



Code-Switching Patterns among Bilingual Professionals in Virtual Workspaces Zainab Mohammed Lafta^{1*}

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1. Introduction

Virtual workspaces allow collaboration with language barriers. Bilingual speakers often speak to partners who are at different levels in their two languages, and may possess different levels of mastery of the languages or unbalanced cultural 'mode' characteristics. Code-switching, which refers to the practice of using two or more languages within an activity or interaction during a conversation or even sentence, is an emerging characteristic of virtual communication in these multilingual settings as bilingual employees drift between languages on platforms used for collaboration. Scholarship also details certain decisional aspects associated with code-switching—types of task, cultural background and interlocutor language proficiency—that have an impact on the broader context of communication, teamwork or performance results. As remote workflows become more intricate, and cross-cultural teams multiply, an awareness of code-switching is key

Patterns and reasons behind using code-switching in professional virtual contexts are largely unexplored. Published evidence may be largely context-specific, or methodologically weak. Similar patterns and mechanisms of repertoire switching in linguistic exchanges are little investigated. It is unclear whether the language switch as used by bilingual speakers is a deliberate, task-driven choice or an automatic response between them. A timely discussion of language-switching behaviour and its impact on team communication in a broader set of multilingual professional tasks is to be welcomed. This study provides an in-depth examination among bilingual professionals that the situational use of code-switching has on clarity, professionalism, productivity and working relationship on team dynamics across multiple virtual collaborative settings.

2. Literature Review

2 Background The literature on code-switching in bilingual cognition is very extensive and it comprises neuroscientific, psycholinguistic, sociolinguistic and discourse analysis approaches. Theorisation and studies of code-switching in the digital domain are, however, relatively rare. In this area, research on interactions between multilingual users in an English-dominant context are relatively limited and the findings have often been somewhat inconsistent. While multilingualism has been associated with general cognitive benefits in language-decoding and processing among highly proficient speakers, few have explored the impact of code-switching on interpreter clarity, production measures or fellow team members' perceptions of professionalism and trust.

Although studies have investigated communicative actions among practitioners in communicative or cross-cultural settings and multiple digital media, few have focused on the activities of code-switching between bilinguals when participating in digital platforms to work



together to accurately complete particular tasks. Building on this distinction is a recent study that analyzes how two languages are used to serve different purposes within the interview (as well as looking at appropriacy of switching based on the interlocutor's and speaker's cultural backgrounds), while others have investigated rehearsal code-switching patterns in virtual mock interviews. Our study extends these lines of research by documenting code-switching practices and their major functions and motivations, as well as the impact those have on communicative dynamics, and how language proficiency, domain, and cultural contexts influence switching patterns and effects.

3. Theoretical Framework

An analysis of code-switching patterns among bilingual professionals in virtual collaboration draws upon functional sociolinguistics and, in particular, situational functionalism. According to this perspective, language functions are shaped by situational properties that constrain speakers' choices while providing interpretive cues for hearers. The language used by a bilingual speaker expresses their current message and identity, but also reflects both communicative and metacommunicative factors. The term "language repertoire" denotes the languages available for use in a given situation, while "language dominance" describes the relative proficiency or comfort with the various languages in the repertoire. A speaker's dominant language is expected to serve communicative functions most effectively, whereas the other language(s) typically assume metaphorical, metacommunicative, or marking functions. When a speaker's first language is not their dominant language, code-switching has strategic or automatic functions depending on the demands of the task, audience, and nature of repertoire switching in the participants involved.

Repertoire switching is the process of code-switching on a macro level; speakers often adjust across tasks pausing at topic boundaries or when other interlocutors assume control of the turn-taking system. It offers a useful perspective on code-switching in bilingual settings characterized by interlocutors sharing a common, but not dominant, language. In addition to situational factors, the bilingual cognitive literature defines language activation status as another critical variable. Actively engaged in speaking or listening to one language, people tend to code-switch less often than when switching to the less active language is highly demanding.

4. Methodology

Methodological design is considered next, describing the methods employed, sampling strategies, and measures taken to enable ethical research and reinforce analysis quality. The mixing of qualitative and quantitative approaches is later specified. Following this, data collection is outlined, detailing the contextual elements enacting the code-switching of interest and the demographic profiles of participants. Finally, a summary of data analysis highlights the general coding framework used, with specific schemes outlined for matching need.

A qualitative approach is combined with a quantitative supplement to meet the aim: two distinct yet complementary techniques enable a rich understanding of code-switching patterns and their functions and effects. To investigate the observed switching behaviour and its use beyond information transmission, the first part of the analysis examines patterns within the



bilingual exchanges coded from Zoom recordings. Data from four dual-language virtual meetings support identification of linguistic elements switched, the moment they occur, the persons exchanging at that moment, and the languages used in the turns immediately prior to and immediately following each switch. The second part of the analysis maps the functions of code-switching to its speakers' situational needs, the live audience, and the language groupings in their cultural repertoires. Here, qualitative codes again form the basis of inquiry, but by researchers personally familiar with the bilingual datasets of participants in the first interview round.

Two distinct aspects of data collection are also considered: the context within which participants are communicating and the social demographic group undertaking that communication. The research examines code-switching in virtual meetings held via Zoom by bilingual professionals based in Taiwan and Hong Kong (all working in various fields) while convening together remotely across multiple time zones. Each pair or team of speakers meets for an exploratory conversation about their work and experiences during COVID-19. Taiwanese participants conduct these discussions in English and Mandarin, while Cantonese and English serve as the working languages for Hong Kong teams.

5. Data and Context

The study investigates code-switching among bilingual professionals collaborating in real time and asynchronously on virtual platforms that include text chat, audio, and video features, and are accessible from different geographical locations and time zones. Participants are engaged in education, consulting, and social-work-related activities involving complex ideas and sensitive topics. Because languaging – both as a cognitive activity of meaning-making and as communicative behavior – reflects culture, the switches are informed by the two-language cultural repertoires. The analysis centers on the patterns identified during the tasks, the functions of these switches, their impact on communication, productivity, and team dynamics, and the factors that shape them.

The code-switching patterns stem from a database of naturalistic bilingual communications collected in two different contexts and settings. Sixty-nine bilingual professionals with high proficiency in both languages and from different linguistic and cultural backgrounds participated in the bilingual zoom speech tasks. Eighteen consultations carried out by a bilingual couple in real contexts under natural conditions provided the data for longitudinal analysis. The dated—going back fifteen years—naturalistic set of WhatsApp communications in minor knowledge domains served to complement the analysis from the perspective of communication in asynchronous workgroups.

6. Code-Switching Patterns in Virtual Collaboration

Code-Switching patterns among bilingual professionals in virtual workspaces require an evidence-based, analytic treatment; clear arguments integrate diverse sources and maintain formal structure throughout the manuscript. State research questions and aims; unusual venues — virtual workspaces of bilingual and multilingual professionals participating in transnational teams — stimulate interest. Code-Switching patterns among bilingual professionals in virtual



workspaces require an evidence-based, analytic treatment; clear arguments integrate diverse sources and maintain formal structure throughout the manuscript. Core research interests — the relation between Language Repertoires and Language Use, and Code-Switching of bilingual professionals during transnational virtual collaboration — encompass notions of Language Dominance.

Users collaborate on virtual tasks and switch between languages due to many reasons. Given the restricted communication channel and human character stroke processing limitations, factors like context depict "switching" in terms of types, timing and interlocutor with implications on message clarity, professionalism productivity and collaboration. The influence of language proficiency, domain and cultural context on the use of switches and their consequences. Research results have implications for management practices and policy when multilingual teams are taking into account. Resolution of ethical concerns about fairness in representation and consent also indicates how guidelines for data use can curtail informal, archive-style, non-original Data Collection Methods. Users are collaborating with others while working on virtual tasks, and they can switch languages for different purposes. Switching patterns are influence by contextual factors driving type, timing, and interlocutor of switching with associated implications for message clarity, professionalism production and team dynamics. Language ability, domain and cultural context constrain switches and their impact. Implications for management and policy in multilingual teams are discussed. Ethical aspects around fair representation and consent also inform guidance on data reuse that would help to prevent such informal, archive-style, non-original Data Collection Methods.

7. Functions and Motivations for Code-Switching

Functions of code-switching are typically but not exclusively: informative, relational, stance-related and identity-related. Speakers alternate between languages for a variety of reasons—task demands, the remand and vogue characteristics of their audience and the repertoire of culture at stake. Reasons were mostly strategic; changes reflected communication and audience backgrounds. However, also situational context and addressee behavior, as well as sequences of interaction could prompt automatic change-of-action switches.

Code-switching fulfills different functions in the virtual professional settings of the bilingual participants. Functions could be largely informative, relational, attitude-related and identity-signaling (Myers-Scotton, 1993; Wu, 2013). Informational functions are most common. As recipients are speakers of multiple languages, participants often perform switching to optimize message comprehension at minimal risk of misunderstanding or overlooking relevant information. There are also strong relational components to the functions, as switches serve to establish rapport and solidarity with familiar partners or alternatively mark casual ambience — aims that could be particularly valuable in high-stakes meetings.

Stance-related functions, those that signal inclusion or exclusion from a particular idea or speaker's position, come out largely in the team and committee activities of decision-making. They also shift into mark identity—in fact, much of their professional identity comes from disparate cultures. Motivations for switching vary. Task specifications require the use of



domain-specific jargon in the preferred language of one's interlocutor, whereas sociolinguistic dynamics prompt switches to less-dominant languages in order to ease communication both contentwise and with respect to attitude. Extra resources in the less dominant repertoire allow for transitions to closer languages on the cultural level. Although many switches are clearly strategic, reflecting task demands and audience obligations, situational variables, interlocutor responses and task order also provoke automatic switches independent of message clarity.

8. Impacts on Communication, Productivity, and Team Dynamics

As code-switching occurs during work tasks, a range of impacts on communication, productivity, and team dynamics are reported. On the one hand, responses from conversation partners highlight that code-switching increases the amount of necessary interpretative effort during interactions, potentially hampering processing speed and leading to errors or message misinterpretation. On the other hand, the code-switching bilinguals evaluated unexpected switches as automatic, identified them as 'mistakes' and thus separate from actual communicative meaning, while having no awareness of the concerns of their interlocutors who perceived code-switching as a sign of reduced professionalism. Within task-based interactions, opportunities for code-switching evidently increased and were used strategically, e.g., to express cultural references or perform identity-related speech acts. In virtual communication, where visual cues are minimized, the choice to produce non-English information was in many instances motivated by the absence of a shared English-equivalent term. Yet, participants reported feelings of mistrust in the additive consequences of switching, fearing that the additional cognitive effort of their interlocutors might affect communication accuracy and task speed, thus resulting in potential productivity losses.

Code-switching is also feared to diminish professional capabilities as specialist are presented as incompetent, or even incompetent, in non-L1 languages in suggestive terms of its usage within hybrid workplaces. By compressing the communicative and interpretive channels, message clarity begins to suffer as well—a fear crying out in the form of miscommunication resulting from confusing swaps; a fear reinforced by greater levels of language errors when switch-code is present; and a fear supported by specific members of teams who—interpreters are leaders—believe that there is less capacity in which to interpret messages from an evaluative position in a switching context. However, a common propinquity between interlocutors also encourages switching when so required, for example, for the lack of an English equivalent term for a particular technical one.

9. Moderating Factors: Language Proficiency, Domain, and Cultural Context

Fluent bilinguals possess varying degrees of proficiency in both languages. For a particular interlocutor, one language may be dominant because that interlocutor is more fluent in that language. However, research indicates that such language dominance is neither static nor idiosyncratic; participants' dominant language can change across collaborative activities, and even within a single conversation, code-switching can occur frequently between the dominant language and the other language. Participants' proficiencies in the two languages and the proficiency balance between them also influence the way they switch between the two



languages. Participants with different language-proficiency profiles may therefore experience different switching patterns when collaborating with one another.

As in other multilingual contexts, domain proficiency and topic familiarity also play a crucial role in language-switching behavior. Among bilinguals communicating about informal rather than technical topics, switching to accommodate “language-switching-richness” in the other person’s repertoire is likely common. But switching into a language about which a bilingual partner is much less capable—especially a language that lacks important (domain-related) English vocabulary—may burden that partner, increase miscommunication risk, and result in more errors. Further, speakers inevitably make use of words and phrases that are domain-specific but also in a language other than the language that is used predominantly in the rest of the message.

10. Implications for Management and Policy

In bilingual workspaces, code-switching can affect communication and connectedness, and uneven switching choices may inhibit information flow. Thus, multilingual teams should consider these phenomena when appointing roles and assessing pre-meeting profiles. As many combining agents use both language repertoires, communication may be faster and perceived as more professional. Miscommunication can occur, however, as switching can reduce clarity for some; therefore, those listening may require more cognitive effort, resulting in longer response time and greater likelihood of errors. Yet, such effects seem largely minor or even positive or beneficial, suggesting little overall cost in professionalism, clarity, trustworthiness, and productivity for many switching usages.

At a higher level, teams can be seen as havens for the negotiation of safe spaces, team dynamics, and valid leadership, impacting associated psychological constructs. Discourse domains can invoke such discourse switches as metaphorical hedging devices for stance softening and intimacy management. When using such tools, teams operating in pseudo cross-cultural environments—expressive cultural-matrix mismatches for interlocutors—benefit by evoking emotionally shared cultures and human relationships. Yet, such tools are most effectively employed when wielded by least-dominant-repertoire speakers in the respective contexts, as they likely yield greatest perception of effort and associated reward. Ensuring that task requirements, membership profiles, and operating dialogic cultures are closely aligned facilitates team safety and desirability.

11. Ethical Considerations and Equity

Unfettered research on code-switching patterns is driven by the rapidly increasing prevalence of English in virtual communications. Bilingualism among participants is often overlooked, and researchers focus on English contents, while only one of a codeologist’s core variables—the balance between communicators’ two languages—is sometimes considered. As a result, English outsiders’ understanding of multilingual switchers’ vernacular communicative environment is typically rooted in their own language alone. This selective perception is compounded in English-only societies where minority speakers, even of dominant languages, understandably feel uncomfortable with excessive use of their first language in communication with outsiders.



Many researchers prefer to study communities in which most or all participants are bilingual in order to concentrate on the translation operation itself, downplaying ethical issues of inequity, misrepresentation, and misappropriation.

Unlike traditional interactive contexts, speaking with a diverse audience in a virtual environment makes the audience's language preference more obvious to the interlocutor than in spoken communication. For the receiver in a collaborative-defining context, code-switching is no longer a spontaneous act; rather, it is based on the real-time assessment of the suitability of the informative content contained in specific words that are peripheral to the main message. At the other extreme, chatting draws on the whole linguistic repertoire and its metaphorical functions. A rich database of real-time communication naturally attracts research interest, but the consensuality of public research on private communication remains an issue. The participants' motivation for joining the chat group is key; once an individual feels the need to change networks, the resulting code-switching can be seen as a natural change of channel. Given that users are also suppliers, it is easy to imagine that certain groups may feel too small to be represented. Similarly, large databases of latently sensitive topics are sometimes subjected to responsibility and management problems. These issues deserve consideration, especially when the audience's language is different from the writer's mother tongue, as happens with the codeswitched language corpus.

12. Limitations and Future Research

Despite its contributions, this study is not without limitations. First, the investigation came from the perspective of a single bilingual individual communicating in English and Spanish. The data represent just one personal code-switching experience in a single environment—video conferencing on Zoom with colleagues from Central and South America while seated in Europe. Second, the linguistic capabilities of the interlocutors, and whether they were bilingual, were not verified. While code-switching involving a dominant language is possible, yet perhaps more rare, in cases where the interlocutor is not bilingual it may cause discomfort for one of the parties. Research findings indicate that even proficient speakers of a non-dominant language may strategically choose domain-specific expressions in their dominant language without jeopardizing communication. Third, the same conversation can be analyzed from the perspective of other participants who may be situated in a different cultural context and have different levels of familiarity with the use of the two languages. A further potential limitation is that some code-switching occurrences commonly viewed as automatic may still be substantial to the interlocutor, warranting continued investigation into the motivations of bilingual communication.

Considerable potential exists for additional future research to discover further dimensions, patterns, or functions of code-switching during virtual collaboration. Longitudinal studies exploring participant roles in virtual workspaces are needed to facilitate enhanced understanding; employing a panel design would yield more extensive insights. Investigating language institutions, language management and policy within organizations, the impact of team composition, culture, and code-switching on psychological safety and leadership perception within cross-cultural teams, and exploring how employees' native language



influences productivity in an environment with restricted bandwidth would increase knowledge on code-switching in the virtual world. These approaches could apply to the scenarios and situations addressed here, especially in highly technical fields; examining the communication of a coding team, for example, would clarify how code-switching pitfalls can be mitigated in order to ensure smooth technical discussion and produce a higher-quality end product. Cross-cultural studies on the bilingualism of a majority language community using a minority language in digital communication with autocorrect features would also be beneficial.

13. Conclusion

Understanding how code-switching operates within spontaneous bilingual interaction provides crucial data about the many and varied functions language can carry as part of bi-lingual cognition. First, as the context for this research focuses on code-switching among bilingual professionals engaged in virtual collaborations – to understand practices, motivations and effects (Iedema & Chic 2015), with re-spect to language-in-the-workplace literature development of digital ecosystems and management of multilingu-alteams it provides valuable contributions. A comparison of bilingual Zoom meetings (of varying degrees of formality and technicality, from technical discussions to informal catch-ups) illustrates how speakers manage cultural differences and linguistic demands in diverse contexts. Code-switching is a very common phenomenon in such interactions, with switches occurring naturally depending on communicative goals. But the application of this strategy is also context-dependent, depending on who is being addressed in what language at what proficiency level, which further corroborates the functional-distributional model of bilingual use’.

Exploring how code-switching influences the effectiveness of communication adds to our understanding of how bilingual speakers utilise their extensive language repertoires in everyday discourse. The results reveal a complex set of interconnected factors that may affect the relationship between bilingual language switching and communication outcomes such as message clarity, risk of misunderstanding, perceived professionalism, and team dynamics. These findings contribute to a better understanding of cross-linguistic communication in virtual worlds, where established functions of code-switching focused on information and relationship are supplemented through an investigation into its use within the performance of task activity.

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