʔ ūtayl/	Hotel
لامرون	French	/nūrmāl/	Normal
لايسيبس	French	/spīsyāl/	Special
رتم	French	/mitr/	Metre
جاتس	French	/stāġ/	Training
تيلوت	French	/twālayt/	Toilette
فصالب	French	/blāṣah/	Place
فكالب	French	/blākah/	Sign
راك	French	/kār/	Bus
ايديم لاشوس	English	/sawṣal mīdyā/	Social media
دنكيو	French	/wīkind/	Weekend
مليف	French	/film/	Film
ويديف	French	/vīdyaw/	Video
تنترن	French	/ʔ intarnit/	The Internet
نيلنو أ	French	/ʔ unlīn/	Online
نيلفو أ	English	/ʔ uflāyn/	Offline
نيمابود	English	/dūbāmīn/	Dopamine
لروبسنارت غوبسناخت	French	/trānspawr/ /tḥānspawġ/	Transport
تنتروف	English	/furint/	Hungarian forint
مارت	French	/trām/	Tram
يكاو أ	English	/ʔ awkay/	OK
سويكاوب	Spanish	/būkādyus/	Traditional Spanish sandwich
نيتور	French	/rūtīn/	Routine
سامس يرك	English	/krīsmas/	Christmas
يف يو	French	/wī fī/	Wi-Fi
وس يربس	French	/ʔ isbrissaw/	Espresso
لتسوه	English	/hawstil/	Hostel
نافراب	French	/bārfān/	Perfume
دنوكميم	French	/mikḥawnd/	Microwave
ونوميك	English	/kimawnaw/	Kimono
روتوم	French	/mawtawr/	Motorcycle
ازتيب	French	/pītzā/	Pizza
ديفوك	English	/kuvid/	COVID
فلاص	French	/ṣālah/	Salon
قطوف	Turkish	/fūṭah/	Napkin
يراس	English	/sārī/	Sari
زلفاو	English	/wāfilz/	Waffle
لزنش	English	/ṣnitzil/	Schnitzel
لاس	French	/sāl/	Room/gym
نجاط	Greek	/ṭāġin/	Tajine

Note. IPA = International Phonetic Alphabet