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INDIVIDUAL DIFFERENCES IN THE COMPREHENSION AND CATEGORIZATION OF SARCASM

by

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Abstract

The present study investigated whether exposure to sarcasm can predict a person’s categorization of sarcasm. Participants (N = 44) were asked to complete a picture matching task. In this task, they would listen to a sentence and look at two images. Sentences had pause durations along a six-point continuum scale. One image was a sarcastic interpretation of the sentence, and one was a literal interpretation. They were asked to choose the image they felt best fit the sentence they heard. Afterwards they were asked to fill out a sarcasm self-report scale. It was predicted that stimuli would follow a linear trend, with ratings linearly decreasing as pause duration increased. While participants did display some of this linear trend, the results were not statistically significant. Future research is needed to better understand which individual differences can predict someone’s sarcasm comprehension.

*Keywords:* Sarcasm, picture-matching paradigm, sarcasm categorization
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Individual differences in the comprehension and categorization of sarcasm

Sarcasm is ubiquitous in language, but the production of it and consequences for comprehension exhibit many individual differences. An individual may show variation in both the ways they use sarcasm and comprehend other’s use of it. The process of sarcasm and irony comprehension have been well explored but still lack a good explanation of what individual differences are at a cognitive or experiential level. Sarcasm is a common type of speech defined as the act of saying one thing and meaning approximately the opposite and is marked lexically, paralinguistically, prosodically or contextually (Basha et al., 2018). For example, a person may say, “I did so well on that exam!” before showing their friend that they made an “F” on their test.

Many of the implementations of sarcasm are binary characteristics, either present or non-present. For example, if you say “It’s so cold” an elongated vowel of the word “so” may mean it is hot, whereas less emphasis on “so” may indicate it is in fact cold. While elongation can be continually manipulated, any extension over the base speaking rate could be seen as an extension, and therefore as sarcastic. Lexically, adding the interjections “gee” or “gosh” to a written sentence is enough to increase how often people indicate it looks sarcastic (Kreuz & Caucci, 2007). Contextually, if someone says, “John’s always on time,” when John is always late, it takes on a sarcastic meaning even without any changes in prosody. This would require shared knowledge of John and his habits, which again is either present or absent. Another cue that can be used to mark sarcastic speech is a pause (or ellipses in text), such as “Your haircut is really… great”. While the other cues are more binary in nature (either present or not present) pause duration has the advantage of being a continuous dimension, and thus may afford a deeper look into the nature of categorizing speech as either literal or sarcastic.
A pause is sometimes defined as being a break in speech that is at least .5 s long (Tepperman et al., 2006). Pause durations may sometimes indicate that a speaker is struggling to find the correct word, attempting to make a choice with their specific wording, or emphasizing a point (MacGregor et al., 2010; Schleef, 2019). The first question addressed in this thesis first explored was whether increasing pause durations increases how sarcastic a phrase sounds.

Individuals differ greatly with regard to sarcasm use and comprehension, exploring categorization in the context of individual differences may allow for detection of previously unidentifiable patterns. Exposure to sarcasm may alter how an individual identifies sarcasm use by others. If a continuum of sarcasm is used, it is possible we might be able to identify various categorization patterns that correspond to people’s experience using sarcasm. For example, participants that self-report a lot of exposure to sarcasm may categorize more of the continuum as sarcastic (category boundary shift), but within each category act very similar. Perceptual categorization is the process through which we distinguish between similar or dissimilar elements in the world and divide them into groups (Croft & Cruse, 2004). Humans use it to distinguish colors, (Xiao et al., 2011), gender (Zhang et al., 2018), emotions (Pollack & Kistler, 2002), animals (Bratanova et al., 2011), and is ubiquitous in speech (McMurray et al., 2018). Sarcasm has not been studied as a categorical phenomenon in the past. Perhaps this is because the majority of cues for sarcasm are more binary in nature, either present or absent such as an additional word or prosodic cue. Sarcasm may not be a “categorical” phenomenon itself, but the methods found in categorization studies may help to explore the boundary between literal and sarcastic speech in more depth.

Sarcasm use and comprehension are shaped in large part by life experiences, which we are proposing also influence the use and comprehension of sarcasm. Categorical perception of
emotion is known to be shaped by experience. In the study by Pollack and Kistler (2002), the researchers created a categorical perception task with facial expressions that gradually changed from happy to fearful, happy to sad, angry to fearful, and angry to sad. The participants were children that were split into two groups: children who previously suffered abuse, and children without a history of abuse. The participants were asked to view pairs of images side-by-side and identify the emotion that was being displayed. While there were no significant differences between participants for happy, sad, or fearful, researchers found that the participants with a history of abuse were more likely to identify an emotion as anger. The participants’ perceptual categorization of negative emotions was shaped by their individual differences. This supports the notion that life experiences and a person’s environment can impact their pattern of categorization. While this is a different modality than language, categorization phenomena between modalities often exhibit commonalities. If being consistently exposed to anger makes a person more likely to interpret an emotion as anger, perhaps being consistently exposed to sarcasm will make a person more likely to interpret a sentence as being sarcastic or use more subtle cues to mark sarcasm in their speech.

The current studies aimed to explore the perceptual categorization of literal and sarcastic speech and examine the individual differences (in terms of amount of exposure) that may contribute to variability in sarcasm categorization. While the phenomenon may not be categorical itself, looking along a continuum allows for a more fine-grained assessment of how sarcastic-leaning or literal-leaning an individual might be and allowing for comparison across individuals while allowing for various patterns to emerge. For example, with a binary marker of sarcasm like insertion of the word “gee”, you can get the proportion of responses that are marked as sarcastic, but this relies on simple detection of a word and if it is associated with sarcasm in
that individual. With pause duration, one person may interpret .5 s pauses and 1s pause as literal and a 2 s pause as sarcastic, while another person may interpret only .5 s as literal. This study used a 6-step continuum of progressively increasing pause duration. The first study demonstrates that this continuum does show an increase. Individual differences were examined to help determine where a participant may begin detecting sarcasm on this 6-step continuum. To test these predictions, we developed a picture-matching paradigm where participants indicate an answer by matching an image to the audio recording. The picture-matching paradigm is well established in the literature (Huette, 2016; Lüdtke et al., 2008; Tian et al., 2016; Vissers et al., 2008). In this task, participants hear a sentence and are presented with at least two images. One image will be a matching context and one image will be a mismatched context. This paradigm is often used in negation literature (Huette, 2016). The version that was used for the current study was slightly modified. In negation literature, there is an objectively correct answer to the picture matching task (Tian et al., 2016). However, in the current study the answer was based on the individual participant’s perception of the sentence that is presented to them. It is quite common in categorical perception literature to not have a “correct” answer (Cuskley et al., 2019; Fuhrmeister & Myers, 2021; Huette & McMurray, 2010). There was more interest in seeing where the categorical boundaries lie for each participant.

Frequency in the usage of sarcasm, interpretation, and cues or features that signal sarcasm may all be different as a function of individual differences (Filik et al., 2018; Olkonie et al., 2019). In our study we examined individual differences to see the impact they have on perceptual categorization in sarcasm. Previous research has shown that different personal experiences influence a person’s tendency to pick up on cues that a sentence is intended to be sarcastic (Anderson & Huntington, 2017 Dress et al., 2008; Olkonie et al., 2016). In a study by
Ivanko, Pexman, and Olineck (2004), researchers developed the Sarcasm Self-Report Scale (SSS). They created two experiments for their study. In their first experiment, they asked participants to complete a sarcasm self-report scale. They then asked participants to read scenarios such as, “You score the winning point for your team in the final basketball game of the season . . .” When the participant reached the ellipses, they were asked to complete it with a sentence. They found that participants who had a higher self-report of using sarcasm were more likely to use sarcasm in the sentence completion task. For the second experiment, participants were presented with a scenario in either a strongly negative context, or a weakly negative context. An example scenario would be: “Sam agreed to pick Christopher up after school.” For the strongly negative context, this sentence would follow, “Sam never arrived to pick up Christopher and never called to say why.” For the weakly negative context: “Sam arrived 1 hour late and apologized.” This would then be followed by either a literal (“Sam is a rotten friend.”) or sarcastic (“Sam is a nice friend.”) statement. Participants read these scenarios on a computer screen one word at a time and their reading times were recorded. Participants also completed the Sarcasm Self-Report scale after finishing the computer task. It was found that participants who reported using sarcasm more often had a faster reading time for the sarcastic responses and were able to process sarcastic statements more quickly. This shows that individual differences play a part in sarcasm comprehension. While this experiment did examine individual differences in sarcasm, it did not look at it in the context of perceptual categorization. The current studies have helped fill in this gap in the research.

**Study 1**

Study 1 was developed to normalize audio stimuli for a larger study that would follow soon after. It contained pause durations on a 4-step continuum. We wanted to see if participants
would interpret sentences differently based on the duration of the pause, and we wanted to see if any adjustments needed to be made to this original 4-step continuum. It was predicted that stimuli would follow a linear trend, with ratings linearly decreasing as pause duration increased. Participants would perceive sentences with longer paused to be more sarcastic than sentences with shorter pauses.

**Method**

**Participants**

We recruited 38 participants from the University of Memphis SONA system. They received partial course credit for completing this online survey.

**Materials**

**Audio Stimuli**

Audio stimuli (see Appendix A) were recorded by a trained psycholinguist with even prosody to avoid segmental cues. Cues that could lead to a sentence sounding sarcastic for any reason other than the pause duration were avoided. Some of these cues would include elongated vowels, stressing words, or higher intonation. The pauses (silences) have been added in after the word “very” for various durations including: .5 s silence, 1s silence, 2 s silence, and 3 s silence. We wanted to get a glimpse of the category boundaries for these pause durations. The sentences had the word “very” followed by the pause duration, which was then followed by an adjective. This was an attempt to keep the sentences relatively similar to each other while consistently being able to sound sarcastic. We also created filler sentences that were all literal, but also contain a pause but with no room for ambiguity. These sentences do not have the pause duration edited in but were spoken naturally with a pause of variable length. An example would be,
“Could you please pass the… salt?” with accompanying pictures of a hand and salt paired with a picture of a flower.

**Procedure**

We utilized Qualtrics to program the study and send it to participants for completion. The sentence structures contained pause durations at the intervals of .5 s, 1 s, 2 s, and 3 s. Participants were instructed to listen to each sentence carefully and rate the genuineness of the sentences. Participants were asked to wear headphones and adjust their volume to a comfortable level. Participants could see the media player on the screen during each question. They pushed play for each sentence. Beneath the media player they could see the question “Please indicate how sarcastic/sincere the sentence sounds to you.” They would then answer on a seven-point Likert scale with “1” indicating sarcasm, “4” indicating they were unsure, and “7” indicating sincerity.

**Results**

A one-way within-subjects ANOVA was conducted to compare the effect of the pause durations on the genuineness ratings. There was a significant effect of the pause duration, Wilks’ Lambda = .592, $F (2, 33) = 7.575, p < .001$. The means of each pause duration followed the linear trend (see Figure 1), .5s ($M = 4.49, SD = .975$), 1s ($M = 4.19, SD = .960$), 2s ($M = 3.72, SD = .916$), and 3s ($M = 3.38, SD = 1.079$) with a significant linear trend, $F (1, 35) = 29.93, p < .001$ (see Figure 1). A higher score meant the listener interpreted the sentence to be more sincere. This result indicates that the longer the pause duration, the more likely a participant was to interpret the sentence as being sarcastic.
Figure 1

Sarcasm Rating Pilot Data

![Graph showing average sarcasm rating vs. pause duration]

Note: Sarcasm scores are displayed for the pause durations of .5s, 1s, 2s, and 3s. Error bars indicate standard error.

Discussion

The results supported the predictions for the study that the longer the pause duration, the more sarcastic the sentence would sound for the included pause durations. This first study supports that the auditory manipulation included in study 2 includes an increasingly sarcastic sounding continuum. While the spread of pause durations from .5 s to 3 s appeared to be good, one potential weakness from this study is the intervals were not consistent (i.e. in increments of .5 s). As a result, two more steps were added to the second study: a 1.5 s pause and a 2.5 s pause to create a six-step continuum.
Study 2

We did this second study to find out whether a participant’s exposure and use of sarcasm could be used to predict how often they would perceive sarcasm from another speaker. If someone reported extremely high levels of exposure, would that also mean they were more likely to interpret a sentence as sarcastic? If someone had extremely low exposure, were they more likely to take a sentence at face value? Could this be observed by isolating one dimension (pause duration) of sarcasm? There were several predicted outcomes for this study. On average, we predicted shorter pauses (.5 s and 1 s) were more likely to be interpreted as literal, longer pauses (2.5 s and 3 s) were more likely to be interpreted as sarcastic, and medium pauses (1.5 s and 2 s) would be either sarcastic or literal. However, this pattern is almost inevitable when there are two response options – participants must select one or the other. Aside from individual cognitive and environmental differences, we also predicted that some participants would display distinct patterns in their answers, while some would simply guess. It was predicted that if life experiences alter literal and sarcastic language boundaries then those differences should be at least partially predictive of each participant’s categorization style. If a participant had extremely high levels of sarcasm exposure, there were more likely to predominantly choose sarcastic responses. If they had an extremely low level of exposure, they were more likely to predominantly choose literal answers. People who fell in between the levels of exposure may lean slightly to sarcasm or literal interpretations. Others may just guess on every single sentence.

Method

Participants

We recruited participants from the University of Memphis SONA system. A power analysis indicated we needed approximately 70 participants to get a medium effect size result with a
moderate amount of power. While initially 90 participants were recruited, we ultimately ended up with 44 participants due to dropouts (completing less than 80% of the study) and technical difficulties. Ramifications for this issue will be discussed further in the Discussion section.

Demographics were recorded for each participant. The average age for participants was 23, ($M = 23, \, SD = 6.87$). The median age for participants was 20. The average GPA for participants was 3.28 ($M = 3.28, \, SD = 1.03$). Prior research indicates metrics such as IQ or GPA do not predict sarcasm use well, so this was not analyzed further. Nine participants were male and thirty-five were female. Nineteen participants identified as Caucasian, eight as African American, and the rest as Other.

**Materials**

**Audio Stimuli**

Audio stimuli from Study 1 were included along with two more continuum steps to create a six-step continuum. Pause durations of .5 s, 1 s, 1.5 s, 2 s, 2.5 s, and 3 s were included in this study.

**Visual Stimuli**

The visual stimuli consisted of pairs of images (see Appendix A) which were obtained from clip art websites, such as Clipart.com. Effort was made to use pictures that were of a cartoon style. This was important because there was concern that varying styles between the images could cause bias in some participants who preferred one style over the other. Images were converted to black and white so that participants were not making selections based on more attractive colors. They were edited so that all the images were the same size (250x250 pixels). This decision was made to ensure that attention would not be directed towards an image that takes up more of the screen, thus creating an unfair advantage. The target was the participant’s
interpretation of the sentence they heard. The competitor was the other related meaning of the sentence. Because there was no objective truth to which tokens are sarcastic, the competitor was defined as the picture they did not choose, while the target was defined as the picture they did choose. For the sentence, “Mary is very graceful,” the two images were a ballerina (literal interpretation) and a woman tripping and falling (sarcastic interpretation). If a participant believed the sentence they heard was sarcastic, they should select the picture of the woman tripping and falling. For the filler trials, there were also two images. There was a literal interpretation of the sentence, and an entirely unrelated image. The target image was the literal interpretation of the sentence.

**Questionnaire**

For the self-reported use of sarcasm, we used part of the scale developed by Ivanko, Pexman, and Olineck (2004) (see Appendix C). There were a total of eight questions. The questions asked participants to self-report sarcasm usage on a seven-point Likert scale. A segment was used instead of the entire scale because it would nearly double the task time for participants. It was still important to include it so that we could gauge the amount of sarcasm participants believe they normally produced. While the original study was looking at individual differences in sarcasm production and interpretation, we wanted to apply this scale to participants’ perceptual categorization of sarcasm as well. We also included the question, “How often do you encounter sarcasm on the internet?” Participants answered on a seven-point Likert scale, with 1 meaning that they do not encounter it very often and 7 meaning that they regularly encounter it.

**Procedure**

We utilized Qualtrics to program the study and send it to participants for completion. Participants were first asked to complete a picture-matching task. The instructions asked
participants to use headphones as well as ensure that the volume on their computer was at a comfortable level. They were asked to adjust their volume to a level that sounded like they were having a face-to-face conversation. We also had them check a box to confirm they were using headphones. Instructions were included on the first page of the study. They were told that they would be listening to a series of sentences and to choose the picture that best matches the speaker’s intended meaning. They were told some of these sentences were genuine and some sarcastic with examples of each kind. They were asked to click on the image they felt best represents the sentence they just heard. When the study began, they saw two pictures and simultaneously heard the pre-recorded sentence spoken. Participants were not able to click on an answer before the spoken sentence finished playing. This was to ensure that they were not choosing answers before they heard the sentence in its entirety. Sentences were paired with related images that represented a literal and sarcastic interpretation of that sentence. Presentation order of trials were random. Participants indicated their answers by clicking on the picture matching the meaning of the sentence they heard, and their responses were recorded. After this task was completed, they were asked to fill out some questions related to environmental and cognitive factors. These included answering questions about demographics, GPA, and a sarcasm self-report.

Results

Data processing

The average score for the sarcasm self-report scale was 4.05 (M = 4.05, SD = 1.11). The overall average proportion of sarcastic responses was 0.254 (M = .254, SD = .317). Participants were placed into one of five groups: predominantly sarcastic (N= 4), sarcastic leaning (N= 10), inconsistent/guess (N= 5), predominantly literal (N= 14), and literal leaning (N= 4). Participants
tended to display gradual shifts between literal and sarcastic interpretation instead abrupt shifts from one to the other. Predominantly sarcastic was defined as a participant who showed an average proportion of \( \geq .7 \) for steps 2-4. Sarcastic leaning was defined as a participant who showed an average proportion of \( \geq .4 \) for steps 2-4. Inconsistent/guess was defined as a participant who showed an average proportion within \( .1 \) of \( .5 \) for 5-6 steps or a slope of \( \leq .05 \). Participants who fell under the criteria for inconsistent/guess were discarded from the analyses. This was because it appeared they chose answers at random. Predominantly Literal was defined as a participant who showed an average proportion of \( \leq .33 \) for steps 2-4. Literal leaning was defined as a participant who showed an average proportion of \( < .4 \) for steps 2-4. Participants were discarded if they answered less than 80% of the questions or reported significant technical difficulties with the study (such as being unable to hear audio). We predominantly examined steps 2-4 because participants consistently categorized step 1 as literal across all groups. Across all but the inconsistent/guess group, participants consistently interpreted sentences as being more sarcastic. Therefore, the inconsistent/guess group was given different criteria than the other groups. We used the independent (predictor) variables (individual differences) to predict the group of each participant. Participants who regularly encounter and use sarcasm would likely have more consistency in the intervals for their literal and sarcastic answers (consistent categorizers). They have learned particular patterns for sarcasm usage and have a system by which they apply them. Participants who answer nearly all literal or all sarcastic would likely have very low or very high exposure to sarcasm (predominant categorizers). They have either barely had any exposure or they have an overabundance of exposure. This makes it more difficult to pick up on cues. They might entirely miss potential cues or be hypersensitive to potential cues. The final group would likely have exceptionally low exposure to sarcasm; thus,
they must guess nearly every answer (inconsistent categorizers). The number of people in these different groups had not been studied before and was an exploratory question. See Figure 2 for individual examples of responses from participants and see Figure 3 for an aggregate of all participants from each category. For both charts, step 1 is .5 s, step 2 is 1 s, step 3 is 1.5 s, step 4 is 2 s, step 5 is 2.5 s, and step 6 is 3 s.

Analyses

Two binary logistic regressions used the individual sarcasm rating to predict categorization style. This type of regression was used because the response variable is categorical. The first regression tested participants who fell into the categories of predominantly sarcastic and predominantly literal. The second regression tested participants who fell into the categories of sarcastic leaning and literal leaning. Using two separate regressions was chosen because it was decided that testing them together may be too coarse of a scale to see what was happening with participants. We wanted the ability to capture the full continuum of behavior that was observed in this study. We tested to see if the self-reported sarcasm answers could predict how often a participant would perceive that a sentence was sarcastic. If this was true, higher self-reported sarcasm usage would mean a higher proportion of sarcastic detections.

Figure 2
Comparison for slopes for steps 2-4

Note: This figure displays the slopes of individual participants for steps 2-4 of the pause durations.

Figure 3

Aggregate of all participants

Note: This figure displays average slopes for all members of each categorization group.
Results

Two binary logistic regressions were performed to examine the effect of sarcasm exposure on the categorization style displayed by participants. It was predicted that binary logistic regressions would be able to use sarcasm ratings to predict participants’ categorization style. A high sarcasm exposure score would predict a participant to be in the predominantly sarcastic group, a low exposure score would predict that a participant would be in the predominantly literal group. This would allow prediction of categorization style based off individual differences in the participants. The first logistic regression model examined the predominantly literal and predominantly sarcastic participants. It was not found to be statistically significant, $\chi^2(7) = 5.38, p > .05$. The model explained .009 (Nagelkerke $R^2$) of the variance in strategies and correctly classified 18% of cases. The second logistic regression model examined the literal leaning and sarcastic leaning participants. The second model explained .008 (Nagelkerke $R^2$) of the variance in strategies and correctly classified 16% of cases. It was not found to be statistically significant, $\chi^2(1) = .076, p > .05$.

General Discussion

The study involved a computer task where participants listened to a phrase with a pause of various durations. At the same time, they saw images that contained a sarcastic interpretation of the sentence and a literal one. They then picked the image they thought most appropriately fit the sentence they just heard. After they completed this task, they were asked to fill out demographic information. We ran binary logistic regressions to examine our results. Some of our predictions were still met, however. Participants displayed different, distinct strategies in their categorization of sarcasm. Their exposure to sarcasm also seemed to have an impact on the strategy they employed.
There were some considerable limitations to this study. Because many participants dropped out or were unable to complete the experiment due to a technical error, the number of participants may not have been sufficient. This could have impacted the results of the study. Another potential issue is the sarcasm exposure scale rating may not be sensitive enough or be attending to the correct aspect of sarcasm exposure. Future observational research will hopefully uncover key aspects to individual differences in sarcasm usage and comprehension. Finally, future studies will need to collect and analyze data that is able to look more closely at responses as they happen so the mental process behind the categorization decision can be examined.

Ultimately, our analysis did not show statistically significant results in study 2 but did conform to the predicted patterns of responding. Some people are more likely to comprehend sarcasm than others. Some people are more likely to see a statement as literal. What makes the former different from the latter? It is possible that there could be some underlying individual differences that explain this behavior. What these individual differences are could be discovered in further studies. While our results might not have been significant, this study has still displayed some interesting results that will certainly contribute to future research. Sarcasm can be very difficult to predict. This study has added many more research questions for us to examine in our future studies. Future plans for this study include a mouse tracking task alongside the categorization task. The mouse tracking task would allow us to view competition between the images the participant needs to choose from. We would be able to see how much time they spend debating their options before they make a choice. With this addition, we could see more of the process as it is happening instead of just looking at the responses afterwards. This would give us even greater insight into the categorical boundaries we wish to explore, and the way pause
duration plays into these boundaries. This sets up many potential future studies exploring these boundaries and the way different factors can play into them.
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Appendix A: Picture-Matching Task Visual Stimuli

1. Gina is very posh.

2. Mary is very graceful.
3. Bobby is very kind.

4. Josie is very beautiful.
Uriah is very generous.

6.

The cat is very cute.

7.

Marcus is very talented.
8.
Morris is very bright.

9.
Melissa is very personable.
11.

The bathroom is very pristine.

12.

David is very punctual.
13.

The climate is very dry.

14.

Emily is very gentle.

15.
Joey is very patient.

Trevor is very perky.

The cake is very good.
18.
Ashley is very bold.

19.
The house is very big.

20.
Eliza is very busy.

Riley is very polite.

Jimmy is very productive.
23. Donny is very brave.

24. Alex is very tall.

25.
The wolf is very tame.

Kathy is very glamorous.

\[ 2 + 2 = \]

27.

The math problem is very clear.
28.

The dog is very tiny.

Filler Sentences

1.

Could you please pass the… salt?
2. Today I ran into… Jim.

3. The movie is called… Aladdin.

4. 
Sally brought the uh cheesecake.

5.

I need the uh glue.

6.

I bought her a… flower.
7.
I need to borrow a... pencil.

8.
He called me on the uh phone.

9.
I can’t find the uh key.

10.
I’m going to need the uh jar.

11.
I bought the uh pie.
12.
He lost the uh mug.

13.
We met at the uh park.

14.
Sarah plays the uh viola.

I bought pens, highlighters and… paper.

Greg made the uh casserole.
17.

We should buy her a… bicycle.
Appendix B: Demographic Questions

1. What is your age? ___

2. What is your gender?
   a. Man
   b. Woman
   c. Other

3. What race do you best identify with?
   a. White
   b. Black or African American
   c. Asian
   d. Native American or Alaskan Native
   e. Native Hawaiian or Pacific Islander
   f. Other

4. What is your GPA? ___
Appendix C: Sarcasm Self-Report

1. Likelihood that you would use sarcasm with someone you just met
2. How sarcastic do you think you are?
3. Likelihood that you would use sarcasm when insulting someone
4. Likelihood that you would use sarcasm with your best friend
5. How sarcastic would your friends say you are?
6. Likelihood that you would use sarcasm with a new colleague at work
7. Likelihood that you would use sarcasm while complimenting someone
8. How often do you make sarcastic statements during daily interactions?