Social Anxiety and Word Use: How Environments Can Influence Words

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Abstract

Language provides insight into individuals’ perceptions, needs, and desires. Stress has been shown to influence an individual’s self-presentation to others, and in the current study, the impact of stress on language was examined. Ninety-four participants completed a stressful speech about the body part that they liked the least. The results indicated that as state anxiety levels increased in males, the use of social related words and references to others increased. This relationship between language use and state anxiety levels was not found in females. These results conflict with current theories of gender differences and coping with stress.
Social Anxiety and Language: Gender Differences of Word Use

Words serve as a link between a person’s outside world and inner being. As part of verbal communication, language communicates the need for survival, a medium of thought and learning, and is the most common form of expression that humans use to interact (Goodman, 1986). Various researchers have stated that language is not used specifically for communication, but also facilitates negotiation of relationships (Pinker, 2007).

However, Pinker and others believe that language serves as part of an executive function and not as the medium of all thought (Pinker, 2003). Evidence given for this standpoint is revealed by those that do not have language but still have categorical function of thought that continues to work, such as: objects, space, cause and effect, number, probability, agency and even tool creation (Pinker, 2003). Primates and infants exemplify these internal workings of the mind because they still communicate their needs and desires without the use of words.

Language has also been found to be processed and retained wholly as a sum of its parts. Past research on “...human memory have confirmed that what we remember over the long term is the content, not the [specific] wording, of stories and conversations” (Pinker, 2003, p. 210). A given example of this is after reading a passage you can recall the overall meaning and general concept of the information. A person is not able to repeat the sentences back verbatim and will leave out bits of the sentences the original author had included. Even if specific words use is not encoded, a person’s choice of individual words should still be a subject of research. Perhaps word use that people share during speech could be used as an indicator to some of the internal processes that the individual experiences.

Word Use
Pennebaker has proposed that the way people talk reveals their own individual identity (Pennebaker & King, 1999). He asserts that the words people use reveal a person’s mental, social, and physical state, including a person’s unconscious condition (Pennebaker, Mehl, & Neiderhoffer 2003). He has also found that language fluctuates on numerous degrees of demographic variables, such as age and gender, and these word choices are utilized in different ways among these items (Pennebaker, et al., 2003; Newman, Groom, Handelman, & Pennebaker 2008). Newman et al. (2008) comprised more than 14,000 language samples that used various forms of communication. Gender differences were found in the types of words used. Specifically, females, more than males, used first person singulars (“I” for example), function words (like pronouns), and social references reflecting various group processes (“advice”, “explain” etc.) (Newman, et al., 2008). Males used more prepositions and articles than females, which were suggested to reflect a more socially detached linguistic pattern (Newman, et al., 2008). However, this study was comprised of various modes of communication, both written and spoken language. In addition, it was found that people will use language differently depending on modality (Newman, et al., 2008).

Pennebaker asserts that word choice changes during stressful times as well, in addition to finding that when sharing a personal or traumatic experience, parts of speech can subtly change (Pennebaker, Mehl, & Neiderhoffer 2003; Pennebaker & Lay, 2002; Stone & Pennbaker, 2002; Gortner & Pennbaker 2002). Furthermore, positive correlations were found between depression and an individual’s use of first person singulars (Pennebaker, Mehl, & Neiderhoffer 2003). When these individuals were asked to talk about any topic for ten minutes, depressed people used “I” significantly more than the non-depressed, no matter the subject they spoke about (Pennebaker, Mehl, & Neiderhoffer, 2003). This study indicates how one single word choice could be an
indicator of a person’s negative state, whether or not they understand the implications of their speech.

Varying degrees of word use can have many sources of influences. Past research has shown that word use can depend on various factors, including a person’s perception, their current state of being, as well as shifting environments (Pennebaker, Mehl, & Neiderhoffer, 2003; Giles & Coupland, 1991). These subtle language differences show how the speaker inadvertently changes word use depending on the situation and environment. Consequently, what people say may actually be an indication of something the person had not intended to communicate. Therefore, word choice during speech may not be so much of a choice at all, and is rather unknowingly influenced by the environment and our social situations.

**Word Use in Social Situations**

Stressful situations can change word choice; however, word use may also vary depending on the individual’s desire to promote social interaction. One theory, the communication accommodation theory, suggests that people can negotiate the social distance between themselves and others during interactions by creating, preserving, or minimizing that distance (Pennebaker, Mehl, & Neiderhoffer, 2003; Giles & Coupland, 1991). Perhaps, specific word choice that people use during this accommodation could be used as a measure for their social distance to another being.

During social situations, language changes how others perceive the speaker. Attempting to create a positive self-presentation may change how language is used by a person. During self-presentation, the person attempts to control how they are viewed and evaluated by others. A listener hears language that is presented by the speaker, and makes social judgments based not only on the speaker’s behavior, but also on the words that are communicated (Kircher & David,
People use language as a tool to help them achieve positive evaluations and maintain a safe social distance to others. However, social anxiety may result if a person doubts their ability to convey the particular impression that they had intended (Mack, Strong, Kolwaski, & Crocker, 2007). Studies have found that people experiencing a social anxiety will allow longer silences to develop during conversation, and take longer time to respond, than those not experiencing a social anxiety (Leary & Kowlaski, 1995). This is an example of how language, or a lack thereof, can be influenced by a person’s level of perceived anxiety. Therefore, one question to ask is if social anxiety can change specific word use that people employ during conversation.

**Social Anxiety and Physique Evaluation**

One particular type of social anxiety, social physique anxiety (SPA), has been found to exist when a person is concerned with how others view their physical appearance (Russell, 2002). During this anxious period, various attempts are made by people to alleviate their restless state. Carron, Estabrooks, Horton, Prapvessis and Hausenblas (1999) determined that the company of others, regardless of their sex, significantly reduced SPA as compared to the anxiety levels of the participants in the alone condition.

Mack, Strong, Kowalski, and Crocker (2007) examined other’s influence on SPA further, and whether or not friends specifically would lower SPA in adolescent males and females as compared to being around strangers. They found that only female participants used friends as a source of protection, which reduced their levels of SPA. Mack and colleagues suggest that this reduction in SPA occurs for females because of their frequent supportive and encouraging discussions related to physique that they have with companions. On the other hand, males do not have these types of engagements with friends, and as a result, do not have alleviation from SPA. This study found that males do not experience body related types of discussions or pressures to
alter their physiques as much as females do; in addition, when these engagements do occur, males have a greater impact than females (Mack et al., 2007, p. 1259). The greater impact on males signifies stronger body dissatisfaction and an even greater desire to alter one’s own physique (Mack et al.).

Being around others can alleviate rising levels of SPA for females. Males, however, might still be seeking for social interaction to alleviate their symptoms, but may use a different modality when seeking for this support. Word choice might serve as a means in which a person experiencing SPA unknowingly communicates a need for others, especially for males.

**Gender Differences in Stress**

These studies examined gender differences to a specific anxiety provoking situation, specifically SPA. Anxiety aggravated situations can incite a stress response in individuals, and several studies have found gender differences during these responses. Whether a physiological or psychological reaction, stressful situations can impact a person in both a beneficial or negative way. Depending on whether the stressor is acute or chronic, the person will react differently. These situations induce a biological response in a person that causes them to act in order to avoid perceived harm that may be impending. Increasing anxiety levels can lead an individual to experience a stress response. During this acute stressor, the person realizes that they are in a situation in which they need to protect themselves. It has been proposed that males and females react differently in these times of stress. Taylor (2006) proposes that females have a tend-and-befriend response when experiencing a stressful situation. This type of reaction facilitates behaviors that are oriented towards nurturing (tend) and cooperation (befriend) instead of competition. In contrast, males are compelled, in times of stress, to react with a fight-or-flight
response. Language may play an important role in these types of stress responses, solely because that person engaged in the stressful situation may have to communicate their need to act.

Validation for gender differences during a stress response has been shown empirically. Gender differences were shown in hormonal level changes during times of stress. Ennis, Kelly, and Lambert (2001) found that levels of cortisol change and these levels depend on how the individual perceived their stressful situation. The individual's view of their situation, as either a threat or a challenge, varied their levels of stress released hormones. Males that perceived their situation as a challenge had a significant rise in cortisol, and males that perceived the situation as a threat had no change in cortisol levels. Females that viewed their situation as a challenge had a significant decrease in cortisol levels, whereas females that perceived their situation as a threat had a non-significant decrease in cortisol levels (Ennis et al, 2001). These changes in hormonal release were hypothesized to be due to both the fight-or-flight response in males, and the tend-and-befriend response in females. The females’ inhibited response of secreted cortisol during this challenge appraisal facilitated a decrease in the stress response, specifically in the hypothalamic-pituitary-adrenal (HPA) activation process (Ennis et al., 2001). This was thought to promote the tend-and-befriend response in females (Ennis et al., 2001). These biological changes are due in part of a psychological perception. Many variables influence people’s reactions in time of stress; including gender, perception, and hormonal response. Perhaps language is impacted specifically by a person’s stress response and influenced by all of these variables that define their particular reaction to stress.

**Stress and Word Use**

Past research has found that word use is impacted by distress. One study conducted by Boals and Klein (2005) found significant changes in word use when people spoke about a stressful
relationship that had ended. Participants had written about their pre- and post- time of breakup. They found a significant difference in cognitive and affective words, as well as differences in use of pronouns, all of which were dependent on the level of distress associated with the breakup (Boals & Klein, 2005). The word use differences found in this study proposes that time of breakup, the occurrence and perception of the event, whether distressing or not, can alter the words used when they explained their situations.

Another study analyzed interviews conducted on 20 holocaust survivors (Boals & Perez, 2009). The within-subject design compared conversations of people speaking about holocaust related experiences (stressful event) to non-holocaust related experiences (not stressful). Differences of first-person singulares (I) and plurals (we), affect words (anger, happy), and cognitive words (such as therefore, because, understand) were reviewed. Cognitive words use was found to reflect coping processes, as well as being an indicator of non-avoidant behavior related to the traumatic experience even years after the first interview. However, use of first person singulares decreased when speaking about holocaust related matter, and use of first-person plurals increased when speaking about holocaust related items. These differences in first-person word use were thought to exist because people experienced the holocaust with others as a collective stressful experience instead of being alone at the time of the event (Boals & Perez). Typically, past research has found that when discussing a stressful event, use of first person singulares will increase (Boals & Klein, 2005; Pennebaker & Lay, 2002). This is an example of how word use greatly depends on subject matter and time of the event, as well as the circumstance to which the stress has been, or is, induced.

Researchers have also found that people’s language use in expressive writing can help predict beneficial outcomes (Pennebaker, Mayne, & Francis, 1997). Here it was hypothesized
that by measuring word use in narratives describing traumatic and emotionally distressing periods, changes in self-reflective thinking type words (i.e., understand, insight) or causal thinking words (reason, because) between writing sessions would be indicative of health improvements over time (Pennebaker, Mayne, & Francis, 1997). In addition, positive emotion word use (happy, for example) was hypothesized to be better predictors of health outcomes than negative word use (i.e., angry) (Pennebaker et al, 1997). Results suggested that participants who increased their use of positive emotion words had better health outcomes over time. In addition, those participants who used more self reflecting or causal thinking words over time showed a decrease in doctor visits and physical symptoms of illness, college student’s grades had improved, and unemployed engineers had found work faster than those who had not significantly increased causal thinking word use for their second narrative (Pennebaker, et al, 1997). This research suggests that people’s word use over time is a product of one’s mental and physical change.

In the previous studies discussed, one’s perception of an event can alter both biological and communication functions. It is logical then to propose that SPA can have an effect on a person, as SPA can be perceived as a stressful event. It is possible that SPA can not only effect a person’s body satisfaction, but can also alter words used in conversation.

The present study examines whether or not various forms of words used by males and females vary depending on their levels of expressed state anxiety when talking about their unfavorable body part. It is hypothesized that there is a general word use difference among males and females. Specifically, it is hypothesized that women will use more first person singulars and references to the self, and males would use more prepositions and articles. These results would be replications of past research suggesting that this word use in females reflect social processes
(use of more social words, i.e. “advice”, and more first person singulars than males), while male’s pattern of word use reflect socially detached language (more articles and prepositions than females) (Newman, Groom, Handelman, & Pennebaker 2008; Pennebaker et al 2003).

Secondly, it is hypothesized that there will be an interaction between gender and state anxiety on language use when describing an unfavorable body part. Specifically, it is hypothesized that females’ word choice does not change when levels of state anxiety increase. Past research indicates that because females engage in frequent types of body related talk, they may not be impacted by a speech about their body. Therefore, it is likely that increases in state anxiety would not influence word choice in females. Additionally, it is hypothesized that increased levels of state anxiety in males will be related to increases in the number of social reference words (i.e., “others”, “advise”, “friendship”, etc.). Other studies have found that males’ lack of communication about body related issues may result in them having a greater impact of SPA, which leads to stronger body dissatisfaction. Since females have been found to use friends as a source of protection from effects of SPA, perhaps males do too. However, since males in previous literature were not found to use friends as a source of protection from SPA, this language change might reflect an unconscious attempt to use social relationships to reduce males’ levels of SPA. Therefore, the increase in social reference words would reflect an effort to seek others through language in attempt to alleviate SPA in males.

Methods

Participants

Ninety-four undergraduates \((n = 61 \text{ females})\) from the University of North Texas were randomly selected from a larger study \((n = 289)\) in which the effects of stress on working memory and executive function were examined. Participants received partial course credit for
participation. Participants for the current study were randomly selected from a larger population; the sample size was reduced due to time constraints for the current methodological procedure.

Materials

**Inducing stress.** Participants were asked to discuss their least favorite body part for three minutes while being videotaped. This task has been successfully used in prior research as a public speaking task to induce stress (Britt, Cohen, Collins, & Cohen, 2001; Starcke, Wolf, Markowitsch, & Brand, 2008). Researchers have also indicated that discussion of a person’s own physique will induce anxiety (SPA), especially if participant engages in social comparisons to others (Mack et al. 2007).

**State and trait anxiety.** Participants completed the State-Trait Anxiety Inventory (STAI) as a measure for their level of state and trait anxiety (Spielberger, Gorsuch, & Luschene, 1970). The STAI includes two different subscales that independently measure state and trait anxiety. The state anxiety subscale was used as a measure of SPA. Test-retest reliability differs between the two subscales, with higher reliability for trait anxiety (.97) and lower reliability for state anxiety (.45) (Metzger, 1976).

**Demographics.** Assessments of the participant’s gender, age, and ethnicity were conducted through completion of a series of demographic questions.

**Text analysis.** Linguistic Inquiry and Word Count (Pennebaker, J. W., Booth, R. J. & Francis, M. E., 2007) software coded various words used during participant’s speech as a percentage of specific word use of the whole speech sample. Using a percentage as the word use score reduces effects that length could have on word use in transcribed speeches.

In the default dictionary, “LIWC recognizes more than 2200 words (about 80% of the words people normally use in non-technical speech and writing)” (Groom & Pennebaker, 2002).
The focus for the current study was prepositions, articles, indicators of self (i.e., “me”, “our”, “we”), and references to others and social words (for example: “us”, “communicate”, “giving”). These categories were chosen to verify previous literature depicting gender differences in the previous listed word groups, as well as to examine gender differences in social word use. Additional word use categories were not relevant to the current study, and therefore not used in the analyses. Reliability measures indicate that across the 72 language variables that LIWC is capable of analyzing (i.e., first person singulars, self words, insight words, etc.), a mean Cronbach’s alpha coefficient of .59 was purported, in which roughly 80% of these language variables used at any time had coefficients of .60 or higher (Pennebaker & King, 1999).

**Procedure**

Upon arrival, participants completed a consent form to participate in the study. Participants were asked to either complete the same working memory tasks (Stroop, Letter Memory, Plus-Minus task, etc.) or executive functioning tasks (N-Back, OPSAN) before or after their speech. However, these tasks were not relevant to the current study, and therefore were not included in analyses. A trained research assistant led the participant into a private room in which they were told that they had to give a speech about the body part of theirs that they like the least. They were informed that the public speaking task would be videotaped and shown to a group of undergraduates for a general evaluation. Participants were given three minutes alone to prepare what they would speak about during their recording. This three minute period was used as a tool to increase the participant’s state anxiety level. Following the three-minute preparation time, participants completed the STAI.

After completion of the STAI, participants were told to start their public speaking task. After being instructed to face the camera, participants were told that he or she could start their
speech only when the experimenter left the room. The researcher turned on the video camera and exited. The participants were given exactly three minutes to talk about the body part of theirs that they liked the least and why. After the participants completed their public speaking task, they completed the demographics questionnaire. The participants were debriefed as to the nature of the study and thanked for their participation.

Results

Outlier Analyses

An examination of scores on state anxiety levels and word use were conducted to determine if any word use scores were greater or less than three standard deviations from the mean. Participants whose speech included 1.62 percent or less of self words were excluded from analysis, $M = 10.86$, $SD = 3.08$, ($n = 2$ females). Also excluded were participants whose speech contained 1.54 percent or less of first person singulars, $M = 10.69$, $SD = 3.05$, ($n = 2$ females). Speeches using less than 2.18 percent of prepositions in their transcribed speech were also removed, $M = 8.81$, $SD = 2.21$, ($n = 2$ females).

Analyses between Groups and Conditions

The data used for the current study was taken from a larger data set. The participants either completed working memory or executive function tasks pre- or post-speech. Even though these tasks were not relevant to the current study, t-tests were conducted to examine whether tasks or speech order had an effect on first person singulars, self words, prepositions, articles or social word use. Task assignment and speech order had no significant effect on these word use categories, except for articles. There were significant differences in use of articles for participants who gave their speech before and after completing executive functioning tasks, $t(62) = 2.08$, $p < .05$. Participants who completed their speech before executive functioning tasks used
significantly more articles than those who gave their speech after completing executive functioning tasks ($M = 4.04$ $SD = 1.63$; $M = 3.26$, $SD = 1.34$, respectively).

**Social Comparisons in Speech Samples**

Social words and references to others have been hypothesized to reflect various group processes (Newman et al, 2008). Social words also infer that a process of social comparison is made; a review of speech samples indicates that both referral of group processes and social comparison exist within the current study. In addition, participants were concerned with what others thought of them, which was a topic of many of the speeches. Females generally spoke about their overall weight and focused more on their midsection, whereas males tended to talk more about muscle mass and overall strength appearance. Listed are a few excerpts of speech samples given by participants after transcription.

**Male samples of transcribed speech:**

“I still feel uncomfortable, you know, going to the pool or something, or taking my shirt off…”

“I have friends make fun of it and family members joke around about it but it is really a sensitive subject.”

“The media says that fat is nasty and unattractive, and you know, studies show that first people’s first impression of you is what they see. Because obviously what they see you generally first before they speak to you. So if the media says that fat is nasty, and then people see a fat person, they relate that fat people are unattractive and nasty.”

**Female samples of transcribed speech:**

“I feel that when people see your legs they judge you based on them because of your physical appearance…they have to be thin and fit too, um, which people will judge you
based off your legs. If they are fit, then people see you as athletic and healthy; but if they aren’t they think that you are just very unhealthy.”

“I generally have a problem with my height basically because I feel like I am taller than every woman.”

“Um today so much emphasis with females in general is put on, like how skinny they can get or how fit they look.”

**Gender Differences in Word Use**

To test the hypothesis of gender differences in word use, a series of t-tests were conducted. The t-tests revealed significant gender differences in the use of articles, \( t(93) = 3.58, p < .001, d = .75 \); use of first person singulars, \( t(91) = -3.13, p < .01, d = .67 \); and self related words, \( t(91) = -3.40, p < .001, d = .73 \). A levene’s test for equality of variance was not met for gender differences and prepositions, \( p < .01 \), thus the Satterthwaite test was conducted to examine gender differences in the use of prepositions, \( t(90.8) = 3.70, p < .001, d = .75 \). As seen in Table 1, the results support the hypothesis that males used a significantly greater percentage of articles and prepositions than females, while females used a greater percentage of first person singulars and self related words than males.

**Interaction between Gender and State Anxiety**

To test the hypothesis that gender and state anxiety levels impact social word use, a regression was conducted. The overall regression model was marginally significant, in which state anxiety levels and gender had a minimal effect on the percentage of social words used, \( F(1,89) = 2.61, R^2 = .05, p = .06 \). However, gender was a significant predictor of social words used, \( (1, 89) = 2.21, \beta = -.84 \). State anxiety was not a significant predictor of social word use, \( p > \)
Interestingly, however, the interaction of state anxiety and gender on social word use was significant, $F(1, 89) = 1.98, p = .05, \beta = .75$.

To further explore this interaction, correlational analyses were conducted. Results revealed females had no correlation between state anxiety levels and percentage of social word use, $r = .007, p > .05$. In contrast, males had a moderate positive correlation of state anxiety levels and percentage of social word use, $r = .48, p < .01$. Not surprisingly, the categories of social word use and references to others were highly correlated, $r(31) = .92, p < .0001$ for males, and $r(59) = .89, p < .0001$ for females.

**Discussion**

The first hypothesis was supported, in which females used more first person singulars and references to the self more than males. In contrast, males used significantly more prepositions and articles than females. These results corroborated past research of a general gender difference in word use (Newman, Groom, Handelman, & Pennebaker 2008; Pennebaker, et al., 2003). Investigating effects of anxiety on word use between genders offered a trend in the data, which suggests that as state anxiety increased for males, they tended to use more social words than females. Gender was found to be a significant predictor of social word use; however, state anxiety levels were not a significant predictor of social word use. Males’ use of social words was moderately correlated with state anxiety levels, and females had no correlation between the social word category and state anxiety levels.

These results show that specific word use can change in various social situations depending on the environment. Specifically, when an individual experiences SPA, social word use was shown to vary depending on the gender of the speaker. Past research has shown differences in word use among males and females, as well as gender differences in stress and coping
mechanisms. Other studies have suggested that word use differs in times of stress, in which the significance of an event played a key role in word use changes. However, what is unknown is the extent to which an individual’s verbal communication may be impacted by specific social anxieties; consequently, changes in word use may influence the way that others perceive them. In the current study, anxiety levels were marginally shown to be a moderator between gender and word use, therefore suggesting that language may change due to a person’s state of being. Specifically, social anxieties were shown to change the word use that males employ during conversation. As a result, word use can be impacted in times of stress, which may alter the social negotiation a person has in their environment and their relationships with others.

Previous theoretical models of the stress response are contradictory in explaining the gender differences we found in word use and participants’ rising levels of state anxiety. Past research suggests that females employ a tend-and-befriend stress response, while males react with a fight-or-flight approach when confronted with a stressor (Taylor, 2006). When considering language use as a predictor for these models of the stress response, one might think that females’ tend-and-befriend response would give rise to them using more social words and references to others as their anxiety levels increased. This change in word use would reflect the social nature of the tend-and-befriend stress response in females. In addition, males theoretically would not use words reflecting various group processes during a stressor because their stress response is not collective in nature when compared to the tend-and-befriend female stress response. The data for the current study did not support this logical explanation of language differences during elevated anxiety levels. In fact, the moderate positive correlation of males’ social word use and state anxiety levels, and females’ lack of any correlation between the two, would suggest quite the
opposite. Males’ word use becomes more social in nature than females; additionally, as females’ state anxiety rose, their language use did not change.

Past research suggests that females’ frequent and supportive conversations about body image occur with friends routinely, which in turn makes females feel more comfortable when discussing their body dissatisfactions with others (Mack et al, 2007). This engagement may be the reason why females did not change word use in this particular stressor; females have become accustomed to frequent conversations about body image related talk, thus word use is no longer impacted by SPA. However, past research has found that males may be more heavily influenced by SPA, and as a result, this anxiety leads males to have a stronger body dissatisfaction and greater urge to alter their body (Mack et al, 2007). Accordingly, the current study suggests that not only are perceptions of body dissatisfaction and alterations negatively impacted by SPA, but also males’ word use is affected as a result of increasing levels of state anxiety.

Another explanation for the results in the current study suggests that males may use more social comparisons when experiencing SPA than females. These social comparisons are reflected by the increases in social word use in males as compared to females. Words that males employ during speech, when related to body image discussions, might suggest that males compare themselves more to others than females. As a result, the increase in social word use by males reflects the internal psychological process that males have when comparing themselves to others.

Explanations given for the current results vary by their originations, but have the same result; SPA changes social word use in males and not in females. Both explanations share an underlying theme; change in social word use during speech depends on gender and may reflect an increase in social anxieties, especially when the discussion is comparative in nature. This infers that
language use may be a predictor of underlying psychological conditions, and word use is not just a tool used for expressing ideas.

The interaction of gender and state anxiety levels on social word use was marginally significant. However, one assumption is that the disproportionate female sample size heavily impacted results of the overall model specifically because females had no correlation of state anxiety levels and social word use. The minimal sample size of males could not as heavily influence the overall model of significance, even with a moderate correlation of state anxiety levels and social word use. However, the current study utilized all of the male speeches that were available from the larger data set for analyses, leaving 33 males and 61 females. More of an equal sample size between genders would make it more plausible to see significant differences within the overall model of gender, and how state anxiety levels affect social word use.

One limitation of this study is that levels of SPA were measured with the STAI. Although the STAI is a measure of state and trait anxiety, it did not specifically measure SPA and thus it was not possible to tell whether the stress manipulation impacted SPA exclusively. Prior research has found that public speaking tasks increase levels of state anxiety, which could interfere with intended measures of SPA. For this instance, using only the STAI as a measure of SPA may result in an unintentional measure of anxiety induced by public speaking. Future research would need to have a measure of specific levels of SPA, perhaps by using the Social Physique Anxiety Scale (SPAS; Hart, Leary, & Rejeski, 1989). This scale used in conjunction with the STAI would be a more reliable measure of the individual’s SPA, thus stronger relationships could be interpreted between specific anxiety levels and word use. Even though the relationship between anxiety and word use for males and females was minimal at best, removal of these limitations could possibly increase the statistical significance in the results found with the regression model.
Examining word use differences among genders in times of stress allows a greater understanding of how language can be impacted through various intervening factors. Most importantly, word use dictates negotiation of relationships. Other’s perceptions are based on a person’s behaviors, including the words spoken in conversation. If environment, state of being, or perhaps even a biological response is capable of altering a person’s word use, these changes must be identified because of the heavy influence language has on the speaker’s social relationships. By examining SPA, word use changes give insight into how males and females are impacted differently by SPA. SPA is a very specific anxiety, but implications from this study show that various mental processes may affect word use. Future studies should inquire if word use could be used as an indicator, or even predictor, of various theoretical models and mental processes; such as making meaning of a negative or traumatic experience, other anxieties and various psychological disorders.
References


Table 1.

Percentage of Word Categories Used by Gender

<table>
<thead>
<tr>
<th>Word categories</th>
<th>Mean</th>
<th>Males</th>
<th>Female</th>
<th>$t$(df)</th>
<th>$d$</th>
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<tr>
<td>Articles</td>
<td>3.59</td>
<td>4.27 (1.55)</td>
<td>3.19 (1.34)</td>
<td>$t$(93) = 3.58***</td>
<td>.75</td>
</tr>
<tr>
<td>Prepositions</td>
<td>9.00</td>
<td>9.77 (1.26)</td>
<td>8.52 (2.00)</td>
<td>$t$(90.8) = 3.70**</td>
<td>.75</td>
</tr>
<tr>
<td>First person singular</td>
<td>10.91</td>
<td>9.85 (2.47)</td>
<td>11.54 (2.57)</td>
<td>$t$(91) = -3.13**</td>
<td>.67</td>
</tr>
<tr>
<td>Self words</td>
<td>11.09</td>
<td>9.93 (2.46)</td>
<td>11.77 (2.57)</td>
<td>$t$(91) = -3.40**</td>
<td>.73</td>
</tr>
</tbody>
</table>

*Note. *$p < .05$, **$p < .01$, ***$p < .001$*