

L2 English Speakers Process Non-Binary Pronouns as Efficiently as Native English Speakers

Runchen Liu

1. Introduction

1.1. Usage of Non-Binary Pronouns

Language evolves alongside changes in society and culture (LaScotte, 2021). The changing use of *they* illustrates this evolution: it can now refer to both plural nouns and to singular subjects. Historically, it was used with indefinite or generic singular antecedents whose gender was unspecified (Balhorn, 2004; Bodine, 1975; Meyers, 1990). In modern English, *they/them* is increasingly accepted as a singular pronoun for individuals who identify as gender-nonbinary, with the growing visibility of the LGBTQ+ community in the US (Gardner, 2023; Hekanaho, 2020). Bradley (2020) similarly found that singular *they* was judged to be as grammatically acceptable as binary pronouns *he* and *she* among native English speakers in the United States.

However, in many countries where English is not the primary language, non-binary pronouns are absent from local linguistic systems due to lower sociolinguistic acceptability. For instance, Mandarin Chinese lacks gender-neutral pronouns, and English learners in China demonstrated lower grammatical acceptability of singular *they* (Ma et al., 2022; Qiu, 2013). In addition, singular *they* is rarely taught in English education and learners encounter it only beyond the classroom, leading to limited exposure to neutral pronouns in English among non-native speakers (Lee & Collins, 2010; LaScotte, 2021; Speyer & Schleef, 2019).

Given cross-linguistic variation in exposure, this study investigates how native and non-native English speakers process non-binary pronouns in real time. Understanding how non-native speakers comprehend singular *they* in gender-inclusive environments is essential not only for improving English language education and promoting the acceptance of non-binary pronouns (LaScotte, 2021), but also for advancing our understanding of how pronoun processing unfolds in second language acquisition.

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1.2. Number and Gender Mismatches

Although the social acceptance of the singular *they* has increased in the US, previous studies have found that native English speakers demonstrate longer reading times on *they/them* when referring to a single antecedent, suggesting greater processing effort than with binary pronouns (Doherty & Conklin, 2017; Prasad & Morris, 2020).

Two primary accounts have been proposed to explain the increased processing cost associated with non-binary pronouns. The number-mismatch account claims that *they/them* is intrinsically plural, resulting in a processing difficulty when referring to a singular referent. For instance, Sanford and Filik (2007) found significantly longer total reading times at the pronoun region when the non-binary pronoun *them* referred to singular antecedents than to plural antecedents, suggesting readers initially attempt to retrieve a plural antecedent. Specifically, in their eye-tracking study, native English-speaking participants read sentences that paired a gender-neutral singular antecedent (*someone*) or a plural antecedent (*some people*) with either singular (*her* or *he*) or plural (*them*) pronouns, as illustrated in the following sentence:

(1) Mr. Jones was looking for the station. He saw [someone/some people] on the other side of the road, so he crossed over and asked [her/them] politely where the station was. It was in a different part of town.

Alternatively, the gender-mismatch account proposes that processing difficulties may arise when singular *they* violates the expectations associated with the gender features of its referent, rather than its number features. Bjorkman (2017) suggested that certain nouns carry both semantic and syntactic gender features, including kinship terms (mother, father, etc.), professions (actress, waitress, etc.), and stereotypically gendered names (John, Mary, etc.). Thus, regardless of number features, referents whose conceptual categories are rigid, such as stereotypically gendered names, may incur higher cognitive costs during pronoun processing than neutral names (e.g., Taylor; Ackerman, 2019).

Foertsch and Gernsbacher (1997) preliminarily tested and supported Bjorkman's framework by investigating reading times on pronouns matched or mismatched in gender-biased antecedents using a self-paced reading task. In example (2a) below, *nurse* was typically perceived as a stereotypical feminine profession, leading readers to anticipate the pronoun *she*, whereas *they* and *he* violated the gender expectation of the antecedent. Reading times for singular *they* were similar when it referred to a non-referential stereotyped (2b) and to a gender-neutral antecedent. Meanwhile, reading times were slower when the referent was referential and gender-biased (2a) than when it was gender-neutral (2c). Their results indicated that singular *they* incurs greater processing cost for gender-biased antecedents with a specified entity.

(2) a. *My nurse* was able to explain how my medication would affect me, even though *he* [*she/they*] had no say in prescribing it... (Referential, stereotyped referent)

b. *A nurse* should have an understanding of how a medication works, even if *she* [*he/she*] will not have any say in prescribing it... (Non-referential, stereotyped referent)

c. *A runner* I knew always ate lots of pasta the night before a race, even when *they* [*he/she*] would've rather had a steak... (Referential, gender neutral)

Doherty and Conklin (2017) directly addressed the effect of gender-expectancy on singular *they* using eye-tracking and acceptability judgments. They designed three types of referents: high gender expectancy (e.g., mechanic), gender-known (e.g., spokeswoman), and low gender expectancy (e.g., cyclist), and paired each with gendered pronouns or neutral pronouns. The sentence structure is shown below:

(3) a. Patrick took his car to the local garage for an MOT. He saw a mechanic there and asked *him* [*her/them*] warily if there were any problems.

b. John was a manager of a company when one of his staff noticed discrepancies in the finances. He called a spokeswoman and instructed *her* [*him/them*] hurriedly to call a press conference.

c. Adam recently had an accident in his car. He was emerging from a junction when he hit a cyclist and knocked *him* [*her/them*] straight off the bike.

In the acceptability task, participants rated neutral pronouns as less natural than gendered pronouns across all three conditions, with the lowest naturalness ratings in the gender-known condition, followed by the high-expectancy condition. Online reading measures showed that singular *they* elicited longer reading times when referring to high-expectancy and gender-known antecedents compared with low-expectancy antecedents. Together, the offline and online results suggest that singular *they* is dispreferred in contexts where the reader infers a gendered expectation for the antecedent. With gender-expectancy manipulated independently of number, the observed differences across conditions indicate that the number-mismatch account (Sanford & Filik, 2007) cannot fully explain the processing cost of singular *they*, which would otherwise predict equal difficulties across conditions. Instead, the integration of singular *they* was influenced by gender-based expectations during real-time comprehension and acceptability judgments.

Furthermore, researchers have also examined how singular *they* is processed across populations that differ in their experience with the pronoun. Prasad and Morris (2020) tested whether individuals who identified as non-binary exhibit a slowdown when processing singular *they*, using event-related potentials (ERPs) to measure the P600 component while participants listened to sentences. The P600 is associated with processing difficulty when the gender and/or number features of a pronoun mismatch its antecedent (Osterhout & Mobley, 1995). Unlike prior studies, they used 50 frequent gendered names in the US and reflexive anaphors

paired with four types of antecedents: gender-unknown (4a) and gender-known (4b) for non-referential subjects, and gender-unknown (4c) and gender-known (4d) for referential subjects, as shown below:

- (4) a. *Someone* in the group needs to pull *themselves* [/herself/himself] together.
 b. *Every woman* must learn to stand up for *herself* [/himself/themselves].
 c. *The stranger* poured *himself* [/herself/themselves] a cup of coffee.
 d. *John* decided to treat *himself* [/herself/themselves] to sushi.

Participants showed greater processing difficulties when the non-binary reflexive pronouns referred to referential than to non-referential subjects, consistent with Foertsch and Gernsbacher (1997). Additionally, the effect of P600 was larger in the referential gender-known condition than in the referential gender-unknown condition. These findings suggested that individuals who identified as non-binary also experience increased processing cost for the neutral pronoun in certain contexts. Ackerman (2018) found that the singular reflexive *themselves* also elicits similar lower acceptability ratings and increased processing cost when referring to a gendered antecedent in native English speakers.

In summary, previous studies have demonstrated that cognitive processing effort is associated with the number and the gender expectation of referents (Doherty & Conklin, 2017; Sanford & Filik, 2007). Readers process non-binary pronouns with non-referential subjects as efficiently as gender-matched binary pronouns, but demonstrate greater processing difficulty when singular *they* index to a referential, gender-known antecedent compared to a gender-unknown antecedent (Foertsch & Gernsbacher, 1997; Prasad & Morris, 2020).

1.3. Non-Binary Pronouns in Non-Native Speakers

While a growing body of research has focused on the processing of singular *they* in native speakers, studies among non-native English speakers remain limited. Additionally, non-native speakers may have greater difficulty adopting singular *they*, as pronouns belong to a “closed class,” which makes new pronominal forms like the singular *they* difficult to incorporate into the mental lexicon (Paterson, 2011), and singular *they* receives limited instruction in English education (Lee & Collins, 2010; LaScotte, 2021).

Speyer and Schleef (2019) investigated whether non-native speakers exhibit pronoun processing patterns comparable to those of English native speakers. They conducted a self-paced reading task using sentences with non-referential antecedents (e.g., a teacher) adapted from Foertsch and Gernsbacher (1997) to test whether German-speaking learners of English can process singular *they* as a neutral gender pronoun as native speakers. They found that lower-proficiency learners had greater processing effort comprehending singular *they* with stereotypically gendered antecedents. In contrast, high-proficiency readers showed native-like patterns, with no significant difference in reading times between binary and non-binary pronouns, suggesting that singular *they* is acquirable and can be successfully processed when the antecedent is unspecified.

Speyer and Schlee (2019) proposed that highly proficient speakers may have more extensive exposure to English in social contexts, which aligns with Paterson's (2011) further suggestion that neutral pronouns can be acquired through late exposure and social familiarization.

However, it remains unclear how non-native speakers process singular *they* when the antecedent is referential and gender-biased. To address this gap, the current study investigates the magnitude of processing difficulties associated with singular *they* when paired with a referential antecedent.

1.4. The Present Study

The present study investigates whether non-native speakers process singular *they* as efficiently as native English speakers in real time, particularly when it refers to stereotypically gender-biased antecedents. Consistent with prior studies and Bjorkman's (2017) framework, both native and non-native speakers were expected to exhibit longer reading times on the singular gender neutral pronoun relative to binary pronouns.

Two competing hypotheses were tested. The first posits that non-native speakers process singular *they* as efficiently as native speakers through later social familiarization (Paterson, 2011; Speyer & Schlee, 2019), in which non-native speakers were expected to exhibit comparable processing costs on singular *they*. The alternative account suggests that non-native speakers may find it more difficult to introduce new pronouns like singular *they* into their second-language mental lexicon, which would result in less efficient processing and an additional processing difficulty (Clahsen & Felser, 2006; Hyltenstam & Abrahamsson, 2003).

2. Method

2.1. Participants

A total of 110 undergraduate students from Macalester College participated in the study. All participants stated that they had been immersed in a gender-inclusive environment and had exposure to gender-neutral pronouns, were fluent in English, and at least 18 years old. Participants were recruited through Macalester email list advertisements. Participants who enrolled in Introduction to Psychology could participate via the Sona system for course credit.

2.2. Experimental Design and Materials

2.2.1. Grammaticality Maze Task

The experiment was conducted using a Grammaticality-Maze (G-maze) paradigm, which detects localized processing difficulties and demonstrates similar reading times on the critical words as eye-tracking experiments (Boyce et al., 2020; Forster et al., 2009; Witzel et al., 2012). In this task, participants were given the initial word of a sentence, followed by pairs of words displayed side by

side. Participants were asked to select the grammatically correct continuation until completing the sentence (Figure 1). Distractor words were matched in length and frequency to the targeted word to minimize interference from word frequency and word length effects. Word frequencies were based on *The Corpus of Contemporary American English* (Davies, 2008). Incorrect selections immediately terminated the current trial and moved to the next sentence. The sample task is available at <https://farm.pcibex.net/p/KbdBhf/>.

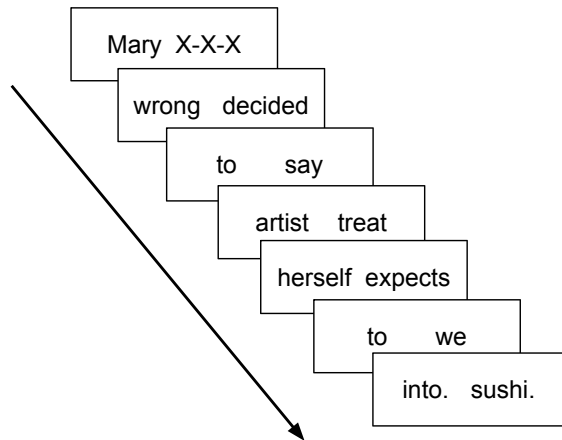


Figure 1. G-Maze Sample Task. Participants were asked to select the grammatically correct word to continue and finish the whole sentence. For instance, “Mary wrong” is an ungrammatical continuation, whereas “Mary decided” could be continued grammatically. In this case, the correct selections would form the sentence “Mary decided to treat herself to sushi.”

2.2.2. Sentence Stimuli

This study used a 2×2 mixed design with language group (i.e., native and non-native) and pronoun type (i.e., binary and non-binary). Fifty sentences were adapted from Prasad and Morris (2020), including 30 filler and 20 experimental items. In the gender-matched condition, binary reflexives (himself/herself) were paired with gender-stereotyped names (5a). In the singular-they condition, the non-binary reflexive (themselves) was used with the same gender-stereotyped names (5b). All names were replaced with the most frequent US baby names most recently reported by the Social Security Administration in 2024.

- (5) a. Mary decided to treat herself to sushi. (Gender-matched, $n = 10$)
- b. Mary decided to treat themselves to sushi. (Singular-they, $n = 10$)
- c. Mary decided to become a musician. (Filler, $n = 30$)

Stimuli were matched for length, and a prepositional phrase (e.g., after dinner) was added when the reflexive was at the end of the sentence to capture spillover effects. Reflexive pronouns appeared between the fifth and eighth words to control the distance between pronouns and their antecedents.

The experiment included 10 gender-matched and 10 singular *they* items, each with five masculine and five feminine names. Only sentences with gender-known referential antecedents were included to assess the processing cost of singular *they* relative to gender-matched pronouns. Four lists were counterbalanced using a Latin Square design. Filler items contained no pronouns and featured 15 feminine and 15 masculine stereotypical names.

2.2.3. Acceptability Judgement Task

To assess whether familiarity with the singular *they* influenced reading times, participants completed an acceptability judgment task on a 1-5 Likert scale. They rated eight sentences with structures similar to those in the G-maze task for grammaticality or naturalness. The task included four critical and four filler items.

2.3. Procedure

Participants completed the experiment on a computer via the PCIBex Farm server (Zehr & Schwarz, 2018), beginning with three practice trials. The server randomly selected one of four sentence lists and counterbalanced item order. The system presented two words in a single line at the top of the screen, and participants needed to press “E” for the left word and “I” for the right. Target words and distractors were randomly positioned, and there was a 1500 millisecond break between each sentence. After the G-maze task, all participants were instructed to complete the acceptability judgement task and a demographic survey. The experiment took approximately 15 to 25 minutes to complete.

3. Results

3.1. Exclusion Criteria and Data Cleaning

Participants were categorized as native or non-native English speakers based on their age of acquisition (AoA) and linguistic background. In this study, participants who acquired English before age five, grew up in English-speaking environments, and were educated in the United States were defined as native English speakers. Participants who learned English as a second language, were educated outside the United States, and did not grow up in English-speaking environments were defined as non-native speakers. Fourteen of the recruited participants were excluded because their demographic information did not allow clear classification or comparability across educational backgrounds.

Only correctly selected words in the G-maze task were analyzed. Reading times (RTs) of words greater than 7000 milliseconds were discarded.

3.2. Participants

The final analysis included data from 96 participants, including 66 native English speakers ($M_{age} = 20.22$, $SD = 1.30$), and 30 self-identified non-native English speakers ($M_{age} = 20.69$, $SD = 1.37$). Non-native English speakers acquired English outside the US, either between ages 1 and 5 ($n = 13$) or after age 5 ($n = 17$), and were proficient enough for college-level study.

3.3. Reading Times

Linear mixed-effects regressions were conducted using the lme4 package in R (Bates et al., 2015). The model included fixed effects for the interaction of condition and language group, with random intercepts for participants and items. Non-native speakers showed slower reading times (RTs) than native speakers by 243.07 milliseconds on average in critical sentences ($t(94.10) = 6.32$, $p < .001$; see Figure 2) and had 2.32 % lower accuracy ($p < .001$). Both native and non-native English speakers exhibited a main effect of pronoun type, with significantly longer RTs on non-binary reflexives compared to gender-matched reflexives. In language group-specific models, native speakers showed 201 milliseconds increase in RTs on non-binary pronouns ($t(1167.18) = 8.53$, $p < .001$), while non-native speakers showed a 261 millisecond slower effect ($t(510.95)$, $p < .001$).

Across three regions of interest (ROIs), non-native English speakers read significantly slower than native English speakers ($\beta_{ROI0} = 262.49$, $\beta_{ROI1} = 263.04$, $\beta_{ROI2} = 281.86$, $p < .001$ for all regions). However, analyses failed to find a significant difference in the magnitude of singular *they* effects between native and non-native English speakers on the critical word ($\beta = 55.22$, $t(1689.13) = 1.16$, $p = .246$), and in the spillover region ($\beta_{ROI1} = 7.21$, $p_{ROI1} = .87$; $\beta_{ROI2} = -24.47$, $p_{ROI2} = .57$).

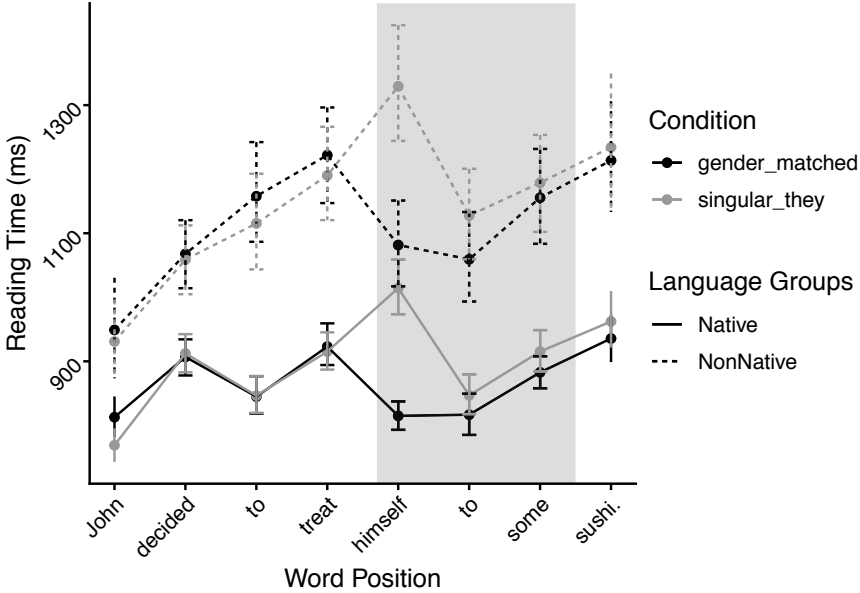


Figure 2. RTs on Each Word Position Between Native and Non-Native English Speakers. The sentence shown illustrates a gender-matched condition. In the non-binary pronoun condition, *themselves* replaces *himself* in the same sentence.

3.4. Acceptability Ratings

A linear regression was conducted to test whether acceptability ratings for sentences containing singular *they* differed between native and non-native speakers. The analysis showed no significant difference in rating scores between groups, $t(94) = .43, p = .67$. It suggested that native and non-native speakers demonstrated similar acceptability of the use of singular *they* in the offline study.

These results suggest that non-native speakers experienced similar processing difficulty for non-binary pronouns as native English speakers (Figure 3), as well as their attitude toward non-binary pronouns.

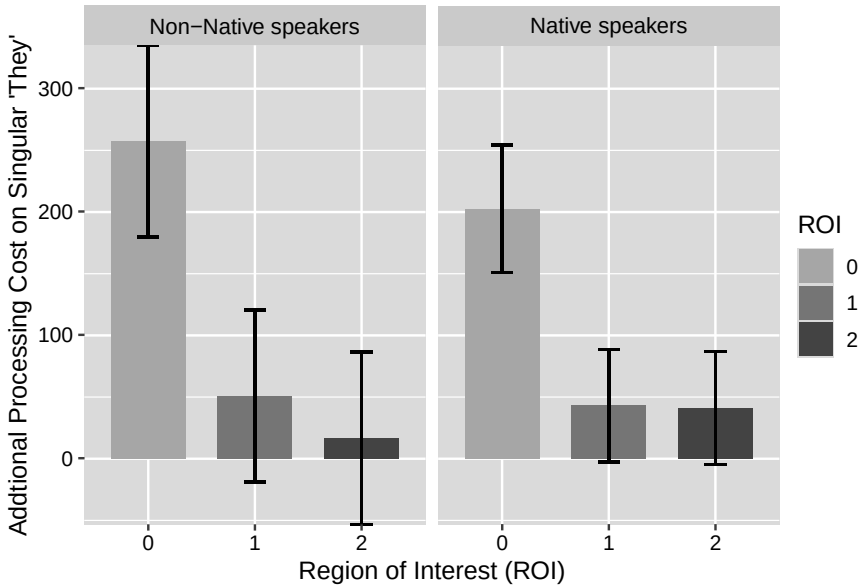


Figure 3. Bar Plot Depicting the Additional Processing Cost on Non-Binary Pronouns Between Native and Non-Native English Speakers. The x-axis represents the critical word (ROI = 0, pronouns), and the first (ROI = 1) and second (ROI = 2) words following the critical word.

4. Discussion

This study investigates whether non-native English speakers immersed in a gender-inclusive environment process non-binary pronouns as efficiently as native English speakers in a real-time comprehension task. Results revealed a main effect of singular *they* across both groups, reflected in longer processing times compared to binary pronouns. There was no significant interaction between language group and pronoun condition, which indicates that both native and non-native speakers experienced comparable processing difficulties when encountering non-binary pronouns.

These findings are consistent with prior research showing that singular *they* incurred a significant slowdown in reading times when referring to a specified antecedent in native English speakers (Bjorkman, 2017; Doherty & Conklin, 2017; Prasad & Morris, 2020). The presence of a slowdown for singular *they* in native speakers suggests that the observed cost is associated with properties of the pronoun and the gender features of the antecedent in this context, rather than with limited exposure during acquisition. The similar magnitude of this slowdown effect in the two groups suggests that late exposure may allow non-native speakers to attain similar processing efficiency on singular *they* (Paterson, 2011; Speyer & Schlee, 2019), rather than integrating a new form of pronouns leading to additional costs (Hyltenstam & Abrahamsson, 2003; Clahsen & Felser, 2006).

4.1. Limitations and Further Directions

The first limitation is the measurement of participants' actual exposure to singular *they*. Previous studies have suggested that non-native speakers have limited exposure to singular *they* in English education, unlike native speakers who encounter it more frequently in daily conversations (Lee & Collins, 2010; Speyer & Schleef, 2019), which was not fully supported by the present data. Self-reports indicated that some native speakers also lacked explicit exposure to the non-binary use of singular *they*, while several non-native speakers reported learning it through informal social interactions. The demographic questions did not capture the nuances of their actual experience with non-binary pronouns. Further research should include more detailed measures of language experience.

Another concern is the choice of *themselves* instead of *themselves* as the non-binary reflexive. This study used *themselves* to maintain comparability with Prasad and Morris (2020) and to avoid confounds from the low frequency of *themselves*. However, *themselves* may still morphologically carry plural information, and therefore may not fully tease apart the effect of the number-mismatch effect (Sanford & Filik, 2007). According to the singular reflexive *themselves* also interacted with gendered expectations in native English speakers (Ackerman, 2018), it remains unknown whether these two forms of non-binary pronouns share the same underlying representation in online measures. Future research could systematically compare *themselves* and *themselves* while controlling for name bias, to examine whether these two forms are processed differently and how knowledge of non-binary reflexives evolves over time in both native and non-native speakers.

Further analyses should consider individual differences, including the pronoun structure of participants' native languages, years in the US, awareness of singular *they*, gender identities and pronoun use. Given that social attitudes might impact language comprehension (Arnold et al., 2021), future work should explore how participants' performances relate to both acceptability judgments and real-time processing to explain the variability in the processing costs.

Other potential directions for research include testing whether similar patterns replicate when pronouns refer to other gender-encoded categories, such as kinship (e.g., father, mother) and profession (e.g., actress, waitress) terms (Bjorkman, 2017). Future work should also recruit a larger and more linguistically diverse sample of non-native speakers to address the variability observed in the current population and to interpret the results with an understanding of current tendencies and social attitudes in participants' home countries regarding the use of non-binary pronouns. Researchers should further examine the processing of singular *they* using a wider range of experimental paradigms, including self-paced reading and eye-tracking, to obtain more fine-grained measures of processing costs. Finally, it is meaningful to study how non-native speakers perform on language production tasks to test whether they can maintain and appropriately use non-binary pronouns in context and in daily conversations.

References

- Ackerman, Lauren. (2018). Being themselves: processing and resolution of singular (im)personal they. In *31st CUNY Conference on Human Sentence Processing*. osf.io/qba7d.
- Ackerman, Lauren. (2019). Syntactic and cognitive issues in investigating gendered coreference. *Glossa: a journal of general linguistics*, 4(1).
- Arnold, Jennifer. E., Mayo, Heather. C., & Dong, Lisa. (2021). My pronouns are they/them: Talking about pronouns changes how pronouns are understood. *Psychonomic Bulletin & Review*, 28(5), 1688–1697. <https://doi.org/10.3758/s13423-021-01905-0>
- Balhorn, Mark. (2004). The Rise of Epicene They. *Journal of English Linguistics*, 32(2), 79–104. <https://doi.org/10.1177/0075424204265824>
- Bates, Douglas., Maechler, Martin., Bolker, Ben., & Walker, Steve. (2015). Fitting Linear Mixed-Effects Models Using lme4. *Journal of Statistical Software*, 67(1), 1–48. <https://doi.org/10.18637/jss.v067.i01>
- Bjorkman, Bronwyn. M. (2017). Singular *they* and the syntactic representation of gender in English. *Glossa: A Journal of General Linguistics*, 2(1). <https://doi.org/10.5334/gjgl.374>
- Bodine, Ann. (1975). Androcentrism in prescriptive grammar: Singular ‘they’, sex-indefinite ‘he’, and ‘he or she’. *Language in society*, 4(2), 129–146. <https://doi.org/10.1017/S0047404500004607>
- Boyce, Veronica., Futrell, Richard., & Levy, Roger. P. (2020). Maze made easy: Better and easier measurement of incremental processing difficulty. *Journal of Memory and Language*, 111, 104082. <https://doi.org/10.1016/j.jml.2019.104082>
- Bradley, Evan. D. (2020). The influence of linguistic and social attitudes on grammaticality judgments of singular ‘they.’ *Language Sciences*, 78, 101272. <https://doi.org/10.1016/j.langsci.2020.101272>
- Clahsen, Harald., & Felser, Claudia. (2006). Grammatical processing in language learners. *Applied Psycholinguistics*, 27(1), 3–42. <https://doi.org/10.1017/S0142716406060024>
- Davies, Mark. (2008-) *The Corpus of Contemporary American English (COCA)*. <https://www.english-corpora.org/coca/>
- Doherty, Alice., & Conklin, Kathy. (2017). How gender-expectancy affects the processing of “them.” *Quarterly Journal of Experimental Psychology*, 70(4), 718–735. <https://doi.org/10.1080/17470218.2016.1154582>
- Foertsch, Julie., & Gernsbacher, Morton. Ann. (1997). In Search of Gender Neutrality: Is Singular *They* a Cognitively Efficient Substitute for Generic *He*? *Psychological Science*, 8(2), 106–111. <https://doi.org/10.1111/j.1467-9280.1997.tb00691.x>
- Forster, Kenneth. I., Guerrero, Christine., & Elliot, Lisa. (2009). The maze task: Measuring forced incremental sentence processing time. *Behavior Research Methods*, 41(1), 163–171. <https://doi.org/10.3758/BRM.41.1.163>
- Gardner, Bethany. (2023). *Learning to comprehend and produce singular they* (Publication No. 30722219) [Doctoral dissertation, Vanderbilt University]. ProQuest Dissertations & Theses Global. <http://hdl.handle.net/1803/18385>
- Hekanaho, Laura. (2020). Generic and nonbinary pronouns: Usage, acceptability and attitudes. *Neuropsychologische Mitteilungen*, 121(2), 498–509. <http://hdl.handle.net/10138/321581>
- Hylenstam, Kenneth., & Abrahamsson, Niclas. (2003). Age of onset and ultimate attainment in near-native speakers of Swedish as a second language. *Multilingualism in global and local perspectives*, 319–340.

- LaScotte, Darren. K. (2021). Nonnative English learners' use and understanding of singular *they*. *Language Awareness*, 30(1), 84–94. <https://doi.org/10.1080/09658416.2020.1869753>
- Lee, Jackie. F. K., & Collins, Peter. (2010). Construction of gender: A comparison of Australian and Hong Kong English language textbooks. *Journal of Gender Studies*, 19(2), 121–137. <https://doi.org/10.1080/09589231003695856>
- Ma, Zheng., Wu, Shiyu., & Xu, Shiyang. (2022). Acceptance and Online Interpretation of “Gender-Neutral Pronouns”: Performance Asymmetry by Chinese English as a Foreign Language Learners. *Frontiers in Psychology*, 12, 765777. <https://doi.org/10.3389/fpsyg.2021.765777>
- Meyers, Miriam. Watkins. (1990). Current generic pronoun usage: An empirical study. *American speech*, 65(3), 228–237. <https://doi.org/10.2307/455911>
- Osterhout, Lee., & Mobley, Linda. A. (1995). Event-related brain potentials elicited by failure to agree. *Journal of Memory and language*, 34(6), 739–773. <https://doi.org/10.1006/jmla.1995.1033>
- Paterson, Laura. L. (2011). The use and prescription of epicene pronouns: a corpus-based approach to generic he and singular they in British English (Version 1). Loughborough University. <https://hdl.handle.net/2134/9118>
- Prasad, Grusha., & Morris, Joanna. (2020). *The P600 for singular “they”: How the brain reacts when John decides to treat themselves to sushi*. <https://doi.org/10.31234/osf.io/hwzke>
- Qiu, Baoying. (2013). The plural forms of personal pronouns in Modern Chinese. [Master thesis, University of Massachusetts Amherst] <https://doi.org/10.7275/4523663>
- Sanford, Anthony. J., & Filik, Ruth. (2007). “They” as a gender-unspecified singular pronoun: Eye tracking reveals a processing cost. *Quarterly Journal of Experimental Psychology*, 60(2), 171–178. <https://doi.org/10.1080/17470210600973390>
- Speyer, Lydia. Gabriela., & Schleef, Erik. (2019). Processing ‘Gender-neutral’ Pronouns: A Self-paced Reading Study of Learners of English. *Applied Linguistics*, 40(5), 793–815. <https://doi.org/10.1093/applin/amy022>
- Witzel, Naoko., Witzel, Jeffrey., & Forster, Kenneth. (2012). Comparisons of online reading paradigms: Eyetracking, moving-window, and maze. *Journal of Psycholinguistic Research*, 41, 105–128. <https://doi.org/10.1007/s10936-011-9179-x>
- Zehr, Jeremy., & Schwarz, Florian. (2018). PennController for Internet Based Experiments (IBEX). <https://doi.org/10.17605/OSF.IO/MD832>

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