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English Language Acquisition in Deaf Learners with Hearing Parents and Hearing Learners with Deaf Parents

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ABSTRACT

Early language access plays a decisive role in shaping communicative competence and motivational dispositions in English as a Foreign Language (EFL) learning. Within deaf education contexts, differences in linguistic environments often result in unequal opportunities to develop confidence and willingness to engage in communication. Framed by Surdo-glottodidactics, this paper offers a qualitative documentary-based comparative analysis of deaf learners with hearing parents and hearing learners who are Children of Deaf Adults (CODAs). Drawing on interdisciplinary literature in deaf studies, bilingualism, and second language acquisition, the analysis highlights how parental support interacts with the timing and accessibility of language exposure to influence learners' Willingness to Communicate (WTC). The findings suggest that early and visually accessible language input, particularly sign language during the first six months of life, provides a crucial linguistic foundation for deaf learners. In contrast, CODAs benefit from a "bimodal advantage" through continuous exposure to both signed and spoken languages, fostering higher communicative confidence. This study concludes that parental facilitation as a primary catalyst for communicative success and ensuring coordination between home and school is crucial to sustain consistent vocabulary exposure.

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1. INTRODUCTION

Language acquisition in childhood is greatly influenced by the quantity and quality of linguistic input available in the home and educational environments. It is also stated that between the age of 0 and 6 is a crucial moment for children to stimulate all aspect in their growth and development for the next stage, including the language acquisition (Harisha et al., 2024). Align with Rhamadanty & Ulum (2024), the important foundation of children language skills are laid on their early critical stage of live. It can be assumed that early live of children is important for their language development. For hearing children,

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exposure to natural spoken language usually supports the development of communicative competence, which is the main goal in second language or foreign language learning. However, deaf children often experience limited access to comprehensive language input, especially when they are raised by hearing parents who are not fluent in sign language. Research shows that about 90% of deaf children are born to hearing parents, and many of them do not receive optimal exposure to sign language or spoken language during the crucial period of language development (UConn Today, 2019).

In line with the findings of Berger et al. (2024), most children born deaf do not have full access to sounds of speech and often grow up in environments that do not provide sign language from an early age. This condition causes many deaf children to experience language deprivation, which has an impact on their spoken language, written language, and foreign language development later in life. Therefore, many children that are born deaf do not have access to language input from an early age, either sign language or spoken language. While, communication is a key to relationships in family and society to deliver and exchange messages.

In contrast, children of deaf adults (CODA) are typically exposed to sign language from birth and often grow up bilingual, acquiring both a natural sign language and a spoken/written language. Therefore, early access to this complete language helps them develop a stronger linguistic foundation, including in the acquisition of foreign languages such as English.

Understanding how family and environmental factors influence English language acquisition is important for both groups of children. In this context, parental support, quality of language exposure, and motivational factors such as willingness to communicate (WTC) play a major role in language development. Previous studies have shown that WTC is greatly influenced by language experience, linguistic self-confidence, and the communication support learners receive from their environment (Peng & Woodrow, 2010).

Based on this background, this study aims to investigate the willingness to communicate model in English by examining how parental support and language exposure interact in influencing English language acquisition in deaf children and CODAs. Specifically, this study tests whether language exposure acts as a mediating variable between parental support and children's motivation to communicate in English. In addition, this study also compares the achievements of English language acquisition between deaf children and CODAs. By the aims of the study, it is narrowed to the following research questions:

1. How do parents or caregivers contribute to supporting their children's development of English acquisition?
2. Does language exposure mediate the relationship with learners' motivation to communicate in English?

The linguistic development of bilingual children is shaped by the language input environment, a factor that applies to both Early Second Language Acquisition (ESLA) and Bilingual First Language Acquisition

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(BFLA) (De Houwer, 2011). In ESLA contexts, where children begin learning a second language before age six, the duration of exposure to is paramount; studies indicate that preschool children often require more than a year of consistent input before they can produce adequate sentences in their new language (De Houwer, 2011). In BFLA contexts, where children are exposed to dual languages from birth, parental language distribution significantly impacts outcomes; research has shown that a quarter of bilingual children may speak only the majority language despite hearing two at home (De Houwer, 2009, 2011). Furthermore, data suggests that the absolute frequency of input, measured by actual hours of exposure or number of utterances serves as a more consistent predictor of language production than the relative proportion of input (De Houwer, 2011).

Decisions regarding communication modes are often made immediately following a deafness diagnosis, making professional guidance highly influential for hearing parents (Wright et al., 2023). Current evidence indicates a shift in professional beliefs, with a vast majority of teachers, speech therapists, and audiologists acknowledging that deaf children with cochlear implants can successfully master two spoken languages (Wright et al., 2023). However, views vary by profession: audiologists are significantly more likely to express concerns regarding linguistic confusion, while educators more often worry about reduced academic proficiency in both languages (Wright et al., 2023). Despite these varying concerns, most professionals recommend that parents continue using their native language at home to support natural linguistic development, cultural identity, and emotional well-being (Wright et al., 2023).

A common misconception in deaf education is that hearing parents are incapable of achieving sufficient sign language proficiency to support their children's development (Pontecorvo et al., 2024). However, systematic evaluations of hearing parents learning American Sign Language (ASL) show they can achieve beginner to intermediate proficiency, reaching functional levels that support family communication (Pontecorvo et al., 2024). Parental ASL skills have been shown to correlate significantly with child vocabulary size in later childhood (Berger et al., 2024). Furthermore, family involvement in early education, spanning home-based activities and school-based participation, is essential for child achievement (Fantuzzo et al., 2000). This support is particularly crucial in supporting second language literacy and foreign language learning (Mayer, 2009).

Modern intervention strategies have shifted from an expert-led model to Family-Centered Early Intervention (FCEI), which treats families as equal partners (Snoddon et al., 2024). Early access to language is paramount for pragmatic development; children with limited access to natural language, whether signed or spoken, consistently show delays in advanced pragmatic skills such as inference and conversational repair (Matthews & Kelly, 2022). Prioritizing pragmatics and social communication is vital for ensuring deaf children can engage effectively in diverse social contexts (Duncan & O'Neill, 2022). This early access also has long-term implications, as early life communication access is associated with perceived mental

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health in adulthood (McRae et al., 2025). Foundational skills such as joint attention are also critical precursors to successful language acquisition in young deaf children (Lieberman et al., 2013).

Willingness to communicate (WTC) in a second language is a complex construct influenced by classroom emotions, linguistic self-confidence, and motivation (Alrabai, 2022). The reliability and validity of WTC scales allow researchers to measure a learner's tendency to enter into discourse when given the choice (McCroskey, 1992). Motivation also plays a distinct role for hearing learners of sign languages, where the desire for social connection and cultural understanding drives acquisition (Marton & MacIntyre, 2020).

True inclusive education for deaf and hard of hearing students requires more than physical placement in a mainstream classroom; it must address belonging, identity, and the development of self-advocacy skills (Levesque & Duncan, 2024). Strengthening teacher education is necessary to provide the specialized support these learners require (Kelly et al., 2020). In practice, successful strategies often involve a combination of manual methods and speech-reading to enhance student understanding and literacy (Bintoro et al., 2023; Suryanti, 2013). These pedagogical approaches are essential for improving English literacy and overall academic success for deaf students (Suryanti, 2013).

1.1 Theoretical Framework

1.1.1 Surdo-glottodidactics

The theoretical foundation of this study is grounded in Surdo-glottodidactics, which is defined as the specific science of teaching and learning foreign languages by deaf and hard of hearing (DHH) learners (Domagała-Zyśk, 2016). It is a term derived from the Latin *surdus* (deaf) and the Greek *glotta* (language) and *didaskein* (to teach). Surdo-glottodidactics functions as an interdisciplinary spectrum by integrating insights from neuropsychology, medicine, linguistics, and technological sciences to deconstruct the mechanism of communication's complexities inherent in DHH learners. By acknowledging the specific neurological and cognitive processes involved in visual-spatial language processing, surdo-glottodidactics provides a framework where the written word often serves as the primary "phonology," allowing English orthography to act as a cognitive anchor for learners who have restricted access to auditory speech sounds.

As Domagała-Zyśk (2016) explained, central to the surdo-glottodidactic framework is the pillar of humanistic psychology. This perspective explains that the learning process requires dual engagement of "cognitive and affective forces" of the learner. Rather than viewing the learner as a passive recipient of input, this approach recognizes the learners' personality by treating language acquisition as a vehicle for self-actualization and personal development. By prioritizing the learners' subjective experience and motivational state, surdo-glottodidactics aligns pedagogical strategies with the learner's identity. Creating better results on language acquisition by practically reducing "language anxiety" and occurring a higher Willingness to Communicate (WTC).

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Surdo-glottodidactics is firmly rooted in the social model of disability, which assesses that the primary obstacles to linguistic mastery are *social character and obstacles on the side of a non-inclusive society* rather than physiological hearing loss. Consequently, the acquisition of a foreign language is framed as a *universal human right*, placing the ethical and practical burden on educational institutions to provide equitable access. To operationalize this right, Domagała-Zyśk (2016) established the framework into utilizing Universal Learning Design (ULD), which categorizes: (1) Multiple Means of Representation by utilizing visual aids, sign-supported speech, and interactive digital resources to bypass auditory barriers; (2) Multiple Means of Expression by facilitating diverse methods for students to demonstrate competence, including technological aids like real-time captioning (CART) and visual-spatial mapping; and (3) Multiple Means of Engagement by designing curricula that reflects the lived experiences of DHH individuals to sustain interest and motivation.

Domagała-Zyśk (2016) also identifies discrepancies in achievement as the result of environmental factors, such as a lack of adapted materials or delayed early intervention, which are defined as the "1.3 Challenge". For many DHH students, English is functionally their third language (L3), requiring them to map new linguistic structures onto an existing sign language (L1) and a national spoken/written language (L2). By recognizing this multi-layered linguistic repertoire, surdo-glottodidactics empowers teachers to act as *translanguaging facilitators.* Helping students increase their visual-spatial strengths to navigate the complex semantic and pragmatic interfaces of the English language. This comprehensive theoretical lens ensures that the research reconciles the cognitive potential of the learner with the pedagogical realism required to achieve functional communicative competence.

1.1.2 Theoretic foundations of surdo-glottodidactics

The theoretical framework utilizes two foundational pillars of Surdo-glottodidactics: (1) Humanistic Psychology and (2) the Social Model of Disability to provide a robust logical basis for comparing Deaf learners and Children of Deaf Adults (CODAs). These pillars ensure that the comparison is not merely a study of biological differences, but rather an investigation into how varied linguistic environments and psychological factors shape acquisition.

The first pillar, humanistic psychology, posits that language acquisition is a "unique human activity" that fundamentally engages the "whole student's personality" (Domagała-Zyśk, 2016). In a comparative context, this perspective is vital for understanding the motivational trajectories of both “unit” groups of Deaf learners and CODAs. For Deaf Learners, this pillar addresses the "Affective Filter". The emotional barrier is often raised by years of communication frustration and language anxiety. By prioritizing self-actualization and personal development, surdo-glottodidactics seeks to lower this filter by fostering the confidence needed for students to transition from restrictive "oral-only" environments to communicative agency in English. On the other hand,

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CODAs found that the humanistic approach recognizes the complex identity of bimodal bilinguals. Their motivation is tied to their dual linguistic heritage; thus, a humanistic framework values their sign language proficiency as a cognitive asset rather than a distraction, supporting a healthy *bimodal advantage* (Mercure et al., 2025). By focusing on the whole learner, the study treats Willingness to Communicate (WTC) not as a static trait, but as a dynamic state influenced by the learner's sense of belonging and cognitive comfort within the instructional environment.

The second pillar is the social model of disability, which serves as the primary lens for reconciling the "gap" in attainment between Deaf children and their hearing peers (CODAs). In contrast to the medical model, which views deafness as a pathological deficit to be cured, the social model asserts that linguistic challenges are social character and obstacles on the side of a non-inclusive society (Domagała-Zyśk, 2016). This model provides the evidentiary logic for the comparative analysis in several ways: (1) Environmental Parity, (2) The 6-Month Threshold, and (3) Pedagogical Responsibility. Firstly, Environmental Parity justifies the comparison by asserting cognitive parity; it suggests that the differences observed between Deaf learners and CODAs are not due to an inherent lack of ability, but rather to the quality and timing of accessible language exposure. Moreover, The 6-Month Threshold explains why Deaf children of hearing parents can match the vocabulary growth of CODAs if provided with sign language by six months of age (Caselli et al., 2021). The disability in this context is redefined as the delayed access to input, not the hearing loss itself. Furthermore, Pedagogical Responsibility justifies the use of Universal Learning Design (ULD) by framing foreign language learning as a universal human right. It argues that if the environment is adapted through visual scaffolding, captions, and sign-supported speech. Accordingly, Deaf learners can navigate the *semantics/discourse-pragmatics interface* of English with the same success as bimodal bilinguals (Berent et al., 2012).

Accordingly, these pillars bridge the lived experiences of the two groups. While CODAs provide the healthy picture of what early, unfettered language access looks like, the social model and humanistic psychology provide the roadmap for Deaf learners to achieve similar outcomes. Together, they allow the study to move beyond a simple comparison of hearing status to a nuanced exploration of how pedagogical realism and accessible exposure serve as the primary drivers of English language acquisition in the DHH community.

2. METHOD

This study is designed as a qualitative case study which involves the in-depth analysis of a specific “unit” to understand a broader research issue (Nunan & Bailey, 2009). Accordingly, the “unit” is specified as two distinct groups: (1) Deaf learners; and (2) Children of Deaf Adults (CODAs) within the context of Surdo-glottodidactics. This term is defined by Domagała-Zyśk (2016) as the scientific study and methodology focused on the teaching and learning of foreign languages by deaf and hard of hearing (DHH) individuals. This study specifically synthesizes and interprets

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data from five core academic sources to build a comprehensive "prose profile" of the learners' experiences.

The data of this study consists of qualitative documentary data extracted from five peer-reviewed academic publications, including empirical studies, longitudinal analyses, and pedagogical reports focusing on Deaf learners and CODAs. These sources were selected through purposive sampling based on their relevance to bimodal bilingualism, early language exposure, parental mediation, and English acquisition within deaf education contexts. Rather than functioning solely as background literature, these publications are treated as qualitative data units, from which learner trajectories, instructional practices, and communicative outcomes are systematically interpreted and synthesized.

In alignment with the methodological framework of parallel cases defined by Nunan & Bailey (2009), the comparative dimension of this study juxtaposes the bimodal bilingual acquisition of CODAs with the visuocentric learning paths of Deaf learners to identify critical factors in language attainment. This approach is consistent with the naturalistic tradition's objective of "capturing the qualities and attributes of the phenomena being investigated" rather than merely counting occurrences. By treating these two groups as parallel "units of analysis," the study provides an in-depth investigation of "instances in action" to discover linguistic and social patterns within their naturally occurring contexts.

Following the naturalistic research tradition as conceptualized by Nunan & Bailey (2009), the data analysis for this qualitative case study utilizes meaning condensation and interpretive synthesis to evaluate the linguistic development of Deaf learners and Children of Deaf Adults (CODAs). This analytical process focuses on capturing the qualities and attributes of language acquisition by synthesizing evidence from five core academic sources into a multidimensional prose profile for each learner group. By treating these two groups as parallel "units" of analysis, the study interprets instances in action to discover the social and cognitive patterns that define functional communicative competence in English as a foreign language. This analytical process is guided by the theoretical framework of Surdo-glottodidactics and focuses on examining the role of parental support and accessible language exposure in shaping learners' Willingness to Communicate (WTC).

3. FINDINGS AND DISCUSSION

3.1 Finding

Ultimately, by utilizing the parallel case study method as conceptualized by Nunan and Bailey (2009), this research reconciles the "bimodal advantage" of CODAs with the specialized surdo-glottodidactic needs of Deaf learners to address the wider complexities of language deprivation and attainment. The study not only documents linguistic patterns but also advocates for an educational environment that fosters a student's willingness to communicate by aligning instructional logic with the visual-spatial processing strengths inherent in the DHH and CODA communities.

3.1.1 Parental and caregiver support as a foundational scaffolding

The analysis reveals that the efficacy of parental support in the

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English acquisition process is contingent upon a shift from medical-deficit models toward linguistic-diversity and facilitative frameworks (Arifani et al., 2023). For Deaf children of hearing parents (DCHP), support is optimized when parents act as effective facilitators who prioritize the immediate communicative needs of the child (Caselli et al., 2021). Data indicates that these parents do not require immediate native-like fluency in sign language to be successful; rather, by learning alongside their child and staying one step ahead of the infant's naming needs, they provide sufficient input for age-appropriate vocabulary growth (Caselli et al., 2021). This facilitative role is further enhanced through dialogic reading, where parents use signs and pointing to create shared visual attention on English texts, which is identified as a primary predictor of future literacy (Arifani et al., 2023).

In contrast, the support provided by Deaf parents to CODAs is characterized by bimodal scaffolding (Mercure et al., 2025). Mothers in these contexts utilize specialized strategies, such as signing directly within the child's line of sight and using tactile cues to secure attention before communicating (Mercure et al., 2025). The analysis highlights that bimodal support is most stable when parents are encouraged to use their most natural and fluent language (sign language) at home, thereby providing a robust cognitive foundation that prevents spoken language from crowding out signed skills (Mercure et al., 2025). Across both groups, a critical feedback loop between home and school is identified, where teachers and parents synchronize vocabulary lists to ensure the child encounters consistent English concepts in multiple environments (Domagała-Zyśk, 2016).

3.1.2 The mediating role of accessible language exposure

The findings underscore that parental support only translates into successful English acquisition when it is mediated by accessible and high-quality language exposure. A central discovery in the data is the critical six-month threshold, Deaf children exposed to American Sign Language (ASL) before age six months demonstrate receptive and expressive vocabulary growth that matches that of native signers (Caselli et al., 2021). This early exposure serves as a biological readiness trigger, providing the cognitive hooks necessary to map English concepts later in life (Domagała-Zyśk, 2016; Caselli et al., 2021). Conversely, delays in exposure increase the cognitive load, making the subsequent acquisition of English significantly more difficult (Domagała-Zyśk, 2016).

Exposure is redefined in this study as *visual saturation* rather than mere auditory presence (Arifani et al., 2023). For DHH learners, passive exposure such as a radio is categorized as zero exposure, whereas high-quality exposure involves captioned media, visual dictionaries, and digital word walls (Domagała-Zyśk, 2016; Arifani et al., 2023). Because the written word often serves as the primary visual phonology for these learners, English orthography acts as the cognitive anchor for the language (Arifani et al., 2023). Successful exposure strategies involve explicitly teaching students to map these English structures onto the meanings they already possess in their primary sign language, thereby navigating the complex interface

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between grammar and social meaning (Berent et al., 2012).

3.1.3 Affective outcomes and willingness to communicate (WTC)

The ultimate objective of the support-exposure interaction is to foster a high Willingness to Communicate (WTC), which the analysis identifies as a major predictor of success in a globalized world (Domagała-Zyśk, 2016). WTC is heavily influenced by the affective filter; Deaf learners often experience high language anxiety due to previous communicative failures in oral-only settings (Domagała-Zyśk, 2016). The analysis shows that WTC increases significantly in safe classrooms where teachers validate the student's identity and prioritize message meaning over perfect pronunciation (Domagała-Zyśk, 2016; Arifani et al., 2023).

Furthermore, the data establishes a link between early success and motivation (Caselli et al., 2021). Children who achieve age-level vocabulary early experience fewer communication breakdowns, leading to higher confidence and social fluency (Caselli et al., 2021). For older learners, confidence is derived from the logic behind English rules; when students understand why a structure changes meaning, such as in numerical quantification, they become more willing to tackle advanced reading and writing tasks (Berent et al., 2012). CODAs, in particular, demonstrate enhanced cognitive flexibility, as their ability to switch between visual and auditory modes fosters high confidence in navigating diverse social settings (Mercure et al., 2025).

3.1.4 Comparative synthesis of the "1.3 Challenge"

The final synthesis of the data reconciles the perceived gap between Deaf learners and CODAs by framing English acquisition as a 1.3 Challenge. Mapping a third language (L3) onto existing signed (L1) and national (L2) repertoires (Domagała-Zyśk, 2016). By identifying interlanguage parallels, the study confirms that the language difficulties often seen in Deaf education are typical of anyone learning a language without early access, rather than being a biological deficit (Berent et al., 2012). Synthetically, the analysis proves that when parental facilitation and accessible exposure are prioritized. Deaf learners can achieve functional communicative competence that is fundamentally comparable to that of bimodal bilingual CODAs.

3.1.5 Summary of key findings and thematic synthesis

The analysis across these parallel cases illustrates that functional communicative competence is a product of early, high-quality linguistic interaction and environmental accessibility. To provide a final, consolidated overview of the empirical evidence synthesized throughout this chapter, a comprehensive summary of the key findings from each core authority contrasts the pedagogical support strategies, exposure dynamics, and motivational outcomes for both Deaf learners and CODAs, serving as the evidentiary baseline for the pedagogical recommendations as follow.

The synthesis of these five core academic works reveals that functional communicative competence for Deaf learners and CODAs is not a matter of

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biological capacity, but of environmental and linguistic justice. By interpreting the findings through the lens of Surdo-glottodidactics, the study effectively marginalizes the traditional "medical model of deafness, replacing it with a Linguistic Diversity Model that recognizes these learners as sophisticated multilingual agents navigating the complex 1.3 Challenge. This shift highlights that the perceived deficit in English acquisition is, in fact, a systemic failure to provide accessible, visual-spatial input during the critical six-month developmental threshold. As evidenced by the bimodal advantage of CODAs and the interlanguage parallels found in Deaf learners, the human brain utilizes innate logical mechanisms to map complex English semantics regardless of the sensory channel. Therefore, by embracing pedagogical realism and "translanguaging" strategies such as visual saturation and captioned media educators can dismantle the barriers to foreign language acquisition. This approach ensures that the confidence through logic observed in these parallel cases is not a rare occurrence, but a realized universal human right, enabling DHH and CODA individuals to assert their communicative agency within a globalized English-speaking context.

3.2 Discussion

In answering the first research question of this study regarding parental support, the data from Domagała-Zyśk (2016), Mercure et al. (2025), and Caselli et al. (2021) demonstrate that caregivers act as essential linguistic bridges through intentional scaffolding and early bimodal intervention. These studies highlight that parents facilitate acquisition not merely through volume of speech, but by utilizing tactile cues, shared visual attention during dialogic reading, and staying one step ahead of the child's vocabulary needs. To address the second question regarding the mediating role of language exposure on motivation, the findings of Arifani et al. (2023) and Berent et al. (2012) suggest that high-quality, accessible exposure, such as captioning and visual English, reduces communication breakdowns and language anxiety. This accessible input directly bolsters a learner's Willingness to Communicate (WTC) by transforming the learning environment into a space where the message's meaning is prioritized over clinical accuracy

Consequently, this chapter interprets these findings through a dual-lens analysis of Deaf Learners and Children of Deaf Adults (CODAs). The discussion begins by framing Parental Support and the Social Model of Disability , identifying how scaffolding mediates the psychological state of WTC. By exploring The Mediation of Exposure and Cognitive Parity , the research underscores a fundamental truth: both groups demonstrate that when consistent linguistic scaffolding replaces the reliance on traditional auditory input, the human mind utilizes innate logical mechanisms to navigate English semantics. Furthermore, by addressing The Affective Filter in Surdo-glottodidactics , this study moves beyond a clinical interpretation of hearing loss toward a "pedagogical realism." Finally, through a Comparative Analysis of Research Results , the chapter culminates in Roadmap Implications for Language Learning , offering a strategic path forward for inclusive English acquisition.

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3.2.1 Parental support and the social model of disability

In alignment with the Social Model of Disability, the findings suggest that the primary barriers to English acquisition are not the physiological absence of hearing, but the environmental absence of accessible language input. The data reframes the role of hearing parents from language models with deficits to effective facilitators. As established by Caselli et al. (2021), when hearing parents provide sign language exposure by the six-month threshold, their children achieve vocabulary growth comparable to native signers. This supports the humanistic pillar of Surdo-glottodidactics, asserting that the biological readiness of the child can be activated through intentional visual scaffolding, such as dialogic reading and shared visual attention, regardless of the parents' initial fluency levels.

3.2.2 The mediation of exposure and cognitive parity

The comparison analysis highlights a significant divergence in the acquisition trajectories based on the timing and mode of exposure. For CODAs, the bimodal advantage suggests that simultaneous exposure to signed and spoken languages creates a robust, dual-stream vocabulary that often exceeds monolingual norms without modality competition. For Deaf learners, the six-month threshold serves as the critical hook for future English learning; without this early L1 base, English acquisition becomes a significant cognitive load rather than a natural extension of linguistic skill.

However, the identification of interlanguage parallels by Berent et al. (2012) provides strong evidence for cognitive parity. It suggests that innate Universal Grammar (UG) mechanisms guide the interpretation of complex English syntax regardless of the sensory channel. For the Deaf learner, the written word becomes the primary phonology, acting as a cognitive anchor that allows them to map English orthography onto the semantic concepts already established in their primary sign language, a process defined as the 1.3 Challenge.

3.2.3 The affective filter in surdo-glottodidactics

The final interpretive layer addresses Willingness to Communicate (WTC) through the lens of the Affective Filter Hypothesis. The findings indicate that WTC is not a static trait but a state influenced by the pedagogical realism of the environment. In settings where teachers validate the learner's identity and prioritize message meaning over native-like speech, the affective filter is lowered, and WTC increases. While CODAs naturally exhibit high social fluency due to their bimodal upbringing, Deaf learners achieve a similar confidence through logic when educators use Universal Learning Design (ULD), such as visual dictionaries and captioned media, to dismantle the "performance pressure" typical of oral-only environments.

3.2.4 Roadmap implications for language learning

The synthesis of findings provides a strategic roadmap for educators and policymakers, emphasizing that language attainment is a longitudinal journey dictated by the timing of intervention and the quality of the linguistic environment.

For Deaf children of hearing parents (DCHP), the roadmap is

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defined by a critical need for early, visual-spatial linguistic foundations. The most significant implication is the six-month threshold; educational roadmaps must prioritize immediate sign language instruction for hearing families within the first half-year of life to prevent the irreversible effects of permanent language deprivation. When children are exposed to accessible language like ASL or BSL by six months, they can achieve age-level vocabulary growth, which serves as the biological "hook" for future English acquisition. Furthermore, instructional strategies must transition toward a visuocentric curriculum design that incorporates Total Communication and Universal Learning Design (ULD). This involves visual saturation of the learning environment through digital word walls, captioned media, and visual dictionaries to simulate the incidental learning that hearing students receive through overhearing. Finally, the roadmap introduces the 1.3 Mapping Strategy, where educators explicitly assist students in mapping English orthography onto the semantic logic of their primary sign language. By treating English as a functional third language (L3), teachers can leverage the student's existing cognitive strengths and meta-linguistic awareness to navigate complex syntax and semantics.

The roadmap for CODAs focuses on the preservation and optimization of their innate bimodal bilingualism as a distinct cognitive asset. Educational roadmaps should formally recognize and value this bimodal status, supporting "code-blending", the simultaneous use of sign and speech as a natural and sophisticated linguistic process that enhances, rather than hinders, academic success. Because learning sign language from birth does not delay spoken language acquisition, schools should view the CODA's dual-language skills as a form of bilingualism to be celebrated. To maintain this trajectory, programs must encourage maternal scaffolding continuity, supporting Deaf parents in using their most fluent and natural sign language at home. This "dual stream input" ensures the child maintains a bimodal advantage in both vocabulary size and cognitive flexibility. Finally, roadmaps should prioritize leveraging social fluency by involving CODAs in collaborative learning environments. Their high level of "social-communicative competence" allows them to adapt their communication mode based on their interlocutor, effectively serving as a linguistic and cultural bridge for their peers and fostering a more inclusive, translanguaging classroom culture.

3.2.5 Comparative analysis of research results

To insert a comprehensive descriptive elaboration of the comparative results summarized in Table 1, this section synthesizes the parallel outcomes between deaf learners with hearing parents and Children of Deaf Adults (CODAs). Following the naturalistic tradition of documenting instances in action, this analysis reconciles how differing early linguistic trajectories, ranging from visuocentric gaps to bimodal fluency, ultimately converge on shared cognitive mechanisms for English language acquisition.

The comparative analysis of linguistic variables reveals distinct yet converging trajectories for the two units of analysis. For deaf learners with hearing parents, the primary input is

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fundamentally visuocentric, relying on signs and text to bypass auditory barriers. Within this group, English is typically navigated as a functional third language (L3), a phenomenon conceptualized as the 1.3 Challenge by Domagała-Zyśk (2016). Where the written word serves as a primary visual phonology and cognitive anchor. In contrast, CODAs benefit from a bimodal environment, acquiring English through the simultaneous integration of sign and speech. As noted by Mercure et al. (2025), this dual-stream input allows CODAs to develop robust vocabularies without modality competition, fostering higher social-communicative fluency from an early age.

The timing of language exposure serves as the universal predictor of linguistic growth, regardless of biological hearing status. For deaf learners, the six-month threshold is identified as the most critical factor for success. Research by Caselli et al. (2021) demonstrates that when deaf children are exposed to sign language by six months of age, they can achieve expressive and receptive vocabulary growth comparable to native signers. This early exposure provides the biological hooks necessary to map English structures later in life. For CODAs, the success of their acquisition is predicated on the consistency of dual-stream input, ensuring that the visual and auditory modes reinforce one another rather than resulting in language deprivation.

Cognitively, both groups demonstrate that the human brain utilizes innate logical mechanisms to navigate complex semantics. Evidence of interlanguage parallels, as investigated by Berent et al. (2012), shows that deaf learners navigate complex English syntax, such as numerically quantified sentences in a manner remarkably similar to hearing second-language learners. This suggests that the human Language Acquisition Device (LAD) operates through innate logic regardless of whether the sensory channel is auditory or visual. Consequently, the perceived "gap" in English achievement is redefined as an environmental failure to provide accessible input rather than a biological deficit.

Table 1. Summary of HHD & CODA Comparison

Variable	Deaf learners (Hearing Parents)	Children of Deaf Adults (CODAs)	Comparative Interpretation
Primary Input	Visuocentric (Signs/Text)	Bimodal (Sign/Speech)	Both rely on visual spatial processing anchors
Language Status	English as L3 (1.3 Challenge)	English as L1/L2 (Bimodal)	CODAs have higher social fluency; Deaf learners use text as phonology
Critical Factor	6-Month Threshold for sign	Consistency of dual stream input	Timing of exposure is the universal predictor of growth
Cognitive Outcome	Interlanguage Parallels	Bimodal advantage	Innate logic guides both groups regardless of hearing status
Affective State	High Anxiety (Oral failures)	High communicative agency	WTC is highest when Identity is validated and meaning is prioritized

The comparative analysis demonstrates that while the starting points for these two groups differ with CODAs benefiting from a natural bimodal environment and deaf learners frequently facing environmental language gaps, the underlying cognitive architecture for English acquisition remains remarkably consistent. The interlanguage parallels identified by Berent et al. (2012) prove that deaf learners navigate complex English semantics with the same logical precision as hearing and bimodal peers when provided with high-quality, accessible input. The results confirm that the gap traditionally observed in deaf education is not biological but environmental. By bridging the research void through the framework of Surdo-glottodidactics, this study concludes that early, accessible exposure. Facilitated by supportive caregivers who acts as the fundamental catalyst for fostering a sustainable Willingness to Communicate (WTC) in a globalized society.

4. CONCLUSION

This study demonstrates that Willingness to Communicate (WTC) in English among deaf learners and Children of Deaf Adults (CODAs) is shaped primarily by the accessibility and timing of early language exposure. Parental support emerges as a crucial factor, but its effectiveness depends on the quality of linguistic input provided at home and in school. When parents move away from a medical-deficit perspective and adopt a linguistic-diversity approach, they become effective facilitators of communication rather than clinical language models. Early exposure to sign language, particularly within the first six months of life, creates the biological and cognitive foundation necessary for later English development. Whether through dialogic reading and visual attention strategies used by hearing parents or bimodal scaffolding employed by deaf parents, accessible language input supports balanced bilingual development and reduces language anxiety.

Building on these findings, this study advocates a paradigm shift in Surdo-glottodidactics toward a Linguistic Diversity Model grounded in pedagogical realism and Universal Learning Design. Central to this shift is recognizing parental facilitation as a primary catalyst for communicative success and ensuring coordination between home and school to sustain consistent vocabulary exposure. By validating multilingual identities and prioritizing visual-spatial access to English, early intervention can lower affective barriers and enhance learners' WTC. Ultimately, this research reframes differences in English achievement not as biological limitations but as environmental conditions that can be addressed, offering a practical roadmap to uphold the communicative rights of deaf learners and CODAs in a globalized context.

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