

GENERIC PRONOMINAL ANAPHORA : THE CASE OF THE ENGLISH *SINGULAR THEY*

Morton Ann GERNSBACHER
University of Wisconsin-Madison

A conventional feature of all languages is that they provide devices for referring to concepts that were previously introduced in a text or discourse. Virtually all languages have devices called pronouns. For example, after we have introduced *the man with the black hat*, we can refer to that man as *he*. Or after we have introduced *the woman with the red dress*, we can refer to that woman as *she*. Certain rules apply to when and how we may use pronouns, or if we do not like the concept of rules, we can call these restrictions, "constraints". Presumably, these constraints are used by native comprehenders to understand pronominal anaphora.

Tyler and Marslen-Wilson (1982) outlined four types of constraints that guide pronominal anaphora resolution. The first type of constraints are lexical constraints, which are cued by lexical markings, such as markings for number, gender, and case. The second type are syntactic constraints, for example, the parallel function strategy (Sheldon, 1971), or the precede-command rule (Langacker, 1969). The precede command rule states that a pronoun cannot precede its antecedent unless it is "commanded" by the clause containing the antecedent. So, for example, we can say,

(1) Dan rides his bike to work because he lives nearby.

and we can say,

(2) Because he lives nearby, Dan rides his bike to work.

But the precede-command rule disallows us from saying,

(3) He rides his bike to work because Dan lives nearby.

A third type of constraint identified by Tyler and Marslen-Wilson (1982) are thematic constraints, which are cued by discourse markings for topic, focus, foregrounding, and the like. Finally, the fourth type of constraint identified by Tyler and Marslen-Wilson are pragmatic constraints, which are provided by comprehenders' knowledge and inferential reasoning about the "real world". For example, after a sentence such as,

(4) I took my dog to the vet yesterday.

pragmatic constraints are what guide the two different assignments of the pronouns *he* and *him* provided by these two sentences :

(5) *He* bit *him* on the shoulder.

versus

(6) *He* injected *him* in the shoulder.

To summarize, Tyler and Marslen-Wilson (1982) outlined four types of constraints that guide pronominal anaphora resolution : lexical, syntactic, thematic, and pragmatic. Of these four types of constraints, lexical constraints are the easiest to implement in Natural Language Processing systems; they are the constraints which are acquired earliest (Palermo & Molfese, 1972); and they are typically the constraints which are most successfully applied (Bartlett, 1984). However, in this paper I shall describe several very common situations in which intelligent, native, fluent speakers of English purposely violate this most elementary constraint.

For instance, consider the following utterance I overheard in a bar:

(7) I think I'll order a frozen margarita. I just love *them*.

Or the utterance I overheard on a university campus :

(8) I'm hoping for an "A", but I don't make *them* very often.

Or a segment of a dialog I had with a friend :

(9) *Friend* : I can't believe you drive a Fiat.

(10) *Me* : Why's that?

(11) *Friend* : Because they're so temperamental.

Or what I found myself saying a few days after that dialog :

(12) I need to call the garage [where my car was being serviced].

They said *they'd* have it ready by 5:00, but I bet *they* won't.

In each instance, there is a mismatch in number between the pronoun and its supposed antecedent. Therefore, these pronouns clearly violate the lexical constraint. In this sense, these pronouns are illegal. However, I have argued and presented data to support the proposal that

these pronouns are easily comprehended, because they are serving as *conceptual anaphors*.

For instance, the woman who was considering ordering a frozen margarita, was not professing her love for any specific frozen margarita, but rather frozen margaritas, in general — perhaps all the frozen margaritas in the universe. Similarly, the student who was hoping for a grade of A, was not bemoaning the fact that she didn't make an A in one specific class, but rather that she didn't make As — in general. When my friend was musing about my car, he wasn't referring to the specific token of Fiats that I owned (at the time!), but rather he was diagnosing the personality of a generic type of automobile. And when I said I needed to call the garage, I wasn't literally referring to a physical structure; rather I was referring to the mechanics who work there. Thus, in each of these instances, the speaker was referring to something more than was represented by the literal preceding noun phrase. I have claimed that these are instances of conceptual anaphora.

Furthermore I have suggested that such cases of conceptual anaphora can be simply, albeit roughly, classified as occurring in at least three situations. In one situation the referent is something a person is likely to have multiples of, or events that a person is likely to experience repeated, for example :

(13) I need *a plate*. Where do you keep *them*?

(14) Would you get me *a paper towel*? *They're* in the kitchen.

(15) Yesterday was *my birthday*. I used to really dread *them*, but yesterday I didn't care.

In these examples, the literal antecedent is a singular noun. But because most households have more than one plate, most people experience more than one birthday, and paper towels are dispensed in rolls of many, one can use the mismatched and technically illegal plural pronoun to refer to these multiple occurrences.

A second situation in which conceptual anaphora occurs is with generic types, for example :

(16) My mother's always bugging me to wear *a dress*. She thinks I look good in *them*, but I don't.

(17) I enjoy having *a pet*. *They* are such good companions.

(18) Carla's downstairs watching *a soap opera*. If she had her way she'd watch *them* all day.

In this communicative situation, the intended referents are the concepts in general. For instance, soap operas in general are what the speaker believes Carla could watch all day.

In a third communicative situation illegal plural pronouns are used to refer to the animale members of a collective set, for instance, the members of a team, a group, or a musical band, for example :

- (19) The substitute teacher begged *the class* to stop misbehaving. But *they* didn't pay any attention to her.

Members of less traditional collective sets are also referred to by plural pronouns, for example :

- (20) After college, my sister went to work for *IBM*. *They* made her a very good offer.

Thus, illegal plural pronouns are used in at least three communicative situations. They are used to refer to frequent or multiple items or events, generic types, and collective sets. Although the boundaries between these three situations might be sharper than what I have drawn, what is common among these instances is that the pronoun in the second sentence contains an illegal but comprehensible plural pronoun.

Illegal plural pronouns can be contrasted with singular (and technically legal) pronouns, for example :

- (21) I need *an iron*. Where do you keep *it*?
 (22) Would you get me *a mop*? *It's* in the kitchen.
 (23) Yesterday was *my fortieth birthday*. I used to dread *it*, but yesterday I didn't care.

In these cases, a singular pronoun is used because the item or event being referred to is unique; the owner most likely has only one of such item; or the event is most likely experienced only once. For instance, although most households have more than one plate, few have more than one iron or one mop, and most people, thank goodness, experience only one fortieth birthday.

A singular pronoun is also used when the antecedent is so distinct that it represents a specific token of a class of items, for example :

- (24) My mother's always bugging me to wear *a dress* that she bought me last year for Christmas. She thinks I look good in *it*, but I don't.
 (25) I enjoy having *a pet canary* named "Chatty". *He* is such a good companion.
 (26) Carla is downstairs watching *a soap opera* that stars Michael Lewis. If she had her way she'd watch *it* all day.

The speaker of (24) is referring to a distinct dress, one that her mother bought her last year for Christmas; the speaker of (25) is referring to a specific pet, a pet canary named "Chatty"; and it is not soap operas in general that Carla could watch all afternoon, but a specific soap opera

that stars a particular character. To refer to these specific tokens, a legal, singular pronoun is used.

A third situation in which a singular pronoun is used is to refer to an individual member, rather than a collective set, for example :

- (27) The substitute teacher begged *the student* to stop misbehaving. But he didn't pay any attention to her.
 (28) After college, my sister went to work for *the president* of IBM. *He* made her a very good offer.

To summarize, a legal, singular pronoun is used to refer to a unique item/event, a specific token, and an individual member, whereas technically illegal, plural pronouns are used to refer to multiple items/events, generic types, and collective sets.

How natural are illegal plural pronouns? Do they disturb educated, native speakers? Perhaps they do because they violate a primary constraint - the lexical constraint. They do not match their literal antecedent in number. But perhaps such illegal, plural pronouns are acceptable because such pronouns refer conceptually. If so, then illegal plural pronouns should be more acceptable when their antecedents are multiple items/events, generic types, or collective sets, than when their antecedents are unique items/events, specific tokens, or individual members.

To answer this question empirically, an experimental approach was taken in which the same target sentence was presented in each of four conditions (Gernsbacher, 1991). In one condition, the target sentence contained a plural pronoun and its preceding sentence contained a multiple item/event, a generic type, or a collective set, for example :

- (29) I need *a plate*. Where do you keep *them*?

In a second condition, the preceding sentence also contained a multiple item/event, a generic type, or a collective set, but the target item contained a singular pronoun, for example :

- (30) I need *a plate*. Where do you keep *it*?

In a third condition, the target sentence contained a plural pronoun and its preceding sentence contained a unique item/event, a specific token, or an individual member, for example :

- (31) I need *an iron*. Where do you keep *them*?

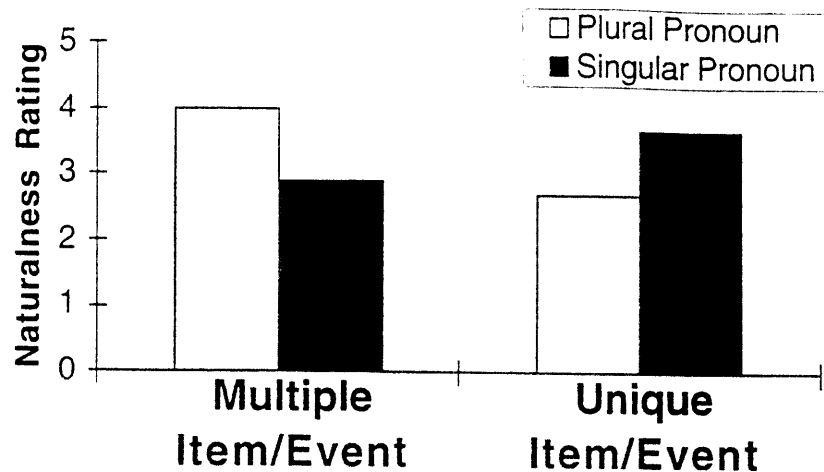
In the fourth condition, the preceding sentence also contained a plural pronoun and its preceding sentence contained a unique item/event, a specific token, or an individual member, but the target item contained a singular pronoun, for example :

- (32) I need *an iron*. Where do you keep *it*?

In total, 48 sets of sentences were constructed, and we presented these 48 sets of sentences to 65 native English speakers, who were university students. The subjects' task was to read each sentence pair and to rate "how natural" the second sentence seemed in reference to the first sentence. The meaning of natural, the subjects were told was "how likely it is that you might hear such a sentence or produce such a sentence". Subject used a 5-point scale with 5 denoting "very natural" and 1 "not very natural".

Figure 1 shows that when the target sentences were preceded by sentences that contained multiple items/events, such as *a plate* they were read more rapidly when they contained plural as opposed to singular pronouns. In contrast, when the target sentences were preceded by sentences that contained unique items/events, such as *an iron*, they were rated more natural when they contained singular as opposed to plural pronouns.

Figure 1



Similarly, as shown in Figure 2, when the target sentences were preceded by sentences that contained generic types, such as *a dress*, they were read more rapidly when they contained plural as opposed to singular pronouns. In contrast, when the target sentences were preceded by sentences that contained specific tokens, such as *a dress that my mother bought me for Christmas*, they were read more rapidly when they contained singular as opposed to plural pronouns. And similarly, as shown in Figure 3, when the target sentences were preceded by sentences that contained collective sets, such as *a class*,

they were read more rapidly when they contained plural as opposed to singular pronouns. In contrast, when the target sentences were preceded by sentences that contained individual members, such as *a student*, they were rated more natural when they contained singular as opposed to plural pronouns.

Figure 2

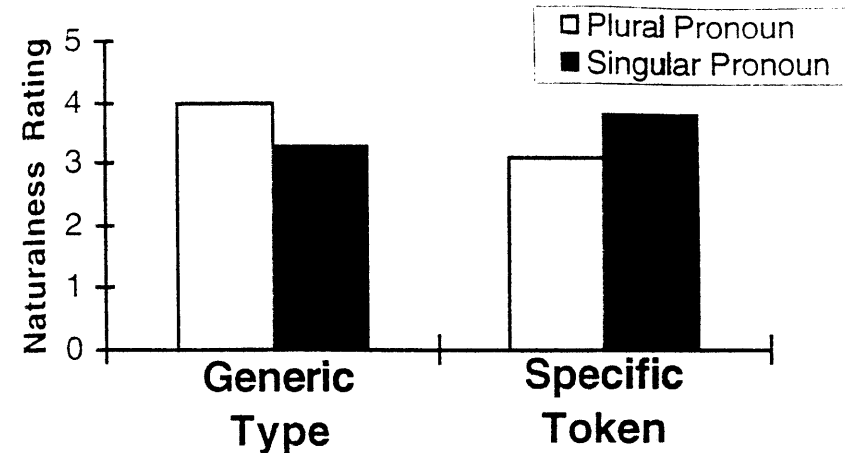
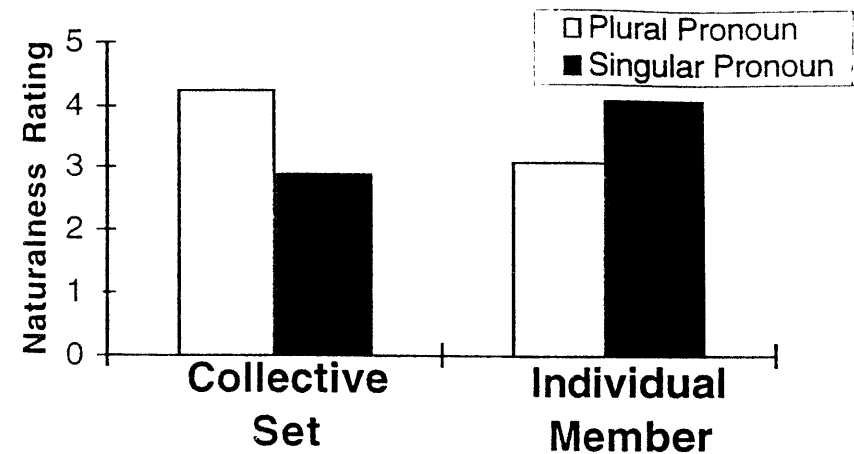


Figure 3



Thus, these data demonstrate that educated, native English speakers often find the use of illegal, plural pronouns very natural. In fact, in some communicative situations, illegal plural pronouns are more

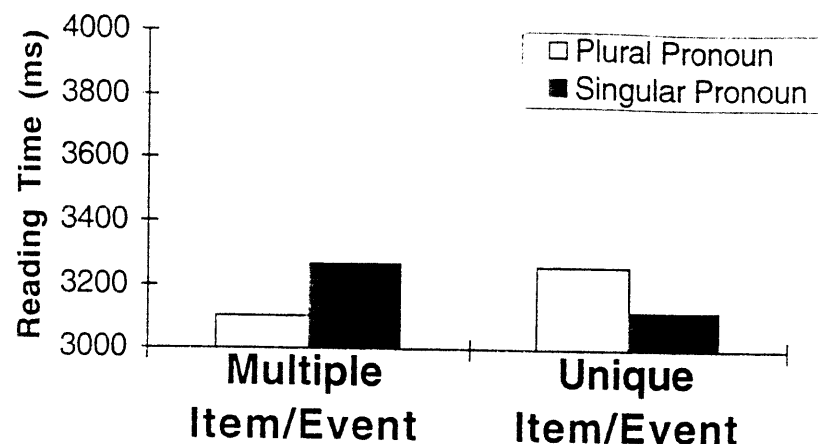
acceptable than legal singular ones. These are situations when the pronouns refer to multiple items/events, generic types, and collective sets.

We next asked the question: How easy are illegal plural pronouns to comprehend? If humans — like existing NLP systems — apply lexical constraints first, these illegal pronouns should be very difficult to comprehend. In contrast, if as suggested by Tyler and Marslen-Wilson (1982), human comprehenders apply the heuristics in parallel, then although one set of constraints is being violated, another set of constraints, namely pragmatic constraints, are being fulfilled. According to this view, illegal plural pronouns should be no more difficult to comprehend than legal singular pronouns, when they refer to multiple items/events, generic types, and collective sets.

To test this hypothesis, we presented the same 48 sets of sentences to 72 educated, native English speakers. The subjects' task was to read the first sentence of each pair, which appeared for a length of time proportional to its length. After the first sentence disappeared the second sentence appeared, and we measured subjects' reading times for the second sentences by recording their key presses. Then the word "paraphrase" appeared and the subjects' task was to paraphrase the sentence pair in their own words.

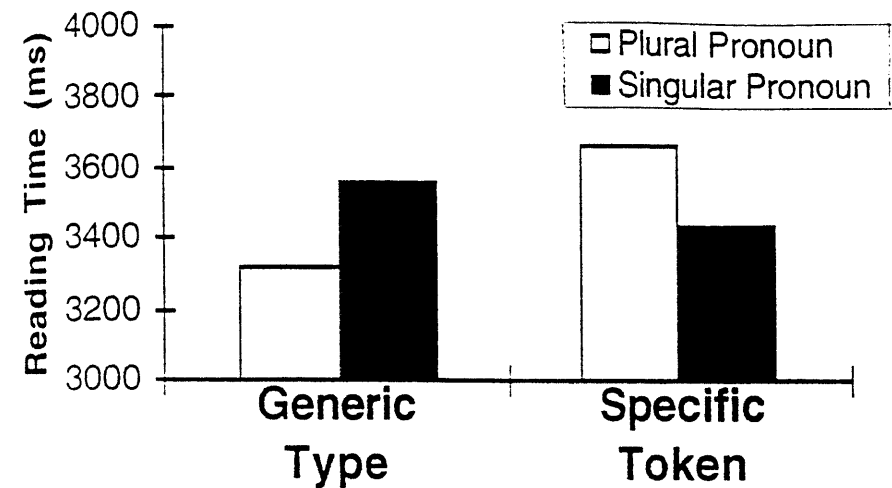
As shown in Figure 4, when the target sentences were preceded by sentences that contained multiple items/events, such as *a plate*, they were read more rapidly when they contained plural as opposed to singular pronouns. In contrast, when the target sentences were preceded by sentences that contained unique items/events, such as *an iron*, they were read more rapidly when they contained singular as opposed to plural pronouns.

Figure 4



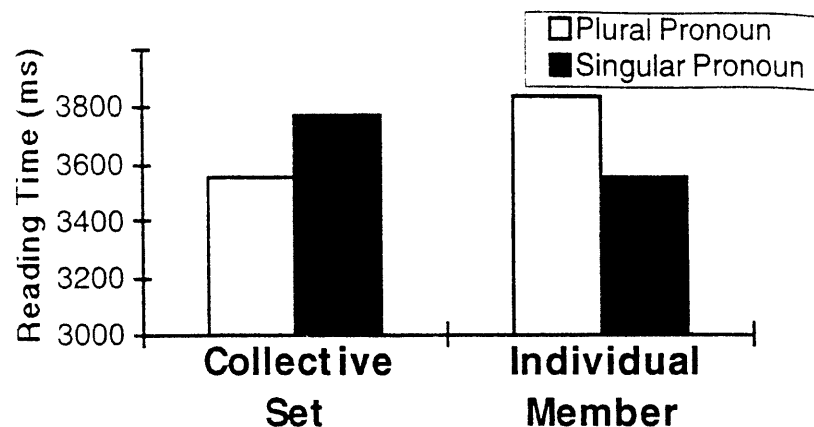
Similarly, as shown in Figure 5, when the target sentences were preceded by sentences that contained generic types, such as *a dress*, they were read more rapidly when they contained plural as opposed to singular pronouns. In contrast, when the target sentences were preceded by sentences that contained specific tokens, such as *a dress that my mother bought me for Christmas*, they were read more rapidly when they contained singular as opposed to plural pronouns.

Figure 5



And similarly, as shown in Figure 6, when the target sentences were preceded by sentences that contained collective sets, such as *a class*, they were read more rapidly when they contained plural as opposed to singular pronouns. In contrast, when the target sentences were preceded by sentences that contained individual members, such as *a student*, they were rated more natural when they contained singular as opposed to plural pronouns. Thus, these reading time data demonstrate that educated, native English speakers often read illegal, plural pronouns more rapidly than singular, legal, pronouns, when the plural pronouns refer to multiple items/events, generic types, and collective sets.

Figure 6



These reading time data have been replicated using British, rather than American English (Oakhill, Garnham, Gernsbacher & Cain, 1992), and Spanish (Carreiras & Gernsbacher, 1992). Indeed, in Spanish the effects transmute to the verb, when the pronouns are dropped. More recently, we have investigated another situation in which native American English speakers use a generic pronoun *they*. Consider the following caption that ran beneath a picture of an empty desk in the Oval Office (where the United States President work) :

(33) If you're going to choose *the next person to sit here*, you should know where *they* stand.

This utterance illustrates the use of the plural English pronoun *they* to refer to a singular person. This use is becoming considerably more widespread in both colloquial spoken English and even more formal written English. (The ad, for which the above caption appeared, was distributed by National Public Radio, and the ad ran in the US weekly magazines *Newsweek*, *Time*, and *Life*). Such instances abound.

For example, I have heard myself saying,

(34) Whenever *a student* comes to my office, and it's not my office hours, I tell *them* ...

A frequently playing public service announcement encouraging optimal prenatal care begins as

(35) Protect *your baby* before *they* are born by ...

Indeed, a sentence published in one of our most elite psychological journals stated that

(36) After *the subject* responded, *they* were given feedback as to the accuracy of *their* response.

This use of the plural pronoun *they* differs from the use of the plural pronoun *they* that I wrote about in the beginning of this chapter because in these instances, the plural pronoun *they* is intended to refer to a singular entity. For instance, I was referring to a situation in which only one student came by my office when it was not my office hours. To my knowledge the prenatal public service announcement was not directed at mothers who were carrying twins, or triplets, or quadruplets, and the excerpt from the methods section I quoted was describing what happened after one subject responded. Therefore, I have dubbed this use of the English pronoun *they* as the use of *the singular they*. Although the pronoun *they* is plural, it is used to refer to a singular entity.

Why do educated, native speakers of English use *the singular they*? Perhaps it is to avoid using the grammatically prescribed generic *he*, as in,

(37) Whenever *a student* comes to my office, and it's not my office hours, I tell *him*...

(38) Protect *your baby* before *he* ...

(39) After *the subject* responded, *he* was given feedback as to the accuracy of *his* response.

The generic *he* is the grammatically mandated legal way to refer to a person of unknown gender, or even a generic person of either gender. But the problem is that the generic *he* is not always understood generically; that is, the generic *he* is not necessarily gender-neutral (Bodine, 1975; Khosroshahi, 1989; Kidd, 1971; MacKay, 1980; MacKay & Fulkerson, 1979; Martyna, 1978; Silvera, 1980).

In one of my favorite studies demonstrating this the generic *he* is not understood to be gender-neutral, the following occurred. The subjects' task was to rate hypothetical applicants for a university scholarship. The subjects were presented with biographical sketches of 10 applicants; half were male, and half were female. To help the subjects make their judgments, they were given some guidelines, which included a description of what a typical scholarship recipient should be like. The description was written in three forms. The description read by one third of the subjects used the generic *he*, for example,

(40) The student awarded this fellowship should be ... *He* should be ... and *he* should be ...

The same description was read by another third of the subjects; however, the generic *he* was changed to the phrase "*he or she*". The

final third of the subjects read the same description, but all pronouns were avoided and plural nouns were used throughout, for example.

(41) Students awarded this fellowship should be ... Recipients should be ... and recipients should be ...

Subjects who read the description with the generic *he* were substantially more likely to select the male hypothetical candidates. Thus, the generic *he* actually biases toward the masculine interpretation.

To counter such biases, many writers and editors have adopted the policy of using the phrase *he or she* in place of the single word *he*. But, as many of us who have tried this know, this construction is awkward and very wordy to use repeatedly. Another alternative involves using *s/he*, which works in print but sounds pretty awkward in speech. A third alternative is to replace the generic *he* with the generic *she*, a form of linguistic affirmative action. And a fourth alternative is to alternate the generic *he* with the generic *she*, a convention I have seen frequently in United States undergraduate textbooks.

However, each of these alternatives has its disadvantages, and because of these disadvantages, I imagine that even educated native English speakers are beginning to use the singular *they* with great regularity. For some situations, the singular *they* has even received grammarians' endorsement. Grammar book like Langendoen's *The Essentials of English Grammar* approve of writers' use of *they* to refer to indefinite pronouns, such as *anyone*, *someone*, *everyone*. However, *they* used to refer to definite or indefinite singular noun phrase, such as "a student", "your baby", or "the subject", is still considered taboo. It is possible that prescriptive rules about how the pronoun *they* should be used lag behind what people actually do in everyday communication. Indeed, it's unclear whether many of those who now choose to use the singular *they* even realize that it is "ungrammatical".

In a series of experiments, one of my graduate students, Julie Foertsch, and I investigated the processing cost of using singular *they* in various contexts by measuring university students' reading times. Our starting point was an experiment by Kerr and Underwood (1984). In Kerr and Underwood's (1984) study, subjects read sentences that contained antecedent nouns which were considered more likely to refer to a male ("the surgeon", "the truck driver") or a female ("the nurse", "the receptionist").

The sentences also contained a gender-marked pronoun, *he* or *she*, that either matched or mismatched the implied gender of the antecedent. Readers were consistently slower reading sentences when

the gender of the pronoun mismatched the stereotyped gender of the antecedent, for example, the pronoun *she* used to refer to "the truck driver" or the pronoun *he* used to refer to "the nurse". By this same logic, Julie and I hypothesized that if using the singular *they* incurs additional cognitive processing, readers will be slowed when they read a clause that uses *they* to refer to a singular antecedent.

Thus, our experiments compared how quickly the pronouns *he*, *she*, and *they* were read and understood in sentences with antecedents that were stereotypically masculine ("a truck driver"), stereotypically feminine ("a nurse"), or neutral, such as "a child", "a student", or "a neighbor". Our assessment of the stereotypic bias of the antecedents was based on a set of norms we collected. We also included a set of sentences in which the antecedents were indefinite pronouns, such as *anyone*, *someone*, or *everyone*.

We conducted two experiments, and in each, subjects read a series of sentences, each of which contained three clauses. The first clause contained one of the four types of antecedents: a stereotypically masculine, stereotypically feminine, or stereotypically neutral indefinite noun, or an indefinite pronoun. The second clause contained one of the three pronouns: *he*, *she*, or *they*. And, the third clause was a rationale clause, for example:

- (42) A truck driver should never drive when sleepy, even if *he/she/they* may be struggling to make a delivery on time, because many accidents are caused by drivers who fall asleep at the wheel.
- (43) A nurse should have an understanding of how a medication works, even if *he/she/they* will not have any say in prescribing it, because a nurse must anticipate how a patient might respond to the medication.
- (44) A child must be scolded for doing something wrong, even if *he/she/they* may be too young to know better, because uncorrected mistakes will only be repeated.
- (45) Anybody who litters should be fined \$50, even if *he/she/they* cannot see a trash can nearby, because littering is an irresponsible form of vandalism and should be punished.

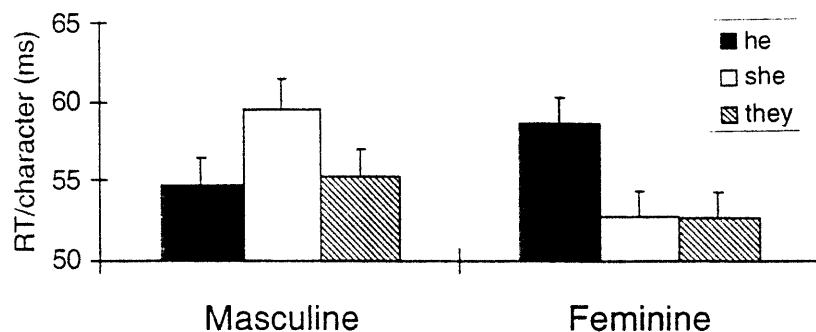
Subjects read the sentences, one clause at a time, and after reading each sentence they responded to the question, "Agree or Disagree?", to indicate whether they agreed with the sentiment expressed in the sentence. The purpose of including the third clause and the "Agree or Disagree?" task was two-fold. First, we wanted to camouflage the reading time task, and second, we wanted to obtain a purer measure of

the reading time for the second clause — the clause containing the pronoun — by not having it potentially confounded with sentence-wrap up time. Thus, our dependent measure was reading time for the second clauses because they were the clauses that contained the pronouns.

As in Kerr and Underwood's (1984) experiments, we predicted that reading times for the second clauses would be slower for the gender marked pronouns — *he* and *she* — when the pronoun's gender-mismatched the implied gender of the antecedent in the first clause (e.g., *he* used to refer to "a nurse", or *she* used to refer to "a truck driver"). Our novel finding was how quickly clauses containing the singular *they* would be read in comparison to clauses that contained *he* or *she*.

We tested 87 subjects and Figure 7 displays their second-clause reading time data, expressed in milliseconds per character in order to control for the different number of characters in the three pronouns, *he*, *she*, and *they*. Consider first the data for the masculine-stereotyped antecedents, such as "truck driver", illustrated by the three left-most bars. As can be seen in Figure 7, clauses containing the gender-matched pronoun, *he*, were read very rapidly. However, clauses containing *the singular they* were read just as rapidly. In contrast, clauses containing the gender-mismatched pronoun, *she*, were read the most slowly.

Figure 7

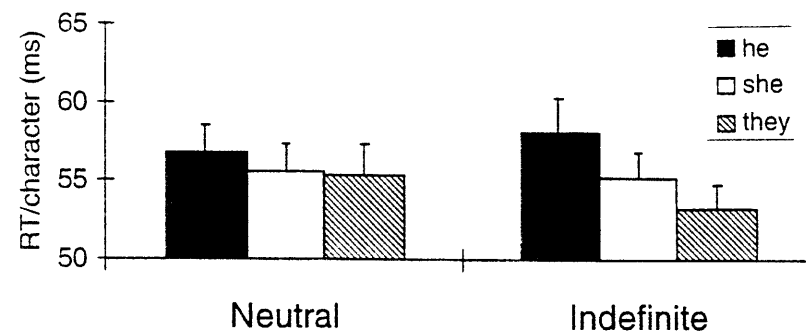


Next consider the data for the feminine-stereotyped antecedents, such as "nurse", as illustrated by the three right-most bars. As illustrated, a similar pattern occurred for the feminine-stereotyped antecedents as for the masculine-stereotyped antecedents. That is, clauses containing the gender-matched pronoun, *she*, were read very rapidly, and again, clauses containing *the singular they* were read just

as rapidly. And again this contrasted with clauses containing the gender-mismatched pronoun, *he*, which were read most slowly. These data suggest that when referring to indefinite gender-stereotypic antecedents, *the singular they* works just as well as a gender-matched pronoun and better than a gender-mismatched pronoun.

The data for the neutral antecedents (e.g., "a student") and the indefinite pronouns (e.g., *someone*), are shown in Figure 8. For the neutral antecedents, clauses containing *he*, *she*, or *they* were read at the same rate. These data suggest that when referring to an indefinite antecedent that is not gender stereotypic, *the singular they* is just as easy to process as either the generic *he* or the generic *she*. Finally, for the indefinite pronoun antecedents (e.g., *anyone* and *someone*), there was a slight, but reliable advantage for *the singular they*, which was most pronounced when comparing the singular *they* with the generic *he*.

Figure 8



Givon (1984) classifies nominals into "nonreferential nominals [that] do not refer to a specific individual; sometimes they refer only to types of such individuals" and "referential nominals [that] refer to an individual assumed (by the speaker) to exist within the universe of discourse". According to this distinction the antecedent nouns that we manipulated in our first experiment — the stereotypic masculine, feminine, and neutral antecedent nouns — were what Givon calls nonreferential nominals. However, I have also observed on rare occasions the singular *they* used to refer to referential nominals; for example, a professorial colleague of mine (J.D.) recently said:

(46) I am reviewing *a particular person* for tenure, who shall remain nameless, and *they* ...

In our second experiment, we investigated how easily comprehenders can map clauses containing *he*, *she*, or *the singular*

they onto clauses that contain referential nominals. We modified the masculine, feminine, and neutral antecedent sentences to make them referential, giving the reader the impression that the sentences were about a specific person whose gender was presumably known.

To accomplish this, we replaced the indefinite articles with either a demonstrative article, such as *that*, or a possessive pronoun, such as *my*, or we inserted a relative clause, such as *who I go to*, for example :

- (47) That truck driver shouldn't drive when sleepy, even if *he/she/they* may be struggling to make a delivery on time, because many accidents are caused by drivers who fall asleep at the wheel.
- (48) A nurse who I go to has an understanding of how a medication works, even if *he/she/they* does not have any say in prescribing it, because a nurse must anticipate how a patient might respond to the medication.
- (49) I always scold my child for doing something wrong, even if *he/she/they* may be too young to know better, because I think uncorrected mistakes will only be repeated.

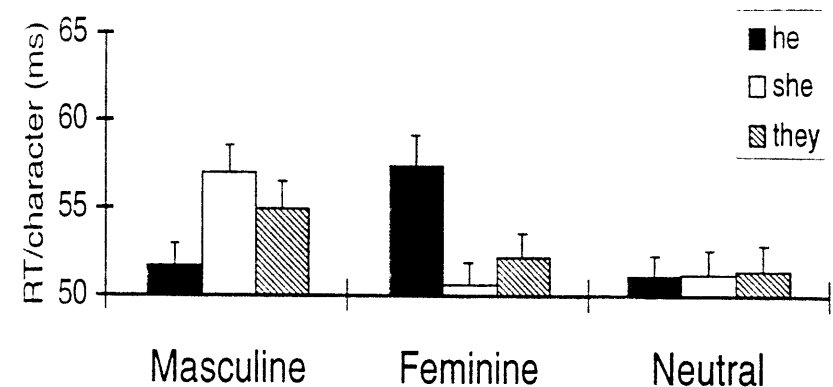
As in our first experiment, subjects in our second experiment also read the sentences, one clause at a time, and after reading each sentence they responded to a yes/no question, for example, "Do you ever drive while sleepy?", "Should I trust my nurse?", or like our first experiment, "Do you agree?". Again, the purpose of this question was to de-emphasize the reading time aspect of the task, and again our dependent variable was second-clause reading time. In this experiment we did not present sentences in which the antecedents were indefinite pronouns.

We tested 108 subjects, and Figure 9 displays their second-clause reading time data, again expressed in milliseconds per character in order to control for the different number of characters in the three pronouns, *he*, *she*, and *they*. Consider first the data for the masculine-stereotyped antecedents, such as "truck driver", illustrated by the three left-most bars. As Figure 9 illustrates, clauses containing the gender-matched pronoun *he* were read very rapidly. But, in contrast to our first experiment, in this second experiment when the antecedents were nonreferential, clauses containing *the singular they* were not read just as rapidly as clauses containing the gender-matched pronoun *he*. In fact, reading times for clauses containing *the singular they* were not statistically different from reading times for clauses containing gender-mismatched pronoun *she*.

A similar pattern occurred for the feminine-stereotyped antecedents as illustrated by the middle three bars. Clauses containing the gender-matched pronoun *she* were read most rapidly, and

marginally significantly faster than clauses containing *the singular they*. Again, this contrasts with the results from our first experiment, when the antecedents were nonreferential. However, for the neutral antecedents, the three pronouns were read at the same rate, as they were in the first experiment.

Figure 9



To review these two sets of data : In our first experiment we discovered that when referring to a nonreferential gender-stereotypic antecedent, *the singular they* works as well as a gender-matched pronoun, and *the singular they* is substantially easier to understand than a gender-mismatched pronoun. When referring to a nonreferential neutral antecedent, *the singular they* is equivalent to the two literally singular pronouns *he* and *she*.

In our second experiment we discovered that when referring to a referential gender-stereotypic antecedent, *the singular they* does not work as well as a gender-matched pronoun; indeed, *the singular they* is almost as troublesome as a gender-mismatched pronoun. However, even when referring to a referential neutral antecedent, *the singular they* is equivalent to the two literally singular pronouns *he* and *she*.

Taken together, these two experiments demonstrate that readers' conception of the gender of a referent affects the comprehensibility of *the singular they*. Perhaps readers are even suspicious when a speaker or writer uses an unnecessarily opaque non-gender-marked pronoun for a referent whose gender is presumably known by that speaker or writer, for example :

(50) I had dinner with *a friend* last night and *they* said ...

This question remains for future research.

REFERENCES

- BARTLETT E. J. (1984). "Anaphoric reference in written narratives of good and poor elementary school writers", *Journal of Verbal Learning and Verbal Behavior*, 123, 540-552.
- BODINE A. (1975). "Androcentrism in prescriptive grammar : Singular "they", sex-indefinite "he", and "he or she", *Language in Society*, 4, 129-146.
- CARREIRAS M. & GERNSBACHER M. A. (1992), "Comprehending conceptual anaphors in Spanish", *Language and Cognitive Processes*, 7, 281-299.
- GERNSBACHER M. A. (1991), "Comprehending conceptual anaphors", *Language and Cognitive Processes*, 6, 81-105.
- GIVÓN T. (1984), *Syntax : A functional-typological introduction*, Amsterdam, Benjamins.
- KERR J. S. & UNDERWOOD G. (1984), "Fixation time on anaphoric pronouns decreases with congruity of reference", in A. G. Gale & F. Johnson (Eds.), *Theoretical and applied aspects of eye movement research*, Amsterdam, Elsevier, 195-202.
- KHOSROSHAHI F. (1989), "Penguins don't care, but women do : A social identity analysis of a Whorfian problem", *Language in Society*, 18, 505-525.
- KIDD V. (1971), "A study of the images produced through the use of the male pronoun as the generic", in *Moments in Contemporary Rhetoric and Communication*, 1, 25-30.
- LANGACKER R. (1969), "Pronominalization and the chain of command", in D. Reibel & S. Schane (Eds.), *Modern studies in English*, Englewood Cliffs, Prentice Hall, 160-186.
- MACKAY D. G. (1980), "On the goals, principles, and procedures for prescriptive grammar : Singular they", *Language in Society*, 9, 349-367.
- MACKAY D. G. & FULKERSON D. C. (1979), "On the comprehension and production of pronouns", *Journal of Verbal Learning and Verbal Behavior*, 18, 661-673.
- MARTYNA W. (1978), "What does "he" mean?", *Journal of Communication*, 28, 131-138.
- OAKHILL J., GARNHAM A., GERNSBACHER M. A. & CAIN K. (1992), "How natural are conceptual anaphors?", *Language and Cognitive Processes*, 7, 257-280.
- PALERMO D. & MOLFESE D. (1972), "Language acquisition from age five onward", *Psychological Bulletin*, 78, 409-428.
- SHELDON A. (1974), "The role of parallel function in the acquisition of relative clauses in English", *Journal of Verbal Learning and Verbal Behavior*, 13, 272-281.
- SILVERA J. (1980), "Generic masculine words and thinking", *Women's Studies International Quarterly*, 3, 165-178.
- TYLER L. K. & MARSLÉN-WILSON W. (1982), "The resolution of discourse anaphors : Some on-line studies", *Text*, 2, 263-291.