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RUNNING HEAD: The Pronoun Problem

The Pronoun Problem: Possible Changes in the use of Epicene Pronouns

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Honors Thesis

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Co-Advisors: Dr. Judith Bryant & Dr. Jane Noll

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Abstract

This study explores the possible bias of gender in the English language and was designed to replicate and extend Noll (1999). We assessed reaction times to lexical decision tasks (i.e., deciding whether a letter string forms a word) following sentences containing supposedly epicene (gender neutral) pronouns “he” and singular “they.” We asked whether both feminine and masculine words would be equally accessible following sentences utilizing the epicene “he” and singular “they.” Participants ($N=208$) were presented with a series of opinion statements and indicated whether they agreed or disagreed. At various points within the sentences, the participants completed the lexical decision task. We measured the amount of time it took to complete the lexical decision task following the pronoun. We found that participants respond faster to male gendered words paired with epicene “he” than female gendered words, also that singular “they” had similar reaction times. However, these results were not statistically significant. Future research should modify the research design, taking into account the limitations of our study.

The Pronoun Problem: Possible Changes in the use of Epicene Pronouns

Think of the statement, "A child must be scolded for doing something wrong, even if he may be too young to know better" (Noll, 1999). Did you picture a little boy being scolded by his parents or a little girl being scolded by hers? Now think of the statement, "A child must be scolded for doing something wrong, even if they may be too young to know better." Do you still picture the same child in this instance? Is it easier to imagine a little girl when the sentence contains "they" as opposed to "he?" These examples illustrate a phenomenon called "the pronoun problem." The problem is that the English language does not have a singular, gender neutral pronoun. That is, English lacks an epicene pronoun which is a pronoun that refers to both genders.

The need for a gender neutral pronoun arose out of the women's liberation movement. Women demanded equal opportunities even in language. A generic person may be unconsciously thought of as male, even by females, and some people believe that the use of epicene "he" keeps adding to females' unequal opportunities. This study explored the possible effects on cognition of gender in the English language. It emphasizes the need for a singular, gender neutral pronoun and how singular "they" could possibly satisfy that need.

The pronoun "he," as in the sentence, "The typical writer says that he will vote, but will he?" is supposed to be gender neutral, however it is not necessarily comprehended that way. People may read or hear "he" as a male themed word when it is intended as a neutral term or a term that has no reference to a specific person, male or female. This use of the pronoun "he," where the comprehension of the pronoun is in question, is part of the pronoun problem. It appears to be the case that English speakers have started to drift towards using singular "they" as a valid gender neutral pronoun.

Gender neutral means that there is no male or female denotation to a word. In everyday use of the English language, the pronoun “they” is sometimes used in place of epicene “he” to refer to a subject, either male or female, even though it is technically ungrammatical. For example the sentence “A good student always does his homework” is replaced with “A good student always does their homework.” Research shows that English speakers intend the pronoun “they” to be a gender neutral singular pronoun that can be used instead of epicene “he” (Fiske, 1985; MacKay, 1980; Miller & James, 2009; Noll, 1999; Moulton, Robinson, & Elias, 1978).

In her dissertation, Noll (1999) used several opinion sentences containing a mixture of pronouns including epicene “he” and singular “they,” as well as control sentences containing neither. She studied sentence comprehension with reaction time data from lexical decision making tasks. Lexical decision making is determining whether a string of letters is a word or not. For example “HOTEL” is presented or “HITEL” is presented. One string creates a word, one does not. When a string of letters spelling out gendered words is presented, data on the reaction times are collected. Of the strings of letters that are presented and create words, some are male gendered (e.g., king, brother) and others are female gendered (e.g., queen, sister). Noll’s study showed that singular “they” was a better gender neutral pronoun than epicene “he” due to the more equal reaction times of male and female lexical decisions following a sentence using the epicene “they.” For example, participants responded more quickly to “KING” than to “QUEEN” after a sentence containing “he”, but comparably for those two words following a sentence with “they.” The information processing theory applies here because it requires extra time to process female gendered words unless the sentence uses singular “they.” The participants for Noll’s study were a large group of college-aged students at the University of South Florida.

Previous studies have also shown a lack of neutrality for epicene “he” like the results shown in Noll’s (1999) dissertation. Fiske (1985) studied the gender comprehension of kindergarteners and first graders when presented with a story where the subject was “he/she,” “he,” or “they.” The results showed that the first grade boys were more likely to choose a male subject when presented with any of the pronouns, while the rest of the groups seemed to rely on their own gender as an image for the person in the sentence. MacKay (1980) found that college students reading textbook paragraphs containing epicene “he” were more likely to comprehend the referents as male than when “he or she” was used in the paragraphs. Miller and James (2009) found that the use of epicene “he” decreased the thoughts of females although it was intended to be gender neutral. Moulton, Robison, and Elias (1978) found that epicene “he” used in neutral contexts made participants think of males first rather than both males and females. Given these findings, the purpose of the present study was to see whether these results still hold in 2011 and to test the prediction that epicene “he” is not a gender neutral pronoun whereas “they” is.

Method

Participants

We used a sample of college-aged students ($N=208$) at the University of South Florida whose primary language was English. There were 52 male participants and 156 female participants. There were 186 right handed participants and 22 left handed participants. Participants were solicited through SONA, the online forum in the Department of Psychology on which researchers can post their studies and participants can select from the studies posted and select a time slot to attend the experiment. Participants were given 1 point of extra credit towards a psychology course as compensation. Participants’ data were eliminated based on consistent slow reaction time responses and/or consistent incorrect responses. The first elimination criterion

was to eliminate all response times lower than 500 milliseconds and greater than 3000 milliseconds. If participants had reaction times under 500 milliseconds, it indicated that they could not possibly have read the sentence, and if their response time was over 3000 milliseconds it indicated inattention to the task. After that, participants with fewer than 20 remaining data values were eliminated completely. If participants had 20 or more values remaining, incorrect responses were deleted. If they had three or more incorrect responses, all of their values were eliminated.

Stimuli

There were six types of experimental sentences. They included 8 practice sentences, 12 buffer sentences that served as trials for the participant to get used to the experiment, 16 critical sentences that were the sentences containing epicene “he” and singular “they” for which we collected data, 8 unrelated sentences that contained no pronouns, and 24 filler sentences that functioned to disguise the purpose of the experiment. In addition, there were experimental words including 24 gendered (12 feminine and 12 masculine), 21 filler, and 24 nonwords. All stimuli were drawn from Noll’s (1999) dissertation (see Appendix A). Each participant received the eight practice sentences in a random order, six of the buffer sentences in a random order, followed by a total of 48 sentences, 16 of which were critical, 8 unrelated, and the other 24 being filler sentences (see Appendix B). Using the software SuperLab 4.5, we uploaded the sentences and words into four different forms (A-D) and selected for right hand or left hand dominance, meaning we created forms with keys to press according to hand dominance. The SuperLab program presented the stimuli and recorded the time it took for the participant to identify a string letters shown after epicene “he” or singular “they” as a word or nonword as well as the participants’ response as to whether they agreed or disagreed. The agree/disagree procedure was

intended to ensure that participants read and comprehended the sentence, as well as to help mask the purpose of the study.

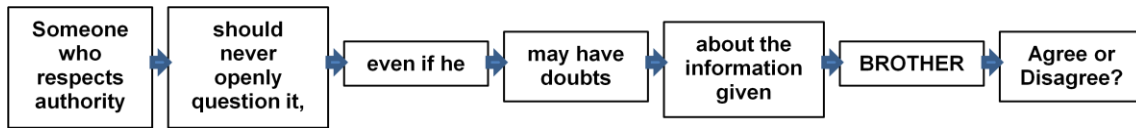
Procedure

The experiment was conducted with groups of one to ten participants at a time in a computer-equipped psychology lab. Each participant was solicited through SONA and signed up for a convenient time slot and was awarded one point for participation. Participants specified whether they were right hand or left hand dominant. Participants were assigned to a form or version of the stimuli in sequence depending on handedness such that the form was unlikely to be confounded with handedness. Researchers gained oral consent from each participant and presented detailed instruction slides on the computer before the experiment began.

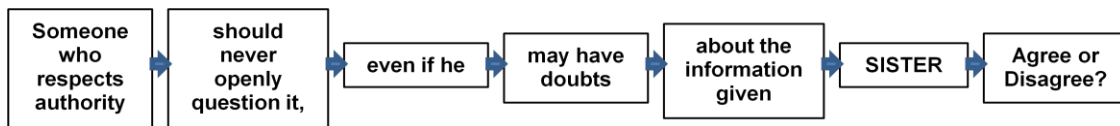
All the sentences presented to participants were opinions, and participants were asked at the end of each sentence whether they agreed with the statement. These sentences were presented in phrases at a rate of “the number of characters including spaces and punctuation X 16.67 + a constant of 750 milliseconds” (Noll, 1999). A string of letters was presented randomly at particular points in each sentence. Participants were asked to identify whether the string was a word or nonword. Right hand dominant participants pressed “J” if they thought the string of letters was a word, “L” if they thought the string of letters was not a word, “F” if they agreed with the sentence and “S” if they disagreed with the sentence. Left hand dominant participants pressed “F” if they thought the string of letters was a word, “S” if they thought the string of letters was not a word, “J” if they agreed with the sentence, and “L” if they disagreed with the sentence. Researchers provided index cards with brief instructions to be used as quick reference guides during the experiment to remind participants which keys to use (see Appendix C). This

procedure took approximately 20 minutes. The following examples illustrate what participants experienced:

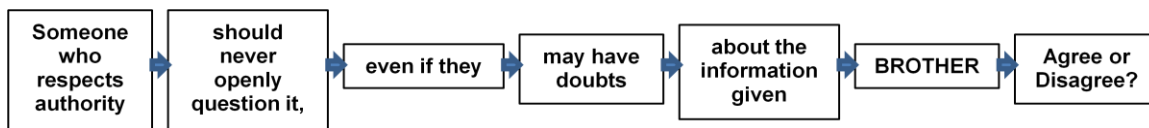
Epicene “he,” followed by a male gendered term.



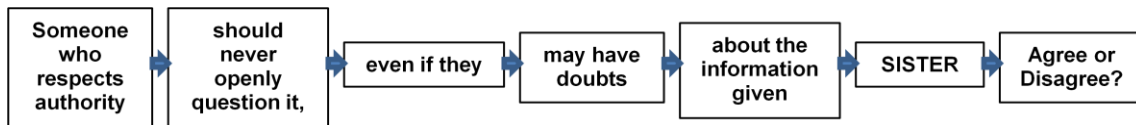
Epicene “he,” followed by a female gendered term.



Singular “they,” followed by a male gendered term.



Singular “they,” followed by a female gendered term.



Neither epicene “he” nor singular “they,” followed by a nonword or a nongendered word.



Results

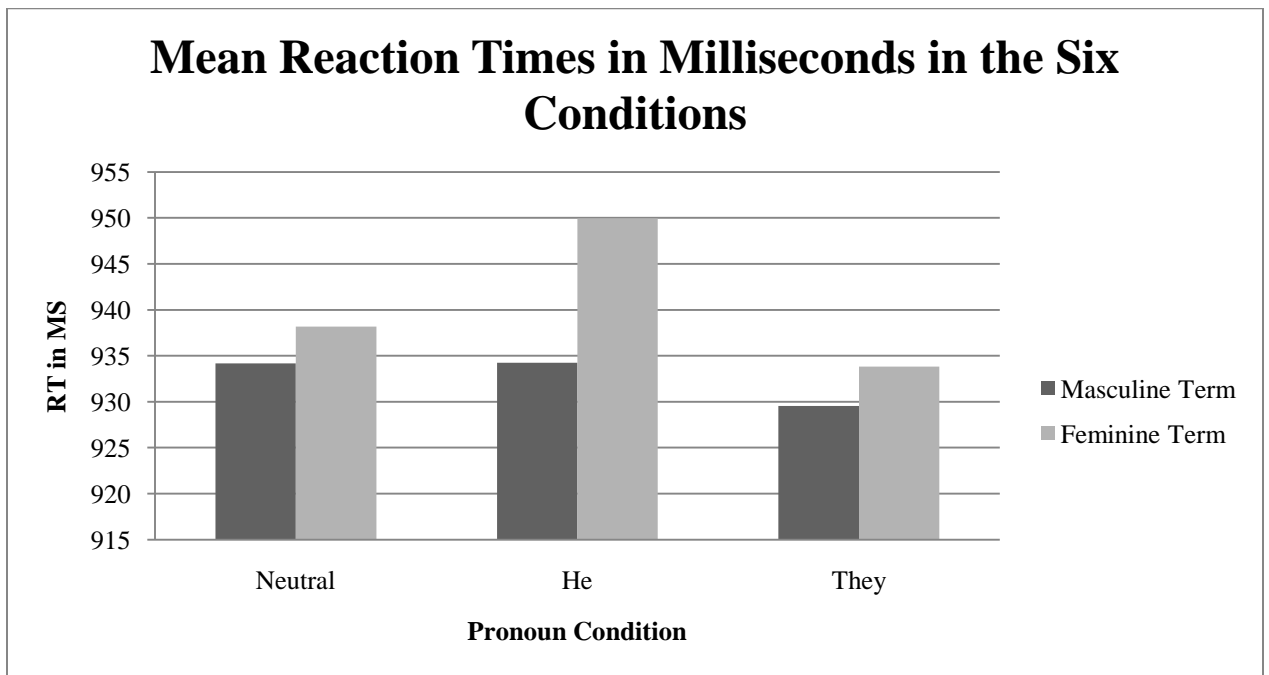
Data consisted of the time it took participants to complete the lexical decision making task, deciding whether the string of letters was a word or not. First, we found the means of each participant’s reaction time pair. The pairs were male and female words with epicene “he,” singular “they,” and unrelated (containing no pronoun) sentences. This resulted in six mean values for each participant. Those means were then averaged for all participants to find a

collective mean value for each pair. Because some data points had been eliminated, responses across gendered words ranged between 180 and 204. Our calculations did not include response times for the words “GAL” and “SIR” because they were considered outlier words based on incorrect responses and mean reaction times. We found that epicene “he” paired with a masculine lexical decision task had a faster reaction time than epicene “he” paired with a female lexical decision task. We also found that singular “they” had similar reaction times for both male and female lexical decision tasks (see Table 1 and Figure 1).

Table 1
Mean Reaction Times in Milliseconds in the Six Conditions

	Unrelated	He	They
Masculine Term	934.18(87.2)	934.24(76.69)	929.54(54.49)
Feminine Term	938.17(109.43)	949.93(141.32)	933.84(132.12)

Figure 1
Mean Reaction Times in Milliseconds in the Six Conditions

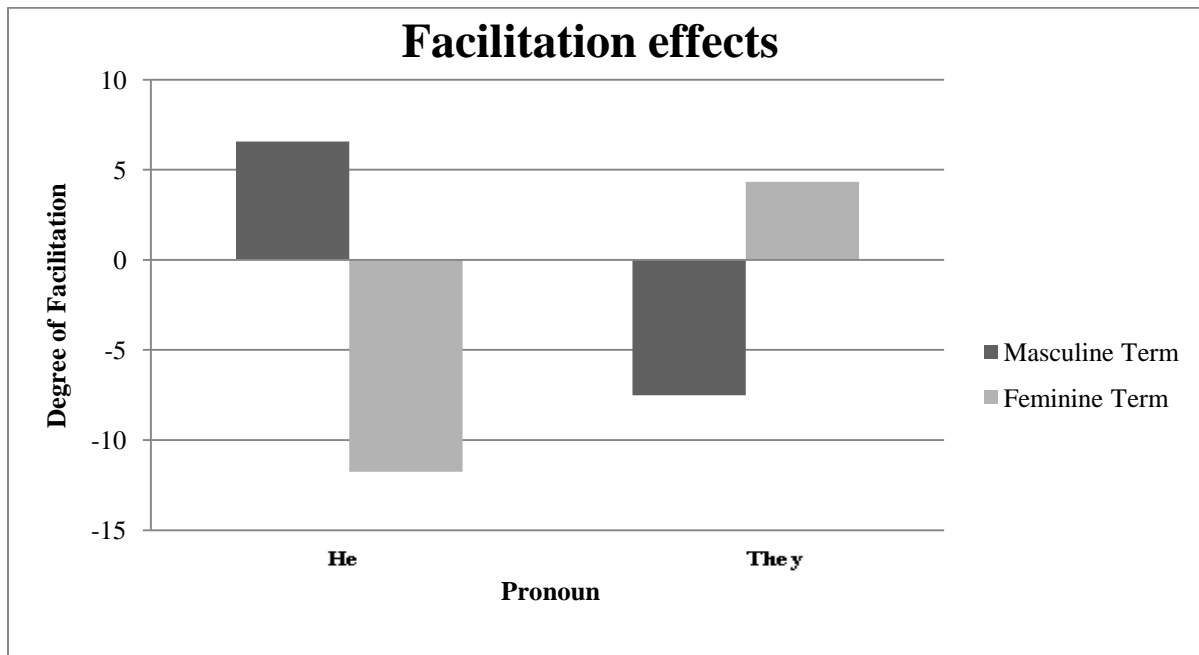


To determine how much “he” and “they” facilitated responses, facilitation scores were found by subtracting reaction times to masculine and feminine words paired with each pronoun from the identical gendered word paired with neither pronoun (the unrelated condition). Positive values indicate facilitation whereas negative values indicate a slowing of reaction time. This showed that participants took longer to respond to sentences containing epicene “he” followed by a feminine lexical decision task than to unrelated sentences containing no pronoun followed by a female lexical decision task. In other words, “he” interfered with processing (see Table 2 and Figure 2).

Table 2
Facilitation Effects in the Four Conditions

	He Facilitation	They Facilitation
Masculine Term	6.566174(113.48)	-7.517(98.37)
Feminine Term	-11.7614(123.48)	4.334604(76.16)

Figure 2
Facilitation Effects in the Four Conditions



A 2 (pronoun) X 2 (gendered term) within subjects ANOVA was computed using the collective mean reaction times as the dependent variable. There was no main effect of pronoun or gendered term and there was no significant interaction ($p > 0.05$). Another two-way within subjects ANOVA was completed using facilitation scores as the dependent variable. There were no significant effects ($p > 0.05$).

Discussion

Although the statistical analyses results showed no significance we are encouraged by the mean values and the direction they are taking towards supporting our hypotheses. There are a number of reasons why we failed to find clearer support. Some possible limitations of our study include many technical and societal details. First, we believe that the format in which our sentences were presented to participants allowed them to understand the general idea behind the sentences, and quickly pass over the “even if ____” portions. This could potentially mean that some participants did not even read the pronouns.

Second, after analyzing individual word data, we found longer than average reaction times for sentences containing the words “GAL” and “SIR.” We believe this is because of the decreased usage of these words in this generation of participants. The words “FELLOW” and “MADAME” were also outlier reaction times. We believe this is because “FELLOW” can have varying definitions from the gender intended usage, and “MADAME” has decreased in usage. In future research, these words should be replaced or omitted.

Third, another limitation we discovered in our research is the number of participants we ran in one given time slot. In Noll (1999) ran one participant at a time, giving her control over the environment and the ability to make sure participants understood the task and performed the

task accurately. Unfortunately, time constraints required us to run our participants in groups of up to ten individuals. We believe this may have caused unwillingness to ask questions about instructions they did not understand, as well as the potential for social loafing.

Finally, there may have been issues with our use of what we called our “quick reference” index cards (Appendix C). These were index cards containing brief instructions to be used as a reminder to participants throughout the study. We found that, rather than using the index cards only occasionally, participants referenced the cards for most or every question. This added extra time to their reaction times, even in instances when they knew the task.

Future researchers must continue to explore gender biases in the English language, specifically the pronoun problem. Due to our differing results from Noll (1999), more research on this phenomenon must be conducted to see whether the pronoun problem has been naturally solved over time, or if the comprehension of epicene “he” continues to not be gender neutral. Looking at the gender differences in participants’ response times may reveal a new dynamic to the pronoun problem. It would also be interesting to explore whether gender biases are prevalent in other languages besides English. A study similar to ours could be conducted on other widely-used languages in the United States to discover whether phenomena like the pronoun problem exist.

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Appendices

Appendix A

Experimental Sentences

Critical Sentences:

1. Someone who respects authority should never openly question it, even if _____ may have doubts about the information being given.
2. Somebody who has been arrested twice for DUI should lose all driving privileges, even if _____ can promise to give up drinking.
3. Anyone who smokes should pay more for health insurance, even if _____ smoke/s less than a pack a day.
4. Anyone who watches violent TV shows contributes to TV violence, even if _____ might not approve of the violence.
5. Anybody who litters should be fined fifty dollars, even if _____ cannot see a trash can nearby.
6. Anybody who buys a gun should have to wait five days before acquiring it, even if _____ may seem like a respectable citizen.
7. Everyone who lives in America should be able to speak and read English, even if _____ came here from another country.
8. Everybody who believes in freedom should be willing to fight for it, even if _____ must risk death or financial ruin.
9. A child must be scolded for doing something wrong, even if _____ may be too young to know better.
10. A neighbor who is considerate will not play loud music, even if _____ are/is having a party.
11. A student should try to do every homework assignment without assistance, even if _____ might have trouble doing some.
12. A bicyclist should stop at every stop sign, even if _____ can see no cars coming.
13. A consumer may unknowingly purchase a food high in fat, even if _____ try/tries to buy only foods that are labeled "light".
14. A speaker should avoid reading a prepared speech, even if _____ will be nervous and want to get the wording exactly right.
15. A reporter should do whatever is necessary to get information about a crime, even if _____ must invade the privacy of the victim.
16. A psychologist should never reveal what is said during therapy, even if _____ are/is questioned by the police about the sessions.

Unrelated Sentences:

1. Exploration of outer space should be encouraged and supported, even if it is expensive.

2. Trees should not stand in the way of progress, even if they are old and beautiful.
3. Gas guzzling cars should be outlawed, even if gas prices are low.
4. Rock music requires less intellect than classical music, even if it is just as complex in its musical structures.
5. A health insurance company should cover all medical expenses, even if it cuts into the profits.
6. A car manufactured in Japan is a better buy than an American car, even if Japanese car prices are higher.
7. A public school provides a more rounded education than a private school, even if test scores are higher for the private schools.
8. Money is the root of all evil, even if it is earned from an honest day's work.

Practice Session:

1. Busch Gardens is a better amusement park than the Disney theme parks, even if Disney is more popular worldwide.
2. Circuses are cruel to animals and should be outlawed, even if the animals are physically well cared for.
3. The national debt should be the number one priority, even if it means higher taxes.
4. A comet is an amazing sight, even if it appears as a faint glow in the telescope.
5. A farm should be considered a treasure, even if it costs more to operate than it brings in.
6. Elected officials should not use state funds to campaign for reelection, even if they have served the people well.
7. Ministers should not be allowed to get married, even if they have found the perfect mate.
8. A librarian should know how to search any data base, even those that are rarely used.

Buffer Session:

1. Frozen yogurt doesn't taste as good as real ice cream, if even it is flavored with chocolate or strawberry.
2. A Macintosh computer is a better buy than a PC, even if Macs cost more initially.
3. A college education is not as helpful in today's job market, even within technical fields.
4. A credit card is a dangerous device, even when the interest rate is low.
5. The weather in Florida is perfect, even with the number of storms that occur.
6. Babysitters should not talk on the phone while on duty, even if the children are in bed.
7. A nanny should be strict and authoritative, even if the children are very well behaved.
8. People convicted of crimes should serve their entire sentence, even if it means building more prisons.
9. Everyone who is eligible should vote, even if they are unfamiliar with the candidates running for offices.
10. Sex education is the wrong way to try to reduce teen pregnancy, even if it includes teaching the use of condoms and other birth control methods.

11. Welfare recipients should be prohibits from having more children while still on welfare, even if birth control violates their religious beliefs.
12. Students in public schools should be allowed to celebrate religious holidays, even if it means a minority of students feel uncomfortable.

Filler Sentences:

1. Surgeons who double park are breaking the law, even if they may be in a hurry.
2. Physicists should never hesitate to develop a new technology, even if they might foresee its potential as a weapon of destruction.
3. Senators who have done something immoral should not be reelected, even if the offense was in private life.
4. Grade school teachers should have plenty of classroom supplies, even if they must pay for them themselves.
5. People should never drive after drinking alcoholic beverages, even if they just had a glass of wine with a full meal.
6. Prostitutes with AIDS who continue to work should be charged with attempted murder, even if they take safety precautions with every customer.
7. Professors should never make fun of students during class, even if they know the students well.
8. Fashion models should have lean figures, even if they must starve themselves and use cosmetic surgery.
9. Pet owners should always keep their pet on a leash or penned, even if the pet is a cat.
10. Curfews for girls should be earlier than curfews for boys, even if the boys and girls are the same age.
11. Art work that objectifies the human body should not be allowed in the work place, even if the pictures are of men.
12. A republican-led congress cannot be trusted to look out for the working poor, even during prosperous times.
13. Children should never come home from school to an empty house, even if both parents need to work outside the home.
14. A woman should not be elected president of the US, even if she qualifies as a good leader.
15. People who plant bombs at abortion clinics should be given the maximum penalty, even if they believe they are doing God's work.
16. All religions are not equal in the sight of God, even if we'd like to think that everyone is entitled to their own beliefs.
17. Drug addicts should not be blamed for their addiction, even if they fail every time they try to stop using drugs.
18. Mandatory drug test should be required for anyone applying for a job, even if the job does not involve the safety of others.

19. Adoption is always a better choice than abortion, even if the pregnancy puts the mother's life in peril.
20. Christianity should be taught in public schools, even if some of the students are of religions other than Christianity.
21. Beauty pageants are degrading to women, even if they award huge scholarships to the winners.
22. Farmers should not be subsidized by the government, even if they can no longer support their families by farming.
23. Welfare recipients should work for their public assistance, even if it is doing menial work for the government.
24. Getting married should require a legal agreement just like getting divorced, even if a legal contract seems unromantic.

WORD LISTS

<u>Masculine</u>	<u>Feminine</u>	<u>Filler Words</u>	<u>Nonwords</u>
BROTHER	SISTER	GROUPER	TECK
HUSBAND	WIFE	MONEY	BASIK
FATHER	MOTHER	PAPER	ACEAN
UNCLE	AUNT	BALL	SWIRT
SIR	MADAME	CAR	GLANT
BOY	GIRL	PIE	EGER
MAN	WOMAN	PEN	CLIGHT
SON	DAUGHTER	ASPEN	JART
KING	QUEEN	MARCH	BITTLE
GUY	GAL	PARADE	POTE
DADDY	MOMMY	OATMEAL	GUP
FELLOW	LADY	PUZZLE	RUP
		OBLONG	HUSP
		APPLE	TIRK
		SPY	GUARP
		RAFT	KNUG
		WASP	PLAM
		MAGAZINE	JASPIR
		POKER	SANNAL
		GARDEN	TRIFT
		CHIP	NATH
			FURNIBLE
			HITEL
			TADDLER
			GENCE
			BLENETER
			SLERM
			FAKEN

Appendix B

	FORM A	FORM B	FORM C	FORM D
1	"he"/fem	"he"/mas	"they"/fem	"they"/mas
2	"they"/fem	"they"/mas	"he"/fem	"he"/mas
3	"he"/mas	"he"/fem	"they"/mas	"they"/fem
4	"they"/mas	"they"/fem	"he"/mas	"he"/fem
5	"he"/fem	"he"/mas	"they"/fem	"they"/mas
6	"they"/fem	"they"/mas	"he"/fem	"he"/mas
7	"he"/mas	"he"/fem	"they"/mas	"they"/fem
8	"they"/mas	"they"/fem	"he"/mas	"he"/fem
9	"he"/fem	"he"/mas	"they"/fem	"they"/mas
10	"they"/fem	"they"/mas	"he"/fem	"he"/mas
11	"he"/mas	"he"/fem	"they"/mas	"they"/fem
12	"they"/mas	"they"/fem	"he"/mas	"he"/fem
13	"he"/fem	"he"/mas	"they"/fem	"they"/mas
14	"they"/fem	"they"/mas	"he"/fem	"he"/mas
15	"he"/mas	"he"/fem	"they"/mas	"they"/fem
16	"they"/mas	"they"/fem	"he"/mas	"he"/fem
17	none/fem	none/mas	none/fem	none/mas
18	none/mas	none/fem	none/mas	none/fem
19	none/fem	none/mas	none/fem	none/mas
20	none/mas	none/fem	none/mas	none/fem
21	none/fem	none/mas	none/fem	none/mas
22	none/mas	none/fem	none/mas	none/fem
23	none/fem	none/mas	none/fem	none/mas
24	none/mas	none/fem	none/mas	none/fem

Appendix C

Index Card for Right Handers

"F" = Yes, I agree.
"S" = No, I disagree.
"J" = Yes, that is a word.
"L" = No, that is not a word.

Index Card for Left Handers

"F" = Yes, that is a word.
"S" = No, that is not a word.
"J" = Yes, I agree.
"L" = No, I disagree.