Working Papers of the Linguistics Circle of the University of Victoria

– Vol. 33 (1) –

Table of Contents

Acknowledgements

First and foremost, we would like to respectfully acknowledge that this volume was compiled on the unceded territories of the Lək̓ʷəŋən, W̱SÁNEĆ, and Esquimalt Peoples.

We would also like to acknowledge and thank the authors for their contributions. This volume would not have been possible without the ongoing support of UVic Linguistics faculty, staff, and students. A special thanks to Hossein Nassaji, who supported and mentored us in this year's journey. In addition, we would like to thank our committee: Jessalyn Campbell, Shankhalika Srikanth, Eloisa Cervantes, Martin Desmarais, Anna Moffat, Erin O'Toole, and Rosemary Webb (also copy editor). WPLC would not be possible without their dedicated work.

We would also like to express our appreciation for the roles that the Department of Linguistics and the UVic Libraries Office of Scholarly Communications played in making this digital edition a reality.

Preface to the 33rd volume

This current volume of WPLC is a continuation of the tradition at the University of Victoria to provide opportunities for linguistics students to publish their research, both from UVic and other universities. This year's volume contains submissions from different areas related to linguistics, with a special emphasis on topics that center linguistic theory and applied linguistics.

This volume also includes the proceedings of the Northwest Linguistics Conference (NWLC39) which was held this May at the University of Victoria. The theme of the conference was "community-building" in all its forms. Many of the presentations whose proceedings are included in this volume sit at the intersection of linguistic theory and applied linguistics, or are otherwise interdisciplinary in nature.

The submissions in this volume represent a variety of topics, spanning from linguistic theory to inherently interdisciplinary fields such as applied linguistics, sociolinguistics, cognitive science, and psycholinguistics. We hope that the diversity in thought included in this volume will both benefit readers interested in these different areas of study, as well as encourage readers to share their research and ideas here in future.

Editorial Committee
WPLC 33

Editorial Committee

Co-editors	Jessalyn Campbell Shankhalika Srikanth
Faculty supervisor	Dr. Hossein Nassaji
Advisory board	Eloisa Cervantes Martin Desmarais Anna Moffat Erin O'Toole Rosemary Webb
Copy editor	Rosemary Webb

Improving teachers' intercultural awareness and communication skills for the benefit of non-native learners' academic performance

Erin O'Toole
Department of Linguistics, University of Victoria
eotoole@uvic.ca

Despite the increasing need for teachers to effectively accommodate students in increasingly multicultural grade-school classrooms, there remains a glaring lack of practical suggestions for teachers to do so. In response to this gap in the literature, the goals of this paper are (a) to highlight the effects of teachers' intercultural awareness and communication skills on the academic performance of non-native students; (b) to generate practical recommendations for teachers to improve their intercultural awareness as well as verbal and non-verbal communication skills in the classroom. In doing so, this paper may function as a response to the call for additional insights on the topic.
Keywords: academic performance; intercultural awareness; non-native students; non-verbal communication; practical recommendations for teachers; verbal communication

1   Introduction[1]

A teacher's verbal and non-verbal communicative behaviours in the classroom can play a significant role in non-native students' academic performance. Ignorance and a lack of intercultural awareness on behalf of the teacher can strain student-teacher relationships, negatively affecting non-native students' academic development and motivation to learn (Taylor, 2010). Yet, despite the urgent need for teachers to effectively accommodate students in increasingly multicultural classrooms, there is a glaring lack of practical suggestions for teachers to improve their intercultural awareness as well as their verbal and non-verbal communication skills. As classrooms become increasingly culturally diverse, it is crucial that teachers are able to confidently build rapport and establish trust with native and non-native students alike (Castro, 2010). Despite the lack of existing practical advice, there are a number of ways in which teachers can improve their intercultural awareness and communication skills for the benefit of non-native students' academic performance.

1.1   Key Definitions

Before beginning the discussion, it is necessary to define the key terms used within this paper. The term "verbal communication" will refer to spoken words and conversations, either between the teacher and the entire classroom or between the teacher and (an) individual student(s), as defined by Sutiyatno (2018). Aspects of verbal communication can include word choice, the volume at which one speaks, verbal emphasis and intonation, as well as the tone of one's voice (Sutiyatno, 2018). Verbal communication most often occurs at the conscious level, meaning a speaker is typically aware that their word choice, volume, and tone are transmitting important messages (Sutiyatno, 2018).

The term "non-verbal communication" will herein refer to non-verbal behaviours which occur either simultaneously or independently of a verbal message. Aspects of non-verbal communication can include eye contact, facial expressions, nodding one's head, pointing, physical touch, and spatial distance between conversation partners (Hans & Hans, 2015). Non-verbal communication frequently occurs at the unconscious level, meaning a speaker is often unaware that their body language and gestures are transmitting messages; however, it is important to note that non-verbal communication is not the same as unconscious communication (Haneef et al., 2014).

Haneef et al. (2014) propose that while unconscious communication is most often non-verbal, non-verbal communication is not always unconscious. While interacting with others, speakers will naturally transmit unconscious non-verbal messages; however, a speaker can also choose to consciously transmit non-verbal messages at any point. For example, a Canadian teacher maintaining eye contact while interacting with a group of students is likely doing so *unconsciously*, considering that casual eye contact is perceived positively among North American individuals (McCarthy et al., 2008). On the other hand, a Canadian teacher maintaining intense eye contact with only one student is likely doing so *consciously*, as holding eye contact (staring) at a single person is perceived as rude, aggressive, and/or punitive among North American individuals (McCarthy et al., 2008). The ability to modify and choose one's non-verbal messages is what ultimately differentiates non-verbal communication from unconscious communication.

Next, it is necessary to define the term "intercultural awareness." Aguilar (2008) writes that intercultural awareness is a "… knowledge, awareness, and understanding of the relationship […] between the 'world of origin' and the 'world of the target community' …" (p. 67). In other words, intercultural awareness involves three core aspects: an awareness of one's own culture and worldview; an awareness of others' culture and worldview; and an awareness of how each culture will mutually influence the progression and outcomes of various interactions.

As for "intercultural communication skills", Moeller and Nugent (2014) define this term as one's ability to interact both appropriately and effectively with those from cultures other than their own; such an ability involves aspects of both

verbal and non-verbal communication. For example, intercultural communication skills can include one's ability to read, write, speak, or understand another language; one's understanding of the customs or values of another culture; as well as one's knowledge of which topics are appropriate to discuss with certain individuals and in certain contexts.

Finally, the term "non-native student" will herein refer to a student who is not a native speaker of the host country's official language(s). Given that certain studies reviewed within this paper do not take place in North America, it would be inaccurate to define a "non-native student" as one who does not speak a particular language, or one who was not raised in a specific country or region. For the purposes of this paper, the term "non-native student" is purposefully broad so as to encompass the various participants of the intercultural classroom studies discussed in the forthcoming literature review.

## 2	Literature Review

Existing literature provides evidence for the interdependent relationship between culture and communication, as well as the potential for teachers' communicative behaviours to affect the academic performance of non-native students.

### 2.1	How Culture Informs Communication

Singelis and Brown (1995) state that since culture affects each individual's psychological makeup, in turn, it must also affect each individual's communicative norms and behaviours. Singelis and Brown (1995) asked over 300 participants to determine the meaning of specific messages within several example conversations; results indicate a correlation between participants' self-disclosed ethnicity and their reliance on context to derive meaning from a given message. While this study provides valuable insight regarding the interdependent relationship between culture and communication, it is important to note that one's ethnicity may differ from one's culture; however, neither ethnicity nor culture are rigid social principles and can change throughout one's lifetime. With the fluidity of each concept in mind, this study ultimately supports that one's culture and communicative behaviours are both integrated and inseparable.

Bambaeeroo and Shokrpour (2017) discuss the notion that native (or otherwise long-standing) community members possess an unconscious knowledge of cultural and communicative norms pertaining to their society. Bambaeeroo and Shokrpour (2017) state that "… according to the culture and traditions of the society … community members know which [communicative] behavior is appropriate for every situation" (p. 57). Since much of one's cultural knowledge is gained early in life from family members and childhood social experiences, it can be difficult for visitors, migrants, and immigrants to learn and adjust to a host or target country's norms (Bambaeeroo & Shokrpour, 2017). As for the impact of teachers' communicative behaviours on non-native students' academic performance, authors Bambaeeroo and Shokrpour (2017) state that

teachers must be both culturally competent and able to communicate effectively with all learners in order to teach in a satisfactory manner. In contrast to these powerful claims, a central limitation of this article is the lack of suggested methods by which teachers may improve their intercultural knowledge and communicative behaviours so as not to negatively affect non-native students' academic performance.

It is evidently indisputable that culture informs communication during interactions. In the context of a classroom, researchers Lum and Marsh (2012) write, "[Culture] encompasses all the decisions that inform and frame the relationship between teacher and learner …" (p. 343). Wahyuni (2018) also writes about teachers' verbal and nonverbal communication, noting that these two forms of communication are inseparable in a classroom setting. Wahyuni (2018) also emphasizes the importance of teachers continually increasing their intercultural awareness in order to make informed choices regarding their communicative behaviours while interacting with students.

2.2 Effects of Teachers' Communication on Non-Native Students' Academic Performance

Given the interdependent nature of culture and communication, several studies have investigated the effects of verbal and non-verbal communication in a multicultural classroom setting. One such study is that of Pogue and Ahyun, who hypothesized that all students would achieve a higher academic performance when the curriculum was presented by highly immediate teachers (2006). Pogue and Ahyun (2006) define "immediacy" as a display of non-verbal behaviours which positively increase feelings of closeness between individuals; thereby, a "highly immediate" teacher is defined as one who regularly employs non-verbal communicative behaviours such as nodding, smiling, and maintaining eye contact while interacting with students. This study involved exposing 586 student participants of undisclosed cultural backgrounds to one of four written scenarios describing teacher-student interactions, and having each participant rank their perceptions of the exemplified teacher's immediacy. Results of this study indicate a significant relationship between perceived teacher immediacy and students' academic achievements (Pogue & Ahyun, 2006). From this, it is interpretable that a teacher's use of non-verbal behaviours can positively influence the academic achievements of non-native students; unfortunately, the applicability of this study's findings is limited by the lack of recommendations provided for teachers to better their non-verbal communication skills so that students may reap academic benefits.

Chaudhry and Arif (2012) studied the overall impact of teachers' communicative behaviours on non-native students' academic performance. In order to ensure a majority of student participants were non-native English speakers, this research was conducted at a number of schools employing English-medium instruction, a system in which core (or all) subjects are taught primarily in English in countries where the general population does not speak English as a

first language (2012). Researchers Chaudhry and Arif (2012) observed the non-verbal behaviours of 90 grade-school teachers during their interactions with English students; examples of such interactions include lecturing, giving directions, acknowledging students' feelings, listening to students' ideas, and answering students' questions. Results indicate a strong correlation between teachers' positive non-verbal behaviour (such as smiling, nodding, and maintaining eye contact) and improved academic performance (2012). The implications of these results are that teachers' positive non-verbal behaviours can directly and positively affect student academic achievement; however, as with Pogue and Ahyun (2006), this study is limited by the lack of specific suggestions for ways in which teachers might alter their nonverbal behaviours in order to boost students' academic achievement.

Thirdly, Sutiyatno (2018) studied the effects of a teacher's verbal and non-verbal communication on students' achievements in learning English as an additional language. Sutiyatno (2018) hypothesized that the native English teacher's use of culturally competent verbal and non-verbal communication would significantly influence non-native students' success in learning English. Results of polling 76 students learning English as an additional language indicate a positive relationship between the teachers' verbal and non-verbal communication and non-native students' English achievements (2018). In other words, an increase in the teacher's culturally competent verbal and non-verbal communication produced an increase in students' English achievement (Sutiyatno, 2018). The discussion of these results encourages teachers to develop an awareness of their communicative impacts on student achievement, although the most substantial advice offered is for teachers to use "good communication skills" in the classroom (Sutiyatno, 2018, p. 435). While this does not compromise the findings of this study, both the lack of specifics and the absence of advice contribute to the overall lack of available, practical guidance for educators hoping to improve their communication skills for the benefit of their non-native students.

2.3   Limitations of Existing Literature

While the aforementioned works provide a solid foundation upon which teachers may begin to understand the impacts of their communicative behaviours on non-native students' academic achievements, a central limitation of all is the lack of concrete, attainable suggestions for teachers to advance both their intercultural awareness and communicative skills. Nieto and Zoller-Booth (2010) advise, "Educators must be aware of different worldviews they may encounter in a classroom … to reject or demean a [student's] cultural heritage is to do psychological and moral violence to the dignity and worth of that individual" (p. 409). It is crucial that teachers are able to access specific and practical recommendations for improving their intercultural awareness and communicative skills, both verbal and non-verbal, for the benefit of non-native students' academic performance. The glaring lack of suggestions for educators to develop

effective intercultural awareness and intercultural communication skills can place teachers in a unique circumstance of knowing they need to improve, but not necessarily knowing how to do so.

3 Recommendations to Improve Teachers' Intercultural Awareness and Communication Skills

Considering the current lack of practical recommendations, some may conclude that there are few things teachers can do to improve their intercultural awareness or communicative skills. Although it is true that existing advice on the subject is often vague, unattainable, or simply unhelpful, there are several ways in which classroom teachers can improve their intercultural awareness and communication skills. By examining the findings of existing literature, practical suggestions for educators to improve their intercultural awareness and communication skills can be developed in order for non-native students' academic performance to be better supported and enhanced.

3.1 Improving Teachers' Intercultural Awareness

A common proposal when discussing the enhancement of educators' skills is for said educators to attend professional development sessions (Aguilar, 2008). While this is not a poor suggestion in and of itself, simply attending these sessions is inadequate for developing intercultural awareness, as this development is a lifelong process one must dedicate themselves to (Smith & Lander, 2022). Aguilar (2008) writes, "[Teachers should receive] training in communication skills but […] should also [consider] the personal and social development of [each] learner as an individual …" (p. 60). While it is true that development sessions can be useful in equipping teachers with general tactics for combating racism and microaggressions, it is crucial that students are viewed as more than just members of their culture. Additionally, promoting the idea that attending occasional workshops is an adequate standalone effort will only serve to absolve individuals of the enduring, internal processes required to better one's intercultural competence and awareness (Smith & Lander, 2022).

In addition to (or in place of) attending professional development sessions, teachers may work to improve their intercultural awareness by personally researching significant events, customs, and values of cultures other than their own; attending events hosted by members of different cultures; participating in their colleagues or students' cultural holidays and celebrations (after ensuring they are welcome to join); as well as educating and extending empathy toward all who are making a conscious effort to improve their intercultural knowledge and adjust to new environments (Smith & Lander, 2022).

3.2 Improving Teachers' Verbal Communication Skills

The findings of certain works translate into practical advice for educators to improve their verbal communicative practices for the benefit of non-native students' academic performance. For instance, an increase in teachers' use of phrases that show empathy, kindness, and praise when interacting with students has been associated with increased student motivation and affective learning (Christophel, 1990; Rodriguez, Plax, & Kearny, 1996). It is reasonable to first recommend that teachers remain aware of their word choices, and especially aware of the influence that language can have on their relationships with non-native students. For example, if a teacher is unsure that their word choice will convey the appropriate message when providing instructions to (a) non-native student(s), the use of simplified vocabulary can help to mitigate any potential for confusion (Amsberry, 2008). Additionally, it is recommended that teachers avoid the use of jargon or idioms, speaking as clearly and intentionally as possible to avoid misunderstandings (Amsberry, 2008).

Researchers find that verbal praise from the teacher has the power to positively enhance teacher-student interactions, which in turn can positively affect non-native students' perceptions and attitudes toward their teacher, as well as students' attitudes toward learning in general (McCroskey, Richmond, & Bennett, 2006). Based on these findings, another suggestion for teachers is to incorporate verbal praise for students wherever applicable and appropriate so as to encourage all students to participate, thereby increasing opportunities for positive interactions which can improve non-native students' attitudes and motivation to learn (McCroskey, Richmond, & Bennett, 2006).

A fourth suggestion for teachers is to adopt the process of improving their verbal communication skills as a conscious, daily practice. Nieto and Zoller-Booth (2010) find that non-native students are often deemed problematic or troublesome when they struggle to follow the communicative and behavioural norms of the host country's dominant culture. To combat this, it is suggested that educators develop a consciousness of the prejudice they carry and reject any prejudicial treatment of non-native students. In doing so, non-native students are more likely to feel accepted and supported in their academic endeavours (Nieto & Zoller- Booth, 2010). Aguilar (2008) notes that it can be extremely difficult for native speakers to change their verbal behaviours; this difficulty can apply to both native teachers and non-native students' adjustment to the shared learning environment. Practicing patience and extending empathy toward non-native students is yet another way in which educators can improve their verbal communication skills for the benefit of non-native students' academic performance (Wahyuni, 2018).

3.3 Improving Teachers' Non-Verbal Communication Skills

The findings of certain works can also translate into practical advice for educators to improve their non-verbal communication skills. It is necessary to

note that non-verbal communication has a unique relationship to verbal communication; as stated by Chaudhry and Arif (2012), "[word choice] turns out to be far less important than tone of voice, [facial] expressions, eye contact, gestures and posture of the teacher … the medium becomes the message" (p. 57). In other words, when one is sending a verbal message, their simultaneous non-verbal behaviours have the power to alter the receiver's perception of the message itself. In some cases, non-verbal messages can replace verbal messages entirely, such as nodding, pointing, and using emphatic facial expressions (Bunglowala & Bunglowala, 2015). Due to this, one suggestion for teachers is to ensure they comprehend the impact of non-verbal behaviours and employ non-verbal behaviours as intentionally as possible when interacting with students.

Aguilar (2008) asserts that "… normal conversational practice in one culture is often construed as rude behavior in another … awareness of […] the important differences between the [conversational] norms is very important for conversational competence" (p. 49). In the context of non-verbal communicative behaviours in the classroom, this is to say that teachers must have a conscious awareness of the conversational norms of a non-native students' culture; from this, a suggestion can be derived in which teachers may wish to research the cultural communicative norms of (a) non-native student(s). While this can be done in a number of ways, teachers may wish to visit online communities to learn about conversational norms outside of their own culture. The work of Tseng and Kuo (2014) suggests that online communities of practice (CoPs) can be beneficial for teachers wishing to expand their cultural knowledge. CoPs are online forums or discussion boards designed to be used by global community members who share a profession, such as teachers (Tseng & Kuo, 2014). Through the use of CoPs, teachers worldwide are able to mutually access and share personal knowledge, resources, and problem-solving strategies with other educators. Another suggestion for teachers is hereby developed: teachers can use CoPs to explore non-verbal communicative behaviours, such as asking teachers across the globe about the cultural politeness of various stances and gestures.

While encouraging teachers to maintain an awareness of non-native students' cultural communicative norms, one must caution that teachers do not further alienate non-native students through obvious differential treatment. For instance, students may find it divisive to watch their teacher point directly at some students but not others; students may mistakenly infer favoritism or draw other conclusions by observing their teacher explicitly change their non-verbal behaviours when interacting with certain students. Moreover, teachers of largely multicultural classrooms may find it difficult to remember which students' cultures permit or encourage certain stances and gestures, and which do not. One suggestion is for teachers to avoid the use of any unnecessary non-verbal communicative behaviours altogether, such as pointing at students, folding their arms, or standing with their hands on their hips. Through such efforts, students are less likely to notice changes in non-verbal behaviours and feel alienated in the classroom, which may improve the academic performance of non-native students as a result (Soćko, 2021).

As it can be difficult to monitor and alter one's own non-verbal behaviours, an additional suggestion for educators looking to eliminate unnecessary non-verbal behaviours is to record themselves teaching a lesson (even if to an empty room) in order to observe their gestures, gaze, and posture throughout the lesson. If this is uncomfortable or difficult, the teacher could instead ask that a colleague watch the video to observe and recount their non-verbal behaviours (Ali & Ali, 2011). In any case, it is important that teachers develop an awareness of their non-verbal behaviours for the benefit of non-native students' academic performance. For example, if a teacher were to point at a student with their index finger (a common practice in Western classrooms), a non-native Japanese student may become uncomfortable and left at a disadvantage against their native classmates due to their cultural norms which convey that pointing at someone in such a manner is disrespectful (Hidayatullah, 2019). As a result, there is greater potential for the Japanese student's academic performance to suffer (Bambaeeroo & Shokrpour, 2017). By reviewing and modifying their own non-verbal behaviours, teachers can become more self-aware and work toward eliminating culturally polarizing non-verbal behaviours for the benefit of non-native students' academic performance.

As with both verbal and intercultural communication, it is suggested that teachers try to view the improvement of their non-verbal communication as a conscious, daily practice. Adopting this view may help teachers practice patience for themselves and extend empathy to others throughout the process of increasing self-awareness, a practice which is especially valuable considering the oft-unconscious nature of non-verbal communication. All in all, by developing an awareness of their own non-verbal behaviours and making conscious efforts to improve, teachers can better support the advancement of non-native students' academic performance (Wahyuni, 2018).

4 Recommendations to Improve Students' Intercultural Awareness and Communication Skills

Having established several practical suggestions for improving teachers' intercultural awareness and communication skills, it is essential for educators to remember that communication is reciprocal. It would be erroneous for teachers to assume student passivity while they are improving their intercultural awareness and communication skills; there are several additional ways in which teachers can share their cultural learning with their students. Including students in this process allows them to acknowledge how their cultures inform their communicative behaviours and invites students to consider ways in which they might improve their own intercultural awareness.

One suggestion for teachers looking to expand students' intercultural awareness and communication skills is to establish respectful classroom behaviours at the beginning of the year. This may be done through a "classroom contract" activity, which allows for transparency regarding what is expected of all students and additionally relieves non-native students of the burden to figure

out which words and behaviours are appropriate for the classroom. Should the teacher collect input from all students and take the time to discuss what constitutes classroom-appropriate behaviour, they will demonstrate to all students the potential consequences of their actions. When native students develop a heightened sense of intercultural awareness, they are better able to perceive and respond to non-native students' needs in the classroom, which in turn can facilitate non-native students' feelings of being supported and accepted by their peers (Nieto & Zoller-Booth, 2010). Increasing all students' intercultural awareness and tolerance through collaborative activities will unquestionably benefit non-native students' academic performance, as non-native students are reported to have greater academic success when their instructor and classmates demonstrate acceptance of their culture (Nieto & Zoller-Booth, 2010).

Another suggested method for teachers to include students and improve their intercultural awareness is to create assignments on the topic of one's cultural heritage and have students share their work with one another. Nieto and Zoller-Booth (2010) find that, "… when students are given the chance to consider their own personal ideas about their culture and to compare them with [non-native cultures], there are more positive responses toward the [non-native] culture" (p. 410). Emphasizing not only pride in one's culture, but also pride in sharing their culture with others, can encourage students to celebrate their differences as much as their similarities. Alternately, teachers may assign work in which students research a culture other than their own, and then share their new knowledge with their classmates. No matter the chosen activity, teachers should make use of discussion-based activities, as inviting curiosity and respectful discussion of culture can promote increased intercultural tolerance, which in turn will improve non-native students' academic success (Nieto & Zoller-Booth, 2010).

Respectful and productive classroom discussions of culture can aid in students' understanding of themselves as well as one another, though non-verbal communication in particular can be difficult to explicitly teach (Hurley, 1992). To mitigate this difficulty, another suggestion to improve students' non-verbal communication skills is to introduce drama-based activities where appropriate (Surkamp, 2014). For those who teach language classes, including lessons regarding the non-verbal communicative behaviours of the target language can be helpful for learners (Wahyuni, 2018). For example, a Japanese teacher could inform students of Japanese customs surrounding eye contact and have them adopt these appropriate eye contact practices during class time. For those who do not teach language classes, Eryilmaz and Darn (2005) suggest an activity in which students attempt to communicate with one another using only gestures and facial expressions, which allows students to see the differences in their peers' choice of non-verbal behaviours as well as practice negotiating meaning from non-verbal behaviours in real-time. If non-native students are unable to communicate non-verbally with their teacher or peers, their academic achievement will be negatively influenced (Alsubaie, 2015); therefore, teachers

should both teach and encourage intercultural communication in the classroom to support non-native students' academic achievement.

When students are exposed to cultures outside of their own, they have greater opportunities to continuously construct a more diverse worldview (Nieto & Zoller-Booth, 2010). Including students in the process of expanding intercultural awareness and communication skills is an important pillar of non-native students' academic success. By providing opportunities for students to improve their intercultural awareness, including a recognition of and appreciation for different communication strategies, teachers can promote an environment of cultural integration in order to support and enhance non-native students' academic performance (Rienties et al., 2012).

5   Conclusion

Teachers' intercultural awareness and communication skills can play a significant role in non-native students' academic performance (Alsubaie, 2015; Bambaeeroo & Shokrpour, 2017; Chaudhry & Arif, 2012; Haneef et al., 2014; McCroskey, Richmond, & Bennett, 2006; Pogue & Ahyun, 2006; Rienties et al., 2012; Soćko, 2021; Sutiyatno, 2018; Wahyuni, 2018). The expectations for teachers to adequately support non-native students' learning would be more attainable if there were adequate practical suggestions for teachers to apply intercultural learning and communication knowledge to the classroom environment. As educators are called to accommodate students in increasingly multicultural classrooms, it is imperative that future research addresses the gap in the literature by creating a solid foundation of practical recommendations from which teachers can begin to advance their intercultural knowledge and skills.

As supported by the findings of numerous studies, non-native students perform best academically when they feel accepted and supported by the teacher as well as their peers (Aguilar, 2008; Bambaeeroo & Shokrpour, 2017; Bunglowala & Bunglowala, 2015; Chaudhry & Arif, 2012; McCroskey, Richmond, & Bennett, 2006; Nieto & Zoller-Booth, 2010; Rienties et al., 2012; Sutiyatno, 2018; Wahyuni, 2018). Despite the lack of practical suggestions in existing literature, there are a number of ways in which teachers can improve their intercultural awareness and communication skills for the benefit of non-native students' academic performance. Teachers do not need to become experts in intercultural communication in order to support the academic performance of non-native students; maintaining a conscious awareness of the impact of communicative behaviours as well as extending empathy toward those who are adjusting to a new environment can begin to facilitate positive change and intercultural tolerance within their classroom. As long as teachers are prepared to dedicate themselves to the processes of gaining as much intercultural knowledge as possible, incorporating culture and communication-based activities into their classroom, and adjusting their communicative behaviours as needed, there is excellent potential to benefit non-native students' academic performance. By working to improve their intercultural awareness and communication skills,

teachers can ensure that non-native students leave the classroom at the end of the year feeling accepted, supported, and proud of their academic performance.

6   About the Author

Erin earned a Bachelor of Arts in French and Developmental Psychology from the University of Victoria in 2021, and is currently earning a Master of Arts in Applied Linguistics at the University of Victoria. As Erin works toward a career in second-language instruction, she finds the interplay of culture and communication within the classroom setting both fascinating and in need of further research.

References

Aguilar, M. J. C. (2008). Dealing with intercultural communicative competence in the foreign language classroom. *Intercultural Language Use and Language Learning* (pp. 59-78). Springer, Dordrecht.

Ali, A. S. M., & Ali, S. (2011). The use of non-verbal communication in the classroom. *International Conference on Foreign Language Teaching and Applied Linguistics, 1*(1), 1096-1099.

Alsubaie, M. A. (2015). Examples of current issues in the multicultural classroom. *Journal of Education and Practice*, *6*(10), 86-89.

Amsberry, D. (2008). Talking the talk: Library classroom communication and international students. *The Journal of Academic Librarianship*, *34*(4), 354-357.

Bambaeeroo, F., & Shokrpour, N. (2017). The impact of the teachers' non-verbal communication on success in teaching. *Journal of Advances in Medical Education &Professionalism*, *5*(2), 51-59.

Bunglowala, A., & Bunglowala, A. (2015). Nonverbal communication: An integral part of teaching learning process. *International Journal of Research in Advent Technology*, *1*(1), 371-375.

Castro, A. J. (2010). Themes in the research on preservice teachers' views of cultural diversity: Implications for researching millennial preservice teachers. *Educational Researcher*, *39*(3), 198-210.

Chaudhry, N. A., & Arif, M. (2012). Teachers' nonverbal behavior and its impact on student achievement. *International Education Studies*, *5*(4), 56-64.

Christophel, D. M. (1990). The relationship among teacher immediacy behaviours, student motivation, and learning. *Communication Education, 37*(1), 323-340.

Eryilmaz, D., & Darn, S. (2005). A nonverbal communication lesson. *The Internet TESL Journal, 5*(2).

Haneef, M., Faisal, M. A., Alvi, A. K., & Zulfiqar, M. (2014). The role of non-verbal communication in teaching practice. *Science International*, *26*(1), 513-517.

Hans, A., & Hans, E. (2015). Kinesics, haptics and proxemics: Aspects of non-verbal communication. *IOSR Journal of Humanities and Social Science*, *20*(2), 47-52.

Hidayatullah, R. (2019). Different meaning of gesture in several countries. *International Conference and Seminar on Cross Cultural Understanding* (pp. 113-119). https://doi.org/10.31219/osf.io/m9c5x

Hurley, D. S. (1992). Issues in teaching pragmatics, prosody, and non-verbal communication. *Applied Linguistics*, *13*(3), 259-280.

Lum, C. H., & Marsh, K. (2012). Multiple worlds of childhood: Culture and the classroom. *The Oxford Handbook of Music Education*, *1*(1), 168-398.

McCarthy, A., Lee, K., Itakura, S., & Muir, D. W. (2008). Gaze display when thinking depends on culture and context. *Journal of Cross-Cultural Psychology*, *39*(6), 716-729.

McCroskey, J. C., Richmond, V. P., & Bennett, V. E. (2006). The relationships of student end-of-class motivation with teacher communication behaviors and instructional outcomes. *Communication Education*, *55*(4), 403-414.

Moeller, A. K., & Nugent, K. (2014). Building intercultural competence in the language classroom. *Faculty Publications: Department of Teaching, Learning and Teacher Education, 1*(1)*,* 1-18.

Nieto, C., & Zoller-Booth, M. (2010). Cultural competence: Its influence on the teaching and learning of international students. *Journal of Studies in International Education*, *14*(4), 406-425.

Pogue, L. L., & Ahyun, K. (2006). The effect of teacher nonverbal immediacy and credibility on student motivation and affective learning. *Communication Education*, *55*(3), 331-344.

Rienties, B., Beausaert, S., Grohnert, T., Niemantsverdriet, S., & Kommers, P. (2012). Understanding academic performance of international students: The role of ethnicity, academic and social integration. *Higher Education*, *63*(6), 685-700.

Rodriguez, J. I., Plax, T.G. & Kearny, P. (1996). Clarifying the relationship between teacher nonverbal immediacy and student cognitive learning: Affective learning as the central causal mediator. *Communication Education 45*(1), 293-305.

Singelis, T. M., & Brown, W. J. (1995). Culture, self, and collectivist communication: linking culture to individual behavior. *Human Communication Research*, *21*(3), 354-389.

Smith, H., & Lander, V. (2022). Finding 'pockets of possibility' for anti-racism in a curriculum for student teachers: From absence to action. *The Curriculum Journal*, *1*(21), 1-18.

Soćko, M. (2021). The importance of non-verbal communication among students and teachers. *Problems of Foreign Linguistics, Literary and Cultural Studies, L2 Teaching and Acquisition*, *1*(2), 74-84.

Surkamp, C. (2014). Non-verbal communication: Why we need it in foreign language teaching and how we can foster it with drama activities. *Scenario: A Journal of Performative Teaching, Learning, Research*, *8*(2), 28-43.

Sutiyatno, S. (2018). The effect of teacher's verbal communication and non-verbal communication on students' English achievement. *Journal of Language Teaching and Research*, *9*(2), 430-437.

Taylor, R. (2010). The role of teacher education programs in creating culturally competent teachers: A moral imperative for ensuring the academic success of diverse student populations. *Multicultural Education*, *17*(3), 24-28.

Tseng, F. C., & Kuo, F. Y. (2014). A study of social participation and knowledge sharing in the teachers ' online professional community of practice. *Computers & Education*, *72*(1), 37- 47.

Wahyuni, A. (2018). The power of verbal and nonverbal communication in learning. *Advances in Social Science, Education and Humanities Research, 125*(1), 80-83.

Zhao, Y. (2007). Cultural conflicts in an intercultural classroom discourse and interpretations from a cultural perspective. *Intercultural Communication Studies*, *16*(1), 129-136.

덧! 꽃! 멋!
(Dot! Kkot! Mot!)
Coda Neutralization in Korean

Matthew Somerville
University of Victoria
matthewsomerville@uvic.ca

In this paper, I propose a teaching tool that aids Korean L2 undergraduate English-speaking students in acquiring coda neutralization. In comparison to the English language, which distinguishes obstruents as either voiced or voiceless, Korean obstruents have a three-way distinction of laryngeal features. In addition, the Korean language allows more phonemes to be neutralized than in English. These phonological characteristics cause difficulties for beginner students whose first language is English. To address the issues that beginner students face, I developed a teaching tool that Korean-as-a-foreign-language instructors can use to benefit their students' understanding by combining theoretical understandings of Korean phonology (specifically obstruents in the coda position) with pedagogical theory. This tool begins with awareness-building exercises to expand students' phonological knowledge of Korean. Then, students apply their knowledge through comprehension problems. Towards the conclusion of the paper, I elaborate on the significance of the teaching tool concerning second language acquisition. I also discuss the tool's limitations and offer recommendations for adapting it to align with the students' native language and Korean language proficiency.
Keywords: Korean-as-a-foreign-language; coronal obstruents; coda neutralization; comprehensible input hypothesis; teaching tool

1   Introduction

Many researchers have examined coda neutralization ("….elimination of a phonemic distinction in the [coda position]" (Jongman, 2004, p. 1) within the Korean language, but their research does not provide methods that Korean foreign language teachers can use to teach their students (Ahn & Iverson, 2004; Kim & Duanmu, 2004; Kang, 2001; Lee, 2006). In order to make coda neutralization understandable for beginner students that are learning Korean, the proposed teaching tool aims to bring forth previous theoretical knowledge of this phonological phenomenon and apply it to pedagogical settings. As the Korean language allows for a wider range of phonemes to be neutralized than the English language, beginner students who speak English as a first language (L1) may find coda neutralization daunting (Lee, 2006). Thus, I intend to explain coda

neutralization in Korean, specifically focusing on coronal obstruents through a teaching tool that features step-by-step activities.

2   Language Background

According to Cho and Whitman (2019), the Korean language belongs to its own language family known as the *Koreanic* language family (p. 13). Within this language family, there are many dialects which have formed because of political differences (i.e., North versus Seoul dialect), as well as geographic (northwestern dialects, central dialects, and Jeju dialect) (Brown & Yeon, 2015). The Korean language is mainly spoken in South and North Korea, but also spoken in other parts of the world, such as China, Japan, United States, and Europe (Brown & Yeon, 2015).

3   Generalization and Examples

The generalization for coda neutralization of coronal obstruents is as follows:

     i. Korean does not allow released obstruents in the coda position.

The following examples from Lee (2006) show that coronal obstruents all neutralize regardless if they are a stop (1), affricate (2), or fricative (3) when in the coda position (p. 3). In the first example, the labial lax stop (1a) and aspirated stop (1b) are being neutralized to an unreleased labial stop ([p̚]). The same process is seen with the velar lax, aspirated, and tense stops (1c, 1d, 1e). All velar stops are neutralized to an unreleased velar stop in the surface representation ([k̚]). The process also occurs for coronal stops (1f) and (1g), which neutralize to an unreleased coronal stop ([t̚]). In the second example, a lax affricate (2a) and aspirated affricate (2b) are being neutralized to an unreleased coronal stop. Finally, in the third example, both a lax fricative (3a) and a tense fricative (3b) are being neutralized to an unreleased coronal stop.

(1)   a.   /pap/   [pap̚]   *'rice'*

        b.   /ip^h/   [ip̚]   *'leaf'*

        c.   /pak/   [pak̚]   *'gourd'*

        d.   /nyek^h/   [nyek̚]   *'around (the time)'*

        e.   /pak'/   [pak̚]   *'outside'*

        f.   /kot/   [kot̚]   *'instantly'*

        g.   /k'ɨt^h/   [k'ɨt̚]   *'a point'*

(2) a.   /nat͡ɕ/   [nat̚]   *'day'*

     b.   /nat͡ɕʰ/   [nat̚]   *'face'*

(3) a.   /nas/   [nat̚]   *'sickle'*

     b.   /kas'/   [kat̚]   *'to go (past)'*

The neutralization of /t͡ɕ/[1] and /t͡ɕʰ/ (2), as well as /s/ and /s'/ (3), to an unreleased [t̚] is an interesting phenomenon as this assimilation does not occur in English. Example (4a) shows neutralization of a coronal obstruent in the coda position which can occur in English. However, in English, the postalveolar affricate (4b) and the alveolopalatal fricative (4c) do not neutralize to an unreleased coronal obstruent in the coda position:

(4) a.   /tɹɪkt/   [tɹɪkt̚]   *'tricked'*

     b.   /t͡ʃɜrt͡ʃ/   [t͡ʃɜrt͡ʃ]   *'church'*

     c.   /sʌs/   [sʌs]   *'sus'*

4   Assumptions

The teaching tool is grounded in a theoretical process and assumption: neutralization, and laryngeal features, specifically glottal width, respectively. These concepts are described in the following sections. In addition, Krashen's (1982) comprehensible input hypothesis is considered as a pedagogical assumption.

4.1   Neutralization

The teaching tool will show the concept of neutralization to assist students in acquiring Korean phonology. Thus, while two forms differ in their underlying representation, they may sound similar (Jongman, 2004, p. 1). For example, in Korean, while the last consonants seen in the forms "instantly" and "to go" (past) (1a, 3b) are different phonemes (i.e., a voiceless alveolar stop (/t/) and a tense fricative (/ s'/)), they have the same unreleased coronal stop ([t̚]) in the surface representation.

4.2   Laryngeal Features

In comparison to other languages, such as English, which use voiced and voiceless features to denote obstruents, Korean uses a three-way distinction for coronal obstruents, which are lax (lenis), tense (fortis), and aspirated features (Ahn & Iverson, 2004, p. 352; Lee, 2006, p. 1; Kang, 2001, p. 136). In addition,

---

[1] /t͡ɕ/ is a lax alveopalatal affricate (Shin, 2015).

Korean has a two-way distinction for the coronal fricative /s/ (lax [s] and tense [s']) (Lee, 2006, p. 1). I assume that the specifications of Korean obstruents are mainly characterized by glottal width, meaning that aspirated obstruents have the feature [spread glottis] or [SG], lax obstruents are characterized as glottis neutral, and tense obstruents have the feature [constricted glottis] or [CG] (Ahn & Iverson, 2004, pp. 352). As coronal obstruents are characterized by [spread glottis], glottis neutral, or [constricted glottis], these features are assumed to be unary because it is redundant to say that a segment has a feature and lacks another (Ahn & Iverson, 2004, p. 346).

4.3   Comprehensible Input Hypothesis

For the teaching tool, the researcher will not state the term neutralization explicitly, but will implement English and Korean examples where neutralization occurs, such as "cat" [kaet̚] and "cad" [kaed̚]. The activities are chosen based on Krashen's (1982) comprehensible input hypothesis, which is a hypothesis that describes how one acquires a second language. Lightbown & Spada (2013) describe this hypothesis as:

> …acquisition [that] occurs when one is exposed to language that is comprehensible and contains *i + 1*. The '*i'* represents the level of language already acquired, and the '+*1'* is a metaphor for language… that is just a step beyond that level. (p. 106).

The teaching tool first introduces English examples that feature coda neutralization to build a foundation of understanding for students. The comprehensible input hypothesis is incorporated when students are acquiring the Korean examples of coda neutralization. The teaching tool assumes that Korean vocabulary is already acquired and comprehensible for students (*i*). The coda neutralization process is a step beyond students' current level (*+1*).

5   Teaching Tool

5.1   Theoretical Context and Grounding

The teaching tool will showcase many phonological concepts which may be new to students. For example, students may believe that Korean obstruents have the same distinction as English obstruents (voiced or voiceless); however, this belief is incorrect. The distinction, instead, is lax (lenis), tense (fortis), and aspirated (Ahn & Iverson, 2004, p. 352). In order to describe this distinction appropriately, elements of laryngeal features are used within the tool. Specifically, lax, tense, and aspirated obstruents are highlighted in a simple phonological rule within the tool. Finally, while coda neutralization occurs in English, students may not realize that this phonological phenomenon also occurs in Korean, and is an

important concept to know as it causes coronal obstruents to become unreleased lax obstruents.

The teaching tool (see Appendix A), created for undergraduate students who are complete beginners (1-4 months of learning), will break down the phenomenon of coda neutralization through step-by-step activities.

First, the teaching tool will list three English words that feature unreleased obstruents in the coda position. For example, "bat" ([baet̚]) or "tricked" ([tɹɪkt̚]). Students will be prompted to say these words out loud and listen to the coronal obstruents, determining whether they are unreleased or released. The teaching tool also uses "subtle" and "clearly audible" to guide students who do not know linguistic terms. The instructor will explain that the last consonant is unreleased and repeat the words using both released and unreleased obstruents to demonstrate the differences clearly. For example, the instructor may say the coronal obstruents released versus unreleased so that students can hear the difference. Showing students words in a language they understand will allow them to build a foundation of understanding.

They can use this knowledge to assist them as they acquire coda neutralization in Korean, which is a step beyond their current level (i.e. *+1*). In this activity, students will be asked to read out loud six Korean words which they are familiar with (*i*). These words have unreleased coronal obstruents and also released coronal obstruents (coronal obstruents with a vowel preceding). Rather than using unreleased and released, the teaching tool differentiates the two forms by consonant vowel consonant (CVC) and consonant vowel consonant vowel (CVCV), and divides the words into columns, which allows students to understand the differences with ease. Below these words, a simple phonological rule of how coronal obstruents in the coda position sound is shown, as well as in written English. In addition, an example of when coronal obstruents become neutralized and when they do not is written.

Finally, the teaching tool will have two perception quizzes at the end that students can use to apply what they have learned. The first section is a comprehension quiz. Three audio recordings, which comprise Korean words that have unreleased coronal obstruents and released coronal obstruents, (i.e. words that feature the coronal obstruent with a preceding vowel), will be given to students. After hearing the audio clip, students will choose between two answers: (a) unreleased and (b) released.

The second section will be a correct/incorrect quiz. Five audio clips that have Korean words with coronal obstruents in the coda position will play. Some of these words will be said with an unreleased coronal obstruent in the coda position (correct) or with a released coronal obstruent in the coda position (incorrect). Students will choose between (a) correct and (b) incorrect, and if the word is said incorrectly, the students are prompted to write the correct form using English romanization.

5.2 Learning Objectives

Once finished with the teaching tool, students will be able to: (1) identify Korean words that have coronal obstruents in the coda position, and (2) apply their knowledge of coda neutralization to pronounce coronal obstruents correctly.

5.3 Assessment Criteria

For assessment, activity one and activity two are not worth marks, as they do not assess students' ability, but rather aid in their understanding of coda neutralization of coronal obstruents. In contrast, activity three, which features the perception quizzes, will be assessed so that the instructor can gauge students' understanding. The first quiz is worth three marks as students only have to determine if the word has a vowel or not. The second quiz is slightly more difficult because students have to determine if the coronal obstruent within each word is said correctly or not. In addition, if the words are said improperly, the students have to write the correct form in English romanization. Thus, the second activity is weighted more heavily. Instructors are told to give a mark if students select the correct option and a mark if they write the English form with an unreleased lax obstruent (i.e. [t̚]). As there are three incorrect answers and five questions in total, a student can receive up to eight marks.

As Korean is not a voiced/voiceless language like English, the tool advises instructors not to dock marks if students write an interchanging consonant or vowel, such as "b/p" or "ae/e." Instead, the teaching tool assumes both answers to be correct as long as the last segment is an unreleased lax obstruent. Instructors are recommended to write the most correct English romanization beside students' answers, and to discuss how to correctly spell consonants after the activity for clarification.

6 Discussion

6.1 Value for Second Language Acquisition

The teaching tool utilizes theoretical and pedagogical concepts to aid students' understanding of coda neutralization, specifically with coronal obstruents. First, the tool will build students' understanding of coda neutralization as the activities are designed using Krashen's (1982) comprehensible input hypothesis. In addition, the tool will benefit students' phonological awareness as they are prompted to perceive released and unreleased stops that exist in the Korean language.

6.2 Limitations of the Teaching Tool

It is important to note the teaching tool is limited in that it only explains the process of coda neutralization of coronal obstruents, rather than labial or dorsal

obstruents. While the process of neutralization is the same for all obstruents, coronal affricates require a change in place of articulation before the coronal stop is unreleased. This extra step is not needed for labial and dorsal stops to neutralize (Lee, 2006, p. 3). Other teaching tools could be made to cover the remaining obstruents.

While the tool is designed to be effective in teaching students coda neutralization of coda obstruents, limitations exist since not all phonological processes in Korean are explicitly addressed. For example, in activity two, some words in the CVCV column show the consonants with different sounds. This phonological process occurs with when some consonants and vowel are combined together, such as "/s/" and "/i/" becoming "[ʃi]" not "[si]" (Eckman & Iverson, 2012, p. 71). To address this limitation, a separate teaching tool can be developed to assist students' understanding of phonological processes like the example above.

6.3   Other Purposes of the Teaching Tool

Possible modifications can be made to the teaching tool to suit students with different languages and proficiencies. The teaching tool is originally designed for undergraduate students who speak English as an L1, but can be changed to a certain extent. The first activity, which features English examples, can be changed to any language as long as those languages have coda neutralization of coronal obstruents.

The teaching tool can also be modified to suit the level of students. For example, if the instructor wanted to use the tool for an upper beginner class (5-12 months), they could take out the Korean transcriptions in 3.2 and have students write the words in Korean if they are incorrect.

7   Conclusion

In this paper, Korean coronal obstruents, specifically stops and affricates, are shown to have a three way-distinction (lax, tense, and aspirated), while coronal fricatives have a two-way distinction (lax and tense). The generalization states that Korean coronal obstruents cannot be released in the coda position.

The teaching tool incorporates theoretical knowledge of coda neutralization of Korean coronal obstruents with pedagogy, thus, addressing the research problem of the study. The teaching tool uses phonological theory from existing research and concepts from Krashen's (1982) comprehensible input hypothesis, allowing L2 Korean beginner undergraduate students whose L1 is English to build and apply their knowledge of coda neutralization of coronal obstruents.

8   About the Author

My interest in languages, Korean media, and an abundance of experience with learning Japanese, led me to start studying Korean at the end of 2020. Despite the explicit knowledge of phonology and phonetics that I gained during my undergraduate at the University of Lethbridge, I struggled (and still do) with my pronunciation of Korean. In 2021, I got accepted into the Master's in Applied Linguistics program at the University of Victoria, and as part of the required courses, I took LING 505: Introduction to Phonology under Dr. Marion Caldecott. The final project for this class was to create a teaching tool using aspects of what we learned during the course. Inspired by my own difficulties with the Korean language, I strived to create a teaching instrument that could help beginner students acquire some aspects of Korean pronunciation.

References

Ahn, S.C., & Iverson, G. K. (2004). Dimensions in Korean laryngeal phonology. *Journal of East Asian Linguistics*, *13*(4), 345–379. http://www.jstor.org/stable/20100878

Cho, S., & Whitman, J. (2019). *Korean: A linguistic introduction*. Cambridge: Cambridge University Press. https://doi.org/10.1017/9781139048842

Eckman, F., & Iverson, G. K. (2012). The role of native language phonology in the production of L2 contrasts. *Studies in Second Language Acquisition*, *35*(1), 67–92. https://doi.org/10.1017/S027226311200068X

Jongman, A. (2004). Phonological and phonetic representations: The case of neutralization. Proceedings of the 2003 Texas Linguistics Society Conference: Coarticulation in Speech Production and Perception. pp. 96-106. Cascadilla Press.

Kang, E. (2001). Edge-integrity and the syllable structure in Korean. In *Proceedings of the 16th Pacific Asia Conference on Language, Information and Computation*.

Kim, M.R., & Duanmu, S. (2004). "Tense" and "lax" stops in Korean. *Journal of East Asian Linguistics*, *13*(1), 59–104. https://doi.org/dbbz27

Krashen, S. (1982). *Principles and practice in second language acquisition* (1st ed.). Pergamon. https://doi.org/10.1111/j.1467-971X.1982.tb00476.x

Lee, S. (2006). *Post obstruents in tensification in Korean*. [Paper presentation]. Annual Conference of the Canadian Linguistic Association (ACCLA), Toronto, Ontario, Canada. https://cla-acl.ca/actes/actes-2006-proceedings.html

Lightbown, P., & Spada, N. (2013). *How languages are learned* (Fourth edition). Oxford University Press. https://doi.org/10.1002/9781405198431.wbeal1094

Shin, J. (2015). Vowels and Consonants. In L. Brown & J. Yeon (Eds.), *The Handbook of Korean Linguistics*. https://doi.org/10.1002/9781118371008.ch1

Appendix A

Name: _____
Date: _____

덧! 꽃! 멋!
(Dot! Kkot! Mot!)
How to Pronounce Coronal Obstruents in the Coda Position in Korean
(___/11 marks)

Intended Level/Proficiency: This tool is created for undergraduate students who are complete beginners (1-4 months of learning) at the Korean language.

Language Background:
Korean is a part of the *Koreanic* language family, and refers to the many dialects that differ politically, such as the Seoul, North, and Jeju dialects. Korean, unlike English, has a three-way distinction for certain consonants: lax, aspirated, and tense.

Cho, S., & Whitman, J. (2019). *Korean: A Linguistic Introduction*. Cambridge: Cambridge University Press. doi:10.1017/9781139048842

Lee, S. (2006). *Post Obstruents in Tensification in Korean*. [Paper presentation]. Annual Conference of the Canadian Linguistic Association (ACCLA), Toronto, Ontario, Canada.

Learn the Rule:

1. Read the following English words out loud.
   What do you notice about the pronunciation of these words? Focus on the pronunciation of the "t". What do you hear? Is the "t" clearly audible (released) or subtle (unreleased)?

   a. Bat
   b. Cat
   c. Tricked

2. Read the following Korean words out loud.
   What do you notice about the pronunciation of these words? Is the last sound different in the CVC column and the CVCV Column? What is the difference?

CVC *(Consonant/Vowel/Consonant)*	CVCV *(Consonant/Vowel/Consonant/Vowel)*
a. 끝(kkitʰ) "A point"[2] b. 낯 (nat) "Day" c. 멋 (meot) "Flavor	d. 끝이 (kkichi) "A point" e. 낯에 (naje) "Day" f. 멋이 (meoshi) "Flavor"

Please observe the following rule:

$$\left\{\overset{/t/}{\sqsubset},\overset{/tʰ/}{\sqsubcup},\overset{/t'/}{\sqcap\hspace{-0.3em}\sqcap},\overset{/c/}{\precsim},\overset{/cʰ/}{\precsim},\overset{/c'/}{\precsim\hspace{-0.3em}\precsim},\overset{/s/}{\curlywedge},\overset{/ss'/}{\curlywedge\hspace{-0.3em}\curlywedge}\right\}\underset{\text{(End of the syllable)}}{\underline{\qquad}}="[t^{\daleth}]"$$

When these sounds (ㄷ,ㅌ,ㄸ,ㅈ,ㅊ,ㅉ, ㅅ,ㅆ) are at the ***end of a syllable***, they are all pronounced as a subtle (unreleased) **"t̚".**

Example:

In this word, "멋, (meos)" the "ㅅ" (s) is at the end of the syllable, thus it is pronounced as **"t"**.

In this word, "머수 (meosu)," the "ㅅ" (s) is at the beginning of the syllable, thus it is pronounced as "s" not **"t"**.

---

[2] Examples adapted and modified from Lee, S. (2006). *Post Obstruents in Tensification in Korean*. [Paper presentation]. Annual Conference of the Canadian Linguistic Association (ACCLA), Toronto, Ontario, Canada.

Apply your Knowledge:

3. Comprehension Quiz: Listen to the audio clips and choose whether the word has an unreleased sound or released sound. (3 marks)

a.	(a) unreleased	(b) released
b.	(a) unreleased	(b) released
c.	(a) unreleased	(b) released

4. Incorrect/Correct Quiz: Listen to the audio clips and determine if the word is said properly or improperly. If not, write the correct pronunciation in English romanization. **Make sure to use "t̚"** if the last consonant is unreleased. (8 marks)

a.	"멋"	(a) correct	(b) incorrect
			_____
b.	"빛"	(a) correct	(b) incorrect
			_____
c.	"넷"	(a) correct	(b) incorrect
			_____
d.	"인터넷"	(a) correct	(b) incorrect
			_____
e.	"끝"	(a) correct	(b) incorrect
			_____

Appendix B

Answer Key:

Comprehension Quiz: Listen to the audio clips and choose whether the word has an unreleased sound or released sound. (3 marks)

   a.   (a) unreleased   **(b) released**
   b.   **(a) unreleased**   (b) released
   c.   (a) unreleased   **(b) released**

Incorrect/Correct Quiz: Listen to the audio clips and determine if the word is said properly or improperly. If not, write the correct pronunciation in English romanization. **Make sure to use "t̚"** if the last consonant is unreleased. (8 marks)

a.	"멋"	**(a) correct**	(b) incorrect
b.	"빛"	(a) correct	**(b) incorrect**
			_____**Bit̚**/Pit̚*_____
c.	"넷"	(a) correct	**(b) incorrect**
			_____**Naet̚**/Net̚_____
d.	"인터넷"	**(a) correct**	(b) incorrect
e.	"곧"	(a) correct	**(b) incorrect**
			_____**Kot̚**/Got̚_____

*For incorrect: Give one point if students write "t̚" at the end of a word. For this worksheet, do not dock marks if students write an interchanging consonant or vowel, such as "b/p", "ae/e" or "g/k," as this assignment focuses on what they perceive. Instead, write the **bolded/<u>underlined</u> version** beside the English form if they do not have the most correct consonant/vowel. For example, if a student writes "pit," write "**bit**" beside. The teacher may want to discuss how consonants are written in English after the assignment is finished as clarification.

The Future of General Linguistic Theory

Jared W. Desjardins
University of Colorado Boulder
jared.desjardins@colorado.edu

In this paper, I argue that contemporary theories of language do not adequately account for the relationship between human language and cognition, and there are three reasons why: generative linguistic theory, as a general theory for language, maintains an unfeasible conception of mind; it initiated, and perpetuates, a gross misinterpretation of Saussure's views on language; and its methods of analysis take too much for granted. The paper begins with an overview of generative linguistic theory and its connection to modern cognitive science, focusing on the role and status of linguistic description and its relationship to the mind(-brain). This connection is then refined by outlining the major goals of theories of language, specifically, theories that purport to account for the human language faculty. I claim that theories meeting such goals account for nothing of substance, since their object of study is ultimately a Cartesian ghost. If our goal is to understand human language in general, we must change how we look at the relation between language and thought. This entails a change in how we view the data comprising language-particular theories, and how language-particular theories (individual grammars) provide the basis for general linguistic theory.
Keywords: Linguistic theory; cognitive science; general linguistics; generative grammar; philosophy of language

1   Introduction

While reading through the literature on formal linguistic theory, one is likely to encounter references to Ferdinand de Saussure (1857-1913) and René Descartes (1596-1650). The references one finds will probably treat their ideas as incompatible, but there is at least one thing that unites these two thinkers. Saussure and Descartes are widely considered to be founders of their respective fields, modern linguistics and modern philosophy. As such, Saussure, like Descartes, is principally concerned with sound methods, fundamental principles, and above all, a radical doubt (Godel, 1984, pp. 84-85; Russell, 1945/1972, p. 563). The method of radical doubt—the process of questioning everything in pursuit of absolute certainty (Broughton, 2003)—is the foundation upon which Descartes's theory of knowledge, or epistemology, rests. For Descartes, *cogito ergo sum* [I think therefore I am] "makes mind more certain than matter, and my mind (for me) more certain than the minds of others" (Russell, 1945/1972, p. 564). Hence the physical world, including natural human language, is knowable

only by way of the mind, and the mind is a thing that thinks.[1] Since doubting is a form of thinking, one cannot deny Descartes's ultimate premise of *cogitationes sunt* [there are thoughts] (p. 567), nor can one deny that, by virtue of our thinking, we exist.

Such methods are sound, but not the Cartesian conception of mind that follows from it. The mind, as noted, is a thing that thinks, though Descartes "nowhere proves that thoughts need a thinker" (Russell, 1945/1972, p. 567). The mind simply *is*, and it is what separates mindful animal (humans) from the mindless (non-human animals, automata, machines) (cf. Descartes, 1637/1910, pp. 60-61). Humans, possessing minds, are able to exercise their thoughts in ways wholly unique to them, for example, in the ordinary use of language. To understand natural human language requires understanding our ability to have and use it, which in turn requires understanding the relationship between language and mind. One could say that the mind (or thinking thing) is antecedent to language, and true understanding of the latter requires investigation of the thoughts (knowledge) contained in the former. Saussure, by contrast, sees in language "only a most complex phenomenon, involving physical and psychological processes, individual freedom and social constraint, change and stability" (Godel, 1984, p. 85). Under this view, one cannot treat language as if it were a discrete object out in the world (or tucked away in the mind) that can be directly observed or analyzed. This is because no such definite object exists— there is only an emergent system that *necessarily requires* a thinker. Given that language is at once a cognitive and social product, along with the inherent difficulties of observing and analyzing a complex system of this sort, Saussure's primary concern is *pour montrer au linguiste <u>ce qu'il fait</u>* [to show the linguist what he is doing] (Benveniste, 1963, p. 13; Godel, 1984, p. 84).

Saussure and Descartes both demonstrate an acute appreciation for their respective objects of study, and for the methods used to investigate them. But when it comes to the study of language, the problem that most bothered Saussure—the fact "that those who speak about language and explain linguistic facts have no adequate idea of the very object they are studying" (Godel, 1984, p. 84)—persists to this day. For example, D'Alessandro and van Oostendrop (2017) (henceforth D'AvO) repeat Saussure's primary concern when they write that "there is very little agreement about the ontology of the object of study among linguists" (p. 2). For D'AvO, the crux of such disagreement is straightforward: it is the irreconcilable difference between approaches, distilled to "Chomsky vs. Saussure" (p. 2), which they describe as in (1).

(1)   In the first [Chomskyan] line of thought, language is seen as a cognitive object, something which resides in the mind of an individual speaker […] and communities present chaotic mixtures of these idiolects. The

---

[1] "A thing that thinks, [Descartes] says, is one that doubts, understands, conceives, affirms, denies, wills, imagines, and feels—for feeling, as it occurs in dreams, is a form of thinking. Since thought is the essence of mind, the mind must always think, even during deep sleep" (Russell, 1945/1972, p. 565).

> other line is the Saussurean view … in which language resides in a community, and the language production of individual speakers is an imperfect reflection of those speakers.

These approaches are said to be "incommensurable in the well-known sense of Kuhn (1962): they are different in scope" (D'Alessandro & van Oostendorp, 2017, p. 2).[2] Their difference in scope hinges upon two things: whether language is treated as a cognitive object (as existing in the mind), and "sufficient loopback to a strong theory" (p. 4), i.e., a universal or general theory for language.

The Chomskyan line of thought owes its success to a complete acceptance of the Cartesian conception of mind, a misinterpretation of Saussure's theory of language, and a selective reformulation of post-Bloomfieldian linguistics (in particular, the work of Zellig Harris). Taken together, we have "an agenda for generative linguistic theory" (Jackendoff, 2002, p. 19), an agenda that, according to D'AvO, provides for sufficient loopback to a strong theory. If we take contemporary linguistics to be "a mosaic of different views and methodologies" (D'Alessandro & van Oostendorp, 2017, p. 4), then generative linguistic theory is but one (group of) tile(s) out of many others, and a complete picture of language is achievable only through the combination of them all (p. 3). The combination of all tiles is then the purview of a general linguistic theory, the goal of which is to understand human language in general (i.e., the complete picture). Generative linguistic theory is not, nor can it be, the sort of strong general theory needed to bring the mosaic together. This is so because generative linguistic theory, as a general theory for language, simply does not make sense. The reasons for the nonsense are threefold: generative linguistic theory, as a general (universal) theory for human language, is based on an outdated conception of mind, a priori assumptions about what language is, and unhelpful methods of analysis. The subject matter of general linguistics calls for a different approach, a unified theory of language predicated on sound methods of analysis and a radical doubt.

This paper is organized as follows. Section two introduces the idea of language as a cognitive object (something in the mind), focusing on the revolutionary claims made in *Syntactic Structure* (Chomsky, 1957) and *Aspects of the Theory of Syntax* (Chomsky, 1965), and their connection to cognitive science. In section three we cover the goals of theory construction, and what a theory for language is supposed to explain. The focus of section four is on "the relevant subject matter" (Chomsky, 2021), i.e., what particular and general linguistic theories in part determine, and in part explain. Specifically, section four provides an overview of the major tenets of generative linguistic theory, and their descriptive and explanatory relevance. The latter portion of section four then outlines the development of linguistic theory in America, from Bloomfield to the present. It is argued that current (formalist and functionalist) theories do not account for the relationship between language and thought in any general way.

---

[2] A sense that Kuhn (1977, p. 295, note 4) seemingly regrets.

Some conclusions are provided in section five, including a brief glimpse of what general linguistic theory might look like.

2 Mentalistic Linguistics

"The remarkable first chapter of Noam Chomsky's *Aspects of the Theory of Syntax* (1965) sets in place an agenda for generative linguistic theory," writes Jackendoff (2002, p. 19), "much of which has survived intact for over thirty-five [fifty-six] years." That which has survived informs D'AvO's (2017) current notion of "a strong theory" (p. 4) (including the sufficient loopback), and whatever "looks and smells like science" to Pesetsky (2015, p. 2). In any case, the agenda encompasses three things: standard techniques of linguistic research (methods of analysis), structures like that in Figure 1 (from Jackendoff, 2002, p. 6), and the claim that this sort of structure "is meant to be 'psychologically real': it is to be treated as a model of something in the mind of a speaker of English who says or hears this sentence" (Jackendoff, 2002, p. 19). So, linguistic theory is "mentalistic, since it is concerned with discovering a mental reality underlying actual behavior" (Chomsky, 1965, p. 4). This sort of mentalistic linguistics is foundational to contemporary cognitive science.

Figure 1. *Syntactic Structure of 'the little star's beside a big star'*
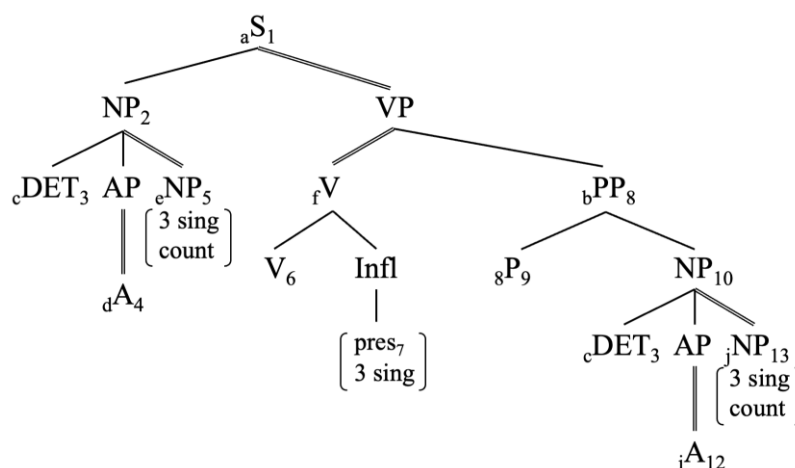
George Miller (2003) "date[s] the moment of conception of cognitive science as 11 September, 1956, the second day of a symposium organized by the 'Special Interest Group in Information Theory' at the Massachusetts Institute of Technology" (p. 142). It is here that Chomsky presented the paper "Three Models for the Description of Language" (1956), which "contained the ideas that he expanded a year later in his monograph, *Syntactic Structures* [(1957)], which initiated a cognitive revolution in theoretical linguistics" (Miller, 2003, p. 143). One such idea involves the sentence *colorless green ideas sleep furiously*. This sentence is supposed to demonstrate an intuitive sense of grammaticalness, since

it is semantically nonsensical, but grammatically well-formed (cf. the ill-formed sentence *furiously sleep ideas green colorless*). The ability to differentiate between grammatical and ungrammatical sentences reflects an underlying "*competence* (the speaker-hearer's knowledge of his language)" (Chomsky, 1965, p. 4), so the problem for generative linguistic theory "is to determine from the data of performance the underlying system of rules that has been mastered by the speaker-hearer and that he puts to use in actual performance" (p. 4). Hence the structure in Figure 1 "is more than just a useful description for the purposes of linguists" (Jackendoff, 2002, p. 19)—it is a model of something in the mind.

What makes Chomsky's (1965) contribution revolutionary is the observation that "*performance* (the actual use of language in concrete situations)" (p. 4) is not a direct reflection of underlying competence, and "cannot constitute the actual subject matter of [generative] linguistics, if this is to be a serious discipline" (p. 4). Generative linguistic theory is serious because it "reject[s] [Saussure's] concept of *langue* as merely a systematic inventory of items" (p. 4), returning instead "to the Humboldtian conception of underlying competence as a system of generative processes" (p. 4). More specifically, Chomsky (1964) equates (underlying) competence with Humboldt's notion of (inner) form. The form of language is universal and constitutes the essence of language, i.e., the human language faculty, or competence. Inner form is one's internal representation of form, allowing the individual to use and understand their particular language. A generative grammar is then "a system of rules that in some explicit and well-defined way assigns structural descriptions to sentences" (Chomsky, 1965, p. 8),[3] the former constituting knowledge (i.e., the internalized generative grammar/system of rules) and the latter being the expression of such knowledge (i.e., the assignment of structural descriptions to sentences/generation of the language).

The foregoing developments are retroactively associated with what Chomsky (2004) calls "the first cognitive revolution of the seventeenth century" (p. 319). As early as the late 1620s, Descartes was interested in demonstrating how mechanical philosophy could explain the natural world, "including a good part of human perception and action but not workings of the human mind" (p. 319), i.e., our ability to reason, doubt, deny, affirm, and so on. Such workings of the mind manifest in the ordinary use of language, which in turn provides "a basis […] for the 'epistemological argument' for mind-body dualism" (Chomsky, 2016, p. 93). In other words, Descartes's assertion "that each one of us is composed of two different kinds of thing: physical bodies and nonphysical minds" (Rowlands, 2010, p. 12), follows from his method of radical doubt—one cannot doubt their (physical) existence since to doubt is to think, and to think is to use one's (nonphysical) mind. This sort of inquiry into the existence of (other) mind(s) is described as "ordinary science, designed to determine whether some object has a particular property" (Chomsky, 2016, p. 93). Hence the mind, being a nonphysical thing (or substance), is a certain kind of object defined by its

---

[3] Such rules are nothing more than the post-Bloomfieldian notion of transformations adapted to a generative (derivational) theory of syntax (see Harris, 2002, p. 6).

function (Rowlands, 2010, pp. 10-11). The mind is a thing that thinks (see footnote 1), i.e., a "*res cogitans* [thinking thing]" (Chomsky, 2016, p. 92). This thinking thing is bound up with our ability to use and understand language (competence) which, taken together, constitutes the subject matter of generative linguistic theory.

Before moving on, it is important to note that the Cartesian conception of mind comprises two separate claims: that the mind is a nonphysical thing, and that the mind exists in the head (Rowlands, 2010, p. 12). Most theorists today would claim they have rejected the Cartesian conception of mind, but this is not true (Dennett, 1991, p. 107). For if one rejects the former premise and not the latter, then one has "not fully rejected the Cartesian conception of the mind, but only a part of it" (p. 107). So, when Chomsky (1995/2016) and Jackendoff (2002) now refer to the mind-brain, they are actually referring to the Cartesian "mind-brain identity/exclusive neural realization combination" (Rowlands, 2010, p. 12)—a "Cartesian theater" (Dennett, 1991) fashioned on an incomplete dismissal of the Cartesian conception of mind. This leaves the *res cogitans* [thinking thing] entirely intact, since all mental states and processes begin and end in the head. There is simply no room for the extended mind, nor embodied cognition, as intimated in Saussure's general linguistics.

3   Goals of Theory Construction

The agenda for generative linguistic theory presupposes "a distinction between *data* and *facts*" (Chomsky, 1961, p. 219). The "data consist of certain observations about the form and use of utterances" (p. 219), whereas "facts of linguistic structure […] go well beyond these observations" (p. 219). One such fact amounts to "our intuitive feeling that [(2a)] is a grammatical sentence and that [(2b)] is not" (Chomsky, 1956, p. 116), especially in cases where neither has been seen before.

(2)   a.   colorless green ideas sleep furiously
       b.   furiously sleep ideas green colorless

To find the simplest theory for language, we must consider two things: grammar (theory for each language), and universal grammar (theory for the faculty of language) (Chomsky, 2021, p. 7).[4] The latter "provides the framework within which each language develops" (p. 7), and it "must satisfy the condition of 'explanatory adequacy,' answering the question how a particular language can in principle be acquired from the data available" (p. 7). More specifically, universal grammar specifies (i) the set of possible languages (the search space) and (ii) a

---

[4] In this context, theory for language encompasses the generation (production) and perception (understanding) of language, both in particular (individual grammar(s)) and in general (universal grammar). It purports to account for what language is, how it arises in the minds of the people who use it, how competence (knowledge) is reflected in performance (its use), the mental organization of such knowledge, etc.

selection procedure "that selects the grammar (or set of grammars) for each language given relevant data" (p. 7). Since the "serious investigation of language use and acquisition presupposes a study of underlying generative processes" (Chomsky, 1964, p. 25); the underlying processes (or rule-governed creativity) are represented "by means of an explicit generative grammar" (p. 22); any explicit generative grammar is based upon (a variation of) rewriting rules (cf. Chomsky 2021, p. 8); and a particular generative grammar is both the result of acquisition (competence) and put to use in performance (p. 8); the formal nature of both (i) and (ii) is entirely predetermined.

It is worth noting that Zellig Harris, the founder of transformational analysis,[5] sees a different relationship between data and theory. Linguistics, unlike most other sciences, "admits of an alternative to theory: an orderly catalog of the relevant data, sufficient to do most of the work that a theory is supposed to do" (Harris, 2002, p. 9). This does not mean that the development of such an 'orderly catalog of relevant data' is not theoretical; rather, the description of particular languages—i.e., "particular linguistics" (Haspelmath, 2021, p. 5)—is inherently theoretical, since a (descriptive) grammar of any given language is in essence a theory of that language.[6] Language-particular description is distinct from general linguistics, which includes both the comparison of languages (generalizations over particular languages) and the "explanation of general features of Human Language" (p. 5).[7] Nonetheless, particular linguistics and general linguistics are equally theoretical: "the difference is merely a matter of different levels" (p. 5).

But what about sufficient loopback to a strong theory? Theoretical linguistics is not the same as linguistic theory (contra Haspelmath, 2021, p. 2), and there are two important reasons why. First, theoretical linguistics necessarily precedes (a strong) linguistic theory: language-particular description results in a grammar (a formal theory of the language); comparison of languages results in generalizations over particular languages, which in turn provide for even more general explanations of Human Language (cf. Haspelmath 2021, pp. 5-6). Second, "[a] formal theory is built through the convergence of a number of proven hypotheses [which] apply at different levels of the analysis" (D'Alessandro, 2021, p. 56). So, convergence of language-particular hypotheses results in one sort of linguistic theory (a formal theory of a particular language, i.e., a grammar), and convergence of cross-linguistic hypotheses would result in another sort of formal theory (a general linguistic theory).

---

[5] Without which there would be no transformational-generative grammar, and no generative linguistic theory (see footnote 3; also section 4.3). Chomsky's departure from Harris (his teacher and advisor) on matters of theory and analysis is interesting.
[6] This is of course recognized by Chomsky (1957, p. 49; and elsewhere), but the role and status of language-particular theories (particular grammars) within generative linguistic inquiry is problematic.
[7] Haspelmath (2021) "use[s] the unusual spelling 'Human Language' (with capitalization) in order to emphasize that this is a distinct phenomenon from the various particular languages that we can observe and study directly" (p. 3, note 1).

This returns us to the issues raised at the outset of this paper. Harris (2002) writes that "a theory should not be thought of as representing the final truth, but only as organizing the results of certain methods of analysis, 'true' as far as it goes" (p. 9). Descartes and Saussure appreciated this fact: the former's theory of knowledge and the latter's approach to linguistics are both predicated on a method of radical doubt (Russell, 1945, pp. 563-567; Godel, 1984, pp. 84-85). The same cannot be said for Chomsky's generative linguistics, which takes "[t]he standard techniques of linguistic research" (Jackendoff, 2002, p. 19) and "the formal nature of the system under investigation" (Chomsky, 2021, p. 6) entirely for granted. The agenda for generative linguistic theory represents a 'truth' of sorts, with very little regard for the data (and phenomena) it purports to explain, let alone the methods of analysis used to explain it.

4   The Relevant Subject Matter

A theory of language is supposed to do two things: (i) explain the data that constitute the theory's subject matter, and (ii) determine the relevant subject matter (Chomsky, 2021, p. 6). The previous sections have largely focused on the relationship between data and (particular) generative grammar(s). We now turn to the deeper facts about language, i.e., the relevant subject matter of general linguistic theory. The faculty of language, it is claimed, "provides the framework within which each language develops" (p. 7). It is also claimed that this faculty must satisfy "the Basic Property of language: it must provide mechanisms for a language to generate an unbounded array of hierarchically structured expressions in a form that can be interpreted at two interfaces with external systems" (p. 7).[8] A theory for the faculty of language, as noted, "must satisfy the condition of 'explanatory adequacy,' answering the question of how a particular language can in principle be acquired from the data available" (p. 7). And "if we take language to be a property of the organism in accord with the 'Biolinguistic Program' […] explanatory adequacy requires the further condition that [the search-space and selection-procedure] be feasible" (pp. 7-8). In general, then, an adequate and/or feasible theory "must provide a realistic abstract account of language acquisition on the basis of Primary Linguistic Data" (p. 8)—it must account for a poverty of stimulus, or "the huge gap between the data available and what the child knows" (p. 8).

Returning to Chomsky's (2021) "dual problems of theory construction for language" (p. 8), i.e., grammar (theory for each language) and universal grammar (theory for the faculty of language), we can identify the three things in (3) that a simple, adequate, and feasible linguistic theory must accommodate. A language-particular theory (i.e., a generative grammar, representing one's knowledge of language) accounts for (3a) and (3b), while a general theory for language (e.g., universal grammar) primarily accounts for (3c).

---

[8] Specifically, "at the conceptual-intentional level CI for expression of thought and at the sensorymotor level SM for externalization in some medium, typically sound" (Chomsky, 2021, p. 7).

(3) a. Poverty of Stimulus: "the huge gap between the data available and what the child knows" (2021:8)
     b. Basic Property of Language: "mechanisms for a language to generate an unbounded array of hierarchically structured expressions" (2021:7)
     c. Faculty of Language: "the innate endowment for language acquisition" (Chomsky 2021:5)

As we saw in section three, there is more to a strong theory than explanatory adequacy and feasibility. The theory must also be as simple as possible. A generative grammar is "a system of rules" (Chomsky, 1965, p. 8), and "the simplicity measure of a rule system is the number of symbols under the conventions and notational transformations that capture legitimate linguistic generalizations" (Chomsky, 2021, p. 11). Hence, the simplest generative linguistic theory is defined in part by its conventions: a distinction between obligatory and optional rules, and between ordered and unordered rules (i.e., (il)legitimate linguistic generalizations); and in part by its formal notation: e.g., one rule, $X \rightarrow YW(B)$, in place two, $X \rightarrow YW$ and $X \rightarrow YWB$ (pp. 9-10). Chomsky's "notations and conventions" (p. 11) then provide for "a quasi-mathematical proof that the sentence contains within itself the property of recursiveness" (Parkinson, 1970/1972, p. 59), i.e., the Basic Property of Language in (3b).

Such talk of simplicity raises the issue of complexity in language. The sort of complexity reflected in Figure 1 supposedly results from the "externalization of syntactic structure to the sensorimotor system […] typically phonetic form" (Chomsky, 2021, p. 12). Externalization is distinct from "language proper" (p. 12), for all externalization does is relate two entirely independent systems: "narrow syntax, a system of pure structure, and [the sensorimotor system], which imposes a requirement of linear order for reasons that have nothing to do with language" (p. 12). The system of pure structure (language proper, narrow syntax) is the purview of phrase structure grammar, transformational generative grammar, X-bar theory, the principles and parameters framework, and the current minimalist program (pp. 11-13)—i.e., every iteration of the simplest theory for language. At the same time, each iteration of generative linguistic theory is supposed to account for (3), i.e., aspects of language proper. Thus, there is a vicious circularity to the dual problems of theory construction which, together, comprise the primary goal of theories of language noted at the outset of this section: "to explain in the best way the data that constitute the subject matter of the theory, along with determining just what is the relevant subject matter" (p. 6). A careful (yet brief) evaluation of the relevant subject matter shall demonstrate the extent to which generative linguistic theory is a product of its own circular agenda.

4.1 Infinite Use of Finite Means

The expansion of Chomsky's 1956 paper into *Syntactic Structures* (1957) "was motivated in part by an interest in the problem of accounting for the ability of a speaker to produce and understand an indefinite number of new sentences" (Chomsky, 1961, p. 222). Since "[a] generative grammar can be regarded as an attempt to characterize certain aspects of this ability, and a particular theory of generative grammar is a proposal concerning its general and universal features" (p. 222), there is an inherent circularity to the entire generative enterprise. Take, for example, the first paragraph of the preface to *Aspects of the Theory of Syntax* (Chomsky, 1965) (henceforth *Aspects*) provided in (4).

(4)   The idea that a language is based on a system of rules determining the interpretation of its infinitely many sentences is by no means novel. Well over a century ago, it was expressed with reasonable clarity by Wilhelm von Humboldt in his famous but rarely studied introduction to general linguistics (Humboldt, 1836). His view that a language 'makes infinite use of finite means' and that its grammar must describe the processes that make this possible is, furthermore, an outgrowth of a persistent concern, within rationalistic philosophy of language and mind, with this 'creative' aspect of language use […]. What is more, it seems that even Panini's grammar can be interpreted as a fragment of such a 'generative grammar,' in essentially the contemporary sense of the term.

Here we must disentangle four things: Humboldt's philosophy of language, rationalistic (Cartesian) philosophy of language and mind, the creative aspect of language use, and generative grammar. As noted in section two, a generative grammar is a system of rules that characterize a language (specifically, its sentences). Furthermore, "every speaker of a language has mastered and internalized a generative grammar that expresses his knowledge of his language" (Chomsky, 1965, p. 8). So, a generative grammar is "a description of the tacit competence of the speaker hearer that underlies his actual performance in production and perception (understanding) of speech" (Chomsky 1966/2009, p. 118, note 2). In *Syntactic Structures* (1957), "[t]hree theories of generative grammar [were] proposed for comparison and study" (Chomsky, 1961, p. 221): a finite-state grammar, "a formalized and somewhat generalized version of the theory of immediate constituents, reinterpreted as a theory of generative grammar" (p. 221), and a transformational grammar. Indeed, the former "is the simplest type of grammar which, with a finite amount of apparatus, can generate an infinite number of sentences" (Chomsky, 1957, p. 24). And yet "such a limited linguistic theory is not adequate" (p. 24) because it cannot "explain or account for the ability of a speaker of English to produce and understand new utterances, while he rejects other new sequences as not belonging to the language" (p. 23). Simply stated, neither a finite-state grammar nor a modified phrase structure

grammar can account for intuitions about grammaticalness. Indeed, the simplest sort of theory that *can* account for this ability (the analysis of grammaticalness) is one based on transformational-generative grammar.[9]

The ability in question becomes the creative aspect of language when it is restricted to a certain type of rule (Chomsky, 1964, pp. 21-22) and merged with Humboldt's notion of "*Form*" (pp. 17-21). It is important to note, however, that the original notion of (inner) form is not necessarily rule-based, and Humboldt's famous aphorism (infinite use of finite means) is open to interpretation (Losonsky, 1999, pp. xxix-xxx).[10] Chomsky's (1964, pp. 23-25; 1966/2009, p. 127, note 39) interpretation is in terms of explicit rules of a very specific kind which, when coupled with an intuitive sense of grammaticalness, forms the basis of the competence-performance distinction (cf. Chomsky, 1965, pp. 24-26; 1966/2009, p. 75).[11] Generative linguistic theory is then framed as being "within the general framework of the study of human intellectual capacities and their specific character" (1964, pp. 25-26), i.e., the Cartesian conception of mind. Putting this all together, "Chomsky sees the emphasis upon the fact that in the employment of language we 'make infinite use of finite means', […] as well as the attempt to give an account of this creative potential, as one of the key contributions of the tradition of rationalistic linguistic theory" (Rieux & Rollin 1975, p. 65, note 3).

4.2   Cartesian Cognitive Science

If by now the comingling of generative linguistic theory with Descartes's theory of mind is not apparent, the titles of two important works will make it clear: *Cartesian Linguistics* (Chomsky, 1966) and *Rules and Representations* (Chomsky, 1980). Thus, we have in Chomsky's theory of language a canonical example of Cartesian cognitive science at work, very much akin to "David Marr's (1982) theory of vision" (Rowlands, 2010). We saw in section two how the histories of cognitive science and generative linguistics are intertwined. In this section, we shall see just how enmeshed these two sciences are.

Traditional (Cartesian) cognitive science makes a fundamental distinction between sensation and perception (Rowlands, 2010, p. 26). Vision

---

[9] Which is based on a modified and elaborated notion of 'linguistic level of representation' (see Chomsky, 1957, pp. 18, 24; also 1955/1975).

[10] In particular, "Chomsky's understanding of Humboldt's idea that language makes infinite uses of finite means entails that the means are rules and the uses are the sentences that can be constructed on the basis of the rules. For Humboldt, however, the boundless or infinite domain is 'the essence of all that can be thought,' not sentences. So while for Chomsky the infinite domain is sentences, for Humboldt the infinite domain is what language is about or what it expresses" (Losonsky, 1999, p.xxx).

[11] That is, it determines the relevant subject matter. "Terminology related to 'competence' includes 'core grammar' (Chomsky, 1981). The distinction between competence and performance can be seen as a distinction between language and its use" (McGilvray, in Chomsky, 1966/2009, p. 118, note 2).

[like language] "seems to be a process that takes place both in the world and in the brain" (p. 26).[12] In particular, "light [sound] has to first strike the retina [ear drum], and this is a worldly occurrence rather than an intracranial one" (p. 26). But for "perception to occur, the brain must then process the information it receives" (p. 26). So, both approaches to the study of perception (Chomsky and language, Marr and vision) can be characterized as in (5): to study perception is to study "the intervening processes whereby it transforms visual [auditory] input or sensation into visual [speech] perception" (p. 26).

(5)   *sensation → ? → perception*

Refocusing on generative linguistic theory, we see the above schema borne out in the following way. Chomsky's self-styled "Cartesian linguistics" (e.g., in 1964, 1965, 1966/2009, 1968/2006) encompasses two fundamental claims: language has both an inner and outer aspect, and these two aspects "need not be identical" (Chomsky, 1966/2009, p. 79). In other words, "[t]he underlying organizing of a sentence relevant to semantic interpretation [deep-structure] is not necessarily revealed by the arrangement and phrasing of its given components [surface-structure]" (p. 79).[13] A primary objective for Cartesian linguistic theory involves "the precise specification of two kinds of abstract device, the first serving as a perceptual model, and the second as a model for acquisition of language" (Chomsky, 1964, p. 26). As depicted in (6), the perceptual model "assigns a full structural description D to a presented utterance U, utilizing in the process its internalized generative grammar G, where G generates a phonetic representation R of U with the structural description D" (p. 26).[14] The only difference between (5) and (6) is that the latter specifies the alleged output (R/D) of perception proper (application of G to U).

---

[12] It may seem unfair to compare language to vision, since (as one reviewer points out) language must be produced in order for it to be perceived. It is indeed unfair, but the comparison demonstrates a fundamental issue of generative linguistic theory, and why a new sort of general linguistic theory is necessary. Dennett (1991) describes the problem in the following way: "One of the skeletons in the closet of contemporary linguistics is that it has lavished attention on hearing but largely ignored speaking […] no one—not Noam Chomsky, and not any of his rivals or followers—has had anything very substantial (right or wrong) to say about systems of language *production*" (p. 231).

[13] Furthermore, "[t]he deep structure that expresses the meaning is common to all languages, so it is claimed, being a simple reflection of the forms of thought. The transformational rules that convert deep to surface structure may differ from language to language" (Chomsky, 1966/2009, p. 81). This amounts to just one of many variants of the facts vs. data distinction; others include language proper vs. externalization, universal grammar vs. (particular) grammar, explanation vs. description, competence vs. performance, search space vs. selection procedure, and so on.

[14] "In Saussurian terms, U is a specimen of *parole* interpreted by the [perceptual model] as a 'performance' of the item R which has the structural description D and which belongs to the *langue* generated by G" (Chomsky, 1964, p. 26).

(6)   U → PERCEPTUAL MODEL → D

The learning model in (7), on the other hand, "is a device which constructs a theory G (i.e., a generative grammar G of a certain *langue*) as its output, on the basis of primary linguistic data (e.g., specimens of *parole*), as input" (Chomsky, 1964, p. 26).[15] Thus, general linguistic theory is "an attempt to specify the character of the device [in (7), i.e., the learning model]" (p. 26), and a particular grammar is "an attempt to specify the information available in principle […] to [(6)] that makes it capable of understanding an arbitrary utterance, to the highly non-trivial extent that understanding is determined by the structural description provided by the generative grammar" (p. 26).

(7)   *primary linguistic data* → LEARNING MODEL → G

To evaluate a particular generative grammar G, "we ask whether the information that it gives us about a language is correct, that is, whether it describes correctly the linguistic intuition of the speaker" (Chomsky, 1964, p. 26). To evaluate "a general theory of linguistic structure that is sufficiently explicit to offer an actual hypothesis about the character of [the device in (6)], we ask whether the generative grammars that it selects meet the empirical criterion of correspondence to the speaker's linguistic intuition, in the case of particular languages" (pp. 26-27). In general, then, Chomsky's theory of language, just like Marr's theory of vision, "is built around two related concepts: *representations* and *rules*" (Rowlands, 2010, p. 29), both of which occur inside the head (p. 30). Rules apply to some input to produce representations, which are then instantiated in the heads of thinking animals.

        In sum, generative linguistic theory is interested in characterizing two abstract devices, one that uses an internalized generative grammar (knowledge of language) for production and perception, and another that accounts for the acquisition of said grammar (acquisition of knowledge). The latter learning machine is endowed with a faculty of language (cf. footnote 15), so to understand this device is to understand human language in general. This enterprise then accommodates the three things listed in (3): the faculty of language, basic property of language, and poverty of stimulus; and it does so in the simplest way possible.

4.3   Aspects of Theories of Syntax

Let us consider again Figure 1 of section two. It goes without saying that "any adequate theory of language must begin with the fact that even the simplest sentences contain this rich a structure" (Jackendoff, 2002, p. 18). Indeed, contemporary linguistic theories begin with this fact, and it is important to

---

[15] "To perform this task, [the learning model] utilizes its given *faculté de langage*, its innate specification of certain heuristic procedures and certain built-in constraints on the character of the task to be performed" (Chomsky, 1964, p. 26).

understand why. Bloomfield's (1923/2000) review of Saussure's *Cours de linguistique générale* provides insight into "how the origins of European structuralist linguistics appeared from a contemporary American viewpoint" (para. 1). On the one hand, it highlights the way in which the histories of American and European structuralism are related: they both start with Saussure's "clear and rigorous demonstration of fundamental principles" (p. 33); i.e., "the theoretical basis for a science of human speech" (p. 35). On the other hand, Bloomfield's review highlights a crucial point of departure between the two structuralisms, for as Bloomfield states: "I should differ from de Saussure chiefly in basing my analysis on the sentence rather than on the word; by following the latter custom de Saussure gets a rather complicated result in certain matters of word-composition and syntax" (p. 34). It is then useful to differentiate between two sorts of structuralism: American structuralism, beginning with Bloomfield but most closely associated with "the theoretical and methodological principles of the so-called post-Bloomfieldian school" (Lyons, 1977, p. 230); and Saussurean structuralism, including, but not limited to, the various European schools of thought (e.g., the Geneva School, Prague Linguistics Circle, Copenhagen School, etc.). We are presently concerned with the American branch, depicted in Figure 2, for two reasons. First, "many of the principles of post-Bloomfieldian structuralism were not only alien to, but at variance with, the principles of […] Saussurean (including post-Saussurean) structuralism" (p. 230). Second, "the work of Harris and his colleagues [the post-Bloomfieldians], with its strong tendency towards rigorous formulation of distributional principles, served as the foundation upon which generative grammar has been built" (Lyons, 1968, p. 157). The goal of this section is to provide an overview of contemporary linguistic theory (the terminal nodes in Figure 2) by focusing on when and by whom common metatheoretical assumptions were introduced. This will help us see the connection between Cartesian cognitive science and modern linguistics, and why no current theory adequately accounts for the relationship between language and cognition.

Figure 2. *Development of Contemporary Linguistic Theory in America*
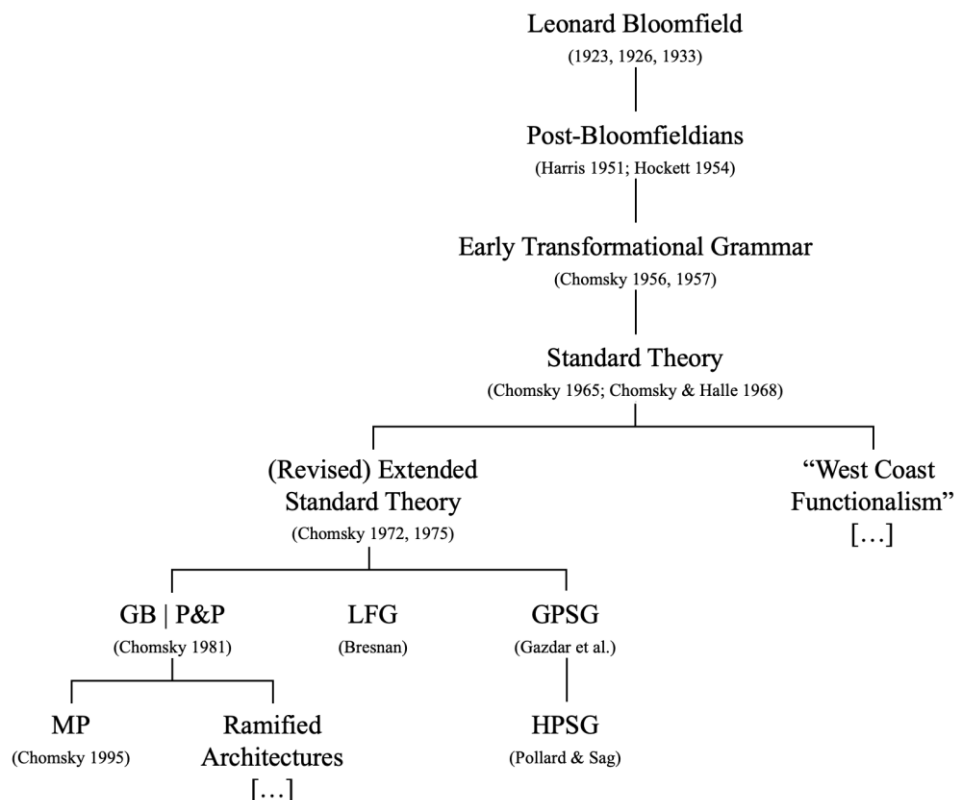
4.3.1 Bloomfield

We begin with Bloomfield's (1923/2000) decision to base his analysis on the sentence rather than the word. According to Bloomfield (1926), a sentence, being a type of phrase, is a non-minimum free form (pp. 156-158). A sentence (or phrase) is composed of words (minimum free forms), which may in turn be composed of morphemes (minimum forms) (pp. 155-156). Hence "every utterance [comprising a language] is made up wholly of forms" (p. 155). Bloomfield makes no distinction between *langue* and *parole*, considering a language to be "the totality of utterances that can be made in a speech-community" (p. 155). So, the various linguistic forms are "recurring units of speech [*parole*], from the sentence, which is the largest, to the smallest [morpheme]" (Matthews, 1993, p. 8),[16] and to study language is to study nature of these recurring units. Since it is assumed that "each linguistic form has a constant and specific meaning" (Bloomfield, 1933, p. 145), and "linguistic study

---

[16] As it relates to Saussure's theory of language, "the implication [of Bloomfield's approach] is that the sign is basically a unit of speech: 'words, word-groups, and sentences are all signs'" (Wells, 1947, pp. 7f.; in Matthews, 1993, p. 9).

must always start from the phonetic form and not from the meaning" (p. 162), semantics is entirely excluded from grammar. Very generally, the grammar of a language contains all the regular or "recurrent patterns" (Matthews, 1993, p. 14), and the lexicon is its "appendix […] a list of basic irregularities" (Bloomfield, 1933, p. 274).

4.3.2 Post-Bloomfieldians

The post-Bloomfieldians are then the inheritors of "a general set of assumptions and attitudes" (Matthews, 1993, p. 14) concerning grammar, meaning, and the lexicon. They take Bloomfield's *Language* (1933) "as a fresh starting-point" (Matthews, 1993, p. 18) from which to consider three interrelated issues: (i) whether semantics (the study of meaning) actually belongs in linguistics (p. 23); (ii) "whether an account of the formal structure of a language can be given independently of an account of meanings" (p. 23); and (iii) "whether it is possible, in theory, to determine this structure without in part relying on meaning" (p. 23). In order to reliably consider these issues, the post-Bloomfieldians, most notably Harris (1951), developed rigorous procedures of analysis (Lyons, 1968, p. 157; Matthews, 1993, p. 25). Such procedural linguistics relied heavily on the notion of levels: "when the phonology of a language had been worked out, the next step was to identify its morphemes; then, after that, their classification and the constructions in which they stand" (Matthews, 1993, p. 27). Crucially, the description of a lower order level, e.g., phonology, "could not rely on what was as yet a purely intuitive understanding of larger grammatical units" (p. 25), i.e., morphology or syntax (or meaning); and furthermore, "a description of formal structure should be separate from and precede an account of meanings" (p. 26). So just as Chomsky's first chapter of *Aspects* set the agenda for generative linguistic theory, "the post-Bloomfieldian's set the agenda for general linguistics in America […] especially in the field of morphology and syntax" (p. 20).

4.3.3 First Chomskyan School

The period between *Syntactic Structures* (Chomsky, 1957) and the mid-1970s comprises "the first Chomskyan school" (Matthews, 1993, p. 34). Its defining features are listed in (8), most of which we have already discussed. The distinction in (8c) is discussed in sections three and four, where evaluation refers to finding the simplest theory for language.

(8)   a.   Grammar as a system of regular rules
      b.   Grammar as a theory of a language
      c.   Discovery vs. evaluation procedures

The first Chomskyan school builds upon the methods and assumptions of the post-Bloomfieldians (see Chomsky 1955/1975, p. 165, note 18; 1961, p. 122,

note 7; 1961, pp. 128-129, note 23; 1964, p. 7, note 1; 1964, p. 11, note 4; etc.; also, Lyons, 1968, p. 157). Chomsky also carries forward the post-Bloomfieldians' affirmative answer to the question of whether an account of linguistic structure can be given independent from meaning (Matthews, 1993, p. 23). And yet Chomsky's (1957) account incorporates "the analysis of grammaticalness" (p. 24), which in turn requires that "the notion of 'linguistic level of representation' […] be modified and elaborated" (p. 24). The linguistic level in question is syntax, and its rules, in the form of a generative grammar, represent one's knowledge of language. The post-Bloomfieldians' distinction between formal structures (syntax) and meaning (semantics) then becomes a distinction between knowledge (of syntax) and meaning, since the grammaticalness of sentence (2a) "cannot be identified with 'meaningful' or 'significant' in any semantic sense" (p. 15). Syntax, however, is not the only level: there is one for phonemes, one for morphemes, and so on (Chomsky, 1955/1975, p. 66). Each level has its own primes that are concatenated into larger strings, hence the primes of phrase structure consist of "such symbols as *Sentence*, *Noun Phrase* (*NP*), *Verb Phrase* (*VP*), *Noun*, *John*, *ing*, etc." (p. 69). This sets up an order between the relevant levels or components, such that "a central *syntactic component* […] generates strings of minimal syntactically functioning elements" (Chomsky, 1964, p. 9), which are then interpreted by "a *phonological component* and a *semantic component*" (p. 9). These three components, in addition to the lexicon, are foundational to Chomsky's linguistics, manifesting in every iteration of generative linguistic theory (cf., e.g., 1970, 1981, 1995/2016; also footnote 8).

4.3.4 Second Chomskyan School to the Present

The second Chomskyan school emerges in the 1970s with the extended standard theory. This period is more difficult to characterize, since it is "distinguished less by the emergence of a single positive idea than by the decay of several old ones" (Matthews, 1993, p. 43). In *Remarks on Nominalization* (Chomsky, 1970), for example, Chomsky suggests that a lexicalist analysis rather than a transformationalist one best accounts for certain complex word forms. Thus, lexicalism ensues, along with highly elaborated accounts of the lexicon (inherited from Bloomfield) and other grammatical components, especially phonology and morphology (see Desjardins, 2023 for discussion). Successors of the (revised) extended standard theory include Government and Binding/Principles and Parameters (Chomsky, 1981, etc.), and the Minimalist Program (Chomsky, 1995/2016); Generalized Phrase Structure Grammar (Gazdar et al., 1985), and Head Driven Phrase Structure Grammar (Pollard & Sag, 1997); Lexical Functional Grammar (Bresnan, 1982; Bresnan et al., 2016); and the Parallel Architecture (Jackendoff, 1997, 2002, 2015). Within each of these we find a lexicon and a central syntactic component, in relation to other domains (potentially phonology, morphology, etc.). The designation "West Coast Functionalism" (Noonan, 1999, p. 11) encompasses those approaches to language

that are less directly associated with Chomsky's theorizing. This includes "Cognitive Grammar, Construction Grammar, Emergent Grammar, Functional-Typological linguistics" (p. 11), among others. My reason for maintaining a connection between the so-called formalist and functionalist traditions (Noonan, 1999, p. 12), aside from sharing many of the same (post-)Bloomfieldian characteristics, is this: they both rely on rules and representations to account for deeper facts about language. In standard generative linguistic theory, the rules and representations are straightforward (see section four). They are harder to spot in West Coast Functionalism, where (derivational) rules and representations become (declarative) inheritance hierarchies of lexical items and constructional schemas (p. 26). In both cases, they represent knowledge and serve as recognition (perception) devices of incoming (input) data (p. 27, and section 4.2). If we simply appeal to Construction Grammar (or any other functionalist or formalist framework) instead of the Minimalist Program as our theory of language as a mental phenomenon, then we have made no progress toward a non-Cartesian cognitive linguistics.

5 Conclusion

We saw in section two how the first chapter of *Aspects* solidified "the specifically Chomskyan revolution" (Pesetsky, 2015, p. 1), providing "an agenda for generative linguistic theory" (Jackendoff, 2002, p. 19). This agenda entails a certain set of goals and objectives which, as noted in section three, presupposes a distinction between data and facts on the one hand, and between particular and general theories of language on the other. The distinction between data and facts, particular and general linguistics, manifests within the generative enterprise as a distinction between grammar and universal grammar: the former treats of data (people's intuitions, or knowledge, of their language), and the latter treats of facts (deeper insights about human language in general). In both cases, however, the subject matter is the same, for as Chomsky says: "the empirical data that I want to explain are the native speaker's intuitions" (Hill, 1962, p. 158).

The subject matter of generative linguistic theory is a Cartesian ghost (cf. Ryle, 1949, pp. 15ff.), an ethereal system of rules and representations—grammar as knowledge—trapped within the mind-brain. We might try to account for knowledge of language in an alternative theory (e.g., Head Driven Phrase Structure Grammar, or the Parallel Architecture), but we will still be trying to account for the ghost. What is needed is a non-Cartesian approach (Rowlands, 2010) to general linguistic theory, and a deeper appreciation for the distinction (and relationship) between particular linguistics and general linguistics (Haspelmath, 2021). In other words, the construction of language-particular theories and general linguistic theory must be viewed in a different way—as relational theories of informational objects. This means we cannot take the status of linguistic description for granted. Any reasonable general (higher order) linguistic theory is only as good as its first order ontological commitments, and for those we rely on sound methods of analysis and fundamental principles, i.e.,

particular linguistics. In this way, the problems that motivated Descartes and Saussure to question what was handed to them, and to be sure of what they were trying to explain, are as relevant now as they were then.

References

Benveniste, E. (1963). Saussure après une demi-siècle. *Cahiers Ferdinand de Saussure*, *20*, 7–21. https://www.jstor.org/stable/27758028

Bloomfield, L. (1926). A set of postulates for the science of language. *Language*, *2*(3), 153–164. http://dx.doi.org/10.2307/408741

Bloomfield, L. (1933). *Language*. Henry Holt and Company.

Bloomfield, L. (2000). Bloomfield on Saussure [reprint of Review of Saussure, 1923 [1916] Modern Language Journal 8: 317-19]. *Henry Sweet Society for the History of Linguistic Ideas Bulletin*, *34*(1), 33–35. https://doi.org/10.1080/02674971.2000.11745515

Bresnan, J. (Ed.). (1982). *The mental representation of grammatical relations*. The MIT Press.

Bresnan, J., Asudeh, A., Toivonen, I., & Wechsler, S. (2016). *Lexical-functional syntax* (2nd ed.). John Wiley & Sons, Inc.

Broughton, J. (2003). *Descartes's method of doubt*. Princeton University Press.

Chomsky, N. (1955/1975). *The logical structure of linguistic theory*. University of Chicago Press.

Chomsky, N. (1956). Three models for the description of language. *IRE Transactions on Information Theory*, *2*(3), 113–124. http://dx.doi.org/10.1109/TIT.1956.1056813

Chomsky, N. (1957). *Syntactic structures* (2nd ed.). Mouton de Gruyter.

Chomsky, N. (1961). Some methodological remarks on generative grammar. *Word*, *17*(2), 219–239. http://dx.doi.org/10.1080/00437956.1961.11659755

Chomsky, N. (1964). *Current issues in linguistic theory*. Mouton de Gruyter.

Chomsky, N. (1965). *Aspects of the Theory of Syntax*. MIT Press.

Chomsky, N. (1966/2009). *Cartesian linguistics: A chapter in the history of rationalist thought* (3rd ed.). Cambridge University Press.

Chomsky, N. (1968/2006). *Language and mind* (3rd ed.). Cambridge University Press.

Chomsky, N. (1970). Remarks on nominalization. In R. Jacobs & P. Rosenbaum (Eds.), *Readings in English transformational grammar* (pp. 184–221). Ginn and Company.

Chomsky, N. (1980). *Rules and representations*. Columbia University Press.

Chomsky, N. (1981). *Lectures on government and binding*. Foris Publications Holland.

Chomsky, N. (1995/2016). *The minimalist program: 20th anniversary edition*. The MIT Press.

Chomsky, N. (2004). Turing on the "imitation game." In S. M. Shieber (Ed.), *The Turing test: Verbal behavior as the hallmark of intelligence* (pp. 217–321). MIT Press.

Chomsky, N. (2016). *What kind of creatures are we?* Columbia University Press.

Chomsky, N. (2021). Simplicity and the form of grammars. *Journal of Language Modelling*, *9*(1), 5–15. http://dx.doi.org/10.15398/jlm.v9i1.257

D'Alessandro, R. (2021). Not everything is a theory. *Theoretical Linguistics*, *47*(1–2), 53–60. http://dx.doi.org/10.1515/tl-2021-2005

D'Alessandro, R., & van Oostendorp, M. (2017). On the diversity of linguistic data and the integration of the language sciences. *Frontiers in Psychology*, *8*, 1–4. http://dx.doi.org/10.3389/fpsyg.2017.02002

Descartes, R. (1637/1910). *Discourse on the method of rightly conducting the reason, and seeking truth in the sciences*. The Open Court Publishing Company.

Desjardins, J. (2023). *The lexicalist manifesto: A cross-theoretical and cross-linguistic survey of lexical integrity and the nature of the morphology-syntax interface*. University of Colorado Boulder. https://doi.org/kgnq

Gazdar, G., Klein, E., Pullum, G., & Sag, I. (1985). *Generalized phrase structure grammar*. Harvard University Press.

Godel, R. (1984). F. de Saussure's theory of language. *Cahiers Ferdinand de Saussure*, *38*, 83–97. https://www.jstor.org/stable/27758314

Harris, Z. S. (2002). The background of transformational and metalanguage analysis. In B. E. Nevin (Ed.), *The legacy of Zellig Harris: Language and information into the 21st century: Philosophy of science, syntax, and semantics* (pp. 1–15). John Benjamins Publishing Company.

Haspelmath, M. (2021). General linguistics must be based on universals (or non-conventional aspects of language). *Theoretical Linguistics*, *47*(1–2), 1–31. http://dx.doi.org/10.1515/tl-2021-2002

Hill, A. A. (Ed.). (1962). *Third conference on problems of linguistic analysis in English, May 9-12, 1958*. The University of Texas.

Jackendoff, R. (1997). *The architecture of the language faculty*. The MIT Press.

Jackendoff, R. (2002). *Foundations of language: Brain, meaning, grammar, evolution*. Oxford University Press.

Jackendoff, R. (2015). The parallel architecture and its place in cognitive science. In B. Heine & H. Narrog (Eds.), *The Oxford handbook of linguistic analysis* (2nd ed., Vol. 1, pp. 593–614). Oxford University Press.

Kuhn, T. S. (1977). Second thoughts on paradigms. In *The essential tension: Selected studies in scientific tradition and change* (pp. 293–319). University of Chicago Press.

Losonsky, M. (1999). Introduction. In *On language: On the diversity of human language construction and its influence on the mental development of the human species* (pp. vii–xxxiv). Cambridge University Press.

Lyons, J. (1968). *Introduction to theoretical linguistics*. Cambridge University Press.

Lyons, J. (1977). *Semantics* (Vol. 1). Cambridge University Press.

Matthews, P. H. (1993). *Grammatical theory in the United States from Bloomfield to Chomsky*. Cambridge University Press.

Miller, G. A. (2003). The cognitive revolution: A historical perspective. *Trends in Cognitive Science*, *7*(3), 141–144. http://dx.doi.org/10.1016/S1364-6613(03)00029-9

Noonan, M. (1999). Non-structuralist Syntax. In M. Darnell, E. A. Moravcsik, M. Noonan, F. J. Newmeyer, & K. M. Wheatley (Eds.), *Functionalism and formalism in linguistics: General papers* (pp. 11–31). John Benjamins Publishing Company.

Parkinson, F. C. (1970/1972). Linguistic and mathematical infinity. *Cahiers Ferdinand de Saussure*, *27*, 55–63. https://www.jstor.org/stable/27758114

Pesetsky, D. (2015, May 28). *Forecast: Sunny with scattered annoyances, but with a chance of storms (recommended action: very basic linguistics education)* [Paper]. Generative Syntax in the Twenty-First Century: The Road Ahead, Athens, Greece. https://site.uit.no/castl/wp-content/uploads/sites/20/2017/03/pesetsky.pdf

Pollard, C., & Sag, I. (1994). *Head-driven phrase structure grammar*. University of Chicago Press.

Rieux, J., & Rollin, B. E. (1975). That the knowledge of what occurs in our minds is necessary for understanding the foundations of grammar; and that on this depends the diversity of words which compose discourse. In J. Rieux & B. E. Rollin (Eds.), *General and rational grammar: The Port-Royal grammar* (pp. 65–68). Mouton & Co. B.V.

Rowlands, M. (2010). *The new science of the mind: From extended mind to embodied phenomenology*. MIT Press.

Russell, B. (1945/1972). *A history of western philosophy*. Simon & Schuster, Inc.

Ryle, G. (1949). *The concept of mind*. University of Chicago Press.

A corpus-based study of Mandarin Chinese referring expressions in oral narratives of preschool children

Yifang Yuan
Simon Fraser University
yifang_yuan_2@sfu.ca

This study utilizes a corpus-based approach to investigate the use of referring expressions, such as definite and indefinite noun phrases and pronouns, in oral narratives produced by monolingual Mandarin Chinese-speaking preschool children. The data for this study were collected from the spoken narratives of five 4-year-old children selected from the Zhou Narratives corpus (Li & Zhou, 2011). Adopting the cognitive approach of Gundel et al. (1993), this study analyzes the relationship between the forms of referring expressions and their corresponding cognitive statuses and discourse functions. The results indicate that the correlations between the referential forms produced by 4-year-old Chinese monolingual children and their cognitive statuses and discourse functions align with the predictions of the Givenness Hierarchy and the patterns observed in earlier research conducted by Gundel et al. (1993) with Chinese adults. However, this study also reveals notable differences in the preferred referential forms used by Chinese monolingual children and adults in relation to specific cognitive statuses and discourse functions, suggesting that the development of referential appropriateness in narrative production follows a gradual trajectory in children.
Keywords: Mandarin Chinese; referring expressions; cognitive status; discourse function

1   Introduction

Referring expressions (REs), such as definite and indefinite noun phrases, demonstrative noun phrases, and overt and zero pronouns, play a critical role in facilitating effective communication by providing processing signals for addressees to identify the intended referent of a speaker.[1] These forms are essential in narratives, fulfilling discourse functions such as introducing, re-introducing, and maintaining referents (Chen & Lei, 2013). It has long been

---

[1] Abbreviations used in this paper are ø 'null pronoun', ART 'article', ASP 'aspect', CL 'classifier', COP 'copula', DEM 'demonstrative', DEM1 'proximal demonstrative', DEM3 'distal demonstrative', EXT 'existential', SG 'singular', N 'noun phrase', NEG 'negation', NP 'noun phrase', OBJ 'object', PL 'plural', POSS 'possessive', PRO 'pronoun', PROG 'progressive aspect', Q 'question marker', QUANT 'quantifier', RE 'referring expression', and SUB 'subject'.

observed that human languages often use different expressions to refer to the same object, and a single expression can also be used to refer to different objects. For example, in English, a particular boy can be referred to as *a boy*, *the boy*, *this boy*, *that boy*, *this*, *that*, or *he*. This phenomenon raises one of the fundamental issues in the field of reference studies, that is, how speakers choose the appropriate form to refer to a particular object and how addressees are able to correctly identify the intended referent despite the potential ambiguity of the expression.

The inventory of referring expressions varies from language to language. In Chinese, common forms of referring expressions include the proximal demonstrative *zhe*, distal demonstrative *na*, indefinite article *yi* 'one', bare nouns, overt pronouns such as *ta* '3SG', and zero pronouns. Unlike English, Chinese commonly uses bare nouns, as the language lacks distinctive forms for articles. Chinese lacks a definite article, and the indefinite article *yi* 'one' is optional. Moreover, as a pro-drop language, Chinese allows for the omission of subjects or objects in certain contexts, resulting in the frequent use of zero pronouns in discourse. Furthermore, the relationship between the forms of referring expressions and their corresponding cognitive statuses and discourse functions varies across languages. This variability can be seen in the comparison of the following Chinese data from the Golden Fish Corpus (Fuller & Gundel, 1987) with its English translation.[2]

(1) | Zhege | shihou | you | yi-ge | haizi | qu | dushu. |
|---|---|---|---|---|---|---|
| *DEM1* | *time* | *EXT* | *one-CL* | *child* | *go* | *study* |
| ø | huidao | jia-li | yihou, | ø | kandao | zhuozi-shang |
| *(RE)* | *return* | *home-in* | *after* | *(RE)* | *see* | *table-above* |
| fangzhe | liang-ge | tongbi | he | yi-ge | pingzi. | |
| *place* | *two-CL* | *coin* | *and* | *one-CL* | *bottle* | |

'At this time, there was a child going to school. When (he) came home, (he) saw on (the) table two coins and a bottle.'

The example in (1) illustrates that both Chinese and English use a proximal demonstrative determiner to refer to the stage topic 'this time', and an indefinite article to introduce a discourse-new entity, namely, the main character of the story. However, Chinese and English differ in the forms of referring expressions used to maintain reference to story characters. When referring to the boy who has been introduced in the preceding utterance, Chinese uses a zero pronoun while English uses an overt pronoun. Furthermore, both languages use numerals to

---

[2] The Golden Fish Corpus (Fuller & Gundel, 1987) is a collection of forty-five narratives that were elicited from twenty-five native speakers of English, Chinese, Japanese, Korean, Arabic, Spanish, and Farsi. The participants were shown a twenty-minute film titled "The Golden Fish" (Séchan, 1959), which features a storyline accompanied solely by a musical soundtrack. After watching the film, the participants were instructed to narrate the story in English to a native English speaker and then retell it in their native language to another speaker of that language.

introduce plural objects ('two coins'), and indefinite articles to introduce singular objects ('a bottle').

Previous research on Chinese referring expressions has mainly focused on aspects such as form and distribution (van Deemter et al., 2017), discourse function (Yang et al., 1999), information structure (Nie, 2020), cognitive status (Gundel et al., 1993; Shi, 1998), and interpretation of certain referential forms (Kuo, 2008). These studies primarily relied on data from the discourse of Chinese adults. Although some previous studies have investigated the development of referring expressions in the discourse of Chinese-English bilingual children (Chen & Lei, 2013; Chen & Pan, 2009), there has been limited attention devoted to investigating the development of referential appropriateness in monolingual Mandarin Chinese-speaking children, particularly with regards to the use of different forms of referring expressions and their corresponding cognitive statuses and discourse functions in their discourse.

To address this research gap, the present study employs a corpus-based approach to analyze the distribution, discourse function, and cognitive status of referring expressions used in the discourse of monolingual Chinese-speaking children. The data used in this study are extracted from the Zhou Narratives corpus (Li & Zhou, 2011) in the CHILDES database. The Zhou Narratives corpus comprises spoken narratives collected from 200 preschool children. These narratives were elicited using two picture books, namely, *The Very Hungry Caterpillar* (Carle, 1969) and *The Three Robbers* (Ungerer, 1962). The corpus includes both video and text files, accessible for retrieval at https://sla.talkbank.org/TBB/childes/Chinese/Mandarin/ZhouNarratives. The primary objective of this study is to provide a systematic and data-supported analysis of the use of referring expressions in oral narratives produced by Chinese preschool children, and enhance our understanding of the developmental trajectory of referential appropriateness in the communication of young children.

This paper is organized as follows. Section 2 begins by introducing the Givenness Hierarchy and the cognitive approach to referring expressions proposed by Gundel et al. (1993) (§2.1). It also provides an overview of the previous studies on Chinese referring expressions (§2.2). Section 3 describes the data (§3.1) and the criteria used for categorizing and coding Chinese referring expressions in the corpus study (§3.2). Section 4 presents and provides the analysis of the quantitative results obtained from the corpus study. Section 5 concludes the paper.

2   Theoretical background

2.1   The cognitive approach to referring expressions

This section will review Gundel et al.'s (1993) cognitive approach to referring expressions and the Givenness Hierarchy. These concepts will serve as the theoretical framework for explaining the relationship between the form and cognitive status of Chinese referring expressions in this study. The cognitive

approach assumes that different forms of referring expressions conventionally encode different cognitive statuses. Speakers must consider the assumed cognitive status of a referent when selecting an appropriate referring expression, which enables the addressee to identify the intended referent among all the possible options. Based on this assumption, Gundel et al. (1993) propose six implicationally related cognitive statuses to explain the conditions governing the appropriate use of different referring expression forms in natural discourse across five languages–English, Japanese, Mandarin Chinese, Russian, and Spanish. The six cognitive statuses are illustrated in the Givenness Hierarchy depicted in Table 1 (Gundel et al., 1993, p. 284).

Table 1. *The Givenness Hierarchy with relevant RE forms in English and Chinese*

	In focus	Activated	Familiar	Uniquely identifiable	Referential	Type identifiable
English	*it*	*HE* *that* *this* *this* N	*that* N	*the* N	indefinite *this* N	*a* N
Chinese	ø *ta* (3SG)	*TA* *zhe* 'this' *nei* 'that' *zhe* N		*nei* N		*yi* N 'a N' ø N

Note. The relevant forms in the table represent members of a whole class. *It* in the 'English' 'in focus' cell represents all phonetically unstressed personal pronouns. *HE* in the 'English' 'activated' cell represents all phonetically stressed personal pronouns (Gundel et al., 1993, p. 284).

The Givenness Hierarchy provided in Table 1 is illustrated with the relevant forms of referring expressions in both English and Mandarin Chinese. This table simplifies the representation by including only one form to represent members of a whole class. In English, for example, the demonstrative determiners *that* and *this* also represent the forms *those* and *these*, respectively. This hierarchical framework correlates the form of referring expressions with six distinct cognitive statuses of the reference: *type identifiable*, *referential*, *uniquely identifiable*, *familiar*, *activated*, and *in focus*. The specific meanings of these statuses will be discussed in detail in the remaining portion of this subsection. These six cognitive statuses represent the assumptions made by the speaker regarding the addressee's knowledge and attention state. Each status is a necessary and sufficient condition for the appropriate use of specific referring expression form(s). To illustrate, in Chinese, the utilization of a zero pronoun (ø) or an unstressed pronoun requires that the referent is in focus, indicating that it is at the center of attention in the current discourse.

It should be noted that not all six cognitive statuses are necessary for all languages. As indicated in Table 1, English has a form (indefinite *this* N) for

which the status "referential" is both necessary and sufficient. However, Chinese lacks forms that specifically require the referent to be referential, but not necessarily uniquely identifiable. The cognitive statuses in the Givenness Hierarchy are implicationally related in the sense that they are ordered on a restrictiveness continuum with regard to the set of possible referring expression forms they are associated with. Each status in the model entails all lower statuses but not vice versa, which means that a particular form can be substituted by any form that requires a lower status (to the right) in the hierarchy. For example, in English, a referent that is uniquely identifiable can appropriately be referred to using either *a* N, indefinite *this* N, and *the* N.

In the Givenness Hierarchy, the status of "type identifiable" implies that the addressee is able to access a representation of the type of object denoted by the referring expression. In Chinese, this status is sufficient for the use of the indefinite article *yi* 'one' and bare nouns. The status of "referential" indicates that the addressee can either retrieve an existing representation or construct a new one of the intended referent after processing the complete sentence. In Chinese, this status is not correlated with any particular expressions. However, in English, it is both necessary and sufficient for the use of the indefinite demonstrative determiner *this.* The status of "uniquely identifiable" denotes when the addressee can identify the intended referent based solely on the referring expression itself. This status is both necessary and sufficient for the appropriate use of the distal demonstrative determiner *na* 'that' in Chinese and the definite article *the* in English. The crucial difference between the statuses of "referential" and "uniquely identifiable" lies in the fact that the former requires the addressee to construct a representation of the referent based on the nominal along with the content of the rest of the sentence, while the latter relies solely on the nominal itself. The status of "familiar" indicates that the addressee already possesses a representation of the referring expression in either long-term or short-term memory, enabling them to uniquely identify the intended referent. Chinese does not have any referential forms specifically associated with the status of "familiar". However, in English, this status is both necessary and sufficient for the appropriate use of the distal demonstrative determiner *that.*

The status of "activated" implies that the referent exists in the addressee's current short-term memory, either through retrieval from long-term memory or arising from the immediate context. This status is both necessary and sufficient for appropriate use of stressed personal pronouns, demonstrative pronouns, and the proximal demonstrative determiner in both Chinese and English. Finally, the status of "in focus" is the most restrictive status in the hierarchy. It indicates that the referent is at the current center of attention. This status is both necessary and sufficient for the appropriate use of zero pronouns and unstressed pronouns in both English and Chinese. In natural discourse, referents in focus often coincide with the topic of the preceding utterance, and consequently, they can be partially anticipated through the syntactic structure of the referring expression. Nevertheless, the actual cognitive statuses of referents are ultimately determined by pragmatic factors. To demonstrate the correlation between the various forms

of referring expressions and the conditions for their appropriate use and interpretation in Chinese, consider the following examples.

(2) **Yi-tiao-gou/gou**   chao-de   wo   shui   bu   zhao.
   one-CL-dog/dog   disturb-PRT   1SG   sleep   NEG   PRT
   'A noisy dog keeps me awake.'   [TYPE IDENTIFIABLE]

Unlike English, Chinese does not differentiate between all six cognitive statuses. It lacks distinctive forms of referring expressions for which the statuses of "referential" and "familiar" are both necessary and sufficient. In Chinese, both bare nouns and indefinite noun phrases can be interpreted as either "type identifiable" or "referential". Moreover, there is no particular referring expression in Chinese that requires the referent to be at most familiar but not activated. For example, in (2), both the definite noun phrase *yi-tiao-gou* 'one-CL-dog' and the bare noun *gou* 'dog' are felicitous in a context where the addressee is assumed to be able to either construct a representation of the dog ('referential') or understand that the speaker is simply asserting the existence of such dog ('type identifiable').

(3) **Na-(tiao)-gou**   chao-de   wo   shui   bu   zhao.
   DEM3-(CL)-dog   disturb-PRT   1SG   sleep   NEG   PRT
   'The noisy dog keeps me awake.'   [UNIQUELY IDENTIFIABLE]

In Example (3), the use of the distal demonstrative *na* is felicitous as long as the addressee understands that the speaker intends to refer to their neighbor's dog, regardless of whether the addressee has previous knowledge of the dog. In English, the use of the distal demonstrative *that* presupposes that the addressee is at least familiar with the intended referent. Therefore, the Chinese distal demonstrative *na* seems to correspond more closely to the definite article *the* in English rather than the distal demonstrative *that* (Gundel et al., 1993; Li & Thompson, 1981).

(4) **Zhe-(tiao)-gou/ta**   chao-de   wo   shui   bu   zhao.
   DEM-(CL)-dog/3SG   disturb-PRT   1SG   sleep   NEG   PRT
   'This noisy dog/it keeps me awake.'   [ACTIVATED]

In Example (4), the use of the proximal demonstrative determiner *zhe* 'this' and the stressed pronoun *ta* '3SG' is appropriate only when the referent is represented in the addressee's current short-term memory, either through retrieving from long-term memory or arising from the immediate context.

(5) Wo   linju-de   gou   hen   chao.
    1SG   neighbor-POSS   dog   very   noisy
    Ta/ø   chao-de   wo   shui   bu   zhao.
    3SG/(RE)   disturb-PRT   1SG   sleep   NEG   PRT
    'My neighbor's dog is very noisy. It keeps me awake.'   [IN FOCUS]

In Example (5), the unstressed pronoun *ta* '3SG' and the zero pronoun are
felicitous since the referent serves as both the topic and the subject of the
preceding sentence. Furthermore, it occupies the current center of attention in the
discourse.

2.2   Previous studies on Chinese referring expressions

This section will review some previous studies on Chinese referring expressions
that have explored aspects including the distribution, interpretation, discourse
function, information structure, and cognitive status of certain referential forms
(see e.g. Chen & Lei, 2013; Chen & Pan, 2009; Gundel et al., 1993; Kuo, 2008;
Nie, 2020; Shi, 1998; van Deemter et al., 2017; Yang et al., 1999). To investigate
the distribution of referring expressions in Chinese natural discourse, van
Deemter et al. (2017) focus on the three canonical patterns of reference in
Chinese: (1) demonstrative + (classifier) + noun phrase (e.g., *na* (*ge*) *laoren* 'that
old person'), (2) bare noun (e.g., *laoren* 'old person'), and (3) indefinite noun
phrase (*yi* (*ge*) *laoren* 'an old person'). The findings of their study reveal several
noteworthy patterns. First, bare nouns are the most frequently used form, while
no instances of demonstratives are found in their dataset. Second, the frequency
of preverbal indefinite noun phrases is nearly twice that of their postverbal
counterparts. In contrast, the occurrence of preverbal and postverbal bare nouns
is approximately equal. This observation suggests that syntactic structure seems
to play a role only for the distribution of indefinite noun phrases, but not for bare
nouns. Moreover, this finding challenges the traditional views that Chinese
preverbal noun phrases take a default definite interpretation, while postverbal
noun phrases generally carry an indefinite interpretation. Consequently,
indefinite noun phrases and bare nouns are generally restricted to postverbal
positions rather than preverbal positions (Chao, 1968/2011).

Referring expressions are generally considered to provide crucial links that
integrate successive utterances, thus playing a significant role in promoting
discourse coherence. To examine the influence of referring expressions on the
comprehension of Chinese discourse, Yang et al. (1999) conduct a series of self-
paced reading time studies and compare the processing time required for reduced
referential expression (e.g. overt pronouns and zero pronouns) and unreduced
expressions (e.g. proper names). The results of their study reveal that sentences
containing reduced referring expressions were processed faster than matched
sentences with repeated names. This finding suggests that reduced referring
expressions in Chinese contribute more to discourse coherence compared to
unreduced expressions. Furthermore, their results also indicate that there is no

significant difference in the processing time required for overt pronouns and zero pronouns, which suggests that the two types of reduced referring expressions contribute equally to discourse coherence in Chinese. This finding contradicts the traditional perspective that zero pronouns and overt pronouns perform different roles in pro-drop languages like Chinese, with zero pronouns requiring referents to be more accessible than overt pronouns (Givon, 1983; Ariel, 1991).

In addition to discourse functions, researchers also explore the information structures of Chinese referring expressions. The distribution of Chinese referring expressions is generally constrained by the universal given-before-new order of information structure. Accordingly, preverbal noun phrases usually represent old information and take definite interpretations, while postverbal noun phrases often introduce new information and have indefinite interpretations (Chao, 1968/2011). However, deviations from the definiteness restrictions are not rare in Chinese natural discourse. To examine the non-canonical distribution of Chinese referring expressions in natural discourse, Nie (2020) investigates three Chinese referential choices that do not follow the universal definiteness constriction: bare nouns, indefinite subjects marked by *yi*(-CL) 'one-CL', and existential *you*-sentence with definite objects. The results of Nie's (2020) study reveal that: (i) Chinese bare nouns are typically used to represent thematically unimportant entities, and thus they are less likely to occur in topic chains and exhibit low topicality. Bare nouns can refer to either new or old entities in Chinese discourse. When referring to new entities, they recur significantly less frequently in subsequent discourse compared to the full forms, such as indefinite noun phrases and definite demonstrative noun phrases. When representing old entities, bare nouns tend to exhibit a greater distance from their antecedents in prior discourse compared to the full forms. (ii) Indefinite subjects marked by *yi*(-CL) 'one(-CL)' are licensed by containing relatively old information and the presence of modification, and thus the given-before-new order is partially maintained. Similar to bare nouns, indefinite subjects often refer to thematically unimportant entities and are frequently used as a source of quotation to provide background information. (iii) Definite objects in existential *you*-sentences can refer to either hearer-new or hearer-old entities, as long as their referents do not contain older information than the subjects. Definite objects In *you*-sentences tend to encode background information and refer to entities of low thematic importance that are discontinuous in the subsequent discourse, exhibiting similarities with bare nouns and indefinite subjects. Overall, these three non-canonical structures all serve to signal a low level of topicality and persistence of the referent, and thus they only partially adhere to the universal given-before-new order of information structure.

The previous research on Chinese referring expressions discussed so far has predominantly focused on adult language use. However, there is a growing interest in understanding the development of referring expressions in children's discourse. Chen and Pan (2009) used the picture book *Frog, where are you?* (Mayer, 1969) to investigate the production of English referring expressions in narratives elicited from sixty Chinese children who were learning English as a second language. Subsequently, using the same picture book, Chen and

Lei (2013) conducted a comparative study analyzing referring expressions produced by Chinese-English bilingual children and their monolingual peers in both English and Chinese. Overall, the results of both studies demonstrate that referential appropriateness is developed gradually for both monolingual and bilingual children, and it is influenced by factors such as the discourse function (introduction, re-introduction, or maintenance of referents) and the character type of the referent (main or secondary story character).

In this section, we reviewed the literature on Chinese referring expression studies from the perspectives of their distribution, discourse function, information structure, and development of production. The following section will introduce the methodology, data material, and coding and analysis procedures utilized in the present study.

3　The present study

3.1　Methods

Utilizing a corpus-based approach, this study investigates the production of referring expressions in the narratives of five 4-year-old Chinese monolingual children. The spoken narratives analyzed in this study are extracted from the Zhou Narratives corpus (Li & Zhou, 2011), including both video files and corresponding transcribed text files, from the CHILDES database. The Zhou Narratives corpus comprises spoken narratives collected from 200 Chinese-speaking preschool children in 2008, elicited using two picture books: *The Very Hungry Caterpillar* (Carle, 1969) and *The Three Robbers* (Ungerer, 1962). Specifically, the data analyzed in this study are selected from the subset of the corpus that was elicited using the latter book. Considering the existing body of research that has explored the production of referring expressions in children starting from the age of 5 years, the present study restricts its scope to include 4-year-old children, with the aim to investigate the use of referring expressions in younger age groups. The elicitation in the Zhou Narratives corpus was conducted in a quiet room at the participants' school, with each child interviewed individually. The participants were instructed to familiarize themselves with the entire book and then retell the story to a toy that had not heard the story before. Minimal instructions, such as prompting with *What happened next?*, were provided only when the children seemed to have trouble producing narration at any point.

3.2　Coding and analysis procedures

The referring expressions occurring in children's speech were identified and coded in terms of their grammatical forms, discourse functions, definiteness, and syntactic position. Table 2 presents the format of the coding scheme used in this study along with an example from the Zhou Narrative corpus. The "code" row in Table 2 encodes the filename of the recording, while the "utterance" row encodes

the transcript of the utterance containing the target referring expression highlighted in bold. The "type" row represents the general form of the referring expression, such as *yi*-N in Example (6), which stands for noun phrases with the indefinite determiner *yi* 'one'. However, in natural data, the form of referring expressions can be further classified according to their actual grammatical form. For example, the form of *yi*-N includes both noun phrases with the indefinite determiner *yi* and noun phrases with *yi* followed by a classifier (CL).

Table 2. *Coding scheme for referring expressions*

Code	4yf01
Utterance	(6) **Yi-ge da ma** guolai-le
	one-CL big horse come-ASP
	'Here comes a big horse.'
Type	*yi*-N
Form	*yi*-CL-N
Cognitive status	Type identifiable
Discourse function	Introduction
Position	Subject
Gesture	N/A

The actual grammatical form of the referring expression is stored in the "form" row, including categories such as *yi*-CL-N. The "cognitive status" row indicates the interpretation of the cognitive status of the referring expression, following Gundel et al.'s (1993) classification criteria. The "discourse function" row captures the specific role of referring expressions in relation to introducing, re-introducing, or maintaining reference to story characters. Following Serratrice (2007) and Chen and Lei (2013), this study codes the discourse function of referring expressions that are used to introduce a story character to the discourse as "introduction". All referring expressions that refer to entities not mentioned in the immediately preceding clause and/or express a subject argument whose immediate antecedent occurs in object position are coded for the discourse function of "re-introduction". The discourse function of all other subsequent mentions of story characters is coded as "maintenance". The "position" row records the syntactic information of the referring expression (e.g., subject and object). Finally, the "gesture" row notes any observed gestures, such as pointing to images in the picture book.

(7) a. **yi-ge-ta**   [introduction]
        one-CL-PRO
     b. **zhe-ge-ta**   [maintenance]
        DEM-CL-PRO
     c. ta-de   mama   bao-zhe   **ta**   [maintenance]
        PRO-POSS   mother   hold-PROG   PRO

	d.	**ta**	zai	shuijiao	ne		[re-introduction]
		PRO	*PROG*	*sleep*	*PRT*		
	e.	**ta**	ba	ta-de	haizi	touzou	le	[re-introduction]
		PRO	*ba*	*PRO-POSS*	*child*	*steal*	*PRT*	

Lit: 'One she, this she, her mother was holding her. She was sleeping. He stole her child.'

In (7), an excerpt from the recording of 4yf02 is provided to exemplify how to code the discourse function of referring expressions in this study. Note that the highlighted referring expressions in (7a) to (7d) refer to a girl in the story, while the pronoun in (7e) refers to a robber who steals the girl from her mother. The discourse function of the targeted referring expression in (7a) is coded as "introduction" since its referent is introduced for the first time in the discourse. Both (7b) and (7c) are coded as "maintenance" because they refer to the same referent as (7a). In (7d), the discourse function is coded as "re-introduction" as it refers to a subject argument in (7d) whose immediate antecedent in (7c) appears in the object position. Finally, (7e) is coded as "re-introduction" because its referent has been mentioned in previous discourse, but not in the immediately preceding clause.

To gain a comprehensive understanding of the distribution of referring expressions in the speech of Chinese monolingual children, we examine each type of referential form found in our data in terms of the cognitive status, discourse function, and sentence structure. The next section will present the quantitative results of the corpus study and provide an analysis of the findings.

4   Results and discussion

In Table 3, we present the frequency of occurrence of different types of Chinese referring expressions in our dataset, ranked in descending order based on their total occurrences (raw frequencies). The column labeled "Freq." displays the frequency count, accompanied by the corresponding percentages in parentheses. For comparison purposes, we have reproduced the results of the distribution of Chinese referring expressions from Gundel et al.'s (1993) study in the table.

Table 3. *Distribution of referring expressions from the recordings of 4yf01–05 in the Zhou Narrative corpus*

Type	Rank	Freq. (%)	Rank	Freq. (%) (Gundel et al. 1993)
N	1	157 (37.0%)	1	104 (43.3%)
PRO	2	79 (18.6%)	2	40 (16.7%)
ø	3	53 (12.5%)	4	26 (10.8%)
zhe	4	43 (10.1%)	7	2 (0.8%)
QUANT-N	5	32 (7.5%)		N/A
zhe-N	6	25 (5.9%)	3	39 (16.3%)
yi-N	7	22 (5.2%)	5	19 (7.9%)
na-N	8	12 (2.8%)	6	10 (4.2%)
na	9	1 (0.2%)	8	0
Total		424 (100%)		240 (100%)

As shown in Table 3, the referring expressions in our corpus data totals to 424 tokens. Among the nine different forms of referring expressions, bare nouns (N) have the highest raw frequency, occurring 157 times and accounting for 37.0% of the total number of referring expressions in our data. The second most frequently used type of referring expression is overt pronoun (PRO), occurring 79 times (18.6%) in total, followed by zero pronoun (ø) which occurs 53 times (12.5%), the proximal demonstrative pronoun *zhe* (43 times, 10.1%), noun phrases modified by quantifiers (e.g. *xuduo* 'many') or numerals (e.g. *san* 'three') (32 times, 7.5%), noun phrases with the proximal demonstrative determiner *zhe* (25 times, 5.9%), noun phrases with the indefinite article *yi* 'one' (22 times, 5.2%), and noun phrases with the distal demonstrative determiner *na* (12 times, 2.8%). The raw frequency of the distal demonstrative pronoun *na* is significantly lower than other forms, occurring only once in our dataset.

The distribution of referring expressions in the present study generally follows the pattern observed in Gundel et al.'s (1993) study. Bare nouns and overt pronouns are the two most frequently used forms in both studies. Note that noun phrases modified by quantifiers or numerals are not included in Gundel et al.'s (1993) study. Noun phrases with the indefinite article *yi* and distal demonstrative determiner *na*, and the distal demonstrative pronoun *na* all rank low in both studies. The frequencies of *yi*-N (5.2% vs. 7.9%) and *na*-N (2.8% vs. 4.2%) are both slightly lower in this study than in the previous study. Only one distal demonstrative pronoun *na* occurs in our dataset, and no occurrences of *na* were found in the previous study. The most noticeable difference between the distribution of referring expressions in this study and that of the previous study lies in the proximal demonstrative *zhe*. The proximal demonstrative pronoun *zhe* occurs 43 times and represents 10.1% of the total number of referring expressions in our data, whereas only two instances (0.8%) of *zhe* were found in the previous study. In contrast, a opposite pattern is found for noun phrase with the proximal demonstrative determiner *zhe*, which account for 5.9% (25 times) in our study but 16.3% (39 times) in the previous study.

The results of the distribution of referring expressions according to their cognitive statuses are presented in Table 4. For ease of comparison, we have reproduced the results from Gundel et al.'s (1993) study in Table 5.

Table 4. *Distribution of referring expressions in the recordings of 4yf01–05 from the Zhou Narrative corpus according to cognitive statuses*

	In focus	Activated	Familiar	Uniquely identifiable	Referential	Type identifiable	Total
ø	40	13					53
PRO	46	31			2		79
zhe	27	16					43
na		1					1
zhe N	12	13					25
na N	4	8					12
yi N	2	1				19	22
N	18	49		12		78	157
QUANT-N	3	9				20	32
Total	152	141		14		117	424

Table 5. *Distribution of referring expressions according to cognitive statuses from Gundel et al. (1993)*

	In focus	Activated	Familiar	Uniquely identifiable	Referential	Type identifiable	Total
ø	25	1					26
PRO	40						40
zhe		2					2
na							
zhe N	12	26	1				39
na N	1	7	2				10
yi N					17	2	19
N	12	17	14	49	2	10	104
Total	90	53	17	49	19	12	**240**

Overall, the distribution of referring expressions according to their cognitive statuses in the present study follows the results of Gundel et al.'s (1993) study. Almost all forms of referring expressions occurring in our dataset meet their corresponding necessary conditions predicted by the Givenness Hierarchy. Most of the zero pronouns (40 occurrences, 75.5%) are used for referents that are in focus, as exemplified in (8). Almost all the overt pronouns found in our data refer to entities that are at least activated, as in (9) and (10). The demonstrative determiners *zhe* and *na* never code referents that are familiar, uniquely identifiable, referential or type identifiable. The distal demonstrative pronoun *na* rarely occurs in our dataset. The only occurrence of *na* found in our data is

provided in (11). Finally, all referents of indefinite noun phrases, bare nouns, and noun phrases with quantifiers or numerals are at least type identifiable.

(8)   Xiao-guaiwu-men   ye   dao   loushang   [IN FOCUS]
small-monster-PL   also   towards   upstairs
qu   shai-le   yifu. Ranhou   ø   ba
go   hang-ASP   cloth   afterwards (RE)   BA
na-ge-xiao-nühai   fangzai   ø   jia   menkou
DEM-CL-small-girl   put   (RE)   home   doorway
'(The) little monsters also went upstairs and hanged (the) clothes. Afterwards, (they) put the little girl in front of (her) house.'

(9)   Zhe-xie   shi   hao   ren.   [IN FOCUS]
DEM-PL   COP   good   people
Ta-men   ba   yifu,   kuzi   nongde   lande   le.
3SG-PL   BA   cloth   pant   make   blue   PRT
'These are good people. They got (their) clothes and pants blue.'

(10)   **Ta-men**   zai   tou   dongxi   ne   [ACTIVATED]
3SG-PL   PROG   steal   thing   PRT
'They are stealing something.'

(11)   Zhe-li   sange-qiangdao   dao   [ACTIVATED]
DEM-in   three-robber   toward
mofashi   **na-li**   qu   le.
magician   DEM-in   go   PRT
'Here, (the) three robbers went to (the) magician.'

However, the results of the present study also show some patterns that do not follow the results of the previous study. For example, 24.5% (13 occurrences) of the zero pronouns found in our data are used for activated referents, as in (12), compared to the 3.8% (1 occurrence) of zero pronouns in Gundel et al.'s (1993) study.

(12)   Zheli   ø   you   bao-qi-le   xiao-nühai.   [ACTIVATED]
DEM   (RE)   again   hold-up-ASP   small-girl
'Here, (he) held (the) little girl again.'

There are 31 occurrences (39.2%) of overt pronouns in our data that are used for activated referents, as exemplified in (13), and 2 occurrences are referential, as shown in (14), whereas all overt pronouns in the previous study are in focus.

(13) Xiao-fangchui   hai   you   ju-ren   [ACTIVATED]
     small-spindle   also   EXT   huge-people
     yao   qiao   **ta-men**   yixia.
     want   hit   3SG-PL   once
     '(The) small spindle and (the) giant want to hit them once.'

(14) **Ta**   shi   ta-men-de   laoshi.   [REFERENTIAL]
     3SG   is   3SG-PL-POSS   teacher
     'He is their teacher.'

The pronoun in (13) is coded for the cognitive status of activated because its referent has been mentioned in the previous discourse, but not in the immediately preceding utterance. The pronoun in (14) is identified as referential because although this is the first mention of the referent in the discourse, the addressee should be able to identify the intended referent on the page of the picture book in front of her.

Furthermore, our data shows that out of 43 instances of proximal demonstrative pronoun *zhe*, 27 occurrences (62.8%) are in focus and 16 occurrences (37.2%) are activated, as exemplified in (15) to (17). This is in contrast to Gundel et al.'s (1993) study, where only 2 instances (0.8%) of *zhe* were found and both were used for activated referents.

(15) **Zhe**   shi   shenme   zi   a?   [IN FOCUS]
     DEM   is   WH   character   PRT
     'What's this character?'

(16) **Zhe**   quandou   shi   ren.   [IN FOCUS]
     DEM   all   is   people
     'These are all people.'

(17) Hai   you   xiaogou   ye   zai   **zhe**.   [ACTIVATED]
     still   EXT   dog   also   at   DEM
     'There is also a dog here.'

In (15) and (16), the targeted referring expressions are coded as in focus because the speaker was pointing at the referents in the picture book when she spoke. In (17), the referring expression is only activated but not in focus because although the speaker has identified the location of the dog in the preceding utterance, the location is not the topic or focus of the preceding utterance, and the speaker was not making any gesture when she uttered the sentence.

Additionally, the frequencies of the proximal demonstrative determiner *zhe* in our data that are coded as in focus (12 occurrences) and activated (13 occurrences) are almost the same (48% vs. 52%), while the frequency of *zhe*-N used for activated referents (12 occurrences, 30.8%) in Gundel et al.'s (1993) study is more than twice as high as that of the proximal demonstrative

determiners used for in focus referents (26 occurrences, 66.7%). Examples of referring expressions with the proximal demonstrative determiner *zhe* found in our data are provided in (18) and (19).

(18) **Zhe-xie-xiaopengyou** dou bei   [IN FOCUS]
    DEM-PL-child   *all*   *BEI*
    ta-men nong zou le.
    3SG-PL make go PRT
    'These children were all taken away by them.'

(19) **Zhe-ge-xiao-nühai** zai yi-ge chuan-shang.   [ACTIVATED]
    DEM-CL-small-girl PROG one-CL boat-above
    'This little girl was on the boat.'

In (18), the referent of *zhe*-N is coded as in focus because not only has it been mentioned in the previous discourse, but the child was pointing at the story character in the picture book when she retold the story. In (19), the referent of *zhe*-N is considered as activated but not in focus because although the referent is discourse-new and the child did not make any gesture, the referent is still highly accessible to the addressee in the context.

    Finally, according to Gundel et al. (1993), indefinite noun phrases *yi* N 'one N' in their study are most likely to be referential (17 occurrences, 89.5%), and bare nouns are most likely to be uniquely identifiable (49 occurrences, 47.1%). However, in our data, most of the indefinite noun phrases *yi*-N (19 occurrences, 86.4%) are merely type identifiable, as exemplified in (20), and most of the bare nouns are either activated (49 occurrences, 31.2%) or type identifiable (78 occurrences, 49.7%), as shown in (21) and (22).

(20) Ta shi **yi-ge-xiaotou** ma?   [TYPE IDENTIFIABLE]
    3SG is one-CL-thief Q
    'Is he a thief?'

(21) Na-xie nan-ren kanjian   [TYPE IDENTIFIABLE]
    DEM-PL male-people see
    nü-ren, ø dou yun-le.
    female-people (RE) all faint-ASP
    'Those men saw women, all fainted.'

(22) **Xiao-guaiwu-men** ye dao loushang   [ACTIVATED]
    small-monster-PL also towards upstairs
    qu shai-le yifu
    go hang-ASP cloth
    '(The) little monsters also went upstairs and hanged (the) clothes.'

The targeted referring expressions in (20) and (21) are coded as type identifiable because they both have a generic interpretation and do not refer to any particular entities in the world. In (22), the referent of the targeted bare noun is considered to be activated because it has been mentioned by the speaker in the previous discourse.

Table 6. *Distribution of referring expressions in the recordings of 4yf01–05 from the Zhou Narrative corpus according to discourse functions.*

	Introduction	Re-introduction	Maintenance	Total
ø	1	5	24	30
PRO	3	29	39	71
zhe				
na				
zhe N	4	10	1	15
na N	3	4	4	11
yi N	12	3		15
N	38	56	11	105
QUANT-N	7	11	2	20
Total	68	118	81	**267**

In addition to the correlation between the referential forms and their cognitive statuses, this study also examines the distribution of the referring expressions found in our dataset according to their discourse functions. The results are presented in Table 6, which shows that out of a total of 424 tokens of referring expressions in our data, 267 occurrences are used to refer to the characters in the picture book. Within these 267 occurrences of referring expressions, 68 occurrences (25.5%) are used to introduce new entities to the discourse, while 199 occurrences (74.5%) are used to re-introduce or maintain reference to entities that have been introduced in previous discourse. Our results show that children are most likely to use bare nouns, noun phrases with the indefinite article *yi* 'one', and noun phrases modified by quantifiers or numerals for referent introduction and re-introduction, and to use overt pronouns and zero pronouns to maintain reference to story characters. These patterns generally follow the definiteness constraint on Chinese referring expressions predicted by the Givenness Hierarchy (Gundel et al., 1993) and the findings from Chen and Lei (2013). As mentioned, all referents in our dataset that are type identifiable and thus have an indefinite interpretation are indicated by either bare nouns, indefinite noun phrases or noun phrases modified by quantifiers/numerals, while all referents of overt or zero pronouns are either in focus or activated and thus have a definite interpretation. Table 7 presents the distribution of the discourse function of referring expressions found in our dataset according to their cognitive statuses.

Table 7. *Distribution of discourse functions of referring expressions in the recordings of 4yf01–05 from the Zhou Narrative corpus according to cognitive statuses*

	Focus	Activated	Familiar	Unique	Referential	Type	Total
Introduction	6	9		4		49	68
Re-introduction	15	89				14	118
Maintenance	78	2				1	81
Total	99	100		4		64	267

Table 7 presents the correlation between the function of referring expressions and the cognitive status of their referents. As expected, the distribution of discourse functions across cognitive statuses generally patterns with the distribution according to referential forms. Most of the referring expressions used for referent introduction indicate referents that are type identifiable (49 occurrences, 72.1%). In total, 104 occurrences of referring expressions used for referent re-introduction refer to referents that are either in focus or activated, accounting for 88.1% of all the referring expressions found in our dataset that are used for referent re-introduction. Furthermore, almost all the referring expressions used to maintain reference to discourse-old entities found in our data also refer to referents that are at least activated. Only one occurrence of referring expression in our data used for referent maintenance refers to type identifiable entities, as shown in (23). The targeted referring expression in (23) is coded as bare noun used to maintain reference to type identifiable referent because the speaker simply intended to assert that there are such three people in the world of the book, and the utterance in (23) is a repetition of the immediately preceding utterance.

(23) Hai shi you **san-ge-ren**. [MAINTENANCE; TYPE IDENTIFIABLE]
still is EXT three-CL-people
'Still there are three people.'

In addition to the cognitive status and discourse function, this study also investigates the distribution of referring expressions according to their grammatical roles. Based on the findings from the previous studies on Chinese referring expressions (e.g., Kuo, 2008; Nie, 2020; Shi, 1998; van Deemter et al., 2017), this study examines the referring expressions in subject and object positions not only in matrix clauses, but also in existential *you*-sentences, *ba*-sentences, and *bei*-sentences.[i] The results are presented in Table 8, which shows the distribution of referring expressions occurring in our data according to their grammatical roles. The raw frequencies are indicated in the Freq. column and the percentages are indicated in parentheses.

Table 8. *Distribution of the referring expressions in the recordings of 4yf01–05 from the Zhou Narrative corpus according to grammatical roles*

Rank	Position	Freq. (%)
1	SUB	208 (52.5%)
2	OBJ	119 (30.1%)
3	OBJ in EXT	42 (10.6%)
4	SUB in EXT	12 (3.0%)
5	OBJ in BA	11 (2.8%)
6	OBJ in BEI	2 (0.5%)
7	SUB in BA	1 (0.3%)
8	SUB in BEI	1 (0.3%)
Total		396 (100%)

Table 8 shows that more than 80% of the referring expressions in our data occur in matrix clauses, and the frequency of referring expressions in the subject (SUB) position (208 times, 52.5%) is much higher than that in the object (OBJ) position (119 times, 30.1%). Furthermore, 42 tokens (10.6%) of referring expressions are found in the subject position of existential *you*-sentences (EXT), and 12 (3.0%) tokens are found in the object position, representing 13.6% of all occurrences of referring expressions in our data. Eleven occurrences of referring expressions are found in the object position of *ba*-sentences (BA), while only one referring expression is found in the subject position of *ba*-sentences. Only three instances of referring expressions are found in *bei*-sentences (BEI): two in the object position and one in the subject position. To better understand the role of sentence structure in the choice of the various forms of referring expressions for different discourse functions, we further investigate the correlation between the form, grammatical role, and discourse function of the referring expressions found in our data. The results are presented in the following tables.

Table 9 presents the distribution of different forms of referring expressions organized by their grammatical roles. The distributional pattern of referring expressions in our data generally follows the universal given-before-new order of information structure. Zero pronouns, overt pronouns, and demonstratives are more likely to occur in the subject position of matrix clauses than in the object position, and these are the forms which only refer to referents that are at least activated in our data, while no such preference exists for noun phrases with the indefinite article *yi* 'one', bare nouns, or noun phrases modified by quantifiers/numerals. In addition to matrix clauses, the sentence structure of existential *you*-sentences also seems to play a role in the choice of forms of referring expressions. In our dataset, only zero pronouns are found to occur in the subject position of existential *you*-sentences, while almost all objects of *you*-sentences are either indefinite noun phrases with the determiner *yi* 'one', bare nouns, or noun phrases modified by quantifiers/numerals.

Table 9. *Distribution of referring expressions in the recordings of 4yf01–05 from the Zhou Narrative corpus according to grammatical roles.*

	SUB	OBJ	SUB (EXT)	OBJ (EXT)	SUB (BA)	OBJ (BA)	SUB (BEI)	OBJ (BEI)	Total
∅	35	4	12		1	1			53
PRO	59	15				2	1	2	79
zhe	34	6				1			41
na		1							1
zhe N	14	9		1					24
na N	6	5				1			12
yi N	4	12		4					20
N	48	58		26		6			138
QUANT-N	8	9		11					28
Total	208	119	12	42	1	11	1	2	396

Table 10. *Distribution of discourse functions of referring expressions in the recordings of 4yf01–05 from the Zhou Narrative corpus according to grammatical roles.*

	SUB	OBJ	SUB (EXT)	OBJ (EXT)	SUB (BA)	OBJ (BA)	SUB (BEI)	OBJ (BEI)	Total
Introduction	25	26		13					64
Re-introduction	60	26		18		5		1	110
Maintenance	62	11		1	1	3	1	1	80
Total	147	63		32	1	8	1	2	254

Table 10 shows the distribution of the discourse function of referring expressions found in our dataset organized by their grammatical roles. As expected by the universal given-before-new principle, referring expressions used to re-introduce or maintain reference to discourse-old entities are much more likely to occur in the subject position of matrix clauses than in the object position. In addition to matrix clauses, referring expressions occurring in the object position of existential *you*-sentences are rarely used for referent maintenance function. However, Table 10 also shows some patterns that do not seem to follow the general definiteness constraints on referring expressions. For example, referring expressions used for referent introduction show no preference in terms of sentence structure in matrix clauses. Expressions occurring in the object position of existential *you*-sentences are often used to re-introduce entities that have been mentioned in previous discourse. To account for these patterns, further qualitative analyses of the data are required.

5   Conclusion

Referring expressions are pervasive and play a significant role in daily communication across languages. Based on the data from the Zhou Narratives

corpus (Li & Zhou, 2011), this paper investigates the use of referring expressions in the spoken narratives of five monolingual Chinese-speaking children at age four. By adopting Gundel et al.'s (1993) cognitive approach and the Givenness Hierarchy, this research provides a preliminary analysis of the quantitative results obtained from the corpus study. Our findings indicate that the correlations between the forms of Chinese referring expressions produced by 4-year-old children and their cognitive statuses and discourse functions align with the predictions of the Givenness Hierarchy. These results are consistent with Gundel et al.'s (1993) study, which was based on data from adult Chinese speakers. Overall, for both children and adult Chinese speakers, bare nouns and overt pronouns are used most frequently, whereas *yi*-N ('one-N'), *na*-N ('that-N'), and the distal demonstrative pronoun *na* are all relatively rare in the data.

The study also reveals some noteworthy differences between Chinese monolingual adults and children in their preferred referential forms for certain cognitive statuses and discourse functions. Specifically, children are more likely to utilize the proximal demonstrative pronoun *zhe* compared to adults, while adults use *zhe*-N 'this-N' more frequently than children. Regarding discourse functions: (1) adults predominantly use zero pronouns for in focus referents, while children use them for both in focus and activated referents; (2) overt pronouns are only used for in focus referents for adults; however, for children, they are used for both in focus and activated referents; (3) adults prefer to use the proximal demonstrative determiner *zhe* for in focus referents over activated ones; in contrast, children employ *zhe*-N 'this-N' for both in focus and activated referents with equal frequency; (4) for adults, indefinite noun phrases *yi*-N 'one-N' and bare nouns are most likely to be referential and uniquely identifiable, respectively; however, for children, *yi*-N 'one-N' is at most type identifiable, and bare nouns are either type identifiable or activated.

In conclusion, our findings suggest that the development of referential appropriateness in discourse is a gradual process for children. This study provides the first systematic investigation of the referential forms and their cognitive statuses and discourse functions in the discourse of Chinese monolingual preschool children. It contributes to a deeper understanding of the developmental trajectory of referential appropriateness in children's discourse and has implications for educational and developmental language interventions for preschool children's discourse development.

References

Ariel, M. (1991). The function of accessibility in a theory of grammar. *Journal of Pragmatics*, *16*, 443–463. https://doi.org/10.1016/0378-2166(91)90136-L

Carle, E. (1969). *The very hungry caterpillar*. Philomel Books.

Chao, Y. R. (2011). *A grammar of spoken language*. The Commercial Press. (Original work published 1968)

Chen, L., & Lei, J. (2013). The production of referring expressions in oral narratives of Chinese-English bilingual speakers and monolingual peers. *Child Language Teaching and Therapy*, *29*(1), 41–55. https://doi.org/10.1177/0265659012459527

Chen, L., & Pan, N. (2009). Development of English referring expressions in the narratives of Chinese English bilinguals. *Bilingualism*, *12*(4), 429–445. https://doi.org/10.1017/S1366728909990216

Fuller, J. W., & Gundel, J. K. (1987). Topic-prominence in interlanguage. *Language Learning*, *37*(1), 1–18. https://doi.org/10.1111/j.1467-1770.1968.tb01310.x

Givon, T. (1983). Topic continuity in discourse: An introduction. In: Givon, T. (Ed.), *Topic continuity in discourse: A quantitative cross-language study* (pp. 1–43). John Benjamins Publishing Company.

Gundel, J. K., Hedberg, N., & Zacharsk, R. (1993). Cognitive status and the form of referring expressions in discourse. *Language*, *69*(2), 274–307. https://doi.org/10.2307/416535

Kuo, J. Y. (2008). A pragmatic approach to the interpretations of Mandarin bare nouns. *Journal of Pragmatics*, *40*(6), 1082–1102. https://doi.org/10.1016/j.pragma.2008.03.004

Li, C. N., & Thompson, S. A. (1981). *Mandarin Chinese: A functional reference grammar*. University of California Press.

Li, L. H., & Zhou, J. (2011). *Preschool children's development of reading comprehension of picture storybook: From a perspective of multimodel meaning making*. East China Normal University.

Mayer, M. (1969). *Frog, Where Are You?* Dial Press.

Nie, X. (2020). *Information structure, discourse and distribution of referring expressions in Chinese*. The University of Arizona.

Serratrice, L. (2007). Referential cohesion in the narratives of bilingual English–Italian children and monolingual peers. *Journal of Pragmatics 39*, 1058–1087. https://doi.org/10.1016/j.pragma.2006.10.001

Séchan, E. (Director). (1959). *The golden fish* [Film]. Columbia Pictures.

Shi, Y. (1998). *Referring expressions in Chinese and English discourse*. Ball State University.

Ungerer, T. (1962). *The three robbers*. Atheneum.

van Deemter, K., Sun, L., Sybesma, R., Li, X., Bo, C., & Yang, M. (2017). Investigating the content and form of referring expressions in Mandarin: Introducing the Mtuna corpus, 213–217. https://doi.org/10.18653/v1/W17-3532

Yang, C. L., Gordon, P. C., Hendrick, R., & Wu, J. T. (1999). Comprehension of referring expressions in Chinese. *Language and Cognitive Processes*, *14*(5–6), 715–743. https://doi.org/10.1080/016909699386248

(24) Wo   jintian   ba   san   ben   shu   dou   mai   le.
     1SG   today   BA   three   CL   book   all   sell   ASP
     'I sold all three books today.'   (Li & Thompson, 1981, p. 465)

The *bei*-sentence is the default construction for passive sentences in Mandarin and generally follows a linear structure of NP1 *bei* NP2 verb, as illustrated in (25). The first NP in example (25) *ta* '3SG' functions as the direct object affected by the action of the verb *ma* 'scold'. *Bei* can be considered a passive coverb, while NP2 *jiejie* 'older sister' is the agent of the action – the one who did the scolding.

(25) Ta   bei   jiejie   ma   le.
     3SG   BEI   older sister   scold   ASP
     'S/he was scolded by (his/her) older sister.'   (Li & Thompson, 1981, p. 492)

Lastly, the existential *you*-sentence in Mandarin is used to signal the existence of the referent of a NP at some place – locus. It can manifest in either of two structures: *you* + NP + *zai* 'at' + locus + (VP) or (*zai*) + locus + *you* + NP + (VP), as shown in (26) and (27).

(26) You   yi   zhi   gou   zai   yuanzi   li.
     EXIST   one   CL   dog   at   yard   In
     'There's a dog in the yard.'   (Li & Thompson, 1981, p. 511)

(27) (Zai)   yuanzi   li   you   yi   zhi   gou.
     at   yard   in   EXIST   one   CL   dog
     'There's a dog in the yard.'   (Li & Thompson, 1981, p. 510)

Emotion-Conveying Words in Polish Social Media*

Anna Prince, [1] C. Anton Rytting, [2] and Ewa Golonka [2]
[1] Georgetown University, [2] University of Maryland College Park**
map407@georgetown.edu, crytting@umd.edu, egolonka@umd.edu

A growing body of research has attempted to categorize emotions in social media text. However, emphasis on macro-scale trends does not provide a nuanced view of how those classifications are drawn. This article builds on Oberländer's work on semantic role labeling in sentiment analysis, using their 2020 schema of *cue word, target, cause,* and *experiencer* to examine semantic roles in social media posts. Using a corpus of geopolitical Polish-language Facebook data annotated for the presence and intensity of 23 distinct emotions, we generate three hypotheses regarding the actors and emotions in our data. We use two subcorpora of posts containing contempt and admiration, emotions that are roughly bivalent and under-researched in the current literature. Our findings suggest that part-of-speech is not a relevant consideration, and that emotion-conveying words are monovalent–that is, they do not signal multiple emotions in different contexts. We also find differences in the semantic roles towards which our two bivalent emotions are directed, as well as the relative intensity with which they are expressed. We hope this exploratory study can inform future research on the integration of semantic role labeling and sentiment analysis.

Keywords: sentiment analysis; semantic role labeling; emotion; social media

1 Background

A standard definition of *emotion* is hard to pin down, in part because scholarly understandings have evolved separately across a variety of disciplines. Early social-psychological research includes Plutchik's (1980) typology, which included eight basic emotions thought to be universal, followed by Ekman's basic emotions derived from facial expressions (Ekman, 1992), and modern

approaches embracing a large number of emotions that are usually extracted from text using computational methods (e.g., Cowen & Keltner, 2021). Though criticized for not being based on modern psychological theory or definitions of emotion (Ortony, 2022), Plutchik's work has informed more recent research within computational social science communities on emotional typologies, including that of Mohammad (2018), which quantified the affective *intensity* of individual words associated with Plutchik's emotional classifications. This research has informed more recent typologies such as that of Paletz et al. (2022), whose 23 emotions are the drawing board of our current study.

For consistency, we defer to a definition provided by our parent project, *Emotions in Social Media* at the University of Maryland. This project examines emotion as "feelings that arise in the interpretation of events, are culturally expressed and understood, have underlying universal bases, and involve some kind of signals or expression" (Paletz et al., 2022, p. 2). This definition, which emphasizes the interaction between universal experiences and individual action, is consistent with recent scholarship defining emotion as "appraisals, experiences, expressive behavior, physiological response, influences upon ensuing thought and action, and language-based representations" (Cowen and Keltner, 2021, p. 125). These definitions are particularly useful because they emphasize a connection between emotion and language–a major means for expressing emotion, and the primary medium used to infer emotion within most computational social science research.

Other researchers have explored computational tools and linguistic resources attempting to narrow down specific relationships between the two, many of them open-source and foundational to this project (see WordNet (Fellbaum, 1998), WordNet Affect Lexicon (Strapparava & Valitutti, 2004), EmoLex (Mohhammad & Turney, 2013), or plWordNet (Maziarz et al., 2016), to name a few). Such tools generally fall under the umbrella of *sentiment analysis,* or the automatic detection of emotion within linguistic data. Yet, as useful as these resources are, there is still limited understanding as to *how* emotion is configured through language. This gap is articulated by Masjid (2012), who, noting the dynamic and multi-tiered interactions between the two, argues that "emotional expression is finely tuned to language-specific structures" deserving of further empirical research. Prince (2022) notes that emotion lexicons often fall short in capturing topic-driven public discourse, such as geopolitical social media data. Mohammad and Turney (2013) also identify contextual ambiguity and sense-scoping issues as potential limitations of lexicons in general.

As such, other scholars have attempted to integrate semantic role labeling into sentiment analysis techniques. These approaches generally follow *Frame Semantics Theory* (Fillmore, 1976, 1982), which argues that the meaning of a

word in a sentence depends on its semantic relationship to the words around it. Semantic role labeling attempts to uncover what words "do" in a sentence; in this context, how words convey emotion, by whom, and towards whom. One useful schema for understanding semantic roles in emotion detection is that of Oberländer et al. (2020), who develop the terms *cue word, target,* and *experiencer.* These terms describe words that evoke an emotion in the reader, the person or object at which the emotion is directed, and the person or object who experiences the emotion, respectively. As an example, take the following sentence, extracted from a social media post in our corpus:

> [Polish]: *Matoły w sejmie, pajace w koalicji. Tylko w ludziach ostatnia nadzieja.*

> [English]: *Dummies in the parliament, clowns in the coalition. Only in [ordinary] people is the last hope.*

In this sentence, *[m]atoły* (unintelligent people) and *pajace* (clowns) were identified through annotation as "cue words," or words triggering a specific emotion–in this case, contempt. This contempt is felt by the author of the post (the "experiencer"), and directed towards politicians (the "target"). We use this schema to develop the following exploratory research questions (RQs):

RQ1. What parts of speech are cue words? How does their grammatical distribution vary across context and emotion?
RQ2. Is there a difference between the prevalence of cue words in describing targets and experiencers?
RQ3. Is there a difference between emotions describing targets and experiencers?

2 Methodology

This work closely follows the *Emotions in Social Media* project at the University of Maryland, which curated a corpus of social media texts taken from Facebook pages of Polish sociopolitical influencers and annotated a sample of 3,649 of these posts for 23 distinct emotions on a 0-100 intensity scale using the Social Media Emotions (SMEmo) annotation guide (Paletz et al., 2022). We refer here to the portion of the Polish Facebook corpus annotated for emotions as the SMEmo Polish corpus. This project examines one pair of antithetical emotions–*contempt* and *admiration*–because they are both well-represented in the SMEmo Polish corpus (Paletz et al., 2023), but not in the greater literature. The SMEmo annotation guide, adapting research from Ekman (1992) and Ekman and Corado (2011), defines *contempt* as "disregard, condescension, disdain, looking down on someone, feeling superior to someone or something, or having no respect for the

other party and what they are doing" (p. 10). Conversely, adapting Cowen and Keltner's (2017) definition, the SMEmo guide defines *admiration* as "respect and appreciation for a person or thing in a way that is distinct from love or sexual attraction [… a] positive emotion associated with a specific person, object, or group that does not entail a long-lasting, mutual bond, but feeling impressed and amazed at another's traits or actions" (p. 12). While some studies (e.g., Lunando & Purwarianti, 2013; Maynard & Greenwood, 2014) have explored contempt in the context of sarcasm, little research has examined either of these emotions in their own right. This is surprising, as our research showed that almost a quarter of all posts in the SMEmo Polish corpus (923 out of 3,649) conveyed contempt, and an even greater proportion (1,051 out of 3,649) conveyed admiration.

Our dataset selected for this study is a subsample of the posts annotated for admiration and/or contempt, consisting of 591 posts, with 300 posts conveying admiration and 300 conveying contempt. Nine posts conveyed substantial levels of both admiration and contempt, and thus counted for both subcorpora. While these posts were randomly selected from the SMEmo Polish corpus, we narrowed selection criteria to account for length, intensity, geopolitical variance, and access to attached multimedia. We excluded posts with fewer than 20 or more than 160 words, since these posts had too much or too little content to identify specific thematic roles. Intensity of the relevant emotion (contempt or admiration), using SMEmo's 0-100 scale, was set at a minimum of 20. We set this threshold to avoid low-level or covert instances of emotion.

In order to minimize selection bias, we also drew from a range of different political events. The posts selected for annotation and inclusion in the SMEmo Polish corpus were sampled within a defined temporal proximity to one of four political events occurring during the period over which it was collected (2015-2020), which include–briefly summarized–two political elections, the Czarny women's strike, and a COVID-19 lockdown. As such, we automatically included ten posts from each event-centered subcorpus conveying the most contempt and admiration, respectively, for a total of 80 pre-selected posts. We find that the remaining posts, which were randomly generated, do not over-represent any of the four events.

Using the semantic role framework established by Oberländer[1] et al. (2020), the following prompts, adapted from Bostan et al. (2020) and translated to Polish were used to guide annotation:

---

[1] Bostan and Oberländer appear to be the same scholar.

1. Which words helped you in identifying the given emotion?
2. Is the experiencer of the emotion mentioned in text, media, both, or neither?
   a. If yes, who are they?
   b. If there are words describing the experiencer, please list them.
3. Who or what is the emotion directed at?
   a. If there are words describing the experiencer, please list them.
4. Select the words that explain what happened that caused the expressed emotion.

We asked our annotator, a native Polish speaker familiar with the geopolitical context of the data, to respond to these prompts on a shared virtual spreadsheet. Responses were open-ended except for Prompt 2, which required one of four pre-configured responses. For RQ1 and RQ2, we used the SpaCy natural language processing library. This is consistent with the emotion lexicon used for RQ3, which was developed by Prince (2022) using the SpaCy python library and the full SMEmo Polish corpus. We removed stop words, or semantically insignificant yet commonly occurring words, using a Polish-language list provided by Paletz et al. (2022). This list mirrors, but is larger than, the Polish-language stopword list available in the SpaCy python library.

3   Results

3.1   RQ1: Part-of-Speech Distribution of Cue Words

Figure 1 shows the breakdown of parts-of-speech of words identified in Prompt 1 (hereafter, "cue words"). Note that there were slightly more admiration cue words than contempt cue words, with roughly 2,400 cue words in each corpus.

**Figure 1.** *Part-of-speech Comparison from Our Corpus*
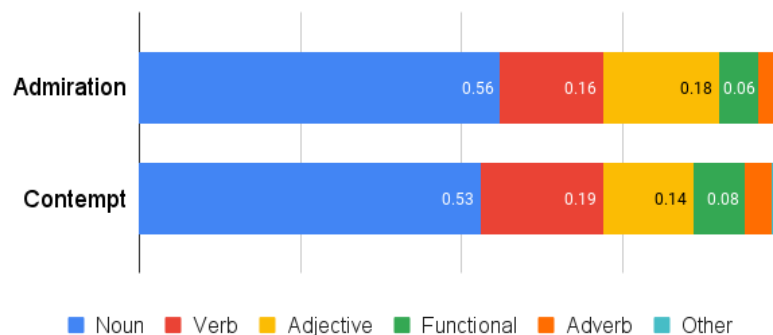
Note: we manually aggregated these words into broader types.

While adjectives are better-represented in admiration cue words, and verbs better-represented in words conveying contempt, an unpaired t-test shows that these differences are not statistically significant.

While we could not find other Polish-language corpora annotated for cue words, the English-language *GoodNewsEveryone* corpus (Bostan et al. 2020), which informs our study, is publicly available for comparison. Using the English-language SpaCy pipeline, the composition of the 6,690 annotator-identified cue words in *GoodNewsEveryone* is seen below. Stopwords were removed using the default English-language SpaCy list.

Figure 2. *Parts-of-speech of All Cue Words in GoodNewsEveryone Corpus*
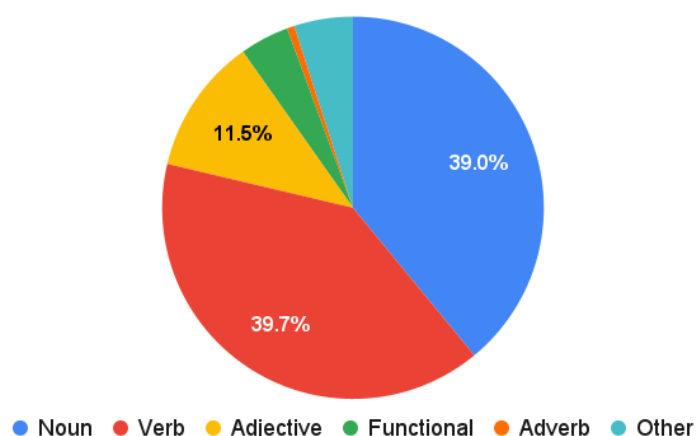
Note: GoodNewsEveryone uses an emotional typology that does not include contempt and admiration. Direct comparisons are therefore not possible.

As in our corpus, the major part-of-speech categories are nouns, verbs, and adjectives. However, verbs are far better-represented in *GoodNewsEveryone* than in our corpus. By extension, nouns are proportionately less.

3.1.1 Discussion

Manual review of both corpora revealed complications with participles, which were sometimes misclassified as verbs or adjectives (e.g., the difference between "a wrinkled shirt" and "he wrinkled the shirt"). Still, the similarity between results in our two subcorpora are notable, especially in contrast with results from the *GoodNewsEveryone* corpus. It is possible that bivalent cue words have semantically similar roles, or that Polish cue words *in general* assume a similar part-of-speech distribution, regardless of the emotion they convey. However,

these findings do suggest that part-of-speech analysis between bivalent emotion-conveying words is not a useful direction for further research.

The differences between our identified cue words and those of Bostan et al. (2020) could indicate a few areas of exploration. *GoodNewsEveryone* is a collection of newspaper headlines, which assume a different linguistic style and audience than personal Facebook posts. These differences could implicate different thematic roles, if newspapers tend towards impersonal and verb-heavy descriptions of events. They could also implicate reader-side expectations, if people *perceive* less emotion in an "objective" newspaper article than an equivalent Facebook post. People may also engage with social media and newspapers for different purposes, or in different emotional states, which could influence their emotional experience in consuming a given piece of content. However, cross-language comparisons are inherently difficult, even with multi-language tools such as SpaCy, and further research would benefit from comparisons across the same language.

3.2   RQ2: Representations of Semantic Entities

3.2.1 Identification of Experiencers in Text and Media

Figure 3 shows the representation of experiencers in text and media (Prompt 2). In posts conveying both admiration and contempt, roughly 10% of posts were not annotated due to the unavailability of attached multimedia, and roughly 7% of posts did not mention an experiencer anywhere in the post (in either text or other media).

Figure 3. *Identification of Experiencers*

Posts evoking admiration   Posts evoking contempt
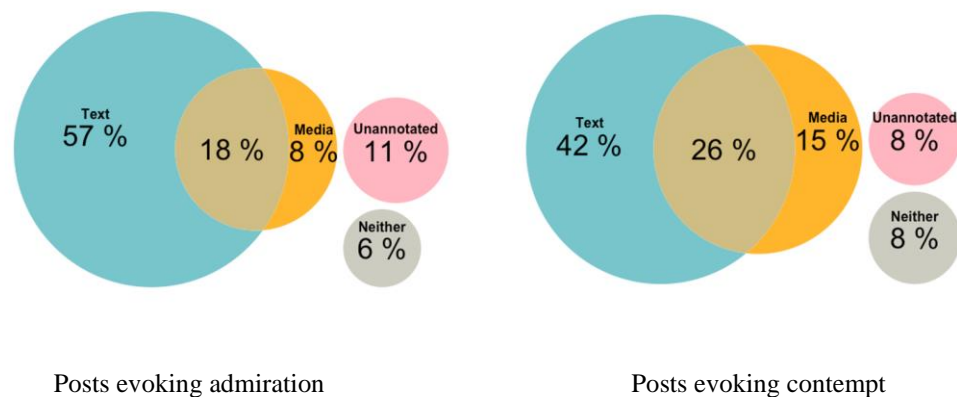
Within the roughly 83% of posts that do mention an experiencer, posts conveying admiration and contempt both tend to rely on text rather than media to identify them, and are about twice as likely to mention an experiencer in text *and* media than media alone. However, posts evoking contempt appear to more often identify experiencers with multimedia than posts evoking admiration. This includes experiencer references made exclusively through multimedia, as well as references made alongside text.

3.2.2 Prevalence of Cue Words in Descriptions of Targets and Causes

We did note differences in the prevalence of cue words as descriptors of both targets and causes. Words that describe a target more often conveyed admiration than contempt. Conversely, words describing a cause more often conveyed contempt than admiration. Out of the 677 words that contemptuously describe a target (Prompt 3a), only five had been previously identified as contempt cue words (Prompt 1). Yet out of the 651 words that admiratively describe a target, 21 had been identified as cue words. Using a two-proportion z-test, the calculated z-value is -3.2705 (p = .00108), indicating a statistically significant difference. Conversely, of the 5177 words that contemptuously describe a cause (Prompt 4), 143 were contempt cue words, whereas the 3148 admirative cause-describing words only contained 47 admiration cue words. This difference is also significant with a z-value of 3.7603 (p = .00016).

The number of cause-describing words is substantially higher than the number of target-describing words. We speculate that targets may have been described with single adjectives or nouns, whereas causes required complex grammatical constructions (e.g., "that happened yesterday," "in the warehouse," et cetera). While we excluded stop words, it is possible that our collection of cause-describing words is inflated by words that are normally semantically significant, but not in this context.

Figure 4. *Cue Words as Target and Cause Descriptors*

Target-Describing Words　　　　　Cause-Describing Words
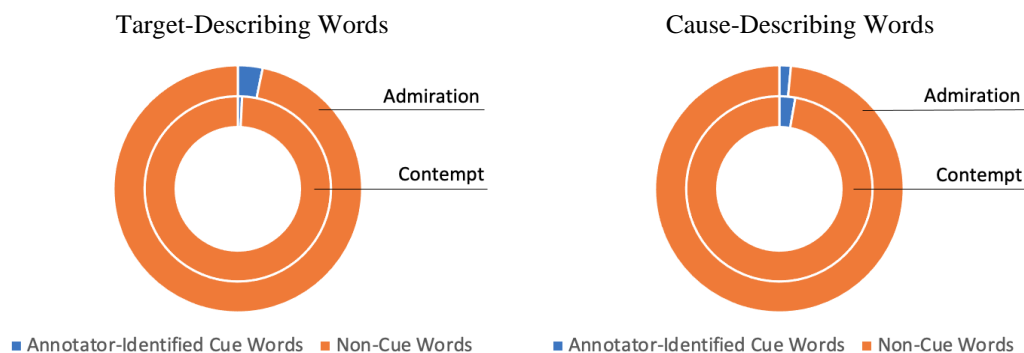
3.2.3 Discussion

From the observed differences in where specific cue words are found–in words describing targets of admiration, but causes for contempt–it seems that the locus of the emotion differed between the two emotions studied. The exact reasons for this are not clear from the statistics alone. It is possible that words describing a cause trigger contempt more often than admiration, since causes are often events or circumstances rather than people. It is harder to admire an impersonal event, such as a hurricane or election, than it is to feel frustrated or bitter about it. It is also possible that the sampled posts in our corpus praised targets of admiration for who they *were* (i.e., with words describing stable, admirable character traits) but criticized targets of contempt for what they *did* (i.e., how they contributed to or (re)acted during events annotated as causes for contempt).

　　　　However, it is surprising that words evoking contempt rarely described targets, given the sheer amount of contemptuous content identified in the broader corpus. One explanation could be the use of multimedia identified discussed above, which suggested that posts containing contempt made greater use of multimedia than posts containing admiration. It is possible that contempt towards targets was conveyed visually, such as through critical pictures and videos, rather than through words. This is consistent with the fact that within Prompt 1, the subcorpus of words conveying contempt was smaller than the subcorpus of words conveying admiration. It is also possible that contempt was more frequently conveyed indirectly–e.g., through irony, sarcasm, humor, innuendo, or other rhetorical devices (cf. Lunando & Purwarianti, 2013; Maynard & Greenwood, 2014)–whereas that admiration was more frequently conveyed directly and straightforwardly in our corpus.

3.3 RQ3: Range and Intensity of Emotions

3.3.1 Valence

Among all words identified in Prompt 1, we find only a 6% overlap between words in the contempt subcorpus, and words in the admiration subcorpus. Within that small percentage, almost all words were proper nouns or functional words that were not included in the stop word list. This percentage also includes cue words from the nine ambivalent posts, which necessarily overlap as they appeared in both subcorpora. These findings suggest that cue words are monovalent; that is, words that convey emotions tend to convey the same emotion consistently, regardless of context–at least for this pair of emotions.[2] Proper nouns do create an interesting exception, since it would appear that the target of the emotion can itself evoke the emotion. We speculate that in such instances, there may have been visual or other cues to contextualize the emotion, or perhaps that these proper nouns name polarizing figures in contemporary Poland, who evoke admiration among some Poles and knee-jerk contempt in others.

3.3.2 Intensity

Figure 5 shows the emotional intensities of cue words identified in Prompt 1. Following the SMEmo 0-100 emotional intensity scale, these graphs represent the emotional intensities of individual words, according to an emotional lexicon developed by Prince (2022).

---

[2] Naturally, since we only looked at contempt and admiration, there is nothing in these findings that preclude the same word conveying similar emotions not examined here: e.g., the same word conveying both admiration and love, or conversely, a single word conveying contempt, hate, and anger. However, these results suggest that none of the words that were annotated as cueing admiration were used elsewhere ironically to cue contempt–or if they were, our annotator found more compelling words to mark as cues for contempt.

Figure 5. *Word-Level Intensities of Annotator-Identified Cue Words*
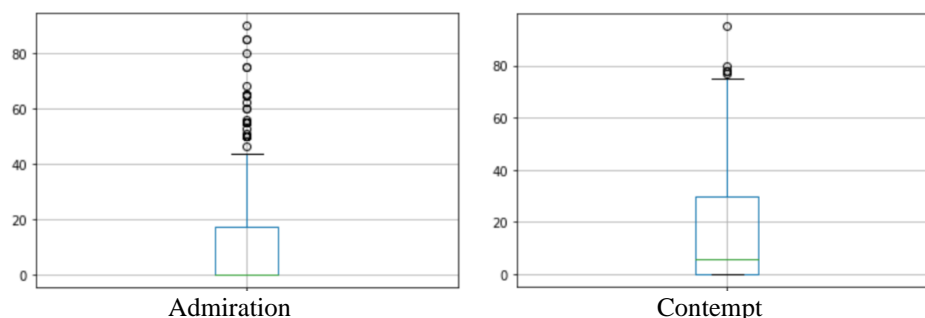
The intensity of individual words identified in Prompt 1 is rather low. Among words identified as conveying admiration, the median admirative content is zero, with the third quartile still falling below 20–the baseline intensity we required for posts. Words conveying contempt appeared slightly more emotive; while the median still fell below 20, a majority of words were individually associated with some level of contempt, with the upper quartile scored as 30 or higher. This is notable given that, as established in RQ2, posts conveying contempt made greater use of multimedia and used fewer textual descriptors overall. It could be the case that multimedia content is somehow related to emotion in text. Perhaps intense emotional states lead people to use multimedia more, or multimedia intensifies emotion already present in a text. Alternatively, it may be an algorithmic issue, in the sense that larger corpora dilute the intensity of words within them.

3.2.3 Discussion

While we found that individual *words* in our corpus consistently conveyed discrete emotions–either contempt or admiration, but not both–in nine instances the *post* did not. This raises the question of how ambivalence can exist within a text, if the words within it convey specific emotions. The general pattern we observed in our corpus is that these posts specify different targets for the respective emotions. Furthermore, in some instances the juxtaposition of opposing emotions, such as contempt and admiration, intensified one another via contrast. In all nine ambivalent posts, we identified at least one target of each respective emotion. One of these ambivalent posts, taken from a high-profile public figure in our dataset, provides a particularly salient example:

> *[Polish]: Prawicowi fanatycy przegięli. Dziesiątki tysięcy kobiet, które pokazały już na ulicach, że stawią im opór, to dopiero początek. Wywołali lawinę. Teraz ta lawina spadnie na ich głowy.*

> *[English]: Right-wing fanatics have gone too far. The tens of thousands of women who have already shown in the streets that they will resist them is only the beginning. They caused an avalanche. Now this avalanche will fall on their heads.*

Here, the author's admiration for the marchers ("tens of thousands of women") is paired with contempt for their political opponents ("right-wing fanatics"). Yet, the identified cause is the same, with the Czarny protests identified as the cause of both emotions. While this contrast is clear enough to an attentive human reader, for a machine performing an emotion inference task, this will only be clear with a semantic labeling approach to ground-truth annotation, which takes a more granular look at the emotional dynamics within the entire post.

Notably, these findings are not inconsistent with our earlier point on monovalence. Whether words convey emotion, and which emotions those words convey, are different questions; that is, a word that is discreetly associated with one emotion may not signal it in all contexts. This would suggest that there is not a linear relationship between the amount of emotion-signaling words in a text, and the emotional intensity of the text at large. Thus, while word-level emotional analyses are useful, they do not go far enough in explaining how those words become "activated" in context. This point again stresses the utility of semantic roles in sentiment classification tasks.

4   Conclusion

This exploratory study provides several useful directions for further research. Primarily, we have argued that current sentiment analysis techniques may overlook emotional dynamics within individual posts. Given that we did find differences in emotional descriptions of different actors, such as targets and experiencers, we argue that integrating semantic role labeling into current research could benefit future sentiment analysis algorithms. Additionally, given our findings that cue words are monovalent while posts may convey multiple and conflicting emotions, we raise the possibilities of multiple layers of referent within a text, as well as interplay between text and visual media. Thus, we argue that focusing on specific words and word-types, as well as their semantic role within a sentence, could be an efficient way of capturing some of that nuance and compensating for visual information.

4.1 Limitations

We do note a few limitations in this exploratory study. First, our sample size of 600 posts is somewhat small. While larger samples may be useful for future research, we believe that this exploratory study can still be useful in guiding that research. Second, since the SMEmo Polish corpus was collected several years ago, some multimedia were no longer available at the time of annotation (roughly 10% of posts, as noted in RQ2). Since we chose posts randomly, within certain parameters, we hope that bias coming from unavailability of multimedia is limited. And finally, we limited our analysis to responses from a single annotator, as open-ended response schemas lend themselves to inconsistent annotations. Difficulty ensuring inter-annotator agreement was also noted by Bostan et al. (2020), who pointed to the inherent subjectivity of emotion in textual content. We hope that the refinement of these annotation methodologies, as well as heavier investment into annotator training, can make these tasks easier for future researchers. Nevertheless, despite issues with annotator training and consistency, we believe this study provides support for the general feasibility of the annotation framework they propose, by extending it to another language and text type.

4.2 Implications and Future Research

More research into the linguistic mechanics of emotion would greatly benefit sentiment analysts across a variety of domains. Adjacent research projects under the *Emotions in Social Media* grant find clear connections between emotion and willingness to share information, which presents clear applications to disinformation studies. Golonka et al. (2023), for instance, partially address our question regarding the interaction between emotion conveyed in text and media by implicating "cute" images as a vector for social media influence. Analyzing semantic roles in conjunction with non-textual data could provide a more complete picture of the social media [dis]information environment, providing better intelligence to social media companies about malicious activity on their platforms. Large-scale data about specific political grievances, or which actors feel what emotion towards which targets, could be particularly useful to human rights advocates or law enforcement.

The medical field may also benefit from further research. Recent studies have used sentiment analysis techniques to better understand the emotional experiences of people with chronic diseases, such as cancer (Edara et al., 2023), and their perceptions of specific treatments, such as anticonvulsant medications (Mathieson et al., 2022). A number of researchers have also used sentiment analysis of social media data to identify psychiatric disorders and assess suicide

risk (see Bittar et al., 2021; Sawalha et al., 2022), which could facilitate more effective interventions at both the individual and community levels. Though these tools carry a number of complex ethical considerations, they have clear applications for saving and improving lives, particularly if classification algorithms can effectively cut through the noise to extract specific sources of patient discomfort. These are fundamentally semantic role-labeling tasks and should be treated as such.

5   About the Authors

We hope this project shows, by example, that community-building across disciplines can facilitate innovative research. Anna Prince is a former research intern at the University of Maryland Applied Research Laboratory for Intelligence and Security (ARLIS), and a current undergraduate student at Georgetown University. She is majoring in linguistics and government, and minoring in tech ethics. C. Anton Rytting and Ewa Golonka are Associate Research Scientists at the University of Maryland ARLIS. Dr. Rytting holds a PhD in Linguistics from the Ohio State University, with a specialization in computational linguistics. His current research focuses on how authors' emotions, personality traits, values, and identity are revealed in texts of various genres. Dr. Golonka's research has focused on instructed second language acquisition, multilingualism, cognitive aptitude, and the analysis of social media corpora in various languages. She holds a PhD in Russian and Second Language Acquisition from Bryn Mawr College.

References

Bittar, A., Velupillai, S., Roberts, A., and Dutta, R. (2021). Using general-purpose sentiment lexicons for suicide risk assessment in electronic health records: Corpus-based analysis. *JMIR Med Inform,* 13(9). doi: 10.2196/22397

Bostan, L., E. Kim, & R. Klinger. (2020). GoodNewsEveryone: A corpus of news headlines annotated with emotions, semantic roles, and reader perception. In *Proceedings of the 12th Language Resources and Evaluation Conference*, 1554–1566. https://aclanthology.org/2020.lrec-1.194

Cowen, A.S., & Keltner, D. (2021). Semantic space theory: A computational approach to emotion. *Trends in Cog. Sciences* 25(2), 124–136. https://doi.org/10.1016/j.tics.2020.11.004.

Edara, D.C., Vanukuri, L.P., Sistla, V., and Kolli, V.K.K. (2023). Sentiment analysis and text categorization of cancer medical records with LSTM. *Journal of Ambient Intelligence and Humanized Computing 14*, 5309–5325. https://doi.org/10.1007/s12652-019-01399-8

Ekman, P. (1992). An argument for basic emotions. *Cognition and Emotion,* 6(3–4), 169–200. https://doi.org/10.1080/02699939208411068.

Ekman, P., and Cordaro, D. (2011). What is meant by calling emotions basic? *Emotion Review*, *3*(4), 364–370. https://doi.org/10.1177/1754073911410740

Fellbaum, C. (1998, ed.) *WordNet: An electronic lexical database.* Cambridge, MA: MIT Press.

Fillmore, C. (1982). Frame semantics. In *Linguistics in the morning calm: Selected papers from SICOL-1981,* 111–137. Hanshin Pub. Co. http://brenocon.com/Fillmore%201982_2up.pdf

Fillmore, C. (1976). Frame semantics and the nature of language. In *Annals of the New York Academy of Sciences: Conference on the Origin and Development of Language and Speech* 280, 20–32. doi:10.1111/j.1749-6632.1976.tb25467.x

Golonka, E.M., Jones, K.M., Sheehan, P., Pandza, N.B., Paletz, S., Rytting, C.A, and Johns, M., (2023). The construct of cuteness: A validity study for measuring content and evoked emotions on social media. *Frontiers in Psychology*, 14:1068373. doi: 10.3389/fpsyg.2023.1068373

Lunando, E., & Purwarianti, A. (2013). Indonesian social media sentiment analysis with sarcasm detection. *2013 International Conference on Advanced Computer Science and Information Systems (ICACSIS)*, 195–198. Doi: 10.1109/icacsis.2013.6761575

Masjid, A. (2012). Current emotion research in the language sciences. *Emotion Review,* 4(4), 432–443. https://doi.org/10.1177/1754073912445827

Mathieson, S., O'Keefe, M., Traeger, A.C., Ferreira, G.E., & Shaheed, C.A. (2022). Content and sentiment analysis of gabapentinoid-related tweets: An infodemiology study. *Drug and Alcohol Review,* 1–11. https://doi.org/10.1111/dar.13590

Maynard, D., & Greenwood, M. (2014). Who cares about sarcastic tweets? Investigating the impact of sarcasm on sentiment analysis. In *Proceedings of the Ninth International Conference on Language Resources and Evaluation (LREC'14)*, 4238–4243, Reykjavik, Iceland. European Language Resources Association (ELRA).

Maziarz, M., Piasecki, M., Rudnicka, E., Szpakowicz, S., and Kędzia, P. (2016). plWordNet 3.0 – A comprehensive lexical-semantic resource. In *Proceedings of COLING 2016, the 26th International Conference on Computational Linguistics: Technical Papers*, 2259–2268, Osaka, Japan. The COLING 2016 Organizing Committee.

Mohammad, S. (2018). Word affect intensities. In *Proceedings of the Eleventh International Conference on Language Resources and Evaluation (LREC 2018),* Miyazaki, Japan. European Language Resources Association (ELRA).

Mohammad, S., and Turney, P. (2013). Crowdsourcing a word-emotion association lexicon. *Computational Intelligence*, 29(3), 436–446. https://doi.org/10.48550/arXiv.1308.6297

Oberländer, L. A. M., Reich, K., & Klinger, R. (2020). Experiencers, stimuli, or targets: Which semantic roles enable machine learning to infer the emotions?. In *Proceedings of the Third Workshop on Computational Modeling of People's Opinions, Personality, and Emotions in Social Media*. (pp. 119–128). https://doi.org/10.48550/arXiv.2011.01599

Ortony, A. (2022). Are all "basic emotions" emotions? A problem for the (basic) emotions construct. *Perspectives on Psychological Science*, 17, 41–61. https://doi.org/10.1177/1745691620985415

Paletz, S. B. F., Rytting, C. A., Johns, M. A., Pandža, N. B., Golonka, E. M., Murauskaite, E. E., & Buntain, C. (2023). *Emotions in Polish and Lithuanian social media* [dataset]. Digital Repository at the University of Maryland. https://doi.org/10.13016/b4lh-j5tg

Paletz, S. B. F., Golonka, E. M., Stanton, G., Murauskaite, E., Ryan, D., Rytting, C. A., & Bradley, P. (2022). Social media emotion annotation guide (SMEmo), Version 4.0. University of Maryland College Park Applied Research Laboratory for Intelligence and Security.

Plutchik, R. (1980). *Emotion: A psychoevolutionary synthesis.* Harper & Row.

Prince, M.A. (2022, April 24). *Emotional intensity lexicons for event-based corpora*. Poster presented at the 16th Annual Cornell Undergraduate Linguistics Colloquium (CULC16), Cornell University, Ithaca, NY.

Sawalha, J., Yousefnezhad, M., Shah, Z., Brown, M.R.G., Greenshaw, A.J., & Greiner, R. (2022). Detecting presence of PTSD using sentiment analysis from text data. *Frontiers in Psychiatry,* 12:811392. doi: 10.3389/fpsyt.2021.8113

Strapparava, C., & Valitutti, A. (2004). Wordnet-affect: An affective extension of WordNet. In *Proceedings of the 4th International Conference on Language Resources and Evaluation (LREC-2004)*,1083–1086, Lisbon, Portugal. http://www.lrec-conf.org/proceedings/lrec2004/pdf/369.pd

MULTILINGUALISM IN THE LINGUISTIC LANDSCAPE OF IBADAN, NIGERIA

Adeola Aminat Babayode-Lawal
University of Ibadan/Simon Fraser University
adeolamin@gmail.com/aab24@sfu.ca

Multilingualism is one of the features of language contact that characterises language use in the public spaces of cosmopolitan areas like Ibadan. Little attention has been paid to multilingualism on signs in the public spaces of Ibadan. This study was, therefore, designed to investigate how multilingualism is reflected in the linguistic landscape of Ibadan with a view to determining the languages used on signs, their patterns and statuses in relation to the sociolinguistic context of Ibadan.

Seven communities in Ibadan (Challenge, Dugbe, Mokola, Iwo Road, Sango, Olodo and Ring Road) were purposively selected because of the strategic presence of different signs in them. The signs were subjected to sociolinguistic and descriptive statistical analyses.

Findings reveal that languages (English, Yoruba, Hausa, Igbo, Arabic, French and Nigerian Pidgin) were used in various ways to show ethnolinguistic vitality, language hierarchy, dominance, distinctiveness and for economic motivation. Although monolingual language use had a high status in all the communities, there were also the pervasive use of English, visibility of French, Arabic and Nigerian Pidgin and the marginalisation of indigenous languages on the signs. These were due to the sign writers' skill condition, the presumed readers' condition and the symbolic value condition.
Keywords: Linguistic landscape; Language hierarchy; Ethnolinguistic vitality

1   Introduction

The study of the relationship between language and society has become an increasingly important field of study as communication and intergroup relations, in recent years, have expanded. Language is one of the most powerful emblems of social behaviour. No doubt, the dimensions of social behaviour and human interactions are often revealed through the study of the use of language in society as well as the relationship that exists between language and society.

The visual language that is used in the city is an important part of society. In other words, the linguistic landscape of society is comprised of items displayed in the written form in the public space as texts on the windows of shops, commercial signs, advertising billboards, graffiti, official notices, traffic signs which are produced and utilized by social actors. The contents of these

items often exceed their communicative functions. The aim of linguistic landscape research, therefore, is to "describe and identify systematic patterns of the presence and absence of languages in public spaces" as well as the dynamics behind the decisions creating these patterns (Shohamy & Ben-Rafael 2015).

The concept of linguistic landscape has motivated several linguists and researchers (such as Griffin, 2004 and Ben-Rafael et al. 2006) to conduct studies in different sites, cities and countries to show the importance of linguistic landscapes in such places. The symbolic construction of the public space can be seen in terms of the linguistic objects or the visible language on signs in the public space. The study of the visibility of language in the public space tend to reveal a lot about the spread, status, vitality and dominance of languages in different social and cultural contexts.

Nigeria is typically and prototypically a multiethnic and multicultural nation where diverse languages and cultures compete (Akindele and Adegbite, 2005). Based on the figures of the recent (2006) national census, the country is populated by over 140 million people. There are also over 250 ethnic groups (Akindele and Adegbite, 2005) and about 500 languages in Nigeria (Crystal, 2003). Multilingualism in Nigeria is studied not just in terms of the number of languages that exist in the repertoire of individuals and the nation but in terms of the sociolinguistic complexities that emanate from their diversity. Modern architecture, traditional housing patterns, traditional and westernised ways of life, all co-existing side by side impressively, have earned Ibadan the epithet "city-village" (Oyebiyi, 2008). The status of Ibadan as a city with the largest concentration of Yoruba, one of Nigeria's major ethnic groups, as well as the seat of one of the nation's largest administrative, commercial and industrial centres, where English is likely to be widely used, has effects on its sociolinguistic reality.

2   The sociocultural setting of the study

Ibadan – the capital of the then Western Nigeria which is Oyo State capital city − is one of the most densely populated African cities. Two million people, mostly from other regions of Nigeria and the world, are thought to live there (Makinde, 2012). The author also recognises three homogenous groups in the residential structure of Ibadan. The traditional sections of the city, known as the core areas (such as Bere, Ayeye, and Agbeni), are characterised by high rates of poverty, dense populations, poor physical design, deteriorating buildings, inadequate health care facilities, high prevalence of illiteracy and limited socioeconomic activity. Majority of people living in the intermediate zones, such as Molete, Oke-Ado, Mokola, Eleyele, and Agbowo, are either recent migrants or residents of neighboring Yoruba towns and ethnic groups. The population density here is lower than in traditional districts, and housing is moderately distributed, though not as in the outer areas. The elite primarily live in the city's periphery area, which includes Alalubosa G. R. A, Akobo Estate, Oluyole Estate, Bodija and other well-planned ones. Adetunji (2013) makes a similar claim regarding the

geographical features of Ibadan in his exposition about the city's eleven (11) Local administrative units. He classifies six areas as "semi-urban" (Akinyele, Egbeda, Ido, Lagelu, and Ona-Ara) and five as "urban" (Ibadan North, Ibàdàn North-East, Ibàdàn North-West, Ibàdàn South-East, and Ibàdàn South-West).

Ibadan was established in 1829 as a station for soldiers from Oyo, Ife, and Ijebu. It was created as a result of the conflicts that threatened the Yoruba people's ability to maintain their racial unity in the early 19th century. According to Oyebiyi (2008), the village was formerly known as Eba Odan, which translates to "near the savannah" and was given to it by passers-by due to its location between the savanna and the forest belt. Time reduced the two words, *Eba Odan* to *Ebadan* and, finally, it became Ibadan. It was founded before the colonial rule was established in Nigeria around 1893. According to Salami (2013), to establish itself and protect the Yoruba people from the Fulani Jihadists ravaging the northern region in the 19th century, Ibadan engaged in a number of conflicts.

The Ibadan *Soge*, or early inhabitants of Ibadan, were a group of *Egba Aguras*. The settlement back then consisted of a number of hill ranges with elevations ranging from 160 to 275 metres (Salami, 2013). Later, it developed as a hub for marketing for traders from the grassland and woodland regions. The city's rulers and the most significant economic group were the warriors (Falola, 1984). As settlers mostly traded in food items, animals and slaves, it had an economic boom in agriculture.

Today, Ibadan, the capital of Oyo State, has grown in population and territorial expansion. It has grown from its population of about 70,000 inhabitants in 1856 to a densely populated multiethnic and multicultural cosmopolitan city. According to the United Nations (2014), Ibadan is one of the West African cities that have population growth of more than 100,000 per year, a result of both natural growth and net migration. One of Nigeria's greatest population densities can be found there (NPC, 2006). Given a projected annual growth rate of 4.6% from 2010 to 2020, the city's population is expected to reach about 5.03 million by 2025 (UN DESA, 2012).

The emergence of Ibadan as the headquarters of the defunct Western Region (Oyebiyi, 2008) contributed to its advancement and attraction to expatriates and other ethnic groups to different opportunities that exist in the city. This could be due to the high literacy level that existed in the Western Region in comparison with other regions in the country which could be due to factors such as the literacy levels of the people, the prevalence of articulate press, media and economic activities and the regional government's programmes which made people benefit from free education in 1955 (Kolawole & Adepoju, 2007). In other words, the opportunities that exist in the city have led to the influx of different linguistic and cultural groups to it. Ibadan is occupied predominantly by the Yoruba ethnic group making up about 95 percent of the population (Olatubara, 1995). The remaining 5 percent appear to be from other ethnic groups such as Igbo, Hausa, Ibibio, Edo, etc. The Yoruba ethnic group, therefore, predominates the city. This is obvious in the social interactions, kinship ties and compound housing system (Mabogunje, 1968). The city has the status of the

administrative capital of Oyo state with different industrial and commercial activities attracting people to the city leading to its development.

Various institutions, commercial and industrial activities, governmental policies and programmes have all aided the city's expansion. Olatubara (1995) holds that the extension of the train line to Ibadan contributed significantly to the development of Ibadan and this extension coupled with the convergence of Ijebu-Ode and Abeokuta routes in Ibadan further facilitated its growth and rapid physical expansion. It is the main commercial and educational centre of the state. Civil servants, artisans, industrialists, store owners, traders, and farmers make up a large portion of the population. Also, institutions and industries like the Nigerian Breweries have largely contributed to its growth, development and physical expansion. According to Oyebiyi (2008), the largest teaching hospital in West Africa (the University College Hospital), the Polytechnic, Ibadan, private universities, the School of Agriculture and Co-operative College, and the Nigerian Breweries are among the research and training institutions in the city. Many of these elements have helped to shape Ibadan into what it is today.

3   The language situation in Ibadan

People of different linguistic and ethnic backgrounds have migrated to Ibadan owing to the opportunities for a better life that abound in the city. English or Nigerian Pidgin is usually considered the lingua franca of such migrants who often consist of different minority groups in the sociolinguistic environment of Ibadan. Yoruba is, however, one of the most used languages by them.

The policies made by the government on language tend to promote a positive attitude towards English vis-a-vis Yoruba. Even though the social, political, and economic prominence of Ibadan, especially for being the (erstwhile) center of regional administration has necessitated an immigration flow (Adetunji 2013), Yoruba is still the most used indigenous language in the city. In the city, English, being Nigeria's official language, is considered a superordinate language which many people have a positive attitude to. Akindele and Adegbite (1999) observe that the other hundreds of languages are not considered as important the way these indigenous languages are.

Ibadan's sociolinguistic reality is impacted by its role as the city with the highest concentration of one of Nigeria's major ethnic groups (Yoruba), as well as one of the country's largest administrative, commercial, and industrial hubs where English is likely to be widely spoken. There appears to also be the extensive use of Nigeria's native languages in Ibadan but there is the official recognition of English accompanying its widespread use by many residents. Also, societal multilingualism in Ibadan can be attributed to the city's geographical location, economic activities and metropolitan nature. Its status as the administrative and economic capital of the Western Region before its delineation into six states predisposes it not only to being a place of attraction and influx for foreigners but different ethnolinguistic groups.

4   Multilingualism in Nigeria

There are sociolinguistic implications for the multiplicity of languages in Nigeria. No doubt, this situation raises issues about the status and functions of the languages used in the country. Controversies surround the agreement on the number of languages used in the Nigerian multilingual context**.** Simply put, an account of the total number of indigenous languages in Nigeria is not certain as scholars have different figures for this. In other words, there is no agreement yet over the number of indigenous languages that are spoken in Nigeria. There are some 500 languages in Nigeria (Crystal, 2003) and a conservative estimate of 400 languages (Akindele and Adegbite, 2005) and over 400 Bamgbose (1977). Also, according to Adegbija (2004), suggestions shift from 200, to 300, 368, 369 (e.g. Osaji 1979; Bamgbose, 1971; Brann, 1990). What is certain, therefore, is that there are several hundreds of languages used in the country (Ezema, 2009). Different ethnic groups in the nation tend to interpret the choice of any of the indigenous languages as the country's lingua franca as a way of imposing domination. None of the indigenous languages, also, has been seen to be capable of fostering growth, unity and development and coping with the realities of modernity if adopted as the official and national language.

Adegbija (2004) identifies three categories of languages used in Nigeria. He identifies about 450 languages as indigenous or native languages out of which Hausa, Yoruba and Igbo have been constitutionally recognised as major. English. French, Arabic, German and Russian are some of the exogenous languages he recognises. Nigerian pidgin belongs to his last category of pidgin languages. Pidgin English is one of Nigeria's important languages. It is spoken as a language of wider communication especially in trade in most parts of the southern states in Nigeria. Pidgin serves predominantly as the language of commerce, mass propaganda and mobilisation at the grassroots level of entertainment in music and of interethnic communication in schools and some cities like Port Harcourt and Benin-City (Adegbija, 2004).

Nigeria belongs to the "Outer Circle" of Kachru (1986)'s classification since English, which does not belong to any ethnic group in the country, is the official language that is used in all parts of the country for various purposes. The English language performs both official and national functions at the level of administration, politics, education, trade and commerce and science and technology (Akindele and Adegbite, 2005). This appears to be why Cenoz and Gorter (2008) consider it a threat to linguistic diversity because of the detriments its predominance places on other languages. However, it plays a unifying role and serves as the language of communication among people of different tribes and languages which is a role none of the indigenous languages have been able to play.

Surely, Nigeria's multilingual situation is complex. The study of multilingualism in the linguistic landscape of cities and urban environments becomes necessary in understanding the linguistic repertoire of societies especially as the linguistic practices and experiences of people throughout the

world have become diverse as a result of migration, media, the virtual space of the internet and educational travel.

5   Multilingualism in linguistic landscape (LL)

Linguistic landscape surpasses just being a linguistic phenomenon but a manifestation of diverse aspects of reality particularly in multilingual contexts where people of different ethnolinguistic groups come in contact and interact for various reasons. Not only does it show the use of language in society, but it also reveals the presence of languages especially in terms of their coexistence which helps us to understand the rapidly changing urban landscapes. In other words, multilingualism has an important focus in linguistic landscape research.

The study of the linguistic landscape is particularly interesting in bilingual and multilingual contexts. Studies such as Gorter (2006) and Barni (2008) have focused on linguistic landscape as an element of multilingual contexts with varying focus on issues of language visibility, language shift, language diversity and language vitality. The methodology for including LL in a mapping of linguistic diversity was developed by Barni (2008). Studies on multilingualism in the linguistic landscape are often carried out in situations of language contact especially where migrants have settled in a host community (Barni, 2008; Ben-Rafael and Ben-Rafael, 2015) and the visibility of languages is often linked to the relative vitality of sociolinguistic groups (Landry and Bourhis, 1997). Landry and Bourhis (1997) in their approach introduced linguistic landscape as a concern in multilingual research with their view of "linguistic landscape" as a newly established approach in the field of language policy and planning which aims to examine multilingualism in speech communities. Ideas about societal multilingualism serve to help in focusing on language choice, hierarchies of languages, contact-phenomena, regulations, and aspects of literacy (Mahemuti, 2018) as well as the importance of multilingualism in the linguistic landscape of communities. This knowledge helps in the understanding of globalisation, language policy and the long-term consequences of language contact.

Linguistic landscape offers ways of explaining language use in multilingual societies. The study of the LL can contribute to the understanding of language and cultural diversity as it reflects the population of the city, either the languages in use among the permanent inhabitants and immigrants or the way information is provided to visitors or tourists (Budarina, 2015). What this suggests is how the study of the use of language on signs serves to reveal the linguistic composition of societies as well as the presence of the different ethnic groups and the communicative patterns in such places. Truly, most of the works on linguistic landscape have been carried out in multilingual societies. Different languages have been found represented on the public signs in Israel (Ben-Rafael, Shohamy, Amara and Trumper-Hecht, 2006); Basque Country (Cenoz and Gorter, 2006); Jordanian cities (Alomoush, 2015); Tunisia; (Said, 2019). Even, Al-Athwary (2017) holds that despite the fact that the speech community in Yemen is generally monolingual in Arabic, the public space of Yemen is

primarily multilingual. Backhaus (2005) studied the diachronic development of Tokyo's linguistic landscape since the early 1990s as well as the coexistence of older and newer generations of signs in the streets of Tokyo. Results suggest an increase in linguistic heterogeneity (Backhaus, 2005). There is the coexistence of English, Japanese, Korean and Chinese on the signs in the streets. As Japan has been known as one of the few prototypes of a predominantly monolingual society, the variety of languages and scripts displayed on these signs is impressive. Since the extent to which a language is visible is one approach to understanding better attitude towards that language, the visibility or absence of a language in the public space echoes far-reaching statements not just about value and relevance of the language but also the language practices in society. Pennycook (2010), in this direction, views multilingualism in the linguistic landscape as a practice focusing on the relationship of uniformity depicted in messages conveyed by languages presented in the linguistic landscapes. This suggests that the use of languages that occur on signs in the linguistic landscape gives insights into the nature of society where they are used.

Multilingualism has an important focus in linguistic landscape research. Research on multilingualism in the linguistic landscape is often carried out in situations of language contact especially where migrants have settled in a host community (Barni, 2008; Ben-Rafael and Ben-Rafael, 2015). Leimgruber (2017) investigates the linguistic landscape of Saint Catherine Street, Montreal, Quebec in Canada. The community's visibility of language in the public space reflects the reality of the federal policy of bilingualism, the nation's sociolinguistic realities as well as laws strengthening the use of French. The research reveals the representation and management of visible mono-, bi- and multilingualism in the light of the nation's language policy and linguistic distribution favourable to the use of English and French. The visibility of other languages (Korean, Chinese, Czech, Spanish, Polish and German) are interpreted as merely indexical, symbolic and therefore mildly controlled. In the study of the representation of multilingualism in Tunisia's urban landscape, Said (2019) reveals the complex language situation as well as the place of multilingualism in helping to negotiate identities in the society of Tunisia. There is diversity in the use of languages on the monolingual bilingual and multilingual signs. Alomoush (2015) appears to represent the first study of multilingualism in the linguistic landscape of Jordan. The research reveals the dominance of both Modern Standard Arabic (MSA) and English on monolingual and multilingual signs as well as the marginalisation and stigmatisation of minority languages. The findings of the study are in consonance with Landry and Bourhis's (1997) observation about the dominant language on public signs being normally the language of the majority group that largely controls a specific region or area. The presence of English is linked to its association with globalisation, sophistication and modernity. The dominance of MSA is linked to the nation's Arabic nationalism. The presence or absence of languages in the public space communicates symbolic messages about the importance, power, significance and relevance of certain languages (Shohamy, 2006) in the multilingual context.

Given the review of these previous studies, studies which explore the linguistic landscape of Africa and Nigeria particularly, are needful. Most of these studies have focused on the linguistic landscape of Europe and Asia. Almost all the studies share a feature of not having a definitive theoretical framework to guide the analysis of data. The study of the visual language use in the environment will provide a more diversified perspective on the representation of languages in multilingual societies.

6   Methodology

Backhaus' (2007) Sociolinguistic framework and Spolsky and Cooper's (1991) model have been selected as the theoretical basis of this study. Backhaus (2007) developed and used his framework in his study of the signs of multilingualism in Tokyo. He also developed analytical categories of top-down versus bottom-up geographic distribution, code preference, part writing, visibility as well as idiosyncrasies and layering. Spolsky and Cooper (1991), in their study of language use on signs, in the eastern parts of the old city of Jerusalem, formulate three conditions to account for the motivations behind the choice of language on public signs.

6.1   Data collection

The data was collected with the aid of a digital camera. The digital camera as a device for documenting data has been used in linguistic landscape studies such as Ben-Rafael et al. (2006) Akindele (2011), Cindy (2011), Alomoush (2015) and Zheng and Luo (2019). This device enabled us to handle a sizeable random sampling of the signs in the study area.

6.2   Sampling technique and procedure

Cities have been known as a showcase for the visual display of symbols and images with shopping and industrial areas having the highest density. Not only do majority of the world's population live in urban areas but the city has become a hotspot of immigration and the resulting ethnic and linguistic mixing offers various possibilities to examine linguistic processes such as language shift, language acceptance, the rise of new varieties (Thema, 2012) as well as linguistic landscape. The urban dynamics of the city, marked by its typical cosmopolitan nature, predisposes it to constant influx of people of different ethnic backgrounds and, consequently, multilingualism.

The purposive sampling technique enabled the representation of cosmopolitan areas where business and commercial activities in Ibadan are expected take place. However, different sections of each of the areas selected for sampling were reflected on the signs photographed. Through this process, the data was collected from the signs found in these Ibadan areas. The sample was representative, in that way, and conclusions about the use of language on signs in

Ibadan from this sample of 280 signs formed an adequate representation. No doubt, different types of texts exist on public signs such as graffiti and place names found in this city. The study has, however focused on choice of public road signs, advertising billboards, commercial shop signs and inscriptions on buildings. These signs, although were selected for personal consideration., are units of signs that constitute the object of study within the scope of linguistic landscape.

7   Data analysis

7.1   Language distribution

This section delves into the analysis of the distribution and patterns of language use on signs in relation to the sociolinguistic contexts. The signs are analysed with respect to their distribution, configuration, frequency, the interaction of languages and the ordering of languages in order to provide a more comprehensive overview of the diversity of languages.

Table 1. *Signs and the number of languages used in Iwo Road*

Signs	Frequency of language(s)					Total
	English only	Yoruba only	English and Yoruba	English and Igbo	English and Arabic	
Advertising billboards	8	0	2	0	0	10
Commercial shop signs	4	0	3	3	0	10
Inscriptions on buildings	7	2	1	0	0	10
Public road signs	8	0	1	0	1	10
Total	**27**	**2**	**7**	**3**	**1**	**40**
Percentages	**67.5%**	**5%**	**17.5%**	**7.5%**	**2.5%**	**100%**

This part deals with the quantitative analysis of languages used in Iwo Road. There is the dominance of English on the signs as well as the prevalence of monolingualism. The high percentage of monolingual English signs is due to the dominant use of English on advertising billboards, public road signs and inscriptions on buildings Even though Yoruba, Igbo and Arabic are visible languages on the signs, they seem to be given diminished visibility as they are not dominantly used the way English is used. This gives credence to the cosmopolitan nature of Iwo Road as even though there appears to be the presence of people of varying ethnic groups in the area, English is still the language that seems to guarantee the intelligibility of the information on signs.

Table 2. *Signs and the number of languages used in Challenge*

Signs	Frequency of language(s)					Total
	English only	Yoruba only	English and Yoruba	English and Arabic	English, Hausa, and Arabic	
Advertising billboards	7	0	2	1	0	10
Commercial shop signs	10	0	0	0	0	10
Inscriptions on buildings	5	1	3	0	1	10
Public road signs	10	0	0	0	0	10
Total	**32**	**1**	**5**	**1**	**1**	**40**
Percentages	**80%**	**2.5%**	**12.5%**	**2.5%**	**2.5%**	**100%**

This part deals with the quantitative analysis of languages used in Challenge. The analysis reveals that although there is the dynamics of language interaction in the community, there is the prevalence of English on signs. Yoruba is, however, the next most visually displayed language. The other languages found (Arabic and Hausa) have a marginal representation on signs in comparison with English and Yoruba. The analysis suggests the presence of other ethnic groups in the community but the fact that the largest percentage of all the signs counted, in this community, is predominantly in English, especially with the way it is represented on commercial shop signs and advertising billboards gives credence to its official status and wide recognition by people of different ethnicities in the community. This reality also suggests that there is an orientation towards monolingual language visibility in the sociolinguistic context of Challenge.

Table 3. *Signs and the number of languages used in Dugbe*

Signs	Frequency of language(s)				Total
	English only	Yoruba only	English and Yoruba	English and Igbo	
Advertising billboards	5	0	5	0	10
Commercial shop signs	7	0	2	1	10
Inscriptions on buildings	5	1	4	0	10
Public road signs	10	0	0	0	10
Total	**27**	**1**	**11**	**1**	**40**
Percentages	**67.5%**	**2.5%**	**27.5%**	**2.5%**	**100%**

This part deals with the quantitative analysis of languages used in Dugbe. Although the analysis suggests linguistic heterogeneity, there is an orientation towards monolingualism with the predominance of English. There is the preponderance of English especially on commercial shop signs and public road signs, adding a glimpse of sophistication to the goods and services being advertised and those offered in shops. It also serves as a means of enabling communicative efficiency on the public road signs by the institutions that own them. The presence of Igbo and the high incidence of the presence of Yoruba on the signs connotes the presence of speakers who are proficient in the use of Yoruba and the sign owners' interest in reaching out to them.

Table 4. *Signs and the number of languages used in Mokola*

Signs	Frequency of language(s)					Total
	English only	Arabic only	English and Yoruba	English and Hausa	English, Yoruba, and Igbo	
Advertising billboards	6	0	2	1	1	10
Commercial shop signs	8	0	2	0	0	10
Inscriptions on buildings	6	1	3	0	0	10
Public road signs	9	0	1	0	0	10
Total	**29**	**1**	**8**	**1**	**1**	**40**
Percentages	**72.5%**	**2.5%**	**20%**	**2.5%**	**2.5%**	**100%**

The analysis of the distribution of the languages on the signs reveals the status of languages in the sociolinguistic context of Mokola. The pervasive use of monolingual English on advertising billboards shows the wide acceptability of English and the sign owners' interest in reaching out to a variety of customers and clients who although may be knowledgeable in other languages prefer to read the information signs in English due to the positive connotations attached to it. Yoruba, Hausa and Igbo seem to be used on such advertising billboards since they are languages that quite a number of people are expected to be familiar with. The sign owner in this way is trying to establish solidarity with them. The dominance of English on the commercial shop signs, inscriptions on buildings and public road signs can be explained in terms of its place as an important language of trade and as a means of helping business owners promote the marketability of their products and services as well as its place in promoting communicative efficiency, making it easy for the presumed writers to reach out to quite a number of people speaking different languages.

Table 5. *Signs and the number of languages used on Ring Road*

Signs	Frequency of language(s)					Total
	English only	Yoruba only	Arabic only	English and Yoruba	English, Igbo, Hausa, and Yoruba	
Advertising billboards	6	0	0	3	1	10
Commercial shop signs	10	0	0	0	0	10
Inscriptions on buildings	6	1	1	2	0	10
Public road signs	10	0	0	0	0	10
Total	**32**	**1**	**1**	**5**	**1**	**40**
Percentages	**80%**	**2.5%**	**2.5%**	**12.5%**	**2.5%**	**100%**

The analysis shows the place of English as the most visually displayed language in comparison with Yoruba, Arabic, Igbo and Hausa in the linguistic landscape of Ring Road. This shows the credence given to the use of English in terms of its role in advertisement, as a lingua franca and a language with a privileged position. Yoruba is the only language used on bilingual signs apart from English. Yoruba, Igbo, Hausa and Yoruba clearly have diminished visibility on the signs. The implication of the dominance of English especially in terms of its prevalence on commercial shop signs and advertising billboards relates to the cosmopolitan nature of Ring Road, characterising its space as a melting pot of cultures and ethnicities. It seems shop owners are aware of this reality and simply use English to communicate with their prospective clients and customers through it since it is the language that the majority are likely to understand.

Table 6. *Signs and the number of languages used in Olodo*

Signs	Frequency of language(s)				Total
	English only	Yoruba only	English and Yoruba	English, Arabic, and Yoruba	
Advertising billboards	2	0	8	0	10
Commercial shop signs	4	0	6	0	10
Inscriptions on buildings	4	3	2	1	10
Public road signs	3	1	6	0	10
Total	**13**	**4**	**22**	**1**	**40**
Percentages	**32.5%**	**10%**	**55%**	**2.5%**	**100%**

The representation of languages in the linguistic landscape of Olodo shows a lot about the dynamics of language interaction in the context. The dominance of Yoruba especially on advertising billboards, commercial shop signs and inscriptions on buildings shows the large presence of Yoruba speakers and the sign owners' intention in reaching out to them. It is also due to the presence of warning notices and directional signs. Its dominance is also as a result of signs expressing identity, solidarity and those showing ownership of streets and buildings which mostly appear in Yoruba. These signs tend to show the actors' identity and their commitments to an ethnolinguistic group (Yoruba). This suggests that English and Yoruba are the dominant languages in this community while Arabic seems to have little or no prevalence.

Table 7. *Signs and the number of languages used in Sango*

Signs	Frequency of language(s)							Total
	English only	Yoruba only	English and Yoruba	English and Igbo	English, Yoruba, and French	English, Igbo, Hausa, and Yoruba	English, Yoruba, Hausa, Igbo, and Pidgin	
Advertising billboards	1	0	6	0	1	1	1	10
Commercial shop signs	6	0	2	2	0	0	0	10
Inscriptions on buildings	8	1	1	0	0	0	0	10
Public road signs	9	0	1	0	0	0	0	10
Total	**24**	**1**	**10**	**2**	**1**	**1**	**1**	**40**
Percentages	**60%**	**2.5%**	**25%**	**5%**	**2.5%**	**2.5%**	**2.5%**	**100%**

The analysis of the distribution of languages on the signs in Sango reveals the level of diversity present in the area. The occurrence of Pidgin further reiterates its place as an important trade language in Nigeria. The use of French on the advertising billboard seems to depict its association with uniqueness, providing information to not just residents of the city but also the foreign tourist population which serves as a means of increasing the income of its owner. It also conveys additional information about the bank and the sign owner's international affiliation. Here, French serves as an attention getting device while English seems to be favoured for its official relevance and status.

7.2   Categorising the signs

The photographs were categorised and grouped into different types of signs for the analysis of the patterns of language use. Each category contains a detailed analysis of photographs using Backhaus' (2007) analytic framework including the four types of "writing" which he named monophonic writing, homophonic writing, mixed part writing and polyphonic writing. The categorisations were also influenced by Spolsky and Cooper's (2009) components based on their preference model for the examination of the relationship between the languages, their owners and how they relate to the sociolinguistic context of the communities in the understanding of the patterns of language use.

Signs with texts having a complete translation (or transliteration) of each other are homophonic signs. In a mixed part writing style, only elements of a sign are available in two or more languages. The polyphonic style has different languages without the mutual translations of languages. On monophonic signs, there is only one language used. Polyphonic, homophonic and mixed part writing style relate to multilingual signs while monophonic concerns only monolingual signs. In other words, there is complete translation or transliteration of languages in homophonic writing. Mixed part writing refers to signs that have partial translation or transliteration of languages. Complete translation or transliteration of languages is not possible in polyphonic writing, and in monophonic writing.

Spolsky and Cooper (1991) proposed a preference model based on three components: the "sign writer's skill" condition, the "presumed reader" condition, and the "symbolic value" condition. The "sign writer's skill" condition necessitates the linguistic ability of the writer of the sign. The "presumed reader" condition requires the intelligibility of the sign to the supposed addressee as it considers the reader's linguistic ability. The "symbolic value" condition has an underlying motivation to show power, uniqueness, distinctiveness, identity and solidarity in language choice.

These models provide a rich background useful in analysing the motivations for the construction and initiation of signs and the patterns of language use on them.

Table 8. *Patterns of language use*

Communities	Monophonic signs	Mixed part signs	Homophonic signs	Polyphonic signs
Challenge	33	1	1	5
Dugbe	28	0	1	11
Iwo Road	29	0	1	10
Mokola	30	0	1	9
Olodo	17	1	0	22
Ring Road	34	1	0	5
Sango	25	3	0	12
Total	**196**	**6**	**4**	**74**

7.2.1 Monophonic signs

In the data, there are instances of monophonic signs in English and Yoruba although most of the monophonic signs are in English. Such signs are mostly directional ('in'), navigational ('This way in, Welcome!'), warning ('beware of 419 this house is not for sale', *to sibi ko ya were tabi ko ku−* meaning 'urinate here, become insane or die', *to sibi ko ya were−* 'urinate here and go insane'), place names ('cocoa house') and regulatory ('no smoking, waiting, hawking' /*mase to sibi*−meaning 'do not urinate here'), persuasive ('core fashion/infusion of extremity outfits') and commercial ('divine mercy stores').

Most of the monophonic signs are regulatory and business signs. Monolingual Arabic on a mosque wall and a residential building appears to be used by the owners of the signs to identify with Islam since Arabic is often associated with the Islamic religion.

Figure 1. *A monolingual English commercial shop sign at Ring Road*

The use of English on this sign could be explained in terms of the presumed reader's and the symbolic value condition as it seems to be the status marker and the language that guarantees the intelligibility of the information on the signs as well as the language in which the expected reader of the signs is able to read. The monophonic signs in Yoruba are mostly used for warning and admonition. The sign in Figure 2 below conveys a prohibitive information.

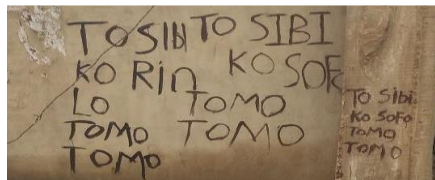**Figure 2.** *A monolingual English sign in Olodo*

Figure 3. *A monolingual Yoruba sign on Ring Road*

Yoruba seems to be used in Figure 3 above as a form of advice to the presumed reader about recognising the important place of Jesus as the only way to salvation in Christianity. The use of Yoruba serves to demonstrate the vitality of

Christianity as well as the place of the Yoruba language in spreading Christianity in the sociolinguistic context of Ibadan.

7.2.2   Homophonic signs

The few instances of these homophonic signs denote the desirability of the sign owners in reaching out to a wide range of individuals who may not be proficient in the dominant code (English). The languages used on these signs are English, Yoruba, Igbo and Hausa.

Figure 4. *A Yoruba/English bilingual sign in Sango*

Figure 5. *A Yoruba/English/Hausa/ Igbo/multilingual sign in Challenge*
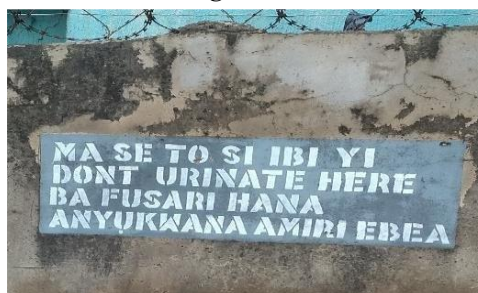
The sign in Figure 4 is a bilingual sign placed on the wall of a building warning people from urinating in the surrounding of the building. It relates to the "presumed reader's" condition as the sign is presented to be intelligible to the presumed readers who are expected to know the dominant languages of the community. The sign in Figure 5 is not only used to suggest language hierarchy and dominance but also multiculturalism. The "symbolic value" condition explains the motivation for the choice of English, Yoruba, Igbo and Hausa presupposing the presence of these language groups as well as the attempt by the signwriter to show solidarity towards them.

7.2.3   Mixed part signs

There are only three mixed part signs in the data and the languages used on them are Yoruba, Hausa, Igbo, Arabic and English. The sign in Figure 6 is the only mixed part sign in the data (in the linguistic landscape of Challenge). The sign is an advertising billboard belonging to a business corporation producing a particular brand of chicken seasoning cubes "Mamador". Only a word has been translated from English into Arabic and, in this case, there is only a partial translation of a word in one language into another one. "HALAL" is the only word translated into the Arabic language on the sign. "HALAL" as well as its Arabic translation is associated with the Islamic dietary laws. The word loosely translates to "permissible" in English which has been used to suggest that the seasoning cube has been prepared and stored lawfully. This tends to convey on

the product a mark of distinctiveness and uniqueness which promotes its marketability. Arabic, in this case, appears to lend a sense of exclusivity to the sign. This appears to be a device for enhancing the acceptability of the product by the general public especially those who may be interested in consuming food items that are considered "halal". The sign could also be directed to the foreign tourist population who might be interested in consuming the halal type of seasoning cubes.

Figure 6. *An Arabic/English bilingual sign*	**Figure 7.** *A Yoruba/Hausa/ Igbo/English sign*

The sign in Figure 7 is the only mixed part sign in linguistic landscape of Ring Road. It is a business sign that advertises a brand of a non-alcoholic beverage. It is a bottom-up sign and the languages used on it are English Hausa, Igbo and Yoruba. On the mixed sign, *Wa* is a Yoruba expression that loosely translates to "come" in English. It is translated into two other languages (Hausa and Igbo) which are *zo* and *bia*. These expressions from the three major languages in Nigeria express the same meaning which translates to "come" in English. The mix of these languages appears to be a strategy used to promote the marketability of the products on the sign to people of various ethnic groups. Although there appears to be the dominance of Yoruba with the use of *Igo kan* ('one bottle') and *Waso ni o* ('It's fifty naira'), English is still prominently used with the use of "bottles". It is worth noting that the sign owner seems to be aware of the influence of Yoruba, Hausa, and Igbo languages, especially as they are presented as alternative languages to English in branding the company.

The symbolic value condition of the multilingual nature of the sign is explainable in terms of how the product is presented as useful to all kinds of people of different identities and ethnicities. The dominance of English relates to the "good reason hypothesis" since it is a status marker in society. It is therefore the preferred language of prestige that conveys a positive image on signs.

7.2.4 Polyphonic signs

Most of the bilingual and multilingual signs in the data are polyphonic in nature. The languages on each of the signs convey different meanings. On some of the signs, proficiency in all the languages used on them is needed to understand the meaning of the sign while in others, the indigenous languages such as "Ogechi" (Igbo), "Akinola" (Yoruba), "Leke" (Yoruba), "Iya Ibeji" (Yoruba) and *Imuse*

Ileri 'the fulfillment of a promise' (Yoruba) are only used as part of the business names in addition to English. The principle of power relations as applied by Ben-Rafael (2009) may help to account for the motivations behind the high incidence of the use of Yoruba which is the dominant indigenous language. The indigenous languages are used to show identity and solidarity and the commitment of the actors to their linguistic groups while English is demonstrated as the language of business, sophistication, prestige, wider communication and a means of helping business owners increase sales. This reality gives the indigenous languages diminished visibility and relevance. The use of Yoruba on inscriptions on buildings on signs showing ownership could be interpreted as conveying the message that showing ownership is more important than being understood.

Figure 8. *An Igbo/English bilingual commercial sign shop sign*	**Figure 9.** *An Igbo/English bilingual commercial shop sign*

The sign in Figure 8 is a bottom-up sign belonging to a private business venture. The use of Igbo as part of the business name in 'IGBO FOOD RESTAURANT' can be explained in terms of the large presence of Igbo cultural groups and an attempt by the presumed writer of the sign to show solidarity towards them as the restaurant is shown to be a place where all kinds of Igbo food is offered for sale. It seems to also be used to index their identity and contributes to showing the preponderance of polyphonic writing on signs in Iwo Road as there are more polyphonic signs than there are monophonic and homophonic signs in this sociolinguistic context and their predominance can be explained in terms of the extent of multiculturalism in Iwo Road.

8   Summary

The analysis reveals that the linguistic landscape of Ibadan is diverse, multidimensional and multilingual resulting from the cosmopolitan nature of the city. The analysis of multilingualism in the linguistic landscape of the communities brings into the limelight the reflection of linguistic hierarchies, language choice, covert and overt language attitudes, language vitality, power structure, ethnolinguistic diversities and nature of multilingualism in Ibadan.

The languages used on the signs are Yoruba, Hausa, Igbo, Arabic, French, Nigerian and English. The languages are used in various ways to attract the attention of the public, to index the social identity of actors, to show distinctiveness and uniqueness, show solidarity, social attractiveness. facilitate

the intelligibility of signs and to challenge the power of dominant languages. The dominance of English is explainable not just in terms of its official status but also the prestige and sophistication attached to it. Yoruba, the primary indigenous language of the community, is the next most visible language in the linguistic landscape of the communities. The heterogeneous and cosmopolitan nature of the communities tends to be responsible for the nature of language diversity found in the linguistic landscapes of the communities.

9 Conclusion

The linguistic situation in the sociocultural context of Ibadan and also gives insights into the patterns of languages use in other cities in Nigeria. Even though Ibadan is a southwestern state with a large population of Yoruba speakers, its metropolitan nature and urban dynamics seems to have made it attraction to people of various linguistic and cultural backgrounds. Despite its ethnolinguistic diversity, however, there seems to be a positive attitude attached to the English language. Yoruba, Hausa and Igbo are used in various ways to suggest multiculturalism, for communicative efficiency and for ethnic identity. English Yoruba and Arabic are also used for religious purposes. There seems to be a positive attitude attached to French and Nigerian Pidgin with the way they are structured on the business signs. Their use also suggests the widespread contact between languages in Nigeria. The superordinate status is demonstrated through its use on the signs and its patterning. The approaches used to analyse the data for this research have enhanced the analysis of multilingualism within the linguistic landscape of the communities. The heterogeneous and cosmopolitan nature of the communities tend to be responsible for the nature of language diversity found in the linguistic landscapes of the communities.

10 Limitations of the study

The process of data collections was a demanding activity that involved moving around streets and roads as well as visiting business ventures and places of residence, thereby observing and taking pictures of signs that were related to the subject of investigation. A great deal of attention was placed to taking photographs of signs that would be research worthy. The research is limited in terms of the geographical areas it covered.

Attention was placed to taking representative samples of data but not all the signs in the communities were photographed. In other words, only 280 photographs of signs were examined. Also, some signs that could have constituted part of data for the study were ignored and left out because they contained expressions that could not be easily analysed as belonging to a particular language. For instance, abbreviations were used on some signs.

11   Suggestions for further studies

The study is descriptive research and it has only focused on multilingualism in selected Ibadan communities of Iwo Road, Ring Road, Sango, Mokola, Challenge, Olodo, and Dugbe and is, however, limited in this respite. The following areas, therefore, are suggested for further studies:

1. More communities in Ibadan need to be covered to provide a well-rounded study on multilingualism in the linguistic landscape of the city. Also, researchers can explore other cities in Nigeria including cites in the eastern and northern parts and conduct comparative studies on multilingual language use in them to reveal what variations in them will show.
2. Future studies could also collect sociolinguistic information about linguistic landscape actors (sign writers and sign owners) to see what variables influence the choice of language in the public space and what they perceive about their choices reflects the power and status of various ethnolinguistic groups in the country.
3. It is further suggested that researchers may also investigate the attitudes of the public towards multilingualism in the linguistic landscapes of communities as well as their perceptions in order to understand the way different individuals and groups perceive the linguistic landscape.

12   About the author

Adeola Aminat Babayode-Lawal conducts research at the University of Ibadan and Simon Fraser University. Her research interests relate to sociolinguistics, multilingualism and phonology.

References

Adetunji, A. (2013). A sociolinguistic study of meaning-making in a Nigerian linguistic landscape: the example of Ibadan. (Unpublished master's thesis). Texas A & M University-Commerce.

Akindele, D. L. (2011). Linguistic landscape as public communication: a study of public signage in Gaborone, Botswana. *International Journal of Linguistics,* 3(1), 1-11. http://dx.doi.org/10.5396.ijl.v3il.ii57

Akindele, F. & Adegbite, W. (2005). *The sociology and politics of English in Nigeria.* Ile-Ife: Obafemi Awolowo University Press.

Al-Athwary, A. H. A. (2017). English and Arabic inscriptions in the linguistic landscape of Yemen: a multilingual writing approach. *International Journal of Applied Linguistics & English literature,* 6(4), 149-162.

Backhaus, P. (2005). Signs of multilingualism in Tokyo − a diachronic look at the linguistic landscape. *International Journal of Sociology of Language,* 175/176, 103-121.

Bamgbose, A. (1977). Towards an implementation of Nigeria's language policy of education. In A. Bamgbose (ed.), *Language in Education in Nigeria* (Vol. 1) (pp. 20-25). The National Language Centre.

Barni, M. (2008). Mapping immigrant languages in Italy. In M. Barni & G. Extra (Eds.), Mapping linguistic diversity in multicultural contexts (pp. 217-241). Mouton de Gruyter.

Ben-Rafael, E. & Ben-Rafael, M. (2015). Linguistic landscapes in an era of multiple globalizations. *Linguistic landscape,* 1(1-2), 19-37.

Ben-Rafael, E., Shohamy, E., Amara, M. H. & Trumper-Hecht, N. (2006). Linguistic landscape as symbolic construction of the public space: the case of Israel. *International journal of multilingualism,* 3(1), 7-30.

Cenoz, J & Gorter, D. (2008). Knowledge about language and linguistic landscape. https://www.researchgate.net/publication/226758890

Crystal, D. (1997). *English as a global language*. Cambridge University Press.

Ezema, P. A. (2009). The English language, politics and the issue of multi-ethnicity in Nigeria. *Bassey Andah Journal,* 2, 115-123.

Finzel, A.M. (2012). English in the linguistic landscape of Hong Kong: a case study of shop signs and linguistic competence. (Unpublished Master's thesis). Universisität Potsdam. https://publishup.uni-potsdam.de/opus4-ubp/frontdoor/index/index/docId/6242.

Grifin, J. (2004). The Presence of written English on the streets of Rome. *English Today,* 20 (2), 3-8.

Kachru, B. B. 1985. Standards, codification and sociolinguistic realism: the English language in the outer circle. In R. Quirk & H. G. Widdowson *(Eds.), English in the World: Teaching and Learning the Language and the Literature.* (pp. 11-30). Cambridge University Press.

Leimgruber, J. R. E. (2017). Global multilingualism, local bilingualism, official monolingualism: the linguistic landscape of Montreal's St Catherine Street. *International Journal of Bilingual Education and Bilingualism*, 23, 1-16. 10.1080/13670050.2017.1401974.

Mahemuti, M. (2018). Linguistic landscape on campus: Asian college students' perceptions of multilingual learning environments. (Unpublished master's thesis). State University of New York.

National Population Commission, Nigeria. (2006). Census report.

Oyebiyi, O. (2008). *The traditional rulers of a great city Ibadan − A tale of seven hills notable events*. Boom Art/Publishing Co.

Oladele, B. M. & Oladimeji, B. H. (2011). Dynamics of urban land use changes with remote sensing: case of Ibadan, Nigeria. *Journal of Geography and Regional Planning,* 4(11), 632-634. https://doi.org/10.5897/JGRP.9000043.

Olatubara, C. O. (1995). Activity patterns and urban residential location in Ibadan, Oyo State. Department of Geography. Obafemi Awolowo University, Ile-Ife.

Shohamy, E. & Ben-Rafael, E. (2015). Linguistic landscape: a new journal. *Linguistic Landscape,* 1(1/2), 1-5.

Shohamy, E. (2006). *Language policy: hidden approaches and new agendas*. New York: Routledge.

Spolsky, B. & Cooper, R. (1991). *The languages of Jerusalem*. Oxford: Clarendon Press.