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ADAPTATION OF LANGUAGE LEARNING STRATEGIES AMONG HYPERPOLYGLOTS: THE ROLE OF SOCIOCULTURAL CONTEXTS AND RESOURCES

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Abstract
This study investigates how hyperpolyglots—individuals proficient in six or more languages—adapt their language learning strategies in response to sociocultural contexts and resource availability. Using a qualitative-dominant mixed-methods design, the research draws on in-depth interviews and an adapted Strategy Inventory for Language Learning (SILL) questionnaire completed by 30 hyperpolyglots from diverse linguistic and cultural backgrounds. Thematic analysis revealed five key findings: strategic flexibility across sociocultural contexts, the central role of social interaction as a motivational and practical scaffold, creative innovation in resource-scarce environments, language-specific strategy differentiation, and integrative, metacognitive planning. These findings extend previous models of strategy use by foregrounding the role of culture, community, and learner-generated tools in multilingual success. This study contributes to sociocultural theory in applied linguistics by highlighting how real-world conditions and interactions shape strategy selection and effectiveness.

Keywords: hyperpolyglots, language learning strategy, metacognition, sociocultural context

Introduction
The phenomenon of hyperpolyglotism—the ability to acquire and use six or more languages with a high degree of proficiency—continues to captivate linguists, cognitive scientists, and language enthusiasts. This rare linguistic aptitude not only pushes the boundaries of human cognitive capacity but also challenges traditional models of language acquisition. While foundational studies have extensively documented the cognitive and metacognitive strategies employed by hyperpolyglots (Erard, 2012; Griffiths & Oxford, 2021), there remains a critical gap in understanding how these strategies are shaped by and responsive to diverse sociocultural contexts and varying levels of material resources.

This oversight is particularly notable in light of the increasing recognition that language learning is not merely an individual cognitive endeavour but a fundamentally social and context-sensitive process. As articulated in sociocultural theory (Lantolf, 2000; Vygotsky, 1978), language acquisition is mediated by social

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interaction, cultural tools, and the learner's participation in communicative practices. Research in applied linguistics has further reinforced the importance of ecological approaches to language learning, which situate learners within specific environments marked by opportunities and constraints (Kramsch & Steffensen, 2017; van Lier, 2004).

Contemporary reviews of hyperpolyglot research have identified a persistent overreliance on decontextualized cognitive models, often neglecting the interplay between learners and their sociocultural surroundings (Chen et al., 2024; Juanda et al., 2024). Although metacognitive strategies such as planning, self-monitoring, and error correction are well documented in the literature (Oxford, 2017), much less is known about how hyperpolyglots recalibrate these strategies when encountering structural obstacles, such as the limited availability of learning resources for less commonly taught languages, or when navigating between immersive and non-immersive environments.

This imbalance in the literature limits the ecological validity of findings, particularly in global language learning contexts characterized by uneven access to native speaker communities, instructional materials, and digital technologies. Moreover, the dynamics of multilingual development in hyperpolyglots demand methodological approaches that can account for both strategic flexibility and contextual embeddedness (Ushioda, 2020). Addressing this gap, Martiningsih and Mukarto (2024) have recently called for more methodologically rigorous and contextually nuanced studies that capture the lived experiences of hyperpolyglots across varied sociolinguistic terrains.

In response to these calls, this study investigates how hyperpolyglots adapt their language learning strategies across different sociocultural and resource conditions. Grounded in sociocultural theory (Vygotsky, 1978) and metacognitive frameworks (Efklides, 2011; Flavell, 1979), this research employs a convergent mixed methods design to address the following questions:

1. How do hyperpolyglots modify their language learning strategies in response to differences in sociocultural context (e.g., immersion vs. non-immersion settings) and resource availability (e.g., widely taught vs. less commonly taught languages)?
2. What role do social factors—such as access to native speakers, community engagement, and digital language networks—play in the effectiveness of these adaptive strategies?
3. What innovative strategies do hyperpolyglots develop to overcome challenges associated with learning less commonly taught languages?

By integrating qualitative narrative interviews with quantitative survey data, this study not only contributes to a more holistic understanding of hyperpolyglotism but also generates pedagogically relevant insights for language learners, educators, and policy makers seeking to support multilingual development in resource-diverse contexts.

Literature Review

Hyperpolyglots and metacognitive strategies in language learning

Hyperpolyglots possess exceptional skill in coordinating complex, multilayered language learning processes, a trait frequently attributed to their

proficient use of metacognitive strategies. These include planning, goal-setting, monitoring, and evaluating progress, which together foster self-regulated learning (Griffiths & Oxford, 2021; Zimmerman, 2002). Metacognitive strategy use is associated with the development of learner autonomy and sustained motivation (Oxford, 2017; Vandergrift & Goh, 2012). Chen et al. (2024) found that metacognitive awareness is key to managing multiple linguistic systems, especially in the context of long-term multilingual proficiency.

Erard (2012) was among the first to systematically document the strategic habits of hyperpolyglots, noting their use of reflective practices such as journaling, self-testing, and goal cycling methods used to balance and switch between languages. More recent studies have added nuance to this view. Martiningsih and Mukarto (2024) report that hyperpolyglots engage in dynamic combinations of cognitive and social strategies, adapting to context and learning demands. Likewise, Pawlak (2022) and Tseng et al. (2006) show that hyperpolyglots deploy strategic learning cycles to navigate cognitive load and maintain long-term motivation.

The ability to tailor strategies to specific language profiles further distinguishes hyperpolyglots. They often implement "goal rotation"—focusing on one language intensively while maintaining others—and "cognitive cycling"—alternating study modes to prevent fatigue and maintain curiosity (Griffiths & Oxford, 2021). Hu and Luo (2024) observe that successful multilingual learners integrate neurological, metacognitive, and sociocultural strategies to develop personalised learning narratives that enhance retention and cultural understanding.

The role of sociocultural context in language learning

While individual learner characteristics and strategies are undoubtedly important, the sociocultural context plays a critical role in shaping language acquisition processes. Sociocultural theory emphasises the importance of social interaction and immersion within the target language environment (Lantolf, 2000; Vygotsky, 1978). Learners who have access to native speakers, opportunities for cultural immersion, and supportive language learning communities tend to achieve greater proficiency, as they can practice and refine their skills in authentic communicative contexts (Ellis & Wulff, 2021; Ortega, 2013). Juanda et al. (2024) demonstrate strong correlations between multilingual proficiency and cultural awareness, suggesting that cultural understanding is integral to successful language acquisition. Their research indicates that social interaction and cultural immersion play crucial roles in developing and maintaining language proficiency.

For hyperpolyglots, exposure to diverse sociocultural contexts can offer valuable opportunities to adapt and refine their learning strategies. They can adjust their communication styles, incorporate context-specific vocabulary, and develop a deeper understanding of the cultural nuances embedded within each language. However, despite the recognised benefits of immersion and sociocultural exposure, much of the research on hyperpolyglots has focused on internal cognitive mechanisms, with less emphasis on the influence of external factors (Erard, 2012).

More recent research (e.g., Li et al., 2022; Tragant et al., 2019) has begun to explore the interplay between individual strategies and sociocultural context in hyperpolyglot language learning. Studies indicate that hyperpolyglots often rely heavily on available resources and adapt their approaches when learning less commonly taught languages or those with limited structured materials. For instance,

case studies of Indonesian polyglots reveal that learners adjust their strategies based on the sociocultural environment of the target language, often emphasising immersion and cultural understanding (Martiningsih & Mukarto, 2024). These learners demonstrate a high degree of flexibility and motivation, employing strategic approaches tailored to each language's unique challenges. Furthermore, neurocognitive research suggests that hyperpolyglots exhibit efficient language network organization in the brain, supporting their capacity to manage multiple languages and adapt to diverse learning contexts (Jouravlev et al., 2021).

Availability of learning resources and hyperpolyglot strategy adaptation

Resource availability is a key factor influencing language learning strategies, and this is particularly relevant for hyperpolyglots who often learn languages with varying levels of resource support. Hyperpolyglots often encounter situations where traditional pedagogical materials are scarce, especially when learning less commonly taught languages (Erard, 2012). This scarcity necessitates a flexible and adaptive approach to resource utilization. As observed by Erard (2012), hyperpolyglots often develop personalised learning tools, such as customised word lists, flashcards, and digital logs, to compensate for the lack of readily available resources. This proactive creation of materials demonstrates their ability to take ownership of their learning process and manage cognitive load effectively, even under resource-constrained conditions.

The ability to adapt strategies based on resource availability appears to be a distinguishing characteristic of successful language learners, particularly hyperpolyglots (Griffiths & Oxford, 2021). When traditional language learning materials are inaccessible, they may utilise alternative resources, such as online platforms, language exchange partners, and authentic materials like films and music (Liaw, 2008). This adaptability is consistent with the notion of strategic flexibility, which emphasises the importance of adapting one's learning strategies to suit the specific context and available resources (Oxford, 2017). Further research is needed to explore the specific ways in which hyperpolyglots evaluate and select resources, and how this process interacts with their broader metacognitive strategies.

It is also important to note that the digital transformation of language learning has introduced new dimensions to hyperpolyglot strategies. Saraeva et al. (2024) examine how digital platforms are reshaping language learning approaches, noting that successful learners effectively integrate digital resources with traditional learning methods. This integration has become particularly crucial in the context of less commonly taught languages, where traditional resources may be limited. Muryani and Yunus (2024) explore how digital vocabulary learning platforms are transforming the way language learners approach acquisition, noting that successful learners develop sophisticated strategies for navigating and utilising digital resources effectively.

Method

A qualitative methodology was used to explore the influence of sociocultural and contextual factors—such as immersion opportunities, cultural exposure, and access to learning resources—on the language-learning strategies employed by hyperpolyglots. Using in-depth interviews and a tailored questionnaire, this study

aimed to uncover the adaptive strategies of hyperpolyglots and how these strategies are influenced by diverse cultural and environmental contexts.

Participants

Thirty participants, self-identified as hyperpolyglots, were recruited using purposive sampling from online multilingual forums, polyglot conferences, and social media communities between February and July 2023. The recruitment strategy aimed to ensure a diverse sample, encompassing variations in linguistic backgrounds, nationalities, learning environments, and levels of exposure to immersive settings.

Participants ranged in age from 18 to 65 years, with a median age of 34 years. The gender distribution was relatively balanced, comprising 14 males and 16 females. The participants came from a variety of professional backgrounds, including language educators, translators, interpreters, business professionals, researchers, and self-taught language enthusiasts. Their educational levels spanned secondary education to advanced degrees, capturing a broad spectrum of formal and informal language-learning experiences.

Fluency levels among participants ranged from four to twelve languages, with a mean of approximately seven languages per individual. This linguistic diversity underscores the participants' extensive engagement with language learning and their applicability to the study's focus on hyperpolyglot strategies.

To further contextualise the participants' profiles, the study incorporated data on exposure to immersive language-learning environments. The sample included individuals with significant immersion experience, such as those who had lived or studied abroad, as well as those with limited or no exposure to immersive settings. This range allowed for an exploration of how contextual factors influence language-learning strategies among hyperpolyglots.

The age distribution of participants reveals that the majority fell within the 26–35 age group. The inclusion of younger and older participants, however, provided a more comprehensive perspective on how age-related factors may impact language acquisition and strategy adaptation.

Instruments and materials

Data collection relied on two primary instruments: a semi-structured interview and a customised language-learning strategy questionnaire. The semi-structured interview (Appendix 1) was developed specifically for this study to explore participants' language-learning strategies and how these strategies adapted according to varying cultural and contextual conditions. The interview questions encouraged participants to reflect deeply on their learning processes, particularly how they responded to scenarios such as limited access to native speaker communities or a scarcity of formal language resources. The interviews followed a semi-structured format with 10 open-ended prompts designed to elicit reflection on language learning strategy use across varying sociocultural contexts. These open-ended questions aimed to capture the nuanced experiences of hyperpolyglots in different sociocultural and environmental contexts.

To supplement the qualitative data, participants completed a 15-item modified SILL questionnaire (Appendix 2) designed to measure the frequency of metacognitive and adaptive strategy use across different language-learning contexts.

Items were rated on a five-point Likert scale (1 = Never, 5 = Always). The questionnaire included items on goal setting, resource creation, and social interaction strategies, allowing for comparison between self-reported frequencies and themes emerging in interviews.

Finally, a brief demographic and background survey (Appendix 3) was administered to gather information on each participant's linguistic profile, including language proficiency levels, years of study, and previous experiences with language immersion. This contextual information was crucial in analysing the data, allowing the study to account for individual differences and further illuminating how varying backgrounds influenced strategy adaptation.

Procedures

The study followed a structured but flexible data collection process, incorporating both interviews and surveys to comprehensively address the research questions. After identifying eligible participants, the researcher contacted each individual to explain the purpose and scope of the study and to obtain informed consent. Each participant was then scheduled for a one-on-one interview conducted via video conferencing, lasting approximately 60 to 90 minutes. The semi-structured format allowed the interviewer to follow the guide closely while adapting questions based on participants' responses, encouraging detailed, personalized accounts of their language-learning experiences. With participants' permission, all interviews were recorded and later transcribed for analysis. To ensure confidentiality, each transcript was anonymized before analysis.

Upon completion of the interview, participants were directed to complete the language-learning strategy questionnaire. The questionnaire was administered electronically and took around 15–20 minutes to complete. By combining qualitative interviews with a questionnaire data, the research design facilitated a comprehensive exploration of participants' adaptive strategies and the influences of sociocultural contexts on their language-learning processes.

Participants received detailed information about the study and gave their informed consent. Interviews and questionnaires were conducted in English. Data were securely stored and anonymised, and participants were assigned pseudonyms for reporting.

Data analysis

The interview transcripts were analysed using thematic analysis as outlined by Braun and Clarke (2006), incorporating six recursive phases: familiarisation, initial coding, theme development, theme review, theme naming, and final reporting. NVivo 12 software was used for systematic coding.

An iterative, inductive coding process generated 47 initial codes, which were clustered into seven overarching themes: resource improvisation (creation of learner-made materials in the absence of formal resources), immersion uptake (adaptation of strategies in response to cultural exposure), social scaffolding (reliance on peer and native speaker support), motivational regulation (self-directed techniques to sustain engagement), identity alignment (integration of language learning with personal or professional identity), strategy transfer (application of techniques across languages), and adaptive pacing (modifying study intensity based on context and language difficulty).

The SILL questionnaire data were analysed using SPSS 28. Descriptive statistics were calculated, and strategy frequency patterns were compared against qualitative themes. This enabled triangulation and differentiation between strategies rooted in personal reflection (qualitative) versus behavioural trends (quantitative),

Findings and Discussion

Findings

Contextual flexibility in strategy use

One of the most salient findings of this study was the extent to which hyperpolyglots adapt their strategies based on sociocultural context. Participants described not only abandoning one approach and adopting another when their environment shifted but also reconfiguring their learning frameworks to align with cultural expectations, language usage norms, and interpersonal dynamics.

Immersion in a native-speaking setting was a particularly powerful catalyst for strategic transformation. One participant, who had studied Japanese through online platforms prior to traveling, explained, "In Japan, textbooks went out the window. I started learning by copying expressions I overheard on the train." Another learner, who had relocated to Morocco, reflected: "I abandoned grammar drills and just started mimicking how people spoke to me in the market. It was faster and more intuitive." These transitions marked not just a change in technique, but in learning philosophy—shifting from rule-based to socially embedded approaches.

Participants also reported nuanced shifts in strategy based on perceived sociocultural expectations. For instance, a Korean-language learner noted, "In South Korea, I learned that being indirect is important in conversations. So I began practicing indirect forms instead of using literal translations from English." Others emphasised the importance of appropriateness and register, learning to distinguish between formal and informal speech, or adapting gestures and tone to mirror cultural norms. These reflections illustrate that hyperpolyglots were not merely learning languages but also cultivating intercultural competence through real-time strategic adaptation.

Moreover, learners adapted their strategies even within the same language across different contexts. A participant who learned Spanish in Argentina and later in Spain remarked, "In Buenos Aires, I relied on body language and slang to build rapport, but in Madrid, I had to adjust my vocabulary and tone to sound more polished and professional." This demonstrates that strategic flexibility extended beyond national borders to regional and sociolinguistic variation, emphasising a learner's ability to fine-tune their approach to align with the specific cultural-linguistic environment.

Social interaction as strategic infrastructure

Participants across the board emphasised the importance of human connection in sustaining language learning. These interactions were not only practical but were also described as emotionally and socially reinforcing. Learners highlighted how consistent social engagement provided both accountability and an authentic context for language use, which many found lacking in traditional classroom or self-study settings.

One participant reflected: "Language exchange partners kept me accountable. Without them, I wouldn't stick to my schedule. Knowing someone was expecting me to show up and speak motivated me to prepare and not skip days." Several participants also described how social dynamics improved their confidence and fluency, even in unfamiliar languages. A learner active in a Discord-based multilingual group observed, "Having a space where code-switching was normal made it okay to not be perfect. It was liberating." Another participant noted, "When I joined a WhatsApp group of learners, I could ask questions in one language and get answers in another—it trained me to think across languages."

These communities, whether digital or face-to-face, served as motivational ecosystems. Participants were more likely to persist with their learning when they were part of a shared practice or peer-driven challenge. One participant shared: "I had been stuck on Russian declensions for months, but then someone in my group suggested a song challenge—translate and perform. That broke the monotony and suddenly it clicked."

Importantly, social interaction also facilitated strategic discovery and exchange. Participants routinely reported picking up techniques from fellow learners. A Turkish-English bilingual shared, "I never thought about using children's books until someone in the group recommended it. Now it's one of my main tools when starting a new language."

This finding was consistent with quantitative data from the strategy questionnaire, in which 80% of participants reported regularly engaging in peer-based learning or language exchange. The qualitative insights add further nuance, revealing that these interactions helped learners navigate self-doubt, reinforce routine, and expose them to authentic usage not typically found in formal curricula.

Innovation in resource-constrained settings

Resource limitations—particularly when learning less commonly taught languages—emerged as a consistent challenge across participants. However, rather than deterring progress, such constraints often catalysed innovation. Participants described developing highly individualised and creative solutions to fill the gaps left by the absence of structured pedagogical materials. One participant explained their approach to learning Quechua: "There were no textbooks. I interviewed locals, recorded them, and then transcribed the conversations. That became my textbook." Another participant, who was learning Swahili, described a similar strategy: "I couldn't find formal courses, so I created transcripts of Swahili podcasts, made vocabulary lists, and turned those into flashcards." This form of grassroots material development was not isolated. Participants consistently reported drawing on a range of authentic and informal sources—including music lyrics, YouTube videos, Instagram captions, and blogs—to construct learning content that was culturally resonant and personally relevant.

The study also found that learners strategically combined analogue and digital methods in response to resource availability. Some participants developed hybrid systems: handwritten vocabulary journals paired with mobile apps for spaced repetition, or annotated grammar sketches supplemented by language learning subreddits and forums. These individualised systems provided structure while retaining the flexibility to accommodate diverse languages and levels of resource support.

This theme was strongly supported by the questionnaire data, in which 73% of respondents reported frequently creating their own learning materials or tools. Importantly, these efforts were not merely functional but often infused with creativity and cultural immersion. One learner recounted: "I make comic strips in the target language—it's fun and helps me remember dialogues. I even post them online and get corrections from native speakers."

These examples highlight not only the participants' strategic agency, but also their willingness to take full ownership of their learning process. This aligns with broader findings in the literature on self-regulated learning, where strategy customization and creative problem-solving are viewed as markers of successful language learning in resource-limited environments. Hyperpolyglots in this study exemplified such resilience, demonstrating that resource constraints can act as catalysts for innovative and culturally embedded learning practices.

Strategy differentiation and cross-linguistic adaptation

A nuanced pattern emerged showing that learners differentiate their strategies depending on the specific language being acquired and the context in which it is learned. This differentiation was influenced by various factors, including language typology, prior exposure, affective motivation, and the learner's goals in using the language. Participants did not adopt a uniform approach across languages; instead, they demonstrated flexibility in aligning their strategies with the cognitive and cultural demands of each language.

One participant remarked, "For Mandarin, I rely on visual memory and characters. For Spanish, I'm more auditory. It depends on how the language works and what tools I have." This perspective was echoed by several learners who noted that phonologically complex or non-Latin script languages required more intensive mnemonic and visual strategies, whereas familiar European languages could be approached through communicative immersion and listening-heavy techniques. Another learner, juggling Arabic, French, and Korean, observed: "Arabic requires me to memorize root patterns. For Korean, I study through dramas and mimic the tone. French is more academic, so I stick to newspapers and books."

Participants also explained that their strategies were shaped by the intended function of the language—whether it was needed for travel, academic research, professional interaction, or cultural engagement. This goal-driven adaptation was exemplified by a participant who stated: "I use Russian at work, so my strategy is more formal—I focus on reports and presentations. But for Italian, which I use with friends, I just practice speaking casually and texting."

Furthermore, many learners highlighted how their strategic repertoire evolved over time. Early in the learning process, they focused on memorization, structured drills, or translation exercises. As proficiency grew, their strategies shifted toward more fluid and creative modes of engagement, such as storytelling, debate, or cultural comparison. One participant reflected, "When I first pick up a language, I build the basics with flashcards. But after a few months, I start reading poetry or watching satire to understand tone and nuance."

In several cases, learners integrated knowledge across languages, using comparative analysis to reinforce grammar or vocabulary. A multilingual participant shared: "I compare how concepts like love or freedom are expressed in different languages I know. It deepens my understanding and keeps me motivated."

Discussion

This study set out to explore how hyperpolyglots adjust their language learning strategies in response to sociocultural contexts and the availability of resources. The findings demonstrate that strategy use among hyperpolyglots is not merely a reflection of personal aptitude or motivation, but rather an adaptive process shaped by immersion environments, social infrastructure, and material constraints. Drawing on sociocultural theory, the results provide new insights into how strategy deployment is embedded in context-specific interactions and influenced by access to tools and community.

In response to the first research question—how hyperpolyglots adjust their language learning strategies based on sociocultural contexts and resource availability—participants demonstrated a high degree of contextual flexibility. Unlike prior studies that primarily focused on metacognitive routines such as goal setting and self-monitoring in isolation (Griffiths & Oxford, 2021; Pawlak, 2022), this study illustrates that these routines are often reconfigured depending on cultural expectations, linguistic norms, and regional variation. Strategic adjustments were not only linguistic but deeply cultural, reflecting learners' efforts to interpret and embody culturally appropriate language use. For example, learners altered their strategies to reflect expectations of politeness, formality, and gendered language roles, showing that language strategy is inextricably linked with sociocultural navigation.

The second research question—concerning the role of social factors in influencing strategy effectiveness—highlighted the importance of social interaction as a strategic infrastructure. Participants drew not only on formal peer exchanges but also on informal digital networks and community spaces to practice, gain feedback, and build confidence. This study contributes novel evidence that language exchange groups, online communities, and even informal peer accountability systems function as scaffolding mechanisms, echoing Vygotsky's (1978) view of mediated learning. These social ecosystems supported not just language output but learner resilience, making language learning a shared, emotionally supported endeavour. Notably, many participants framed these social dynamics as the most valuable aspect of their learning process—more impactful than any textbook or app.

The third research question explored how hyperpolyglots address the challenge of learning less commonly taught languages. While past research has acknowledged the difficulty posed by resource scarcity (Erard, 2012; Oxford, 2017), this study documents in greater detail the creative processes learners use to overcome it. Participants demonstrated a remarkable ability to construct personalised and culturally grounded resources. These strategies ranged from compiling glossaries of idiomatic expressions sourced from community interviews to generating immersive learning environments using social media and digital storytelling. Such approaches reflect what sociocultural theorists term "distributed cognition"—a system in which thinking and learning are shared across tools, environments, and people. Importantly, these strategies were often not documented or recognised in traditional language pedagogy, revealing a gap between lived multilingual practice and institutional models of learning.

By examining these findings through a sociocultural lens, this study extends prior work in three significant ways. First, it shows that strategic flexibility is not

just cognitive, but also social and cultural, requiring learners to negotiate shifting norms of interaction and identity. Second, it reveals that social engagement is not a supplementary feature of language learning but a core component of strategy deployment and retention. Third, it foregrounds the underexplored dimension of strategic innovation in resource-constrained contexts, which has received limited attention in existing models of strategy research. This reframing positions hyperpolyglots not as anomalies of talent, but as exemplary case studies of culturally and socially attuned learners operating in dynamic environments.

In contrast to studies that emphasise internal regulation or universal strategy models, this research demonstrates that successful multilingualism is constructed through dynamic engagement with environments—whether through community, culture, or creative resource use. These findings advocate for pedagogical approaches that integrate sociocultural awareness, learner autonomy, and digital literacy, particularly in programs supporting the acquisition of minoritized or under-resourced languages. Educators should consider how to replicate the conditions under which hyperpolyglots thrive: by fostering communities of practice, encouraging learner-generated materials, and valuing local language practices that lie outside of standardized curricula.

It is also important to note that this study is not without limitations. First, the reliance on self-reported data through interviews and questionnaires introduces the potential for recall bias or social desirability bias, as participants may have framed their learning experiences in retrospectively idealised ways. Second, although the sample was diverse in terms of language background and sociocultural exposure, it was drawn from a self-selected group of active hyperpolyglots, many of whom participate in online polyglot communities. This limits the generalizability of the findings to more casual or emerging multilingual learners. Third, while the study incorporated triangulation through mixed methods, it did not include longitudinal data, which would provide deeper insight into how strategies evolve over time and across changing contexts. Addressing these limitations in future studies could strengthen the field's understanding of language learning strategy development in hyperpolyglot populations.

In spite of these limitations, findings contribute to a richer understanding of the strategic lives of hyperpolyglots, positioning them not only as expert learners but also as adaptive, context-sensitive navigators of multilingual spaces. They challenge educators and researchers to consider how institutional models can evolve to support the kind of strategic, reflective, and socially embedded learning that defines successful polyglotism. Future research should continue to bridge cognitive and sociocultural approaches to language learning strategy, particularly through longitudinal, ethnographic, and multimodal designs that can trace how strategy evolves through practice, interaction, and environmental change.

Conclusion

This study has shed light on the nuanced and dynamic strategies employed by hyperpolyglots in navigating the challenges of multilingual learning across diverse sociocultural contexts. Through a mixed-methods approach that prioritised in-depth qualitative insights, it has become clear that effective language learning extends far beyond the cognitive application of isolated strategies. Instead, it is an adaptive,

socially mediated, and culturally responsive process shaped by the learner's environment, goals, and community.

Key findings indicate that hyperpolyglots exhibit a high degree of strategic flexibility, adjusting their methods in response to immersion experiences, cultural expectations, and language-specific structures. Social interaction was shown to play a critical role—not just as a means of language input, but as a motivational scaffold that fosters accountability and resilience. Furthermore, the study revealed a previously underexplored dimension of learner-driven innovation, particularly in resource-scarce contexts. Hyperpolyglots were not passive consumers of content but active constructors of their own tools and environments, developing highly personalized learning ecosystems.

By foregrounding the sociocultural dimension of language learning strategies, this study moves beyond traditional models that treat strategy use as a fixed set of skills. It underscores the importance of learner agency, community engagement, and creative adaptation, especially when navigating underrepresented or structurally marginalised languages. These insights suggest a need for more flexible, inclusive pedagogical models that support learners in becoming self-directed, culturally literate, and resourceful multilinguals.

Ultimately, hyperpolyglots provide a compelling case for rethinking language learning as a practice embedded in real-world contexts—fluid, relational, and deeply shaped by the learner's interaction with their linguistic and social environment. As language education evolves in increasingly global and digital landscapes, the practices of hyperpolyglots offer valuable lessons for fostering strategic, meaningful, and sustainable language acquisition for all learners.

References

Braun, V., & Clarke, V. (2006). Using thematic analysis in psychology. *Qualitative Research in Psychology*, *3*(2), 77–101. https://doi.org/10.1191/1478088706qp063oa

Chen, Y. M., Yang, L., Yang, S. Y. R., & Tsai, C. (2024). Exploring the synergistic interplay of metacognitive knowledge, metacognitive strategies, and practice strategies for fostering self-regulated learning of L2 speaking. *The Asia-Pacific Education Researcher*, *33*, 1223-1236. https://doi.org/10.1007/s40299-023-00792-4

Efklides, A. (2011). Interactions of metacognition with motivation and affect in self-regulated learning: The MASRL model. *Educational Psychologist*, *46*(1), 6–25. https://doi.org/10.1080/00461520.2011.538645

Ellis, R., & Wulff, S. (2021). *Language transfer effects in multilingual contexts: Theories and applications*. Bristol: Multilingual Matters.

Erard, M. (2012). *Babel no more: The search for the world's most extraordinary language learners*. New York: Free Press.

Griffiths, C., & Oxford, R. L. (2021). *The strategy factor in successful language learning: A meta-analytic review*. Bristol: Multilingual Matters.

Hu, W., & Luo, Y. (2024). Chinese English language learners' vocabulary retention: Investigating the effectiveness of neuro/metacognitive and socio-cultural strategies. *BMC Psychology*, *12*(1), 1–12. https://doi.org/10.1186/s40359-024-01612-0

Jouravlev, O., Mineroff, Z., Blank, I. A., & Fedorenko, E. (2021). The small and efficient language network of polyglots and hyper-polyglots. *Cerebral Cortex, 31*(1), 62–76. https://doi.org/10.1093/cercor/bhaa205

Juanda, J., Azis, A., & Mantasiah, R. (2024). Multilingualism and cultural awareness: A correlational analysis in language education in Indonesian higher education. *Language Teaching Research Quarterly, 42*, 163–187. https://doi.org/10.32038/ltrq.2024.42.10

Lantolf, J. P. (2000). *Sociocultural theory and second language learning*. Oxford: Oxford University Press.

Li, L., Wang, Y., Qian, Y., & Shang, H. (2022). Role-mediated strategies as sociocultural strategies in L2 writing: A quantitative study among Chinese EFL learners. *Journal of Language Teaching and Research, 13*(4), 749–756. https://files.eric.ed.gov/fulltext/EJ1361433.pdf

Liaw, S. (2008). Investigating students' perceived satisfaction, behavioral intention, and effectiveness of e-learning: A case study of the Blackboard system. *Computers and Education, 51*, 864-873. http://dx.doi.org/10.1016/j.compedu.2007.09.005

Martiningsih, W., & Mukarto, F. X. (2024). A polyglot's strategies in learning foreign languages: A case study. *LLT Journal: A Journal on Language and Language Teaching, 27*(1), 1–18. https://doi.org/10.24071/llt.v27i1.7086

Muryani, R. N., & Yunus, M. (2024). Students' digital vocabulary learning: Experiences, barriers, and adaptive strategies exploration. *English Review: Journal of English Education, 12*(2), 245–258. https://doi.org/10.25134/erjee.v12i1.9328

Oxford, R. L. (2017). *Teaching and researching language learning strategies: Self-regulation in context*. New York: Routledge. https://doi.org/10.4324/9781315719146

Ortega, L. (2013). *Understanding second language acquisition* (2nd ed.). London: Routledge. https://doi.org/10.4324/9780203777282

Pawlak, M. (2022). Investigating language learning strategies: Where are we now? *Language Teaching Research, 26*(2), 147–164. https://doi.org/10.1177/1362168820921884

Saraeva, N., Pachina, N., & Saraev, A. (2024). Adaptation resources of digital language platforms in the field of linguistic identity modeling. *2024 6th International Conference on Control Systems, Mathematical Modeling, Automation and Energy Efficiency (SUMMA), Lipetsk, Russian Federation*, 760-764. https://doi.org/10.1109/SUMMA64428.2024.10803863

Steffensen, S.V., & Kramsch, C. (2017). The ecology of second language acquisition and socialization. In P. Duff, & S. May (Eds.), *Language socialization: Encyclopedia of language and education* (pp. 17-32). Cham: Springer. https://doi.org/10.1007/978-3-319-02255-0_2

Tragant, E., Thompson, A. S., & Schleicher, L. (2019). Language learning motivation and strategies of adult multilinguals. *Journal of Multilingual and Multicultural Development, 40*(6), 501–513. https://doi.org/10.1080/01434632.2018.1538302

Tseng, W.-T., Dörnyei, Z., & Schmitt, N. (2006). A new approach to assessing strategic learning: The development and validation of the self-regulating capacity in vocabulary learning scale. *Applied Linguistics, 27*(1), 78–102. https://doi.org/10.1093/applin/ami046

Ushioda, E. (2020). *Language learning motivation: An ethical agenda for research*. Oxford: Oxford University Press

Vandergrift, L., & Goh, C. C. M. (2012). *Teaching and learning second language listening: Metacognition in action*. New York: Routledge. https://doi.org/10.4324/9780203843376

Vygotsky, L. S. (1978). *Mind in society: The development of higher psychological processes*. Cambridge: Harvard University Press.

Zimmerman, B. J. (2002). Becoming a self-regulated learner: An overview. *Theory into Practice, 41*(2), 64–70. http://dx.doi.org/10.1207/s15430421tip4102_2

Appendices

Appendix 1. Semi-structured interview guide

The following interview prompts were used to guide the in-depth qualitative interviews with hyperpolyglot participants. The questions aimed to elicit detailed reflections on participants' language learning strategies, the influence of sociocultural context, and their adaptation to resource availability.

1. Can you describe your general approach to learning a new language?
2. How do you decide which strategies to use when learning a language?
3. Have you ever changed your strategy because of the cultural environment in which you were learning? Can you give an example?
4. What role does social interaction play in your language learning process?
5. Can you describe a situation where immersion in a cultural or linguistic context altered how you studied or practiced the language?
6. What do you do when you don't have access to formal resources like textbooks or language classes?
7. Have you created your own language learning materials? If so, what kinds?
8. What are some of the biggest challenges you've faced when learning less commonly taught or under-resourced languages?
9. How do online communities or peer networks influence your learning process?
10. What advice would you give to other language learners who are working without structured resources or immersion opportunities?

Appendix 2. Adapted strategy inventory for language learning (SILL)

Participants completed the following adapted SILL questionnaire to complement the qualitative data collected through interviews. Respondents rated each statement on a 5-point Likert scale: (1 = Never, 2 = Rarely, 3 = Sometimes, 4 = Often, 5 = Always)

1. I set specific short-term goals for each language I am learning.
2. I establish long-term goals for what I want to achieve in each language.
3. I regularly track my progress using journals, spreadsheets, or apps.
4. I revise my learning plans based on how well I'm doing.
5. I identify my strengths and weaknesses in each language and adjust accordingly.
6. I create my own vocabulary lists, flashcards, or grammar notes.
7. I use audio or video recordings to improve pronunciation and comprehension.
8. I seek opportunities to speak with native or fluent speakers.
9. I participate in language exchanges or online conversation groups.
10. I change my strategies when a particular method isn't working well.
11. I immerse myself in media content (TV, music, podcasts) in the target language.

12. I use social media or online forums to gather new learning resources.
13. I modify my strategy depending on the cultural norms of the language community.
14. I develop custom strategies when I lack access to textbooks or classes.
15. I combine traditional and digital tools (e.g., books and apps) to support my learning.

Appendix 3. Participant demographic and linguistic background questionnaire

Section A: Demographic Information

1. Age: _____
2. Gender:
   - [ ] Male
   - [ ] Female
   - [ ] Non-binary
   - [ ] Prefer not to say
   - [ ] Other (please specify): _____
3. Nationality: _____
4. Current country of residence: _____
5. Occupation/Field of Study: _____

Section B: Linguistic Profile

6. How many languages do you speak (excluding your native language)?
   - [ ] 1
   - [ ] 2
   - [ ] 3
   - [ ] 4 or more (please specify number): _____
7. Please complete the table below for each language you speak or have studied:

Language	Years of Study	Self-Assessed Proficiency (Speaking / Listening / Reading / Writing)*	Formal Instruction? (Yes/No)	Immersion Experience? (Yes/No)	Duration of Immersion (if applicable)

*Use the following scale:
1 = Beginner, 2 = Elementary, 3 = Intermediate, 4 = Advanced, 5 = Near-native/Native-like

Section C: Language Learning Experience

8. Have you ever lived in a country where one of your non-native languages is spoken?
   - [ ] Yes
   - [ ] No

   If yes, which country/language and for how long?

   _____

9. What methods or resources have you typically used when learning new languages? (Select all that apply)
   - [ ] Classroom instruction
   - [ ] Private tutoring
   - [ ] Language apps (e.g., Duolingo, Babbel)
   - [ ] Self-study with books or online materials
   - [ ] Language exchanges/tandem partners
   - [ ] Watching movies/TV/listening to music in the target language

- [ ] Travel or immersion
- [ ] Other (please specify): _____

10. Have you adapted your language learning strategies when studying less commonly taught languages or languages with fewer resources?
- [ ] Yes
- [ ] No

If yes, please briefly describe how: