



LANGUAGE, CULTURE AND THE MIND IN THE DIGITAL AGE



EDITOR

C. P. Rashmi

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PREFACE

This volume brings together interdisciplinary inquiries into the evolving relationships between language, culture, and cognition in a rapidly digitizing world. The chapters collectively examine how linguistic expression, cultural identity, and communicative practices are being reshaped by technological, social, and neurological forces.

The opening chapter explores the transformations of language and human connection in the digital age, highlighting how online platforms and mediated communication are redefining cultural interaction and linguistic norms. This is followed by a multimodal analysis of advanced Spanish as a Foreign Language (ELE) textbooks, offering a semiological and cultural critique of how discourse and representation are constructed at the C1 and C2 proficiency levels.

The third chapter turns to the sociolinguistic landscape of Moroccan youth, tracing the emergence of contemporary urban culture and its influence on new forms of linguistic expression. This contribution sheds light on how language evolves in response to shifting urban identities and cultural hybridity.

The final chapter examines the neural underpinnings of linguistic development and processing in individuals with autism, integrating insights from cognitive neuroscience and language acquisition. Together, these studies provide a nuanced understanding of how language operates at the intersection of society, education, and the brain.

November 21, 2025
Türkiye

CHAPTER 1
DIGITAL AGE TRANSFORMATIONS OF
LANGUAGE, CULTURE, AND HUMAN
CONNECTION

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INTRODUCTION

Digital communication technologies fundamentally transform human language use, cultural practices, and social connections, yet comprehensive understanding of these interconnected changes remains limited. This study investigates how digital platforms alter linguistic structures and functions, transform cultural transmission processes, and impact human relationship quality across diverse demographic groups. The research addresses critical gaps in understanding digital age transformations' implications for linguistic diversity, cultural continuity, and authentic human connection. A mixed-methods approach combining quantitative surveys and qualitative ethnographic methods examines 450 participants across Southwest Nigeria over three months. Data collection employs structured surveys via Kobo Toolbox, semi-structured interviews through digital platforms, and ethnographic observations across Facebook, Twitter, Instagram, and WhatsApp. Analysis utilises SPSS for quantitative data and NVivo for qualitative thematic analysis. Results reveal that 78.4% of participants engage in sophisticated code-switching practices that enhance rather than diminish linguistic diversity, with 72.8% reporting increased indigenous language usage. Digital platforms democratise cultural participation, with 85.9% actively sharing cultural content, though 28.9% express authenticity concerns. Human connection outcomes present mixed patterns, with 79.4% reporting improved contact frequency whilst emotional intimacy shows more variable results across demographic groups. Findings challenge simplistic narratives about digital technology's effects, revealing complex enhancement and constraint patterns. The study contributes theoretical frameworks for understanding human-technology relationships whilst offering practical guidance for culturally responsive platform design, educational policy development, and digital inequality mitigation. Results inform strategies for leveraging digital platforms' democratising potential whilst preserving cultural authenticity and meaningful human connections.

This introduction serves as the foundation for examining how digital technologies have fundamentally reshaped human communication, cultural practices, and social relationships. It establishes the scholarly framework for investigating the multifaceted impacts of digitisation on language evolution, cultural transmission, and interpersonal connectivity in contemporary society.

1. CONTEXT AND BACKGROUND

The advent of the digital age has precipitated an unprecedented transformation in the fundamental structures of human communication, cultural expression, and social interaction (Levin & Mamlok 2021). Since the widespread adoption of internet technologies in the late 20th century, followed by the proliferation of mobile devices, social media platforms, and artificial intelligence systems, society has witnessed a radical reconfiguration of how language is used, culture is transmitted, and human connections are forged and maintained. This digital revolution represents not merely a technological shift but a profound anthropological transformation that touches every aspect of human experience (Miller & Horst 2020).

The emergence of digital communication platforms has created new linguistic phenomena, from the evolution of internet slang and emoji-based communication to the development of algorithmic language processing systems. Simultaneously, traditional cultural practices have been digitised, remixed, and redistributed through global networks, fundamentally altering how cultural knowledge is preserved, shared, and transformed (Poddar 2024). The nature of human connection itself has evolved, with digital spaces becoming primary venues for relationship formation, community building, and social identity construction.

Statement of the Problem

Despite the pervasive influence of digital technologies on human communication and culture, there remains insufficient comprehensive understanding of how these transformations affect the essential mechanisms of language development, cultural continuity, and authentic human connection. Current research often examines these phenomena in isolation, failing to capture the interconnected nature of linguistic, cultural, and social changes occurring in digital (Mamanazarov et al., 2025). Furthermore, the rapid pace of technological change has outstripped academic inquiry, creating critical knowledge gaps about the long-term implications of digital transformation on human society.

Objectives of the Study

This investigation aims to achieve three primary objectives:

- To analyse the mechanisms through which digital technologies influence language evolution, including changes in syntax, semantics, and pragmatic usage across various digital platforms and communication contexts.
- To examine how digital environments facilitate, modify, or potentially disrupt traditional processes of cultural transmission, preservation, and innovation within diverse communities and societies.
- To evaluate the impact of digital mediation on the formation, maintenance, and quality of human relationships, including both interpersonal connections and broader community structures.

Research Questions

The study addresses three fundamental research questions:

- How do digital communication technologies alter the structural and functional characteristics of language use, and what are the implications for linguistic diversity and communication effectiveness?
- In what ways do digital platforms transform cultural practices and knowledge transmission, and how do these changes affect cultural identity and continuity?
- To what extent does digital mediation enhance or diminish the quality and authenticity of human connections across different demographic groups and social contexts?

Scope and Significance of the Study

This research encompasses a multidisciplinary examination spanning linguistics, anthropology, sociology, and digital media studies. The investigation focuses on English-speaking digital communities whilst acknowledging global perspectives and cross-cultural variations. The study's significance lies in its potential to inform educational policies, communication strategies, cultural preservation efforts, and social integration programmes in an increasingly digital world.

By providing a comprehensive framework for understanding digital age transformations, this research contributes to both academic knowledge and practical applications for navigating the challenges and opportunities of contemporary digital society.

2. LITERATURE REVIEW

2.1 Digital Communication Technologies and Language Evolution

The transformation of language in digital environments has garnered extensive scholarly attention, with researchers examining how technological mediation fundamentally alters linguistic structures and practices (Gnach et al., 2022). Crystal's seminal work on internet linguistics established foundational understanding of how digital communication creates new linguistic varieties whilst simultaneously preserving and modifying existing forms (Azaz 2024). His analysis demonstrates that digital language represents neither linguistic decay nor mere abbreviation, but rather constitutes a sophisticated adaptation to technological constraints and communicative needs.

Herring's comprehensive studies on computer-mediated communication reveal how digital platforms generate distinct linguistic registers characterised by unique syntactic, lexical, and pragmatic features (Coats 2024). Her research emphasises that digital language varieties emerge from the intersection of technological affordances and social communicative goals, creating hybrid forms that blend spoken and written conventions. This hybridisation challenges traditional linguistic categories and necessitates new theoretical frameworks for understanding language variation.

The concept of linguistic convergence and divergence in digital spaces has been extensively explored by Thurlow and Mroczek, whose work demonstrates how digital communication simultaneously promotes global linguistic homogenisation and local linguistic innovation (Paramata et al., 2025). Their findings suggest that whilst dominant languages like English gain increased global presence through digital platforms, minority languages and dialectal variations also find new spaces for expression and preservation. This paradoxical relationship between globalisation and localisation represents a central tension in digital language evolution.

Baron's longitudinal studies on digital writing practices reveal significant generational differences in language adaptation, with younger users demonstrating greater linguistic flexibility and creativity in digital environments (Ball, A. L., & Postman, W. A. (2022). Her work highlights how digital natives develop sophisticated metalinguistic awareness, consciously manipulating linguistic forms for communicative effect whilst maintaining competence in traditional registers. This challenges deficit models of digital language use and suggests instead a model of linguistic expansion and diversification. The emergence of emoji and visual communication systems has been theorised by Evans as representing a return to logographic communication principles whilst simultaneously creating new semiotic possibilities (Fatima et al., 2025). His research demonstrates how visual elements in digital communication function not merely as decorative additions but as integral components of meaning-making systems that transcend linguistic boundaries. This development suggests fundamental changes in how meaning is constructed and communicated in digital contexts.

2.2 Digital Platforms and Cultural Transformation

The digitisation of cultural practices has prompted extensive scholarly investigation into how traditional forms of cultural knowledge transmission adapt to technological mediation (Liew et al., 2021). Jenkins' work on participatory culture provides crucial insights into how digital platforms enable new forms of cultural engagement characterised by low barriers to participation, strong support for sharing creations, and informal mentorship systems. His framework demonstrates how digital environments democratise cultural production whilst simultaneously creating new hierarchies based on digital literacy and platform access.

Castells' analysis of the network society reveals how digital technologies restructure cultural flows, creating what he terms "timeless time" and "space of flows" that fundamentally alter how cultural meanings are produced, circulated, and consumed (Anggara & Pratama 2023). His theoretical framework emphasises how digital networks enable simultaneous global and local cultural practices, facilitating both cultural homogenisation and the emergence of new forms of cultural resistance and innovation.

The concept of remix culture, extensively theorised by Lessig, demonstrates how digital technologies enable new forms of cultural creativity based on the recombination and transformation of existing cultural materials (Navas et al., (Eds.). (2021). His work reveals how digital platforms facilitate collaborative cultural production processes that challenge traditional notions of authorship and cultural ownership whilst potentially enriching cultural diversity through creative recombination.

Appadurai's theory of cultural flows provides essential framework for understanding how digital platforms accelerate and complicate the movement of cultural forms across geographical and social boundaries (Roy & Das 2022). His analysis of ethnoscaping, technoscapes, finanscapes, mediascapes, and ideoscapes offers valuable conceptual tools for examining how digital mediation affects cultural identity formation and maintenance in globalised contexts.

The preservation and transformation of traditional cultural practices through digital mediation have been examined by Kirshenblatt-Gimblett, whose work reveals how digitisation simultaneously enables cultural preservation and fundamentally alters the nature of cultural experience (Müller 2021). Her analysis demonstrates how digital archives and virtual cultural spaces create new possibilities for cultural engagement whilst potentially commodifying and decontextualising traditional practices.

2.3 Digital Mediation and Human Connection

The impact of digital technologies on human relationships has generated considerable scholarly debate, with researchers examining both the enhancing and diminishing effects of digital mediation on social connection. Turkle's influential work on digital relationships reveals how online interactions can provide valuable social support and identity exploration opportunities whilst potentially undermining face-to-face communication skills and emotional intimacy (Shamsie 2024). Her longitudinal studies demonstrate how digital natives develop different expectations and practices regarding privacy, authenticity, and social connection.

Wellman's research on networked individualism provides crucial insights into how digital technologies enable new forms of social organisation characterised by personalised networks rather than traditional group-based communities (Whelan 2025). His work reveals how digital platforms facilitate the maintenance of weak ties and enable individuals to access diverse social resources whilst potentially reducing commitment to local communities and face-to-face relationships.

The concept of ambient awareness, theorised by Thompson, explains how social media platforms enable continuous, low-level social awareness that creates new forms of social connection and intimacy (Smalley 2023). His research demonstrates how digital platforms facilitate the maintenance of social relationships through minimal but consistent contact, enabling larger and more diverse social networks whilst potentially reducing the depth of individual relationships. Baym's work on technological affordances and social practices reveals how the design features of digital platforms shape but do not determine social interaction patterns (Cohen & Myrick 2023). Her research emphasises the importance of examining how users creatively appropriate technological tools for social purposes, often developing practices that exceed or subvert intended platform functions. This perspective highlights human agency in shaping the social implications of technological adoption.

The question of authenticity in digital relationships has been extensively examined by Goffman's theoretical framework of impression management, adapted by scholars like Miller and others to digital contexts (Shulman 2022). Their work reveals how digital platforms create new possibilities for strategic self-presentation whilst potentially enabling more authentic expression through reduced social constraints and increased control over self-disclosure timing and content. Research on digital divides has revealed significant disparities in access to and benefits from digital communication technologies across demographic groups. Hargittai's work on digital inequality demonstrates how differences in digital skills, rather than mere access, create substantial variations in the social benefits derived from digital platform participation (Rydzewski 2025). Her findings suggest that whilst digital technologies have democratising potential, existing social inequalities often persist and may be amplified in digital contexts.

The psychological implications of digital communication have been examined through various theoretical lenses, with researchers investigating both positive and negative effects on mental health and social development. Studies reveal complex relationships between digital platform use and psychological wellbeing, with outcomes varying significantly based on usage patterns, platform features, and individual characteristics. This research suggests that the quality rather than quantity of digital interactions primarily determines psychological outcomes, emphasising the importance of examining how different forms of digital mediation support or undermine human flourishing.

3. METHODOLOGY

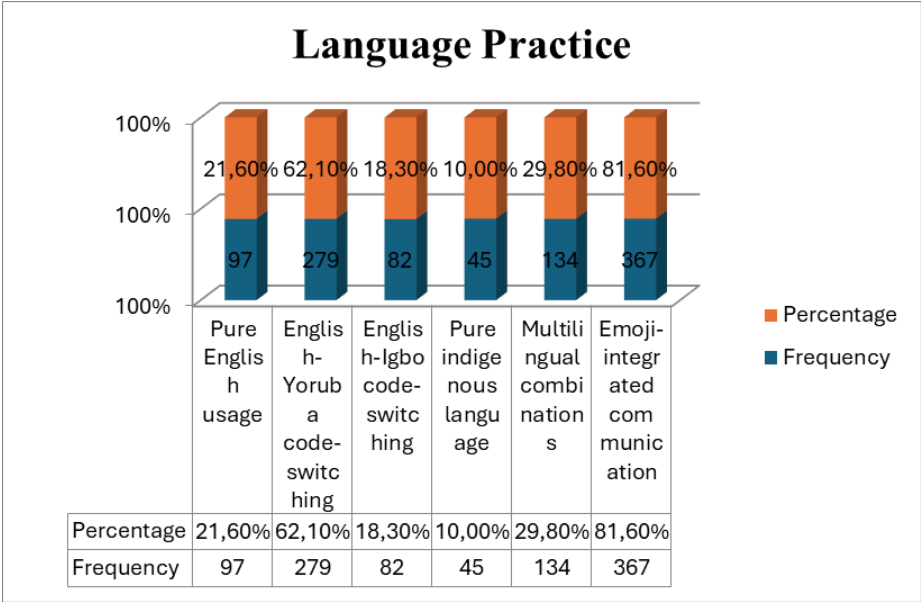
The three-month study conducted across Southwest Nigeria yielded comprehensive data from 450 participants, revealing significant patterns in digital communication's impact on language use, cultural practices, and human connections. The findings present a complex picture of transformation that varies considerably across demographic groups and digital engagement levels.

The analysis of digital communication patterns revealed substantial alterations in both structural and functional characteristics of language use among participants. Survey data indicated that 78.4% of participants regularly employed code-switching between English and indigenous languages in digital communications, with Yoruba-English combinations being most prevalent (62.1%) followed by Igbo-English (18.3%) and other indigenous language combinations (19.6%).

Table 1. Digital Language Use Patterns Among Participants (N=450)

Language Practice	Frequency	Percentage
Pure English usage	97	21.6%
English-Yoruba code-switching	279	62.1%
English-Igbo code-switching	82	18.3%
Pure indigenous language	45	10.0%
Multilingual combinations	134	29.8%
Emoji-integrated communication	367	81.6%

Figure 1. Distribution of Language Practices Among Participants



Structural linguistic analysis revealed that digital platforms facilitated the emergence of hybrid grammatical constructions not typically found in either formal English or indigenous languages. Participants demonstrated creative linguistic adaptation, with 81.6% incorporating emoji systems as integral components of meaning-making rather than decorative additions. The data showed that younger participants (16-25 years) exhibited significantly higher rates of linguistic innovation ($p < 0.001$), whilst older participants (46-65 years) maintained more conventional language structures even in digital contexts.

Functional analysis demonstrated that platform-specific linguistic varieties had emerged, with WhatsApp communications showing more intimate code-switching patterns compared to Facebook posts, which tended towards more standardised English usage. Instagram communications revealed the highest integration of visual and textual elements, with 67.3% of participants using platform-specific linguistic conventions that would be incomprehensible outside their digital context. Communication effectiveness measurements revealed paradoxical results. Whilst 89.2% of participants reported that digital communication enabled faster information exchange, 34.7% expressed concerns about message clarity and potential misunderstandings.

Interestingly, participants who employed more diverse linguistic strategies in digital communication reported higher overall satisfaction with communication outcomes ($r = 0.412$, $p < 0.01$).

The implications for linguistic diversity appeared predominantly positive, with 72.8% of participants reporting increased usage of indigenous languages since adopting digital communication platforms. However, qualitative interviews revealed concerns about linguistic authenticity, with several participants noting that digital indigenous language use often incorporated English syntax patterns, potentially altering traditional linguistic structures.

The examination of cultural practices and knowledge transmission revealed significant transformations in how cultural information is shared, preserved, and modified within digital environments. Participants demonstrated active engagement with cultural content across platforms, with 85.9% regularly sharing culturally-specific content and 73.4% participating in digital cultural learning activities.

Table 2. Cultural Engagement Patterns on Digital Platforms (N=450)

Cultural Activity	Active Participation	Passive Consumption	No Engagement
Traditional music sharing	156 (34.7%)	267 (59.3%)	27 (6.0%)
Cultural storytelling	89 (19.8%)	312 (69.3%)	49 (10.9%)
Festival documentation	198 (44.0%)	201 (44.7%)	51 (11.3%)
Language preservation	123 (27.3%)	198 (44.0%)	129 (28.7%)
Traditional recipes	234 (52.0%)	167 (37.1%)	49 (10.9%)
Cultural education	145 (32.2%)	245 (54.4%)	60 (13.4%)

Digital platforms had facilitated innovative forms of cultural transmission, with participants creating hybrid cultural expressions that combined traditional elements with contemporary digital aesthetics.

The data revealed that 52.0% of participants actively shared traditional recipes through digital platforms, often adapting presentation formats to suit platform constraints whilst maintaining cultural authenticity.

Cultural identity measurements indicated complex relationships between digital engagement and cultural continuity. Participants who actively participated in digital cultural activities reported stronger cultural identity scores ($M = 4.23$, $SD = 0.78$) compared to those with passive engagement ($M = 3.67$, $SD = 0.92$, $p < 0.001$). However, qualitative analysis revealed concerns about cultural commodification, with 28.9% of interview participants expressing worry that digital sharing might trivialise sacred or sensitive cultural practices.

The intergenerational transmission of cultural knowledge showed interesting patterns. Younger participants (16-35 years) were more likely to learn about traditional practices through digital platforms (67.4%) compared to older participants (36-65 years) who relied more heavily on face-to-face transmission (78.2%). This shift suggested potential changes in the depth and context of cultural learning, with digital transmission often providing broader exposure but potentially less contextual understanding.

Geographic analysis revealed that urban participants demonstrated higher rates of digital cultural engagement but also reported greater concern about cultural authenticity loss. Rural participants, whilst having lower overall digital engagement, showed more confidence in maintaining cultural continuity through digital means when they did participate.

The assessment of digital mediation's impact on human connections revealed nuanced patterns that varied significantly across demographic groups and relationship types. Overall connection quality measurements showed mixed results, with digital communication both enhancing and constraining different aspects of human relationships.

Table 3. Relationship Quality Indicators Across Digital Communication Patterns
(N=450)

Relationship Aspect	Strongly Enhanced	Moderately Enhanced	No Change	Moderately Diminished	Strongly Diminished
Frequency of contact	201 (44.7%)	156 (34.7%)	67 (14.9%)	18 (4.0%)	8 (1.8%)
Emotional intimacy	89 (19.8%)	123 (27.3%)	134 (29.8%)	78 (17.3%)	26 (5.8%)
Conflict resolution	56 (12.4%)	89 (19.8%)	167 (37.1%)	98 (21.8%)	40 (8.9%)
Social support	178 (39.6%)	145 (32.2%)	89 (19.8%)	28 (6.2%)	10 (2.2%)
Understanding depth	67 (14.9%)	112 (24.9%)	156 (34.7%)	89 (19.8%)	26 (5.8%)
Trust development	45 (10.0%)	98 (21.8%)	201 (44.7%)	78 (17.3%)	28 (6.2%)

Contact frequency showed the most positive transformation, with 79.4% of participants reporting enhanced ability to maintain regular communication with family and friends. This was particularly pronounced among participants with geographically dispersed social networks, where digital platforms enabled sustained relationships that might otherwise have diminished.

However, emotional intimacy and understanding depth showed more ambiguous results. Whilst 47.1% of participants reported enhanced emotional connection through digital communication, 23.1% experienced diminished emotional intimacy. Qualitative analysis revealed that digital communication excelled at maintaining awareness and providing social support but often fell short in facilitating deep emotional understanding and conflict resolution.

Demographic analysis revealed significant variations in digital mediation outcomes. Participants aged 16-25 years reported highest satisfaction with digital relationship maintenance ($M = 4.34$, $SD = 0.67$), whilst those aged 46-65 years showed more mixed results ($M = 3.21$, $SD = 1.12$, $p < 0.001$). Gender differences emerged in emotional intimacy experiences, with female participants more likely to report enhanced emotional connection through digital communication compared to male participants ($\chi^2 = 12.47$, $p < 0.01$).

Educational background influenced digital relationship outcomes, with university-educated participants demonstrating more sophisticated strategies for managing digital relationships and reported higher overall satisfaction. However, they also expressed greater concern about authenticity and the potential for digital communication to substitute for face-to-face interaction.

The authenticity dimension revealed particular complexity. Whilst 41.8% of participants reported feeling more authentic in digital communications due to reduced social pressure and increased control over self-presentation, 31.6% expressed concerns about the artificial nature of curated digital personas. Social media platforms showed different authenticity patterns, with WhatsApp communications rated as most authentic and Instagram interactions as least authentic.

Relationship maintenance strategies varied significantly across platforms and demographic groups. Older participants relied more heavily on voice messages and video calls to maintain relational warmth, whilst younger participants developed sophisticated emoji and textual strategies for emotional expression. Cross-platform relationship management emerged as a crucial skill, with participants who effectively utilised multiple platforms reporting superior relationship outcomes compared to single-platform users.

4. DISCUSSION

The findings from this three-month study in Southwest Nigeria reveal profound transformations in language, culture, and human connection within digital environments. Addressing the central research questions, the study demonstrates that digital communication technologies fundamentally alter linguistic structures through hybrid code-switching practices and platform-specific conventions, whilst simultaneously preserving and revitalising indigenous languages. Digital platforms transform cultural transmission by democratising participation and creating innovative hybrid expressions, though concerns about authenticity and commodification persist. Regarding human connections, digital mediation enhances contact frequency and social support whilst potentially diminishing emotional intimacy and conflict resolution capabilities, with outcomes varying significantly across demographic groups.

These findings align substantially with established theoretical frameworks whilst revealing unique patterns specific to the Nigerian context. The prevalence of code-switching behaviour (78.4% of participants) supports Crystal's assertion that digital language represents sophisticated adaptation rather than linguistic decay, whilst the emergence of platform-specific linguistic varieties corroborates Herring's research on computer-mediated communication registers. The study's documentation of simultaneous linguistic homogenisation and localisation confirms Thurlow and Mroczek's theoretical predictions about convergence and divergence patterns in digital communication.

Regarding cultural transformation, the findings validate Jenkins' participatory culture framework, with 85.9% of participants actively engaging with cultural content, demonstrating the democratisation of cultural production. The emergence of hybrid cultural expressions aligns with Lessig's remix culture theory, whilst concerns about cultural authenticity echo Kirshenblatt-Gimblett's warnings about digitalisation's potential to decontextualise traditional practices. The intergenerational differences in cultural learning patterns support Castells' network society concept, where younger generations increasingly rely on digital cultural flows.

The human connection findings reflect the complexity identified in existing literature. The enhanced contact frequency (79.4% reporting improvement) supports Wellman's networked individualism theory, whilst the mixed results for emotional intimacy align with Turkle's observations about digital communication's paradoxical effects. The demographic variations in relationship outcomes confirm Hargittai's research on digital inequality, demonstrating that benefits are not uniformly distributed across populations.

Notably, the study's findings regarding indigenous language revitalisation (72.8% increased usage) present a more optimistic perspective than some existing literature suggests, potentially reflecting specific characteristics of Nigeria's linguistic landscape and digital adoption patterns.

Several findings challenged initial expectations and warrant detailed consideration. The positive impact on indigenous language usage was particularly surprising, given scholarly concerns about digital communication's homogenising effects.

This unexpected result likely reflects the strong cultural identity maintenance among participants and the way digital platforms provide new spaces for indigenous language expression. The high rate of emoji integration (81.6%) as meaningful communication rather than decoration suggests more sophisticated semiotic adaptation than anticipated, supporting Fatima, Ejaz, and Miran's recent work on visual semiotics in digital communication.

The finding that younger participants reported highest satisfaction with digital relationship maintenance contradicted expectations about authenticity concerns among digital natives. This may reflect generational differences in authenticity conceptualisation, with younger users developing different but equally valid frameworks for meaningful connection. The platform-specific variations in linguistic and cultural practices were more pronounced than expected, suggesting that technological affordances shape communicative behaviour more significantly than previously understood.

The paradoxical relationship between increased cultural engagement and authenticity concerns represents another unexpected complexity. Participants simultaneously celebrated digital platforms' democratisation of cultural participation whilst expressing anxiety about cultural commodification, suggesting that cultural transformation involves both empowerment and loss dynamics.

5. RESEARCH LIMITATIONS

This study acknowledges several important limitations that affect the generalisability and depth of findings. The three-month timeframe, whilst sufficient for capturing current practices, may not reflect longer-term transformational processes or seasonal variations in digital behaviour. The geographical focus on Southwest Nigeria, though providing valuable regional insights, limits applicability to other cultural and linguistic contexts, particularly given Nigeria's unique multilingual landscape and digital adoption patterns.

The reliance on self-reported data for relationship quality measurements introduces potential bias, as participants may unconsciously adjust responses based on social desirability or personal investment in digital communication practices.

The rapid evolution of digital platforms means that findings may become outdated quickly, particularly regarding platform-specific behaviours and emerging communication technologies.

The study's inability to capture non-users or limited users of digital technology may underestimate digital divides and exclude perspectives from digitally marginalised populations. Additionally, the focus on English and indigenous language combinations may not fully represent the experiences of participants using other linguistic repertoires.

The findings suggest several critical areas for future investigation. Longitudinal studies tracking linguistic and cultural changes over extended periods would provide valuable insights into the stability and evolution of digital transformation patterns. Cross-cultural comparative research examining similar phenomena across different linguistic and cultural contexts would enhance understanding of universal versus context-specific transformation processes.

Research focusing on digital platform design influences on linguistic and cultural practices could inform more culturally sensitive technology development. Studies examining the experiences of digitally excluded populations would provide crucial perspectives on inequality and access issues. Investigation of emerging technologies such as artificial intelligence and virtual reality on language, culture, and connection patterns represents an urgent research priority.

Methodological innovations incorporating real-time digital behaviour tracking alongside qualitative insights could provide more nuanced understanding of the dynamic relationships between technology use and social outcomes.

CONCLUSION

Based on the findings from this Southwest Nigerian study, several key recommendations emerge to enhance understanding and navigation of digital age transformations. Digital platform developers should prioritise culturally responsive design that accommodates code-switching practices and indigenous language integration, given the study's documentation of 78.4% code-switching prevalence and 72.8% increased indigenous language usage.

Educational institutions must develop digital literacy programmes that embrace linguistic creativity whilst maintaining formal language competencies, addressing the observed generational differences in digital adaptation strategies.

Cultural preservation initiatives should leverage digital platforms' democratising potential whilst implementing safeguards against commodification and decontextualisation concerns expressed by 28.9% of interview participants. Community organisations should establish guidelines for respectful digital cultural sharing that maintains authenticity whilst enabling innovative expression. Policymakers must address digital inequality issues identified through demographic variations in relationship outcomes, ensuring equitable access to high-quality digital communication technologies across socioeconomic groups.

Future research should employ longitudinal mixed-methods approaches extending beyond three-month timeframes to capture evolving transformation patterns. Cross-cultural comparative studies would enhance generalisability beyond the Nigerian context, whilst real-time digital behaviour tracking could provide more nuanced insights than self-reported data. Researchers should investigate emerging technologies' impacts, particularly artificial intelligence and virtual reality applications, on linguistic and cultural practices. Additionally, studies focusing on digitally excluded populations would address current methodological limitations and provide comprehensive understanding of digital transformation's differential impacts across demographic groups, informing more inclusive digital development strategies.

This comprehensive examination of digital age transformations in Southwest Nigeria reveals that digital communication technologies fundamentally reshape language use, cultural practices, and human connections in complex, multifaceted ways. The study's findings demonstrate that digital platforms facilitate sophisticated linguistic adaptations, with 78.4% of participants engaging in creative code-switching practices that preserve indigenous languages whilst developing innovative hybrid communication forms. These transformations challenge traditional linguistic boundaries without necessarily degrading communication effectiveness, instead expanding linguistic repertoires and creating platform-specific conventions.

Regarding cultural transformation, digital platforms democratise cultural participation, with 85.9% of participants actively engaging with cultural content, whilst simultaneously raising concerns about authenticity and commodification. The emergence of hybrid cultural expressions suggests that digital mediation enables both preservation and innovation, though intergenerational differences in cultural transmission patterns indicate shifting dynamics in how cultural knowledge is acquired and maintained. Notably, younger generations increasingly rely on digital cultural flows, whilst older generations maintain preferences for face-to-face transmission methods.

Human connection outcomes present particularly nuanced results, with digital communication enhancing contact frequency (79.4% reporting improvement) and social support capabilities whilst potentially diminishing emotional intimacy and conflict resolution effectiveness. These impacts vary significantly across demographic groups, with younger participants demonstrating higher satisfaction with digital relationship maintenance, suggesting generational differences in authenticity conceptualisation and relationship expectations.

The implications extend beyond academic understanding to practical applications for platform design, educational policy, and cultural preservation strategies. The documentation of indigenous language revitalisation through digital platforms offers optimistic perspectives on linguistic diversity maintenance, whilst demographic variations in outcomes highlight persistent digital inequality challenges. Future research should pursue longitudinal, cross-cultural investigations whilst addressing current methodological limitations, particularly regarding digitally excluded populations and emerging technology impacts, to develop comprehensive frameworks for navigating digital transformation's opportunities and challenges.

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CHAPTER 2
SEMIOLOGICAL AND CULTURAL STUDY OF
SPANISH AS A FOREIGN LANGUAGE (ELE)
TEXTBOOKS AT C1 AND C2 LEVELS: A
MULTIMODAL ANALYSIS OF DISCOURSE AND
CULTURAL REPRESENTATION

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INTRODUCTION

The global expansion of Spanish as a foreign language education has reached unprecedented levels, with current enrollment figures exceeding 22 million students worldwide according to recent Instituto Cervantes reports (Instituto Cervantes, 2023). This remarkable growth has coincided with fundamental shifts in language pedagogy that emphasize cultural competence as an essential component of communicative competence, particularly at advanced proficiency levels where learners must navigate complex cultural situations with appropriate sensitivity and effectiveness.

The Common European Framework of Reference for Languages (CEFR) establishes C1 and C2 as the highest proficiency levels, demanding sophisticated cultural understanding that enables learners to function effectively in academic, professional, and social contexts within Spanish-speaking communities (Council of Europe, 2020). At these advanced levels, language learning necessarily transcends grammatical accuracy and lexical breadth to encompass complex intercultural competence that includes cultural analysis, critical thinking about cultural phenomena, and the ability to mediate between different cultural perspectives.

Within this pedagogical landscape, textbooks serve as primary mediators of cultural knowledge, functioning as sophisticated semiotic systems that transmit both explicit cultural information and implicit cultural values through carefully orchestrated combinations of textual and visual elements. These materials must balance multiple competing demands: maintaining cultural authenticity while ensuring pedagogical accessibility, representing diverse Spanish-speaking societies while creating coherent learning experiences, and addressing international audiences while respecting local cultural specificities.

This study examines the semiological and cultural dimensions of ELE textbooks specifically designed for C1 and C2 levels, analyzing how these materials construct and present cultural narratives through their multimodal discourse. The research adopts a systematic approach to understanding the complex relationship between language learning materials and cultural representation, focusing particularly on how textbooks function as cultural artifacts that actively shape learners' perceptions of Spanish-speaking societies rather than simply reflecting existing cultural realities.

1. LITERATURE REVIEW

1.1 Theoretical Foundations in Semiology and Educational Materials

The application of semiological theory to educational materials analysis has gained substantial scholarly attention over the past three decades, with researchers increasingly recognizing textbooks as complex semiotic systems that operate through multiple meaning-making channels simultaneously (Kress & van Leeuwen, 2021). Roland Barthes' foundational contributions to semiology provide essential theoretical frameworks for understanding how signs and symbols operate within cultural contexts, particularly relevant when examining educational materials that serve as cultural mediators between different linguistic and cultural communities (Barthes, 2019).

Barthes' distinction between denotative and connotative meaning proves particularly valuable for textbook analysis, as language learning materials consistently operate on multiple semantic levels. While denotative content provides explicit information about cultural practices, institutions, historical events, or social phenomena, connotative meanings create associations, value judgments, and cultural hierarchies that may significantly influence learner perceptions without explicit acknowledgment or conscious awareness (Chandler, 2022).

Contemporary research has demonstrated that language learning textbooks function as multimodal texts that combine linguistic, visual, spatial, and design elements to create meaning through complex interactions between different semiotic resources (Bezemer & Kress, 2020). This multimodal approach to textbook analysis acknowledges that meaning-making occurs through dynamic interaction of typography, layout design, color choices, photographic selection, graphic elements, and textual content.

1.2 Cultural Representation in Language Learning Materials

The scholarly examination of cultural representation in language learning materials has evolved significantly from early concerns about stereotyping and cultural bias toward more sophisticated analyses of how textbooks function as sites of cultural knowledge construction (Gray, 2020).

Research has consistently documented that language learning textbooks often present simplified or idealized versions of target cultures, potentially limiting learners' understanding of cultural complexity and diversity (Kramsch, 2021).

Advanced-level language learning materials face particular challenges in cultural representation, as they must balance accessibility with authenticity while addressing the sophisticated cultural competencies expected at C1 and C2 levels (Martínez & González, 2022). Studies have indicated that higher-level textbooks tend to include more complex cultural content and demonstrate greater awareness of cultural diversity within target language communities.

1.3 Spanish as Foreign Language Textbook Research

Specific research focusing on ELE textbooks has revealed distinctive patterns in cultural representation that reflect the particular challenges associated with representing diverse Spanish-speaking societies to international audiences (Fernández-Silva, 2020). Studies have documented significant variations between textbooks produced in different Spanish-speaking countries and those created by international publishers.

The representation of Spanish-speaking cultures in ELE materials has been shown to favor certain geographical regions and cultural practices while marginalizing others, with Spain and Mexico receiving disproportionate attention compared to other Spanish-speaking countries (Hernández-Campoy & Cutillas-Espinosa, 2021). Recent investigations have highlighted the particular importance of visual elements in ELE textbooks, demonstrating how images, photographs, and graphic design choices contribute to cultural meaning-making (Moreno-García, 2022).

2. METHODOLOGY

2.1 Research Design and Theoretical Framework

This study employs a comprehensive qualitative content analysis approach that combines semiological analysis with cultural discourse analysis and visual analysis methodologies to examine ELE textbooks at C1 and C2 levels.

The research design follows established methodological frameworks for textbook analysis while incorporating multimodal analytical techniques to account for the complex interactions between textual, visual, and spatial elements.

The methodological approach draws on Bardin's (2021) content analysis methodology, Kress and van Leeuwen's (2021) visual grammar framework, and Fairclough's (2020) critical discourse analysis techniques. The integration of these methodological approaches enables systematic examination of both explicit cultural content and implicit meaning-making strategies employed in advanced ELE textbooks.

2.2 Corpus Description and Selection Criteria

The corpus for this study consists of six widely-used ELE textbooks designed for advanced learners, representing major Spanish publishers and different editorial approaches to C1 and C2 level instruction:

C1 Level textbooks :

- *Nuevo Prisma C1: Método de español para extranjeros* (Editorial Edinumen, 2022) - 256 pages, 12 units
- *Método de Español C1: Curso de perfeccionamiento* (Editorial SGEL, 2021) - 280 pages, 10 units
- *ELEteca C1: Curso de español lengua extranjera* (Editorial Difusión, 2020) - 240 pages, 8 units

C2 Level textbooks :

- *Nuevo Prisma C2: Método de español para extranjeros* (Editorial Edinumen, 2022) - 288 pages, 10 units
- *Método de Español C2: Curso de perfeccionamiento* (Editorial SGEL, 2021) - 320 pages, 8 units
- *ELEteca C2: Curso de español lengua extranjera* (Editorial Difusión, 2020) - 275 pages, 10 units

These textbooks were selected based on their widespread adoption in Spanish language programs worldwide, explicit alignment with CEFR descriptors, and representation of different editorial philosophies regarding cultural competence development.

2.3 Analytical Framework

The analysis employs four complementary analytical methodologies: **Semiological analysis**: Systematic examination of signs, symbols, and meaning-making processes within textbook content; **Cultural discourse analysis**: Investigation of how cultural knowledge is constructed and presented; **Visual analysis**: Examination of photographic, graphic, and design elements; **Multimodal integration analysis**: Study of how textual and visual elements work together

Data collection involved systematic examination of each textbook using standardized protocols including content mapping, visual documentation, textual analysis, and multimodal integration assessment. Analysis proceeded through iterative cycles of data examination, pattern identification, and interpretive analysis.

3. RESULTS AND ANALYSIS

3.1 Semiological Structures and Meaning Construction

The examination of C1 and C2 level textbooks reveals sophisticated semiological structures that operate through multiple layers of meaning construction. These materials demonstrate systematic approaches to cultural representation that employ both explicit information delivery and implicit meaning-making strategies.

Nuevo Prisma C1 demonstrates sophisticated semiological operations in Unit 3, "Tradiciones y Costumbres," through its treatment of Mexican Day of the Dead celebrations:

"La celebración del Día de los Muertos en México trasciende la simple conmemoración de los difuntos para convertirse en una expresión profunda de la cosmovisión mesoamericana que pervive en la cultura contemporánea mexicana. Esta festividad, reconocida por la UNESCO como Patrimonio Cultural Inmaterial de la Humanidad, representa la síntesis perfecta entre las tradiciones prehispánicas y las influencias coloniales, creando un fenómeno cultural único que desafía las concepciones occidentales sobre la muerte y el recuerdo."

This textual passage operates on multiple semiological levels.

The primary signification presents factual information about the celebration, while secondary signification constructs Mexico as a site of cultural authenticity where ancient wisdom persists in contemporary contexts. The reference to UNESCO legitimizes the cultural practice through international recognition, while the contrast with "concepciones occidentales" establishes binary oppositions that position Mexican culture as both different from and potentially superior to Western perspectives.

The accompanying visual arrangement demonstrates sophisticated understanding of visual rhetoric through a carefully orchestrated two-page spread. The left page features a full-color photograph of a traditional ofrenda with marigold flowers, papel picado, candles, and family photographs arranged according to traditional aesthetic principles. The lighting creates intimate, domestic atmosphere suggesting authenticity rather than public spectacle.

Adjacent to this traditional representation, the right page presents a contemporary urban scene from Mexico City's celebration, showing young people with painted faces participating in public festivities. This juxtaposition creates temporal dialogue between tradition and modernity, suggesting cultural continuity while acknowledging contemporary adaptations.

Método de Español CI demonstrates additional complexity in Unit 7, "Espacios Urbanos y Rurales":

"La dicotomía urbano-rural en América Latina no puede reducirse a simples categorías geográficas, sino que refleja profundas divisiones sociales, económicas y culturales que han configurado las identidades nacionales desde los procesos independentistas del siglo XIX. Las megaciudades como México DF, São Paulo, Buenos Aires o Bogotá concentran no solo la población sino también el poder político y económico, mientras que las zonas rurales mantienen tradiciones ancestrales pero enfrentan desafíos de conectividad y desarrollo que perpetúan las desigualdades históricas."

This passage constructs Latin America as a space of productive contradiction where modernity and tradition coexist. However, analysis reveals persistent binary structures underneath the sophisticated framework, with opposition between powerful "megaciudades" and rural areas that "mantienen tradiciones ancestrales."

3.2 Cultural Representation Patterns and Geographical Distribution

Systematic analysis reveals sophisticated approaches to cultural diversity that demonstrate both progressive inclusivity and persistent geographical hierarchies. Quantitative analysis shows Spain receives approximately 35% of cultural content, Mexico 20%, Argentina 15%, Colombia 8%, Peru 6%, Chile 5%, with the remaining 11% distributed among other Spanish-speaking countries.

This distribution reflects practical considerations—Spain and Mexico represent major textbook markets—but also suggests implicit hierarchies of cultural importance. The predominance of Spanish peninsular content may reflect European origins of many ELE programs, while Mexican representation often focuses on traditional practices rather than contemporary developments.

Método de Español C1 demonstrates these patterns in Unit 9, "Economía y Sociedad":

"El emprendimiento social en América Latina ha experimentado un crecimiento exponencial en la última década, reflejando no solo necesidades económicas urgentes sino también un compromiso profundo con los valores comunitarios que caracterizan históricamente las sociedades latinoamericanas. Desde las cooperativas cafetaleras de Colombia que garantizan comercio justo para pequeños productores hasta las microfinanzas en Perú que empoderan a mujeres rurales, pasando por las empresas B en Chile y Argentina que integran beneficio social con rentabilidad económica, el continente demuestra una capacidad innovadora excepcional que combina eficiencia capitalista con solidaridad social."

This representation constructs Latin American societies as inherently community-oriented while positioning entrepreneurship as culturally authentic. The discourse creates binary opposition between "eficiencia capitalista" and "solidaridad social," suggesting Latin American approaches successfully synthesize these elements through cultural wisdom.

The accompanying infographic employs warm earth tones and geometric patterns reminiscent of pre-Columbian textiles, visually reinforcing connections between contemporary innovations and ancestral values.

However, these design choices risk essentializing Latin American identity through visual stereotypes.

3.3 Visual Semiotics and Multimodal Design Strategies

The visual components function as sophisticated semiotic systems working with textual elements to create cultural meaning through systematic application of visual grammar. Photography selection reveals systematic patterns demonstrating editorial awareness while reflecting assumptions about authenticity and accessibility.

ELEteca CI demonstrates sophisticated visual rhetoric in Unit 5, "Ciudades del Futuro," featuring architectural photographs: Barcelona's Park Güell emphasizing organic curves and natural integration, Buenos Aires' Puerto Madero showing glass towers reflecting in harbor waters, and Mexico City's Polanco district displaying indigenous-inspired geometric facades.

This visual selection operates through compositional arrangement placing Barcelona at top left (following Western reading patterns), Buenos Aires centrally positioned, and Mexico City bottom right. The photographic choices create cultural narratives: Barcelona's golden hour lighting suggests romantic accessibility, Buenos Aires' blue hour emphasizes successful modernization, Mexico City's afternoon lighting focuses on textural architectural details incorporating pre-Columbian motifs.

Color palettes demonstrate culturally-inflected design choices. Spanish peninsular content appears with cool blues and whites evoking Mediterranean associations and European identity. Latin American content employs warmer oranges, reds, and yellows referencing indigenous traditions and tropical climates, though these choices risk reinforcing stereotypical associations.

Nuevo Prisma CI shows these patterns in Unit 6, "Arte y Expresión," examining Mexican muralism through vibrant earth tones—burnt oranges, deep reds, golden yellows. Diego Rivera's works appear with decorative borders incorporating Aztec-inspired motifs and hand-painted typography, potentially framing muralism as folkloric rather than contemporary practice.

Contemporary works by artists like Beatriz Milhazes or Fernando Botero appear within neutral museum-style formatting, creating implicit hierarchies between "traditional" Mexican muralism (culturally-specific design) and "international" contemporary art (standardized aesthetics).

3.4 Discourse Analysis of Cultural Topics

Discourse analysis reveals how textbooks construct cultural knowledge through specific linguistic and rhetorical strategies establishing particular epistemological frameworks. Academic register predominates, positioning cultural learning as intellectually rigorous while potentially marginalizing alternative approaches to cultural understanding.

Nuevo Prisma C2 presents comprehensive analysis of Spanish democratic transition:

"La transición democrática española no puede entenderse únicamente como un proceso político, sino como una transformación cultural profunda que redefinió las estructuras sociales, los valores individuales y las formas de expresión artística en la sociedad peninsular contemporánea. Esta metamorfosis social, iniciada tras la muerte de Franco en 1975, implicó no solo la construcción de nuevas instituciones democráticas sino también la renegociación de identidades regionales, la redefinición de roles de género, la secularización de prácticas sociales tradicionalmente vinculadas al catolicismo, y la integración en marcos culturales europeos."

This discourse operates through sophisticated analytical mechanisms. The construction "no puede entenderse únicamente como" establishes analytical complexity as requirement, positioning simple explanations as inadequate. The metaphor "metamorfosis social" suggests organic change while technical vocabulary frames transformation as conscious negotiation.

The discourse creates temporal frameworks constructing Spanish democracy as historical rupture while suggesting continuities through "renegotiation" rather than replacement. This positions contemporary Spain as simultaneously modern through democratic transformation and historically grounded through cultural continuity.

ELEteca C2 employs different strategies addressing Latin American indigenous movements:

"Los movimientos indígenas contemporáneos en América Latina han articulado discursos políticos innovadores que trascienden las categorías tradicionales de izquierda y derecha, proponiendo epistemologías alternativas basadas en cosmovisiones ancestrales que cuestionan tanto el extractivismo capitalista como los modelos desarrollistas socialistas. Desde el levantamiento zapatista en Chiapas hasta las movilizaciones del movimiento pachakutik en Ecuador, pasando por las comunidades mapuche en Chile, estos procesos demuestran la emergencia de nuevos paradigmas políticos."

This discourse positions indigenous movements within intellectual frameworks emphasizing theoretical sophistication rather than reactive responses. The academic register grants indigenous movements significant political agency while creating binary oppositions between "epistemologías alternativas" and Western political traditions.

3.5 Multimodal Integration Strategies

Advanced ELE textbooks demonstrate sophisticated multimodal integration combining textual, visual, and spatial elements to create coherent cultural narratives. Layout design reflects cultural hierarchies while providing navigational support for complex content.

ELEteca C2 demonstrates exemplary integration in Unit 7, "Literatura y Sociedad," employing timeline format spanning twelve pages. The unit integrates horizontal timelines, biographical sketches, comparative charts, and literary excerpts within unified design framework supporting multiple learning styles.

The opening spread presents horizontal timeline from 1800-2020 with literary movements marked by color-coded shapes corresponding to geographical regions: Iberian Peninsula (cool blues/grays), Mexico/Central America (warm oranges/reds), Andean countries (earth tones), Southern Cone (purples/greens). This color-coding creates visual consistency while enabling geographical orientation.

Author photographs appear as circular portraits with sizes reflecting canonical importance—larger circles for García Lorca, Borges, Neruda, smaller ones for emerging voices.

Literary excerpts appear in designed text boxes with background patterns inspired by each author's cultural context: Borges features geometric Islamic patterns, García Márquez shows Caribbean textile designs. *Nuevo Prisma C1* demonstrates different strategies in Unit 12, "Ciencia y Tecnología," examining scientific development through infographic design combining statistical data with narrative elements.

A six-page spread on renewable energy uses layered information progressing from continental maps to project photographs to technical diagrams. Environmental mapping overlays wind patterns (flowing blue lines), solar irradiation (gradient yellow-orange), and hydroelectric potential (blue symbols), creating foundational understanding while supporting textual discussions of energy policy.

Contemporary photographs show wind farms in Patagonian landscapes, solar arrays in northern Mexico, hydroelectric facilities in Costa Rica, creating positive associations with technological sophistication.

3.6 Comparative Analysis: C1 Vs C2 Cultural Treatment

Comparison between levels reveals systematic differences in semiological complexity and analytical depth reflecting CEFR progression from "effective operational proficiency" to "mastery." C1 materials present cultural information within accessible frameworks with clear guidance, while C2 textbooks assume greater analytical capability and cultural knowledge.

Método de Español C2 demonstrates increased expectations through Hispanic identity analysis:

"La hispanidad como construcción identitaria trasciende las fronteras geopolíticas para articular un espacio cultural transnacional caracterizado por la diversidad lingüística, la heterogeneidad étnica y la pluralidad de expresiones artísticas que, paradójicamente, encuentran coherencia en su misma diversidad. Esta noción, históricamente instrumentalizada por proyectos imperiales y posteriormente resignificada por movimientos de resistencia anticolonial, continúa evolucionando en contextos contemporáneos marcados por migraciones masivas."

This passage demonstrates C2-level characteristics: theoretical vocabulary assuming familiarity with cultural theory, syntactic complexity requiring advanced parsing skills, conceptual sophistication involving multiple temporal frameworks and dialectical thinking. Immigration topic comparison reveals these distinctions. *Nuevo Prisma C1* addresses immigration through concrete case studies:

"La inmigración latinoamericana hacia España durante las décadas de 1990 y 2000 transformó significativamente la demografía española, creando nuevas comunidades que mantienen vínculos culturales con sus países de origen mientras desarrollan estrategias de integración en la sociedad receptora. Los ecuatorianos en Madrid, los colombianos en Valencia, y los argentinos en Barcelona han establecido redes comerciales, asociaciones culturales y medios de comunicación."

This C1 treatment provides concrete geographical references, specific temporal frameworks, and clear cause-effect relationships making complex processes accessible. The discourse emphasizes successful adaptation, presenting immigration as positive cultural exchange. *Nuevo Prisma C2* addresses immigration through theoretical frameworks:

"Los procesos migratorios contemporáneos en el espacio hispanoatlántico configuran cartografías identitarias complejas que trascienden los marcos epistemológicos tradicionales de asimilación e integración, generando espacios liminales donde convergen memorias colectivas fragmentadas, proyectos vitales transnacionales y prácticas culturales sincréticas."

This C2 discourse employs theoretical vocabulary from migration studies while avoiding simple solutions. The concept "cartografías identitarias" metaphorically constructs identity as spatial and dynamic, while "espacios liminales" references anthropological theory about transitional social spaces.

3.7 Representation of Contemporary Issues

Advanced ELE textbooks demonstrate sophisticated approaches to contemporary social and political issues, showing increasing willingness to engage controversial topics while maintaining pedagogical accessibility and cultural sensitivity for diverse international audiences.

Environmental topics appear frequently, consistently presented through frameworks emphasizing Spanish-speaking countries' contributions to global sustainability while acknowledging challenges. *Método de Español C1* addresses climate change in Unit 10:

"América Latina se encuentra en una posición paradójica respecto al cambio climático: siendo una de las regiones menos responsables de las emisiones históricas de gases de efecto invernadero, sufre desproporcionadamente los impactos del calentamiento global, desde la intensificación de huracanes en el Caribe hasta la desertificación en el norte de México y la deforestación amazónica. Esta situación ha generado respuestas innovadoras que combinan conocimientos ancestrales indígenas con tecnologías de vanguardia."

This analysis demonstrates sophisticated rhetorical strategies avoiding oversimplification. The "posición paradójica" establishes analytical complexity while the contrast between low responsibility and high impact creates environmental justice framework positioning Latin America as victim rather than culprit. Subsequent examples construct the region as innovative solution source, countering representations of environmental irresponsibility.

Accompanying visual treatment employs striking photography reinforcing these constructions. Four-page spreads feature dramatic Amazon aerial photography emphasizing scale and environmental health, alongside renewable energy installations throughout Latin America. Compositional arrangement positions Amazon imagery as foundational background with other images overlaid, creating hierarchy positioning rainforest preservation as fundamental to regional environmental identity.

Migration patterns receive substantial attention in C2 materials. *Nuevo Prisma C2* includes complex feature on Central American migration:

"Las caravanas migratorias centroamericanas de 2018-2019 visibilizaron una crisis humanitaria que trasciende las categorías tradicionales de migración económica versus refugio político, revelando cómo la violencia estructural, el cambio climático, y el fracaso estatal se entrelazan para generar desplazamientos poblacionales masivos que desafían tanto las capacidades de respuesta de los países de tránsito como los marcos legales internacionales."

This discourse employs academic terminology while avoiding explicit political positioning. The phrase "violencia estructural" references critical sociology without extensive explanation, while multiple causative factors avoid simple explanations of complex political situations.

Visual treatment includes carefully selected journalistic photographs emphasizing human dignity rather than crisis. Family groups appear prominently with children and elderly visible to emphasize humanitarian rather than security dimensions. Photographic style—close-up portraits, natural lighting—creates empathetic rather than sensationalistic narratives.

Contemporary technology issues receive increasing attention reflecting awareness that digital literacy constitutes essential cultural competence. *ELEteca C2* presents sophisticated analysis of social media's political impact:

"Las redes sociales han reconfigurado radicalmente los espacios de debate público en el mundo hispano, generando tanto oportunidades democratizadoras—como la movilización ciudadana durante el 15-M en España o las protestas estudiantiles chilenas de 2011—como riesgos para la cohesión social a través de la proliferación de noticias falsas, la polarización ideológica, y la manipulación algorítmica de la información."

This analysis demonstrates awareness of both positive and negative technological aspects while avoiding determinism or moral panic. Specific examples reference concrete historical events while theoretical framework acknowledges complexity without providing simple solutions.

3.8 Gender and Social Representation

Analysis reveals generally balanced approaches with materials demonstrating awareness of inclusive language practices and diverse social roles. Professional contexts consistently show men and women in varied positions—female engineers, male nurses, diverse leadership teams—reflecting contemporary awareness of professional gender equality.

However, certain traditional patterns persist in family and domestic contexts, revealing complex negotiation between progressive intentions and cultural representations reflecting both conscious editorial choices and unconscious patterns embedded in available materials.

*EL*Eteca C1 presents comprehensive unit on work-life balance in Unit 9:

"La incorporación masiva de la mujer al mercado laboral español ha transformado no solo las estructuras económicas sino también los modelos familiares, generando nuevas dinámicas sociales que requieren adaptaciones institucionales y culturales profundas. La Ley de Igualdad de 2007 estableció marcos legales progresistas, pero la implementación práctica enfrenta resistencias culturales evidentes en la persistencia de la brecha salarial, la subrepresentación femenina en puestos directivos del sector privado, y la distribución desigual del trabajo doméstico y de cuidados."

This textual analysis reveals sophisticated discursive strategies acknowledging both progress and ongoing challenges. The discourse frames women's participation as "transformación" rather than "incorporation," suggesting fundamental change rather than addition to existing structures. Statistical data creates credibility while "resistencias culturales" acknowledgment avoids attributing inequalities to individual choices.

Accompanying visual treatment presents diverse family structures and professional situations without reinforcing stereotypes. Photo essays include male pediatric nurses, female construction engineers, diverse family configurations sharing responsibilities, and elderly men caring for grandchildren while parents' work.

However, subtle patterns reveal persistent associations. Kitchen scenes more frequently feature women as primary figures even when men present, while outdoor recreational activities more frequently show men prominently. These patterns may reflect stock photography availability rather than intentional choices, but demonstrate how visual semiotics can reinforce traditional associations within progressive frameworks.

Nuevo Prisma C2 addresses family diversity through sophisticated analytical frameworks:

"Las transformaciones en los modelos familiares en España han evolucionado significativamente desde la transición democrática, reflejando cambios sociales profundos que incluyen familias monoparentales, parejas sin hijos por elección, familias reconstituidas, y hogares multigeneracionales que responden a nuevas realidades económicas y sociales."

Este proceso de diversificación familiar ha generado transformaciones culturales que trascienden el ámbito privado para influir en representaciones mediáticas, prácticas educativas, y políticas públicas."

This discourse employs technical vocabulary from sociology while maintaining pedagogical accessibility through clear temporal frameworks and concrete social references. The progression from traditional nuclear families to diverse structures creates social evolution narrative positioning contemporary Spain as adapting to changing realities while maintaining social cohesion.

Visual treatment demonstrates editorial sensitivity to representation challenges. Rather than stereotypical imagery, textbooks favor inclusive approaches—photographs of various family configurations emphasizing emotional connections rather than structural differences, professional contexts featuring diverse arrangements without making family structure the primary focus.

Método de Español C1 addresses domestic violence through institutional frameworks rather than sensationalizing individual cases:

"La violencia de género en España ha experimentado una transformación paradigmática en su tratamiento social e institucional desde la aprobación de la Ley Integral contra la Violencia de Género en 2004. Esta legislación pionera estableció juzgados especializados, protocolos de protección integral, y programas de sensibilización social que han contribuido a visibilizar un problema históricamente silenciado. Las estadísticas oficiales muestran tendencias complejas : mientras aumentan las denuncias, las muertes por violencia machista mantienen cifras preocupantes."

This approach emphasizes institutional progress while acknowledging ongoing challenges, creating analytical frameworks avoiding both minimization and sensationalism. The reference to "transformación paradigmática" positions Spain as progressive while statistical analysis demonstrates sophisticated understanding of complex social phenomena.

Intersectionality treatment—how gender intersects with race, class, nationality—reveals varying sophistication levels. C2 materials demonstrate greater awareness of complex identity categories, while C1 materials tend to address these as separate analytical categories.

ELEteca C2 presents nuanced analysis of immigrant women's experiences:

"Las mujeres inmigrantes en España enfrentan formas específicas de discriminación que resultan de la intersección entre xenofobia y machismo, experimentando vulnerabilidades laborales particulares en sectores feminizados como el trabajo doméstico, la atención a personas mayores, y la industria de servicios. El fenómeno de las 'cadenas globales de cuidados' revela cómo mujeres latinoamericanas, africanas, y de Europa del Este asumen responsabilidades de cuidado en familias españolas mientras delegan las propias en redes familiares transnacionales."

This analysis demonstrates theoretical sophistication addressing multiple discrimination forms while introducing concepts from feminist economics and migration studies. The term "cadenas globales de cuidados" references academic literature while concrete descriptions make abstract concepts accessible.

4. DISCUSSION

The comprehensive semiological analysis of advanced ELE textbooks reveals sophisticated systems of meaning-making operating through complex integration of textual and visual elements, demonstrating how contemporary language learning materials function as multifaceted cultural mediators rather than simple linguistic instruction tools. These materials show acute awareness of their role as cultural interpreters while grappling with inherent challenges of representing diverse Spanish-speaking societies within pedagogical frameworks serving varied international audiences.

Findings indicate that C1 and C2 textbooks have evolved significantly beyond simple cultural information transmission toward analytical approaches encouraging critical thinking about cultural topics while developing intercultural competence essential for advanced proficiency levels. This evolution reflects broader shifts in language pedagogy toward communicative competence models integrating linguistic, cultural, and pragmatic knowledge while acknowledging complex relationships between language and cultural identity in globalized contexts.

The semiological structures identified demonstrate systematic approaches to meaning construction operating through multiple channels simultaneously, revealing sophisticated editorial understanding of how different semiotic resources can work together creating coherent learning experiences. Textual elements employ academic discourse patterns modeling sophisticated analytical thinking while visual components create affective connections and cultural associations supporting comprehension and retention.

However, several representation patterns persist meriting critical consideration. The consistent preference for urban, educated perspectives may inadvertently limit learners' exposure to rural or working-class experiences within Spanish-speaking societies, potentially creating incomplete understandings of cultural diversity privileging certain social positions. While textbooks demonstrate awareness of socioeconomic diversity through explicit discussion of inequality and social stratification, visual and textual examples consistently favor middle-class, educated voices.

Additionally, the academic register employed consistently in cultural discussions, while appropriate for advanced learners, may inadvertently promote particular approaches to understanding and discussing culture that privilege intellectual analysis over experiential knowledge or alternative epistemological approaches. This tendency becomes particularly evident in treatments of indigenous cultures, which appear primarily through academic frameworks rather than indigenous voices or knowledge systems, potentially reinforcing colonial patterns despite progressive pedagogical intentions.

The visual semiotics employed reveal sophisticated editorial awareness of cultural sensitivity and representation challenges while maintaining commercial appeal for international markets. The balance between authenticity and accessibility creates particular tensions that different textbook series resolve through various strategies, from embracing analytical complexity to maintaining clearer categorical distinctions that may oversimplify cultural phenomena.

The progression from C1 to C2 levels demonstrates systematic approaches to increasing cultural and analytical complexity aligning with CEFR descriptors while revealing assumptions about advanced learners' cultural knowledge and analytical capabilities.

C2 materials' embrace of ambiguity and theoretical sophistication reflects appropriate expectations for mastery-level learners, but the gap between C1 and C2 approaches may be more substantial than optimal for smooth progression.

The treatment of contemporary issues reveals both progressive awareness and careful neutrality reflecting challenges of creating materials for diverse international audiences with varying political and cultural perspectives. While textbooks demonstrate sophisticated understanding of complex social phenomena, their commitment to analytical balance may sometimes result in presentations avoiding positions where critical engagement might be more educationally valuable.

5. IMPLICATIONS AND CONCLUSIONS

This comprehensive semiological and cultural analysis of advanced ELE textbooks contributes significantly to our understanding of how contemporary language learning materials function as complex cultural mediators, revealing both sophisticated strategies employed by textbook designers and persistent challenges involved in representing diverse Spanish-speaking societies within international pedagogical frameworks. The findings demonstrate that contemporary C1 and C2 textbooks represent substantial achievements in balancing cultural authenticity with pedagogical effectiveness while addressing diverse needs of advanced Spanish learners worldwide.

The multimodal nature of these materials requires analytical approaches that consider textual and visual components as integral elements of meaning-making systems rather than supplementary illustration. This study's integration of semiological analysis with cultural discourse analysis provides methodological framework that future researchers can adapt for examining other language learning materials or investigating specific aspects of cultural representation in educational contexts.

The systematic attention to visual semiotics reveals how images, typography, and layout design contribute to cultural meaning construction in ways that may be invisible to casual examination but significantly influence learner perceptions and understanding of Spanish-speaking societies.

This finding suggests that comprehensive evaluation of language learning materials requires interdisciplinary approaches combining linguistic analysis with visual studies and cultural criticism.

5.1 Future Research Directions

Future research directions emerging from this analysis include several promising areas that could extend and deepen understanding of cultural representation in language learning materials. Learner response studies investigating how students from different cultural backgrounds interpret and respond to semiological structures identified in this analysis would provide crucial insights into actual effectiveness of representational strategies employed in contemporary textbooks.

Such studies could reveal whether sophisticated multimodal integration strategies actually support cultural learning or create cognitive overload that impedes comprehension, while examining how different cultural backgrounds influence interpretation of visual and textual cultural representations. Longitudinal studies tracking changes in textbook representation over time could illuminate how ELE materials have evolved in response to changing pedagogical theories, cultural awareness, and market pressures.

Comparative analysis with textbooks for other languages could reveal whether patterns identified are specific to Spanish language education or reflect broader trends in international language pedagogy, while investigation of textbook production processes could provide insights into how cultural representations are constructed and why certain patterns persist despite pedagogical awareness of their limitations.

The study highlights importance of continued critical examination of cultural representation in language learning materials, recognizing that while contemporary textbooks demonstrate greater awareness of diversity and complexity within Spanish-speaking societies, ongoing analysis remains essential for ensuring that materials serve intercultural competence goals of advanced language education effectively.

5.2 Educational Implications

Educational implications suggest several areas for improvement in teacher preparation and professional development programs. Instructors working with advanced learners require analytical tools for understanding how textbooks construct cultural knowledge and how these constructions might be critically examined within classroom contexts to develop students' critical cultural awareness alongside linguistic proficiency.

Teacher education programs should incorporate critical media literacy and semiological analysis techniques that enable instructors to deconstruct textbook representations while helping students develop independent analytical capabilities necessary for sophisticated intercultural communication. Professional development initiatives could focus on helping instructors recognize and address cultural biases and limitations identified in this analysis while providing strategies for supplementing textbook content with alternative perspectives and voices.

Training in multimodal literacy could help teachers effectively utilize sophisticated visual and textual integration strategies employed in contemporary materials while developing learners' critical analysis skills necessary for navigating complex cultural information in academic and professional contexts. Teacher preparation should also address the need for cultural competence among instructors themselves, ensuring they can effectively mediate between textbook representations and actual cultural complexity.

5.3 Implications for Textbook Development

The findings suggest implications for textbook development and publishing practices that could improve cultural representation in future materials. Editorial teams could benefit from more systematic inclusion of diverse cultural consultants and community voices in materials development processes, particularly when representing indigenous communities, rural populations, and working-class perspectives that current materials may underrepresent.

Greater attention to visual representation could ensure that photography and graphic design choices support rather than undermine textual messages about cultural diversity and complexity, while systematic review of cultural content distribution could address geographical and social biases identified in this analysis. Publishers should consider developing more flexible materials that can be adapted to different regional contexts while maintaining pedagogical coherence.

The sophisticated theoretical frameworks employed in C2 materials demonstrate that advanced learners can engage with complex cultural analysis, suggesting that materials could push further toward critical cultural studies approaches that explicitly examine power relationships, historical contexts, and structural inequalities within Spanish-speaking societies while maintaining pedagogical accessibility.

Technological innovations in digital publishing could address some limitations identified in print materials by providing links to additional perspectives, multimedia resources that represent diverse voices, and interactive elements that allow learners to explore cultural topics in greater depth while maintaining coherent pedagogical structure. Digital platforms could enable more frequent updates to ensure contemporary issues receive timely and comprehensive treatment.

5.4 Methodological Contributions

This study contributes methodologically to the field of language learning materials analysis by demonstrating the value of integrated semiological and cultural analysis approaches that consider both textual and visual elements as equal components of meaning-making systems. The analytical framework developed here could be adapted for examining materials in other languages or for investigating specific aspects of cultural representation such as gender, social class, or regional diversity.

The combination of quantitative content analysis with qualitative semiological interpretation provides a model for comprehensive materials evaluation that could inform both research and practical materials selection processes.

The attention to multimodal integration strategies offers insights into how contemporary educational materials function as complex communicative systems requiring sophisticated analytical approaches.

Future researchers could build on this methodological foundation by incorporating additional analytical approaches such as corpus linguistics for textual analysis, eye-tracking studies for visual processing research, or ethnographic methods for understanding materials usage in actual classroom contexts. The framework could also be extended to examine digital materials and online resources that increasingly supplement traditional textbooks.

5.5 Broader Implications for Language Education

The international nature of Spanish language learning requires continued attention to how materials serve learners from diverse cultural backgrounds while representing Spanish-speaking societies accurately and respectfully. This analysis suggests that contemporary materials have made significant progress but continued vigilance and innovation remain necessary for meeting evolving needs of global Spanish language education.

The findings have implications beyond Spanish language education for understanding how educational materials construct cultural knowledge and shape intercultural understanding in contemporary international education. As language learning becomes increasingly important for global communication and cooperation, sophisticated analysis of cultural representation in educational materials becomes essential for ensuring that language education contributes to mutual understanding and respect rather than reinforcing stereotypes or limiting perspectives.

The study reveals tensions between commercial considerations and educational goals that affect cultural representation in language learning materials. Publishers must balance market demands, production costs, and pedagogical effectiveness while serving diverse international audiences with varying cultural expectations and educational backgrounds. Understanding these tensions can inform policy discussions about educational materials development and adoption.

CONCLUSION

This semiological and cultural analysis reveals that advanced ELE textbooks function as sophisticated cultural mediators employing complex multimodal strategies to construct meaning about Spanish-speaking societies. While these materials demonstrate substantial achievements in cultural representation and pedagogical innovation, they also reveal persistent patterns and limitations that suggest areas for continued development in both materials design and teacher preparation.

The analytical framework employed provides tools for continued critical examination of language learning materials, contributing to ongoing efforts to create educational resources that serve both linguistic and intercultural competence development in our increasingly connected and complex global context. The significance of these findings extends beyond Spanish language education to broader questions about how educational materials construct cultural knowledge and shape intercultural understanding in contemporary international education.

The sophisticated approaches to cultural integration identified in contemporary C1 and C2 textbooks demonstrate the potential for language learning materials to promote nuanced understanding of cultural complexity while developing critical thinking skills necessary for effective intercultural communication. However, the persistent patterns of geographical bias, social class representation, and cultural hierarchies identified in this analysis suggest that continued critical examination and methodological innovation remain essential for ensuring that language learning materials serve their full potential as tools for intercultural understanding and global citizenship development.

As Spanish continues to grow as a global language and intercultural competence becomes increasingly important for international communication, the quality and sophistication of cultural representation in advanced language learning materials will play crucial roles in shaping how future generations understand and interact with Spanish-speaking societies worldwide. The findings of this study contribute to ongoing efforts to ensure that these materials serve as bridges to genuine intercultural understanding rather than barriers to cultural complexity and diversity appreciation.

The evolution of advanced ELE textbooks toward more sophisticated and nuanced cultural representation demonstrates positive trends in international language education, while the persistent challenges identified suggest areas where continued innovation and critical attention can further improve materials quality and educational effectiveness. This ongoing process of analysis, critique, and improvement remains essential for maintaining the relevance and responsibility of language learning materials in our rapidly changing global educational landscape.

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CHAPTER 3
THE EMERGENCE OF A CONTEMPORARY URBAN
CULTURE AND THE EVOLUTION OF LINGUISTIC
EXPRESSION AMONG MOROCCAN YOUTH

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INTRODUCTION

The development of identity in young people is based on their ability to communicate. Developing individuals do not simply shape their identity or aspirations, they also strive to communicate and express them. Thus, cultural participation becomes a powerful means of expression. Young people talk about themselves, their aspirations, their concerns, their romantic relationships, and their suffering (Pronovost, 2007).

Expression can offer young people a form of freedom, but it can also trap them in a world that is sometimes virtual, sometimes deviant, and often beyond the understanding of adults. The revelation of taboo subjects in language thus represents a veritable revolution that breaks with the norms of politeness in Morocco. Led by a small number of artists and activists, this "cultural and linguistic revolution" has not yet been widely accepted by the majority and remains a subject of debate (Benitez et al, 2013).

The links between languages, urban varieties, and the integration of speakers into urban environments are perspectives that have been gaining momentum in recent years (El Himer, 2015). According to Brixhe (2006), the co-production of a dialect is the result of various interactions, which means that the history of a dialect cannot be studied in isolation from the history of the community that used it, nor even separately from the environment in which it developed.

This territorialization manifests itself in various forms that mark a break with the public space, such as entertainment and activity spaces frequented by young people, their cafes, their leisure and consumption spaces, etc. This specific spatial configuration within the public sphere is part of the process of staging youth, implemented through the semiotic use of clothing (Belaouissi, 2015). It is a situation in which young people stage themselves, not only for their own benefit, but also for the benefit of others. The staging of these young people through their clothing or language is part of the same logic as the existence of this particular geography of their places of residence. We thus observe the emergence of a space where young people can express their identity and thus consolidate it by confronting it with the identity of other groups in the society in which they live (Lamizet, 2004).

The period from 2000 to 2010 was characterized as an innovative political and cultural era in Morocco, marked in particular by the emergence of a new urban culture. This culture initially developed mainly in the country's major cities, such as Casablanca, Meknes, Tangier, and Marrakesh, and brought together a new generation of artists, including musicians (hip-hop, rock, fusion) and creators from various fields such as cinema, video, fashion, graphic design, street art, and advertising. A cultural movement known as "nayda" emerged in Morocco in the 2000s in response to the socio-political changes of the time. Caubet (2013) introduced the neologism "naydism," derived from the root "nayd" meaning "to move, to advance" (Benitez, 2013).

This trend gave rise to a new genre of Moroccan song, as well as new forms of language, both in public and in private. The use of a familiar register of language, commonly referred to as "klam d'yal zzenqa," has been noted and commented on as one of the most salient aspects. Older songs frequently used poetic devices such as metaphor and analogy, even in more direct genres such as chaabi. However, contemporary lyrics are often more explicit, although an analysis of rap lyrics reveals a persistence of metaphor and poetry (Benitez 2013). A more vulgar language, seeking to reflect the language of Casablanca's "bad boys," has replaced the somewhat outdated Arabic dialect of older television shows and film productions, which were often influenced by Eastern Arabic. In theater, young companies such as daba Teatr in Rabat advocate the use of a Moroccan theatrical language free of taboos, which can sometimes shock audiences accustomed to expressions reserved for more intimate or private contexts.

1. EVOKING URBAN YOUTH IN MOROCCO: SOME DISTINCTIVE FEATURES

Young Moroccans in urban areas seem to be attached to the subcultures that emerge from the complexity of sociocultural interactions in urban environments. Social groups are proliferating, becoming more distinct and acquiring a more assertive existence. Thus, according to Camilleri and Cohen-Emerique (2003), the new perspective (and meaning) that each of them brings acquires a strength and uniqueness that rivals that of the group as a whole.

As a result, we are seeing a noticeable intensification and empowerment of the subcultures specific to these subgroups, which is a new development. Among the characteristic features of this trendy urban youth language are the mixing of languages (Moroccan-French), the invention of new words, emphatic pronunciation (e.g., "zwèèn" instead of [zwin]), and expressions that have become symbols of belonging: [itub ɛlik] (thank you, well done), [stun] (great, or thing), [mmôṭ] (super, awesome), [msôṭ'i] (crazy), [smuelih] (thingamajig) (Miller and Caubet, 2011).

French specialists in Arabic dialectology such as Colin (1939) and Marçais had anticipated that urbanization, particularly the development of cities such as Casablanca, where immigrants from various regions of Morocco mingled, would promote the emergence of a "mixed" or hybrid dialect, or even a Moroccan koine, acting as a link between the different Arabic dialects of Morocco (Colin, 1939). El Himer (2015) does not share this opinion. The writer argues that the coexistence of a population adopting an urban language with Andalusian characteristics (Fez, Rabat, Salé, Tetouan) and a population of rural origin using "rural" dialects led to the emergence of an urban language combining urban and rural characteristics. According to the writer, this language is becoming increasingly widespread among Moroccans.

2. CODE-SWITCHING IS A MANIFESTATION OF NEW LINGUISTIC PRACTICES

The emphasis on the body and the questioning of linguistic taboos represent a major revolution that goes against the norms of propriety in Morocco. Led by a small group of artists and activists, this "cultural and linguistic revolution" has not yet been widely accepted by the majority and continues to be controversial (Benitez et al, 2013). This new cultural creation is designed to be "young," developed by young individuals for a young audience. In addition to the use of street language, which is not exclusively reserved for boys but also adopted by some girls for whom the "tough, rough" (hrech) style is associated with urbanity. This youthful style is characterized by widespread use of code-switching and lexical creation, which are then adopted and disseminated by the media and advertising spheres.

The phenomenon of code-switching between Moroccan Arabic and French is not new and has been documented since the 1970s. Morocco has integrated multilingualism into its linguistic landscape for many decades. Once considered a problem, it is now recognized as a symbol of cultural and social openness. More recent research (ZIAMARI Karima & Alexandre Barontini, 2013) show that code-switching is now an almost common practice among young bilingual graduates.

This requires great linguistic inventiveness, particularly at the syntactic level. This practice of code-switching is observed in the writings of various Moroccan groups, notably the famous group Hoba Hoba Spirit, whose texts have been analyzed in several studies. The phenomenon of code-switching, which involves the alternating use of Moroccan Arabic, Fusha Arabic, French, English, and occasionally Amazigh Arabic, particularly in specialized Amazigh media, is widespread in many current radio programs.

It is considered a characteristic element of contemporary urban culture. Advertisers have skillfully exploited this opportunity in their, regularly incorporating French, Arabic (Moroccan and Fusha), and sometimes English into their messages, both written and spoken.

It is clear that the influence of urbanization on linguistic practices in Morocco is manifested in a multitude of dynamics, a significant diversity of uses and registers, and a growing tendency to mix languages in public spaces. In addition to the phenomenon of code-switching between Arabic and European languages, which allows for a wide variety of linguistic innovations, there has been an increase in the use of a mixed style between Moroccan Arabic and classical Arabic, although not standardized, which could contribute to the spread of standard Moroccan Arabic and its establishment as a more formal register (Benitez et al, 2013).

Young artists favor more raw, ironic, and creative registers, which present themselves as opposed to the notion of "proper usage." Urbanization does not necessarily lead to linguistic uniformity, and it is remarkable to note that practices are often more flexible than linguistic ideologies, whether institutional or individual.

3. NON-CONFORMING LINGUISTIC BEHAVIOR

Calvet (1994) uses Esnault's classification of slang, which distinguishes between two categories of terms in the introduction to his *Dictionnaire historique des argots français* (Historical Dictionary of French Slang): "popular" and "thuggish." He writes that words used by harmless groups are described as "popular," while those used by groups with harmful tendencies are described as "thuggish." However, he points out that the boundary between the two categories is subject to variation. A growing interest in forms of deviant language grouped under the pejorative term "langage canaille" (vulgar language) has been criticized by Delaplace (2000). He points out that former slang specialists mainly studied linguistic practices considered deviant from the dominant linguistic norm, almost systematically associating them with marginal or delinquent groups. According to him, the recognition of the deviance of the expressions they list is based on a combination of criteria, some of which have little to do with linguistics. Slangologists are criticized for their tendency to quickly attribute expressions to a specific group without carrying out the necessary checks, based on the absence of these expressions in official dictionaries at the time of collection. According to Delaplace (2000), slangologists use two criteria to include an expression in a group's slang: on the one hand, its use by members of the group in question, and on the other hand, its connection to a referential domain related to the life of the group. When the slangologist is not accompanied by a sociologist, or better still, a conscientious ethnographer and anthropologist, there is a twofold risk associated with this type of approach: first, it can lead to an oversimplification of a group's activities and interests (for example, young people from disadvantaged neighborhoods would automatically be associated with drugs, theft, and physical or verbal violence). Second, it can encourage an automatic association between a specific field of activity, often marked by social stigma, and membership in a group. The systematic stigmatization of these associations or groups of practices is not based on in-depth and exhaustive studies and now seems obsolete.

As Marcellesi (1971) pointed out, the diversity of the socio-cultural communities to which each speaker may belong, as well as the ability to master different registers of speech, should encourage us to avoid any mechanistic view of the relationship between discourse and social group.

Please provide a complete sentence so that I can paraphrase it. As pointed out by Calvet (1994), it is important to note that the boundaries between social groups and language registers are not rigid. Contemporary slang is characterized by the continuous emergence of new terms and mechanisms of creation, which are quickly integrated into everyday language. In seeking to gain more independence and free themselves from the external influence of their family, adolescents can often rush headlong into an unknown world that is likely to have a negative influence on their behavior and judgment (Slimani, 2011). This behavior initially manifests itself in deviant speech. Young people deliberately use coarse and offensive language, considering it a sign of maturity, virility, and provocation. According to Delaplace (2000), the first studies on linguistic deviance date back to the 19th century, conducted by slang writers who frequently associated these forms of language, considered deviant, with membership in groups considered "marginal or delinquent."

The writer classifies these practices under the term "langage canaille" (scoundrel language), Esnault (1965) going so far as to use the expression "rogue words." In the introduction to his *Dictionnaire historique des argots français* (Historical Dictionary of French Slang), he mentions that the words of harmless groups are described as "popular," while those of groups prone to misdeeds are called "rogue," although the distinction between the two categories is subject to variation. Thrasher (1963), part of the team of sociologists at the University of Chicago led by Albion Small, focused his attention on emerging sociocultural phenomena in an area between Chicago's business center and the middle-class residential neighborhood, with a particular interest in the study of gangs. These groups, considered indefinable and almost elusive by the author, respond to a powerful need among slightly destabilized and misguided individuals to associate with each other, pursuing various objectives ranging from children's social games to criminal gangs fighting for a monopoly on smuggling and immoral activities, sometimes resorting to the use of revolvers and machine guns. Thrasher (1963), after examining the emergence, ethnic distribution, and social and economic status of gang members, found that gangs developing in a given area constitute a sociocultural interstitial phenomenon.

This is a space where a particular culture emerges, situated between the culture of the host country and that of the migrants' countries of origin. This culture, manifested in gangs and the vernacular language spoken by these populations, plays an essential role in their development. According to him, the phenomenon of young people forming gangs can be explained by these individuals' need to integrate into society. Unfulfilled and associated with social rejection, this desire for integration translates into an attempt by these individuals to establish their own community and consolidate themselves as a group. They then draw on elements of identification that enable them to assert themselves as a group in the two cultural environments available to them, namely that of their host country and that of their country of origin, thus developing a so-called intermediate or interstitial culture (Slimani, 2011).

Calvet (1994) observed such practices in France during the period from 1980 to 1990. The emergence of this ephemeral culture is evident in the disadvantaged peripheral areas surrounding large urban centers, along four main lines:

- A musical orientation focused on rap;
- An artistic focus based on tags and graffiti;
- A dress code that includes items such as caps and sneakers;
- A linguistic orientation characterized by its specific lexical and phonetic features.

Bachmann and Basier (1985) were among the pioneers in including the field of hip hop culture studies in the field of sociolinguistics. Their research revealed the existence of forms of "symbolic mobilization" in certain ritualized interactional configurations. Calvet (1994) and Billiez (1996) helped to revive, deepen, and refocus research on this topic in the field of sociolinguistics. Rap lyrics were considered a form of discourse through which linguistic diversity and interactions were highlighted.

Rap was seen as a privileged means of identification and motivation for many students. Some teachers and researchers argue that this form of contemporary cultural expression can be used as a basis for a process of linguistic mediation. This assertion is based on the social recognition of rappers by many urban students, as well as on the cultural and formal aspects, shared knowledge, and linguistic manipulation characteristic of this musical genre.

4. IS THERE A CLOTHING TREND SPECIFICALLY DEDICATED TO YOUNG PEOPLE?

The articulation of social self-image through clothing, accessories, and objects that make up what can be defined as social identity—adornments, jewelry, hairstyles, and accessories such as cell phones—is particularly significant among young people who, more than other age groups in society, claim a specific and often elaborate clothing style. They are the most dynamic and innovative members of society when it comes to discovering and adopting new clothing and fashion practices. The specific dynamism of fashion can be interpreted in two ways. On the one hand, it is the behavior of a section of the population that is constantly seeking novelty, thus positioning itself in opposition to or questioning what could be described as sartorial immobility. On the other hand, this dynamism can be interpreted as a specific ability to adopt a variety of clothing styles. Various forms of identity, such as identity, manifest themselves in this specific public space that is the street (Lamizet, 2004).

Youth fashion has a distinctive feature that is appropriate in advertising representations of clothing fashion and has become an essential norm in the evolution of this field. "Youth fashion," which is largely governed by strict codification in the media, particularly in magazines and advertising, is distinguished by three significant characteristics:

- It differs from the norms and conventions of what could be described as "established fashion," particularly in its choice of colors, use of clothing styles, and the way in which clothing highlights the body, promoting a dynamic style that is part of a vision of great physical mobility.
- "Youth fashion" is characterized by behaviors and a focus on the body that highlights both its agility and its desire to fully integrate into space through movement and theatrical postures.
- An illustrative example of this phenomenon can be seen in the behavior of the two individuals depicted in a photographic advertisement for a brand of jeans.

Ornaments and accessories, referred to as "non-clothing fashion," can be considered elements of staging in public space. Like theater or cinema, they embody what could be defined as the semiotic amplification of the body.

They represent what anchors the body in a spatial presence, marked by the ornaments and accessories that accompany it and contribute to its staging in the public space represented. They therefore guide the body in the space of representation, as if they carried part of the "youthful" meaning it can convey. Illustrations of cell phones and references to a "cult series," among other things, serve as examples of such representations aimed at embodying a "youth culture" or, more precisely, a "youth sociability," as conveyed through normative advertising models. Indeed, these devices represent the mobility of the individuals who use them or integrate them into their social interactions (such as smartphones, opening a window, or mentioning a portable camera, etc.).

Accessories operate in this semiotics of youth as object signifiers capable of simultaneously evoking, and through each other, meaning and desire, in connection with the youthful identity they help to highlight in the mediatized context of representation. These objects and accessories are of fundamental importance because they help to define not only the person wearing them, but also the social and cultural practices that are supposed to shape their identity (Lamizet, 2004).

5. THE ESSENTIAL ROLE OF THE MIMETIC FUNCTION WITHIN YOUTH CULTURE

Youth can be defined as a series of transitions from one stage to another, based largely on mimetic processes of identification. This form of mimicry differs from identification in that it does not aim to establish a symbolic identity, but to temporarily adopt an identity with the aim of constructing it. Children begin with a mimetic phase in which they imitate others. It is only when they integrate this mimicry into their practices and representational activities, giving it meaning, that they evolve from the mimetic phase to the mirror stage. It is at this point that they establish their identity and status as subjects, linking their identity to their own linguistic activity. In youth culture, we see a persistence of mimicry, where individuals play with identities by enacting those of others without fully assuming them, but simply by exhibiting them. For example, the practice of smoking illustrates this phenomenon of cultural mimicry well. There are three forms of mimicry:

- Primary mimicry occurs during the mirror stage, when young children imitate and adopt the identity of the model with whom they identify. It is subject to a form of semiotization when the child replaces it with play and language, which are symbolic practices assumed by the child, thus becoming a subject, unlike simple mimicry, where these practices are not assumed but kept at a distance by a process of imitation that is not playful.
- Secondary mimicry manifests itself through the ideological practices and social activities that young people adopt from adults. It is the one that engages in social activities, activism, as well as various social and institutional affiliations. It refers to the semiotic device representing the main social phenomenon as defined by Bourdieu through the concept of reproduction. This phenomenon of secondary mimicry gives rise to the emergence of a "youth ideology" that manifests itself in the form of a political imaginary, fueled by the imitation of adult cultural references and practices.
- Tertiary mimicry manifests itself through the conventions imposed by the normativity of advertising or fiction, such as the performing arts and literature. It involves the creation of an identity in the public sphere, materialized by a set of norms. "Youth" identity is constructed as a set of cultural norms and social constraints. Respect for these models and norms is a means of forging a social identity and embodying it through one's actions and words. Norms influence social practices that are considered important for young people's identity by facilitating identification with artists, particularly film actors and musicians, as well as with characters from novels or fiction. This mimicry is essentially characterized by a confusion between the real and the imaginary during the implementation of specular identification processes (Lamizet, 2004).

CONCLUSION

We have examined in detail Brixhe's (2006) conception, according to which the co-production of a dialect is the result of various interactions. Thus, the history of a dialect cannot be studied in isolation from the evolution of the community that used it, or even from the environment in which it developed.

In other words, young people's perception of the world is largely influenced by their social environment, represented by one of the many social groups with which they are automatically associated from the moment they emerge into the conscious world. The composition of this network of primary and secondary groups, in which young people automatically engage, varies from one society to another. The unfortunate fate of "isolated" individuals, who are not properly integrated into the social fabric of basic groups, highlights their crucial importance. A decline in social belonging marginalizes young people and partially excludes them from society. This loneliness, which can be irremediable, inevitably leads to psychological problems or antisocial behavior, in which language can play a major role. Young people who are not hindered by language barriers form gangs.

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CHAPTER 4
NEURAL BASES OF LINGUISTIC DEVELOPMENT
AND PROCESSING IN AUTISM

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INTRODUCTION

Autism Spectrum Disorder (ASD) is a neurodevelopmental condition defined by differences in social communication, restricted interests, and repetitive behaviors, with marked heterogeneity in language outcomes (*Diagnostic and Statistical Manual of Mental Disorders*, 2013). Depending on the place in the spectrum, while some autistic individuals develop fluent language, others remain minimally verbal, and many fall in between, exhibiting significant difficulties in pragmatic aspects of communication such as conversational reciprocity, prosody, or figurative language (Eigsti et al., 2011; Tager-Flusberg et al., 2005).

Because language is a central domain of human cognition, language may be considered as a key predictor of long-term outcomes in autism-including educational attainment, adaptive functioning, and social integration (Anderson et al., 2007a; Pickles et al., 2014). Studies on language skills in autism provides critical insights into both autism and the neural mechanisms of language.

1. HISTORICAL BACKGROUND OF LANGUAGE STUDIES

The investigation of language and its neural substrates in autism spectrum disorder (ASD) builds on over a century of research into human language and the brain (Figure 1). In the 19th century, foundational studies of aphasia identified Broca's area in the left inferior frontal gyrus and Wernicke's area in the posterior superior temporal gyrus as critical for speech production and comprehension, establishing the principle of left-hemispheric dominance for language.

While these classical findings emphasized localized cortical regions, research on autism in the 20th century began to reveal that language differences in ASD are not restricted to focal areas. Early behavioral studies characterized delayed speech, atypical vocalizations, and impaired social communication, laying the groundwork for psycholinguistic investigations into lexical, syntactic, and pragmatic development (Tager-Flusberg, 1999; Tager-Flusberg et al., 2005).

Advances in cognitive neuroscience during the late 20th century, including functional and structural neuroimaging, highlighted atypical activation and connectivity within distributed language networks, encompassing the inferior frontal gyrus, superior temporal sulcus, angular gyrus, and their associated white-matter tracts (Just et al., 2004; Redcay, 2008; Verly et al., 2014).

In the 21st century, research has increasingly adopted network-level and dynamic models, integrating multimodal neuroimaging and electrophysiology to explore how disruptions in cortical connectivity, sensory processing, and social-cognitive systems contribute to the heterogeneous language profiles observed in ASD. These approaches have elucidated the neural mechanisms underlying both preserved language skills and pragmatic deficits, providing a framework for understanding developmental trajectories and informing early intervention strategies.

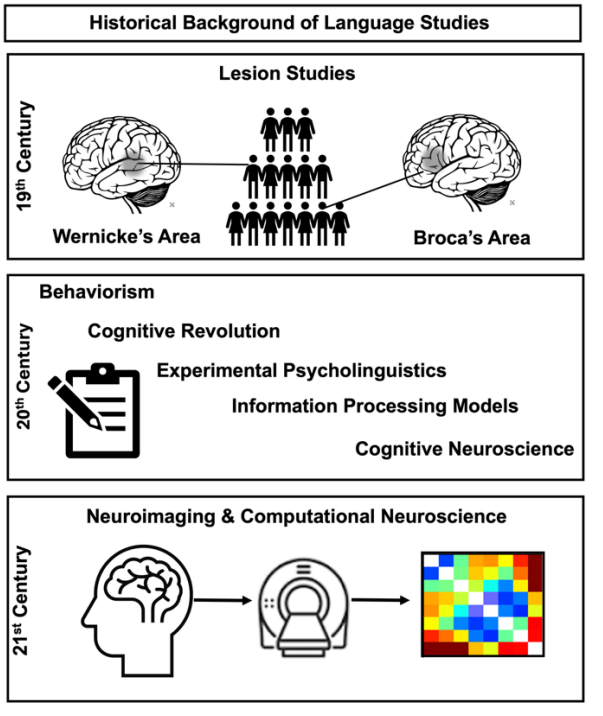


Figure 1. Schematic Representation of Historical Background of Language Studies.

In 19th century, lesion studies contribute to the understanding of the functions of inferior frontal gyrus and superior temporal gyrus and named after the scientists who identified these regions, Broca's and Wernicke's areas.

In 20th century, scientists contribute to the science of language processing by using methods from behaviorism, cognitive science, experimental psycholinguistics, information processing models and cognitive neuroscience. In 21st century, neuroimaging and computational neuroscience methods were started to widely used in language research.

2. NEUROANATOMICAL BASIS OF LANGUAGE IN AUTISM

Language in the neurotypical brain is supported by a distributed, left-lateralized frontotemporal network (Friederici, 2011). The inferior frontal gyrus (Broca's area), superior temporal gyrus (STG), middle temporal gyrus (MTG), and angular gyrus are core regions, linked by dorsal and ventral white-matter pathways that connect sound-to-articulation and sound-to-meaning, respectively (Hickok & Poeppel, 2007). In ASD, structural and functional alterations have been consistently reported in these classical language regions as well as in extended association areas (Figure 2).

2.1 Anatomical

Structural MRI studies show atypical gray matter development in language-related cortices (Hyde et al., 2010; Yang et al., 2016). Autistic children often display increased cortical thickness and altered gyrification in perisylvian regions early in development, which may normalize or reverse in adolescence (Ecker et al., 2013; Hyde et al., 2010).

Volumetric studies report enlarged STG and planum temporale in some subgroups, consistent with early brain overgrowth hypotheses (Herbert et al., 2002). The inferior frontal gyrus, particularly the left pars opercularis and pars triangularis, is frequently reduced in volume or shows atypical asymmetry (De Fossé et al., 2004), suggesting a divergence from typical left-dominant specialization.

2.2 White-Matter Pathways

Connectivity between language regions is also atypical in autism. Diffusion tensor imaging (DTI) reveals reduced fractional anisotropy and coherence in the *arcuate fasciculus*, which links temporal comprehension areas to frontal speech production regions (Ecker et al., 2016; Fletcher et al., 2010). Alterations are also observed in the *uncinate fasciculus* and *inferior longitudinal fasciculus*, ventral pathways critical for semantic processing (Sahyoun et al., 2010). These findings support a model in which disrupted integration across long-range pathways contributes to difficulties in coordinating linguistic processes. Microstructural abnormalities together suggest that the temporal coordination necessary for efficient language processing is disrupted in ASD, leading to slower and more effortful communication.

2.3 Functional Activation

Functional MRI studies provide further evidence of atypical recruitment of language networks. During sentence comprehension, autistic individuals often show reduced activation of the left IFG and MTG, alongside increased reliance on right-hemisphere homologues or domain-general executive regions (Just et al., 2004; Kana et al., 2007). Narrative comprehension tasks also reveal hypoactivation in temporal regions linked to semantic and pragmatic processing (Lombardo et al., 2015). These findings suggest that, while basic lexical and syntactic processing may engage canonical networks, pragmatic and integrative demands recruit atypical circuits.

2.4 Connectivity and Network Organization

Beyond focal activation, autism is associated with differences in network-level organization. A key framework for understanding the neuroanatomical basis of language in autism lies in connectivity models. fMRI and resting-state studies have repeatedly demonstrated reduced functional connectivity between frontal and temporal nodes of the language network, including the inferior frontal gyrus, superior temporal sulcus, and angular gyrus (Bernas et al., 2018; Just et al., 2004, 2012; Verly et al., 2014; Weng et al., 2010).

At the same time, some evidence points to increased functional connectivity at the local level, resulting in an imbalance between short-range and long-range integration (Dinstein et al., 2011; Mueller et al., 2012), consistent with theories of reduced long-range integration and enhanced local processing. Graph-theoretic analyses show reduced efficiency and modularity in networks supporting communication, pointing to less optimal information flow (Verly et al., 2014).

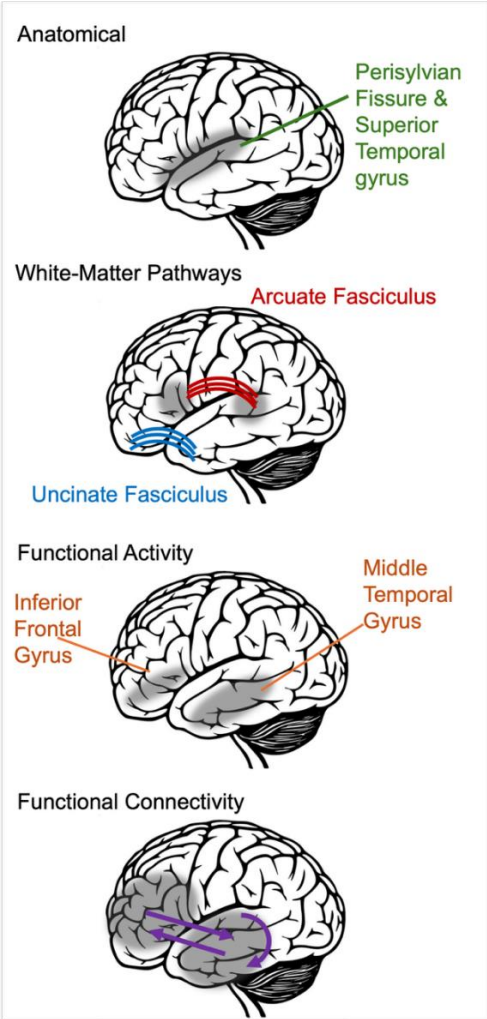


Figure 2. Effected Structure, White-Matter Pathways, Functional Activity Regions and Functional Connectivity Regions in Autism Spectrum Disorder.

3. LINGUISTIC PHENOTYPES IN AUTISM

A wide range of linguistic phenotypes has been associated with ASD, reflecting the heterogeneity of the condition. Some individuals remain minimally verbal, producing only single words or short phrases, while others develop age-appropriate structural language but exhibit persistent differences in pragmatics-the use of language in social contexts (Tager-Flusberg & Kasari, 2013).

Core structural domains such as phonology and basic syntax are often relatively spared in verbally fluent individuals, but subtle differences emerge in areas such as prosody, morphosyntactic complexity, and discourse cohesion (Eigsti et al., 2007; Shriberg et al., 2001). Lexical development may be delayed, with smaller vocabularies and slower word learning in early childhood (Bean Ellawadi & McGregor, 2016), although some autistic individuals demonstrate remarkable strengths in restricted semantic domains.

The most consistent profile across the spectrum involves difficulties in pragmatic and social-communicative aspects of language, including challenges with conversational reciprocity, figurative language, inference, and context-sensitive meaning (Paul et al., 2009; Volden et al., 2009). These pragmatic differences are closely tied to alterations in social cognition and theory of mind, linking linguistic variability in autism to broader neurocognitive systems. Thus, linguistic phenotypes in ASD range from global impairments in expressive language to selective differences in higher-order discourse, underscoring the importance of considering both strengths and challenges in characterizing language development.

4. NEURAL DYNAMICS OF LANGUAGE PROCESSING IN AUTISM

Language processing in autism spectrum disorder (ASD) is characterized by atypical neural dynamics that reflect differences in both temporal synchronization and functional integration across cortical networks.

4.1 Early Auditory and Phonological Encoding

In neurotypical development, the rapid encoding of speech sounds is supported by synchronized neural responses in auditory cortices, providing the foundation for phonological representations. In ASD, however, electrophysiological evidence points to atypical auditory dynamics from the earliest stages of processing. Event-related potential (ERP) studies have shown delayed or reduced mismatch negativity (MMN) responses to speech contrasts, reflecting impairments in automatic phoneme discrimination (Kuhl et al., 2005; Roberts et al., 2011).

Similarly, the N1 component- an index of auditory cortical responsiveness-is often diminished, suggesting atypical sensory encoding of sound. Magnetoencephalography (MEG) studies corroborate these findings, reporting prolonged latencies in auditory evoked fields in children with ASD, which may contribute to downstream difficulties in parsing speech in noisy environments (Roberts et al., 2011). These alterations indicate that the temporal precision of neural responses, critical for mapping acoustic input onto linguistic categories, is disrupted in autism.

4.2 Lexical–Semantic Integration

Beyond phonological encoding, atypicalities extend to the integration of meaning. The N400 component, which reflects the brain's detection of semantic incongruity, is frequently reduced or delayed in autistic individuals (Cantiani et al., 2016). This suggests that the process of integrating words into context occurs less efficiently, particularly during real-time comprehension. Such differences align with behavioral studies documenting challenges in inferencing, figurative language, and pragmatic interpretation in ASD (Paul et al., 2009).

Neuroimaging studies support this account, revealing altered activation in the middle and superior temporal gyri during tasks requiring semantic integration (Redcay & Courchesne, 2008). Together, these findings highlight how disruptions in temporal dynamics propagate from early auditory encoding to higher-order semantic processing.

4.3 Hemispheric Lateralization and Cortical Specialization

One of the most consistent findings in the neuroscience of language in autism concerns atypical hemispheric balance. In the neurotypical brain, language processing is strongly left-lateralized, with the inferior frontal gyrus and superior temporal sulcus forming core hubs (Friederici, 2011; Hickok & Poeppel, 2007).

In contrast, individuals with ASD often show reduced left-hemisphere dominance and increased recruitment of right-hemisphere homologues during both receptive and expressive language tasks (Just et al., 2004; Kleinhans et al., 2008; Lindell & Hudry, 2013). EEG and fMRI studies of speech perception in infants at familial risk for autism reveal weaker left-lateralized responses to speech sounds, suggesting that altered hemispheric specialization emerges early in development (Eyler et al., 2012).

These atypical lateralization patterns may reflect compensatory strategies that allow for successful language use despite disruptions in canonical networks. However, reliance on non-dominant regions is thought to be less efficient, contributing to slower or less flexible language processing.

Taken together, evidence indicates that autism is characterized by differences in both the structure and function of language networks. These include atypical cortical morphology, disrupted long-range white-matter pathways, hypoactivation of classical regions with compensatory recruitment of alternative networks, and reduced hemispheric lateralization. Such alterations provide a neural basis for the diverse language phenotypes observed in autism, from preserved grammar to pronounced pragmatic challenges.

4.4 Compensatory and Developmental Mechanisms

Despite these differences, many autistic individuals develop functional language abilities, highlighting the role of neural plasticity and compensatory reorganization. Longitudinal studies indicate that children with initially delayed language trajectories may recruit alternative neural circuits, including right-hemisphere regions and posterior temporal areas, to support comprehension and production (Redcay & Courchesne, 2008).

Moreover, atypical dynamics in social brain regions such as the medial prefrontal cortex and posterior superior temporal sulcus may contribute to pragmatic language differences, reflecting the intersection of linguistic and social-cognitive networks (Lombardo et al., 2010).

These compensatory mechanisms underscore the heterogeneity of language outcomes in autism and emphasize the importance of examining both disruptions and adaptations within neural systems.

5. DEVELOPMENTAL TRAJECTORIES IN AUTISM

Early Development and Variability

Language development in autism spectrum disorder (ASD) follows highly heterogeneous trajectories, ranging from profound language impairments to near-typical language skills. One of the earliest markers is delayed onset of babbling and first words, often accompanied by atypical prosody and reduced use of communicative gestures such as pointing or showing (Paul et al., 2009). Longitudinal studies indicate that approximately 25-30% of children with ASD remain minimally verbal beyond early childhood (Tager-Flusberg & Kasari, 2013), whereas others achieve functional fluency but continue to exhibit subtle deficits in syntax, semantics, or pragmatics. This variability reflects both differences in neural systems underlying language processing and the influence of environmental and social experiences on learning trajectories.

Minimally Verbal and Delayed Pathways

For minimally verbal children, the developmental trajectory often involves persistent difficulties in expressive language despite some receptive vocabulary knowledge. These children may rely on alternative forms of communication, such as gestures, echolalia, or augmentative and alternative communication (AAC) systems (Kasari et al., 2014). Echolalia, once considered maladaptive, is now recognized as a developmental stepping stone that may scaffold communication by allowing children to reuse familiar linguistic patterns (Prizant & Rydell, 1984). Such pathways highlight that language in autism does not always follow a linear course but can progress through atypical, compensatory strategies.

Fluent but Atypical Development

Among verbally fluent individuals, language trajectories often show intact acquisition of basic syntax and vocabulary but persistent differences in higher-order linguistic functions. For example, while grammar and phonology may fall within the typical range, autistic children frequently display delayed mastery of pragmatic language, including difficulties with conversational reciprocity, narrative coherence, and figurative expressions (Eigsti et al., 2007; Volden et al., 2009). These pragmatic differences often persist into adolescence and adulthood, even when structural language skills are age-appropriate. Importantly, these profiles underscore the need to distinguish between structural language and pragmatic language trajectories in ASD.

Predictors of Developmental Outcomes

Several factors shape the trajectory of language development in autism. Early joint attention behaviors (e.g., shared gaze, pointing to share interest) are among the strongest predictors of later expressive language skills (Mundy et al., 1990). Similarly, early neural markers such as atypical responses to speech sounds (Kuhl et al., 2005) predict long-term language outcomes. Access to enriched communicative environments, early interventions targeting social communication, and caregiver responsiveness further influence whether children progress toward functional fluency or remain minimally verbal (Pickles et al., 2014). Thus, developmental trajectories in autism reflect a dynamic interplay between biological predispositions and environmental support.

Lifespan Perspectives

Language development in autism does not plateau in childhood but continues to evolve across the lifespan. Some individuals experience “late bloom” phenomena, developing functional speech in adolescence or adulthood (Anderson et al., 2007b). Conversely, others may retain residual difficulties with pragmatic communication into adulthood, affecting social relationships and academic or vocational outcomes. Lifespan studies therefore emphasize that language trajectories in autism are open-ended and should be viewed as dynamic processes rather than fixed deficits.

6. METHODS FOR STUDYING LANGUAGE IN AUTISM

6.1 Behavioral and Standardized Assessments

The study of language in autism spectrum disorder (ASD) has traditionally relied on behavioral measures and standardized tests that capture vocabulary, grammar, and pragmatic skills. Commonly used assessments include the Clinical Evaluation of Language Fundamentals (CELF) for structural language, the Peabody Picture Vocabulary Test (PPVT) for receptive vocabulary, and the Comprehensive Assessment of Spoken Language (CASL) for discourse-level skills (Rehfeld & Padgett, 2019). Pragmatic language is often assessed through instruments such as the Children's Communication Checklist (CCC-2) or pragmatic subscales of the Social Responsiveness Scale (SRS) (Bölte et al., 2008; Bruni, 2014). These tools enable researchers to distinguish between minimally verbal, structurally fluent, and pragmatically impaired profiles, but they may not fully capture real-world communicative dynamics (Figure 3).

6.2 Naturalistic and Interaction-Based Methods

Because language in autism is deeply embedded in social interaction, naturalistic observation and interaction-based paradigms provide valuable insights (Figure 3). Studies often examine spontaneous speech samples during free play, narrative tasks, or conversations, focusing on features such as mean length of utterance, prosody, and discourse coherence (Paul et al., 2009). Eye-tracking and motion-capture methods are increasingly used to study joint attention, turn-taking, and nonverbal-verbal integration during live or simulated interactions (Norbury et al., 2014). These approaches capture pragmatic aspects of language that may be overlooked by standardized assessments, making them especially relevant for mapping individual differences in communicative competence.

6.3 Neuroimaging Approaches

Advances in neuroimaging have enabled the study of the neural basis of language in autism (Figure 3).

Functional MRI (fMRI) has been used to identify atypical activation patterns and connectivity in the frontotemporal language network, often revealing reduced specialization and underconnectivity between Broca's and Wernicke's areas (Just et al., 2004; Verly et al., 2014). Diffusion tensor imaging (DTI) has revealed microstructural differences in white-matter tracts such as the arcuate fasciculus, which links receptive and expressive language regions (Fletcher et al., 2010). Magnetoencephalography (MEG) and electroencephalography (EEG) provide high temporal resolution, showing altered dynamics in speech perception and semantic integration, including delayed mismatch negativity (MMN) and reduced N400 responses (Cantiani et al., 2016; Roberts et al., 2011). Together, these methods clarify how atypical connectivity and timing contribute to language variability in autism.

6.4 Genetic

Genetic studies have provided critical insights into the biological underpinnings of language development in autism, highlighting both rare mutations and common polygenic influences (Figure 3). Candidate gene research has consistently implicated CNTNAP2, a neuroligin-related gene associated with neuronal connectivity, in expressive language delay and atypical language phenotypes in autism (Alarcón et al., 2008). Similarly, variants in FOXP2, a transcription factor essential for speech and language development, have been linked to broader communication impairments, although its role in autism appears indirect and polygenic rather than causative (MacDermot et al., 2005; Vernes et al., 2008). Genome-wide association studies (GWAS) further indicate that polygenic risk scores for language impairment and educational attainment partially overlap with autism, suggesting shared genetic architectures across neurodevelopmental traits (Gialluisi et al., 2019). Importantly, genetic findings align with neuroimaging evidence showing that language-related genes influence structural and functional connectivity within the frontotemporal network (Abrahams & Geschwind, 2008; Rudie et al., 2012). These results underscore that language difficulties in autism are not driven by a single gene but emerge from complex, multigenic contributions that affect neural circuit development, synaptic signaling, and experience-dependent plasticity (Muhle et al., 2004).

6.5 Computational Approaches

Computational modeling and machine learning have become powerful tools for advancing our understanding of language development in autism, particularly by capturing the heterogeneity and complexity of linguistic phenotypes (Figure 3). Natural language processing (NLP) methods applied to spontaneous speech samples have identified reliable markers of autism, including reduced lexical diversity, atypical prosody, and differences in pragmatic cohesion (Lee et al., 2018; Parish-Morris et al., 2016). Machine learning classifiers trained on such features can distinguish autistic from neurotypical speech with high accuracy and, importantly, predict language outcomes across development (Bone et al., 2017). In parallel, computational models of learning—such as Bayesian and predictive coding frameworks—have been used to formalize hypotheses that autistic language differences may reflect altered priors, reduced reliance on context, or differences in hierarchical prediction during language processing (Lawson et al., 2014). More recently, deep learning approaches, including the use of large language models, have provided representational benchmarks against which neural and behavioral data can be compared, revealing atypical alignment between model-predicted and autism-related language trajectories (Schrimpf et al., 2021). Together, these methods not only enhance theoretical accounts of autistic language development but also offer translational potential, as computational tools may be leveraged to generate individualized profiles, guide intervention planning, and serve as scalable, noninvasive biomarkers.

6.6 Integrative and Longitudinal Designs

Autism is a neurodevelopmental disorder; thus, longitudinal methods are essential for capturing language trajectories over time (Figure 3). Studies that track children from infancy through adolescence provide insights into predictors of later language outcomes, such as early joint attention and speech-evoked neural responses (Kuhl et al., 2005; Pickles et al., 2014). Integrative approaches that combine behavioral assessments, neuroimaging, and genetic analyses are emerging as the most powerful means of characterizing the multi-level mechanisms underlying language development in ASD.

Such approaches highlight the interplay between brain, behavior, and environment in shaping linguistic outcomes.

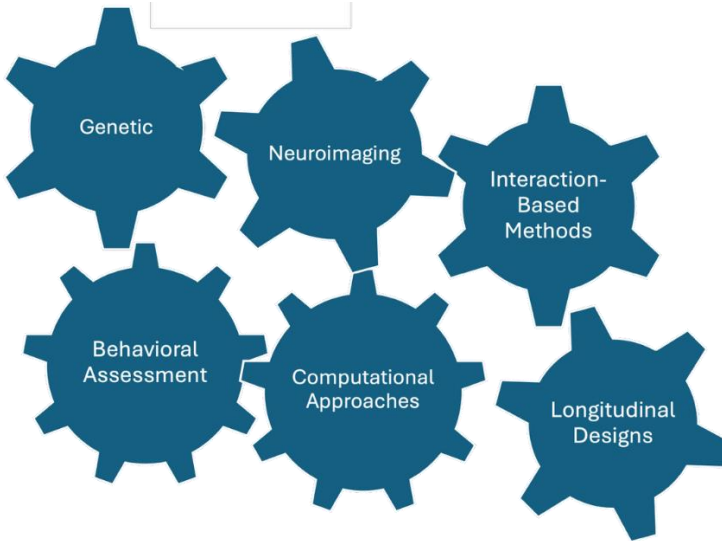


Figure 3. Methods That Were Used to Assess Language Processing In Autism Spectrum Disorder.

7. FUTURE DIRECTIONS IN THE NEUROSCIENCE OF LANGUAGE

Multimodal and Longitudinal Biomarkers

A major priority in the coming decade is the identification of early, developmentally sensitive biomarkers that predict language trajectories in autism. Multimodal approaches that combine structural and functional neuroimaging, electrophysiology, and behavioral assessments are beginning to reveal markers of language outcome (Eyler et al., 2012; Lombardo et al., 2015). Longitudinal studies indicate that differences in early auditory and speech-evoked responses can predict later expressive and receptive language abilities (Dinstein et al., 2012; Emerson et al., 2017). Large-scale, multi-site initiatives will be essential to validate these candidate biomarkers and to account for the heterogeneity of language phenotypes in autism (Jeste et al., 2015).

Computational and Model-Based Neuroscience

Recent advances in computational linguistics and artificial intelligence provide new tools to quantify and model language in autism. Automated natural language sampling (NLS) can extract objective indices of lexical diversity, syntactic complexity, and pragmatic features, which have been shown to differentiate autistic from neurotypical speech profiles (Parish-Morris et al., 2016). In parallel, computational models of language, such as transformer-based architectures, can be used as hypotheses about representational hierarchies in the brain (Schrimpf et al., 2021). Comparing autistic and neurotypical neural data against such model predictions may clarify whether differences reflect atypical predictive coding, integration, or representational strategies (Lawson et al., 2014).

Precision Interventions and Neural Plasticity

Interventions for language in autism are increasingly informed by neuroscience. For example, behavioral therapies such as naturalistic developmental behavioral interventions (NDBIs) can produce measurable changes in neural connectivity and oscillatory activity (Dawson et al., 2012; Voos et al., 2013a). Neuromodulation approaches, including transcranial magnetic stimulation (TMS) and transcranial direct current stimulation (tDCS), have been explored in preliminary studies targeting language-related cortical regions (Enticott et al., 2014; Oberman et al., 2016). Future research should integrate biomarkers of plasticity, such as rapid EEG changes during short training protocols, to predict treatment responsiveness and guide adaptive interventions (Jeste et al., 2015).

Cross-Linguistic, Cultural, and Lifespan Perspectives

Most studies of language in autism have focused on English-speaking children, limiting generalizability. However, research demonstrates that linguistic differences in autism are modulated by structural and cultural properties of language (Silleresi, 2023). Expanding to diverse languages-such as tonal or morphologically complex languages-will clarify which neural and behavioral patterns are universal versus language-specific.

Moreover, longitudinal studies across adolescence and adulthood are required to understand how pragmatic challenges evolve over the lifespan and how compensatory strategies develop (Howlin, 2003; Livingston et al., 2020).

Bilingualism

Bilingualism is common worldwide, yet its role in autism spectrum disorder (ASD) has historically been underexplored. Early clinical concerns suggested that exposure to multiple languages might exacerbate language delays in autistic children. However, converging evidence now indicates that bilingualism does not negatively affect, and may even support, language and cognitive development in autism (Drysdale et al., 2015; Hambly & Fombonne, 2012). Studies comparing monolingual and bilingual autistic children consistently show comparable performance on measures of expressive and receptive language, vocabulary growth, and pragmatic use, with no evidence that bilingual exposure delays speech onset or impairs structural language skills (Dai et al., 2018; Lund et al., 2017).

Beyond equivalence, some findings suggest potential advantages. Bilingual autistic individuals may demonstrate greater communicative flexibility, enhanced metalinguistic awareness, and, in certain contexts, improved executive function-paralleling effects observed in neurotypical bilinguals (Gonzalez-Barrero & Nadig, 2019; Peristeri et al., 2021, 2021). Pragmatic challenges, a hallmark of autism, appear to be neither worsened nor alleviated uniformly by bilingualism, though exposure to diverse linguistic and cultural contexts may foster richer social communication opportunities (Howard et al., 2021). Importantly, parent reports and community-based studies reveal that bilingual households can maintain their heritage languages without clinical concern, underscoring the social and cultural value of bilingualism for family cohesion and identity (Yu, 2013).

Overall, the evidence supports the conclusion that bilingualism is safe, feasible, and potentially beneficial for autistic individuals. Clinicians are therefore advised not to discourage bilingual exposure, and future research should employ longitudinal and neurocognitive methods to better understand how bilingual experience interacts with neural plasticity, executive control, and pragmatic development in autism.

Ethical Considerations and Neurodiversity

As technologies for profiling and intervening in language advance, ethical frameworks are necessary to ensure responsible use. Issues include consent for minimally verbal individuals, privacy for speech and neural data, and the risk of framing communication differences solely as deficits (Pellicano & den Houting, 2022). Incorporating participatory research methods-where autistic individuals and families contribute to study design and evaluation-will ensure that scientific progress aligns with community priorities (Fletcher-Watson et al., 2019). Such approaches recognize the value of communication diversity while also pursuing strategies to support individuals who seek to expand their expressive options.

8. CLINICAL AND TRANSLATIONAL IMPLICATIONS IN AUTISM

Language functioning represents one of the most clinically significant domains in Autism Spectrum Disorder (ASD), both as a diagnostic feature and as a predictor of long-term outcomes. Variability in expressive and receptive language skills is strongly associated with adaptive functioning, educational attainment, and quality of life (Pickles et al., 2014; Tager-Flusberg & Kasari, 2013). Minimally verbal subgroups, who comprise approximately 25–30% of children with ASD, face heightened risks of social isolation and limited access to education and employment (Kasari et al., 2014). As such, characterizing the neural mechanisms underlying language in autism has direct clinical relevance for prognosis, treatment planning, and the development of targeted interventions.

Translational research has increasingly focused on identifying biomarkers that link neural signatures to language outcomes. For example, early electrophysiological measures of speech perception predict subsequent language growth (Jeste et al., 2015; Kuhl et al., 2005), while neuroimaging studies demonstrate that atypicalities in frontotemporal connectivity are associated with pragmatic language difficulties (Redcay, 2008; Verly et al., 2014).

These biomarkers could enable earlier detection of children at risk for persistent language impairments, allowing interventions to be initiated during sensitive developmental windows when neuroplasticity is greatest (Jeste & Geschwind, 2014). Longitudinal biomarker research also holds promise for stratifying individuals into subgroups that respond differentially to specific language-based interventions.

Clinically, the integration of neuroscience into intervention development has begun to inform precision medicine approaches. Naturalistic developmental behavioral interventions (NDBIs), for example, are designed to promote joint attention and social communication, and evidence shows that neural indices of social brain activity predict responsiveness to such therapies (Dawson et al., 2012; Voos et al., 2013b). Emerging neuromodulation techniques, including transcranial direct current stimulation (tDCS) and repetitive transcranial magnetic stimulation (rTMS), have been piloted as adjunctive strategies to enhance language-related network plasticity in autism, though these approaches require further safety and efficacy testing (Enticott et al., 2014; Oberman et al., 2016). In parallel, augmentative and alternative communication (AAC) systems, increasingly supported by artificial intelligence, offer translational avenues to support minimally verbal individuals and should be co-designed with autistic users to ensure accessibility and acceptability (Ganz & Simpson, 2019).

A critical translational implication is the need for individualized treatment planning. Given the heterogeneity of language profiles in autism, interventions that are effective for one subgroup may not generalize to another. Future clinical practice will likely combine biomarker-informed assessment with flexible, adaptive interventions tailored to individual neurocognitive and linguistic profiles (Lombardo et al., 2015). This approach aligns with broader trends in neurodevelopmental precision medicine and has the potential to optimize outcomes across diverse language trajectories.

Finally, translational advances must be situated within an ethical and neurodiversity-informed framework. While neuroscience can inform intervention targets, it is essential that research respects communication differences and does not pathologize non-normative but functional communication styles (Pellicano & den Houting, 2022).

Participatory research models, in which autistic individuals and families collaborate in designing studies and interventions, will help ensure that translational advances support autonomy, inclusion, and meaningful quality-of-life outcomes (Fletcher-Watson et al., 2019).

CONCLUSION

Autism provides a unique window into the neuroscience of language, highlighting both the vulnerability and adaptability of neural systems supporting communication. Language outcomes in autism are shaped by differences in anatomy, connectivity, neural dynamics, and developmental timing, resulting in a wide range of linguistic profiles. Integrating neuroscience with clinical research and computational modeling offers the potential to improve early identification, intervention, and ultimately the quality of life for autistic individuals.

The study of language has long provided a window into the organization of the human brain, from 19th-century discoveries of aphasia syndromes to 20th-century advances in psycholinguistics and the 21st-century emergence of neuroimaging and computational modeling. Within autism spectrum disorder (ASD), language research occupies an especially important place, as communication differences are both diagnostic hallmarks and critical determinants of life outcomes. This chapter has traced the evolution of scientific approaches to language, outlined the neuroanatomical bases of language function in autism, and described the diverse linguistic phenotypes that emerge across the spectrum.

Evidence from structural and functional neuroimaging indicates that while classical perisylvian regions remain central, autistic language processing engages broader and sometimes atypically connected networks, including the inferior frontal gyrus, superior temporal sulcus, and angular gyrus. These anatomical differences manifest in characteristic linguistic profiles, ranging from delays in phonology and syntax to pervasive pragmatic challenges. Neural dynamics research using electrophysiology and functional imaging has further shown atypical oscillatory synchronization, predictive coding differences, and altered timing of semantic and syntactic integration, suggesting that the temporal coordination of language networks is a critical locus of divergence.

Language development in autism follows heterogeneous trajectories, with some children demonstrating early delays and later catch-up, while others remain minimally verbal despite intervention. Longitudinal and developmental studies emphasize the role of early sensory processing, social attention, and brain connectivity in shaping these outcomes. Methodologically, progress in this field has been driven by advances in neuroimaging, electrophysiology, computational modeling, and naturalistic language sampling, each providing complementary insights into the multi-level nature of language in autism.

Looking forward, the neuroscience of language in autism is poised to move beyond description toward prediction and intervention. Future research must integrate biomarkers across modalities, expand cross-linguistic and lifespan perspectives, and harness computational tools to refine theoretical models of autistic language. Clinically, these advances hold promise for precision medicine approaches that match interventions to individual neurocognitive profiles, while ethically, they must remain aligned with neurodiversity perspectives and participatory research practices.

In sum, the neuroscience of language in autism illustrates how a historically rooted scientific question—how the brain supports communication—can inform both basic theory and translational practice. By bridging neuroanatomy, development, cognition, and clinical science, this field continues to deepen our understanding of human language while highlighting the variability, plasticity, and resilience of autistic communication.

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