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Vocal Fillers, Contagion Effects, and, um, Overlooked Pedagogical Opportunities in the, uh, Public Speaking Classroom

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Research Article

Vocal Fillers, Contagion Effects, and, um, Overlooked Pedagogical Opportunities in the, uh, Public Speaking Classroom

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Abstract

The current study explores the relationship between social contagion and vocal fillers. An experiment was conducted in which 100 students presented speeches. Prior to presenting their speech, half of the students were exposed to a speech with excessive vocal fillers and half were exposed to a speech with no vocal fillers. Students who heard a speech with excessive vocal fillers used more vocal fillers in their own speech. Students were unaware of this transmission, which further demonstrates the example of social contagion. Social contagion highlights the presence of linguistic communities in public speaking classrooms. The study then provides a review of popular public speaking textbooks' coverage of the topic of vocal fillers. The review finds vocal fillers are generally not given serious treatment in public speaking classes. The current study concludes with suggestions for how public speaking instructors can better leverage the topic of vocal fillers to their full pedagogical potential.

Keywords: vocal fillers, public speaking, linguistic community, contagion effect

Introduction

"In 1970, uh, a 14 oz, bottle of Heinz ketchup only cost 19 cents! Um, today the same, um, bottle costs $2.09. Uh, that is a 1,500% increase in price! Have you ever, um, thought about why prices rise over time? In this speech I am going to, um, explain what inflation is."

Most instructors of a college level public speaking class will likely find the above speech opening familiar. In this project, we argue there is more pedagogical value in these ums and uhs than we often give them credit for. The purpose of the current study was to explore whether vocal fillers were subject to social contagion and to explore the consequences of vocal fillers as transmissible for the public speaking classroom. After we established the connection between vocal fillers and the contagion effect, we examined popular public speaking textbooks to explore whether public speaking instructors are using the concept of vocal fillers to their full pedagogical potential.

Literature Review

Contagion Effect

The social contagion effect is a well-documented phenomenon describing how behaviors and emotions are transmitted between individuals. It uses the language of a pathogen to describe "the unconscious transmission of actions or emotions from one individual to another" (Wang, 2006, para. 7). Social contagion theory posits that if a subject has enough exposure to a certain behavior or emotion, they are likely to "catch" it. If an individual is exposed beyond a certain threshold, contagion sets in (Lacopini et al., 2019). Individuals have a variety of contagion thresholds for different behaviors and emotions.

Social contagion differs from empathy because individuals do not have knowledge about the origin of the affective experience (Singer & Lamm, 2009). Naivete of the social transmission facilitates the spread as individuals believe they are the author of the behavior or emotion. If individuals were aware of the influence others have on them, it may limit the contagion effect.

The power of social contagion is well known by marketers who often try to harness it (Bilgicer et al., 2015; Aral & Walker, 2011; Manchanda et al., 2008). Experimental research has also identified a variety of behaviors, attitudes and emotions subject to social contagion. Happiness (Fowler, 2008) and depression (Rosenquist et al., 2011) are both communicable. Hubner et al. (2019) demonstrated

entrepreneurial passion in the workplace can be transferable, while Bakker et al. (2001) found burnout is similarly contagious among physicians. Memory is also transmissible as demonstrated in an experimental setting when Meade and Roediger (2002) had confederates recount false memories about a shared event watched by participants. Subjects recalled they too remembered the false event even when researchers warned them about the concept of false memories. Foulk et al. (2015) discovered people can "catch" rudeness even after exposure to a single episode of similar behavior in a colleague. Motivation in exercise is also contagious. Boss and Kleinert (2020) found subjects pushed themselves harder when they exercised next to a confederate who exhibited enthusiasm about exercising and less so when they were placed next to a confederate who complained about physical exercise. Eating habits, especially binge eating, are also contagious (Crandall, 1988).

Lakin et al. (2003) and Chartrand et al. (2005) describe the contagion effect as a kind of social glue. Mirroring behaviors and attitudes creates affiliation, which fosters relationships between individuals. Humans are social creatures, and adopting each other's attitudes and behaviors creates rapport and cohesion.

Vocal Fillers

Vocal fillers refer to words and phrases initially seen as extralinguistic. While they may communicate some meaning, they exist outside of a message. They often appear as vocalized pauses while a speaker appears to search for what to say next. Words such as uh and um are clearly vocal fillers. You know and like may be vocal fillers if they are used unintentionally.

Often people think of vocal fillers as linguistically empty, but several studies in the field of linguistics have demonstrated vocal fillers are far from meaningless. Fox Tree (2007) explains "unlike the general public, most researchers who have studied um, uh, like, and you know agree that they are meaningful and functional, although there is ongoing debate about what they mean and how they are used" (p. 298).

Through discourse analysis, Swerts (1998) argued vocal fillers are discourse insofar as they tend to clue listeners into certain linguistic structures. They help speakers communicate when one idea ends, and another begins. Furthermore, Fox Tree (2001) makes a case for understanding vocal fillers as complex and nuanced in her examination of the difference between how um and uh function in discourse. Uh signals a short delay is forthcoming, while um clues in a listener to expect a longer delay. Listeners subconsciously know how to process the difference. Vocal fillers

also convey important cultural and personality information about a speaker (Laserna et al., 2014).

Vocal fillers even help listeners process information (Fox Tree & Shrock, 1999). According to Conrad et al. (2013), vocal fillers can assist listeners in recognizing an upcoming word faster. Additionally, a complete lack of vocal fillers may be detrimental to a speaker getting the desired effect they want from their audience (Conrad et al., 2013). A lack of vocal fillers tends to sound machine-like to listeners because it also creates an atypical pitch in a speaker's voice.

Christenfeld (1995) conducted a study challenging common conceptions of how audiences make sense of vocal fillers. In a simple questionnaire, respondents reported they found speakers who used vocal fillers to be less eloquent than those who did not. But, experimental data where respondents (who did not know vocal fillers were being studied) rated speakers with pauses as more eloquent if they filled the pauses with um. The subjects were unaware of their own perceptions. Pykto and Reese (2013) found the use of vocal fillers did not negatively affect an audience's perceived intelligence of a speaker, although it did have an effect on the perceived preparedness of a speaker.

Both content analysis and experimental research has positively correlated the use of vocal fillers to truth telling (Villar & Castillo, 2017; Villar et al., 2012; Arciuli et al., 2010). Speakers are often more polished when they are being deceptive. A strategic speaker is likely to pay very close attention to their own speech. A healthy amount of vocal fillers signals a kind of effortlessness in a speaker. Someone who uses vocal fillers isn't trying too hard, which means they probably aren't engaging in strategic deception. It seems people trust someone who uses vocal fillers.

Are Vocal Fillers Contagious?

There are three factors which lead us to believe vocal fillers may be contagious. The first is understanding verbal speech can be transmissible. People mimic words and grammar from conversational partners (Bock, 1989; Levelt & Kelter, 1982). Some research has shown there is a chameleon effect where individuals take on speech patterns, behavior mannerisms, and accents when interacting with others (Chartrand & Bargh, 1999). As illustrated in the section above, vocal fillers qualify as a speech pattern and have grammatical qualities.

The second factor is that vocal fillers produce anxiety. Public speaking is an anxiety producing activity among students. In a survey of 1,124 university students,

59.7% reported having a fear of public speaking and 55.2% had a negative perception of their own vocal abilities in public speaking situations (Marinho et al., 2019). Fear of using vocal fillers is one of the anxiety-producing elements among students. In survey data, Pontillas (2020) identified factors that college students felt hindered their abilities to speak well in public speaking situations. In addition to a variety of physiological arousal responses, participants also identified vocal fillers as problematic factors contributing to public speaking anxiety. LeFebvre et al. (2018) also identified vocal fillers as a student fear related to public speaking. Emotions being socially transmissible has been well established. Contagion can happen in public speaking settings as well. Behnke et al. (1994) found anxiety can be passed from one student to another in the public speaking classroom. Bono and Ilies (2006) demonstrated the mood of a speaker is contagious to an audience. Public speaking anxiety can lead to increased use of vocal fillers (Duvall et al., 2014).

Third, as documented in the literature about the contagion effect, social contagion acts as a social glue. Given public speaking is a solitary and anxiety producing endeavor, people may be more likely to unconsciously adopt behaviors that create rapport with the group. The unconscious shared collective experience of using vocal fillers may build a cohesive group and work to soothe the anxieties produced by the isolating activity of giving a speech.

Hypotheses

Given the role of vocal fillers in speech, their strong tie to anxiety, and that the contagion effect can happen in public speaking settings, we wanted to explore whether vocal fillers produce a contagion effect in the public speaking classroom. One way to address a possible contagion effect is to determine if students who witnessed the use of vocal fillers in a speech just viewed would produce more vocal fillers in their own speech. Because the environment and audience may be one of the factors producing anxiety, we wanted to determine if participants would produce more vocal fillers when giving a speech to a live audience compared to students recording a speech with no audience.

We tested two hypotheses:

> H1: Participants who watch a student experimenter give a speech with excessive vocal fillers will use more vocal fillers in their own speech than participants who watch a student experimenter give a speech with no vocal fillers.

H2: Participants who deliver a live speech in front of an audience will use more vocal fillers than participants who deliver a video recorded speech with no audience.

Method

Participants

We recruited 100 participants ranging in age from 17-38 (39 men, 61 women, Mage = 19.7) from introductory public speaking classes. All participants received a $25 Amazon gift certificate as an incentive to sign up for the study. They were deceived initially by being told the project was part of the overall department assessment program. They were also deceived by being told they needed to give their best effort to receive the gift card (this was not true but provided an incentive for participants to take the activity seriously). Deception was approved by the IRB.

Data Collection

We enlisted a student majoring in Communication to assist us. We prepared a 3-minute sample speech on the history of Gatorade to be presented to our participants. She practiced the sample speech repeatedly until she could easily and convincingly give two versions of it. The versions were identical except one was completely free of vocal fillers and the other version consisted of 15 ums and uhs per minute for a total of 45 across a 3-minute speech.

Participants were randomly assigned to one of 4 groups;
- Live vocal filler group (consisted of at least 3 people in the room, sample speech presented live to the audience with numerous vocal fillers)
- Live no vocal fillers group (consisted of at least 3 people in the room, sample speech presented live to the audience with no vocal fillers)
- Video vocal filler group (consisted of participant viewing the sample speech with numerous vocal fillers on a computer screen)
- Video no vocal filler group (consisted of participant viewing the sample speech with no vocal fillers on a computer screen)

Participants in each group were not from the same class section, so most did not know each other.

Materials

At the end of the study, participants were asked to complete a brief demographic questionnaire asking their age, gender and year in school. They were also asked to rate our student speaker in terms of how well the participant thought she had presented her speech on Gatorade from 1 (poorly) to 5 (extremely well). They were then asked to rate themselves in terms of how well they thought they presented their own speech from 1 (poorly) to 5 (extremely well). Given social contagion is an unconscious phenomenon, we wanted to ensure students were not aware of any influence. If students were aware, any mirroring might be an empathic response instead of social contagion. The last question asked of participants was to identify how many times in their life they had given a speech to 10 or more people. The responses they could choose included 0, 1, 2, 3, 4, or 5 or more. The question allowed us to control for whether the number of speeches a participant had given in the past had any effect on the number of vocal fillers used in the speech.

Procedure

Participants assigned to the live groups were put into groups of 3-4 students and given a time and location to report for the project. The student researcher welcomed them to the session, reviewed the informed consent and then explained to participants they all needed to give a speech in order to receive their Amazon gift card. Participants were then told they needed to give their best effort to receive the gift card.

Participants were randomly assigned an uncontroversial informative speech topic. The topics were the Golden Gate Bridge, Mark Zuckerberg, tornados, *The Price is Right,* and killer whales. Participants were given an outline with several different facts about their topic along with notecards. They were asked to take the outline provided and translate the information they wanted onto a notecard they could use during their speech. They were also given instructions to add their own transitions and to include a personal story to the introduction. The student researcher then told the participants, "we just need you to give a speech like you would in class. It's easy. I'll give you an example." Participants in the vocal filler group then heard her give the sample speech with 15 ums and uhs per minute and the non-vocal filler group heard her give the same sample speech with no ums or uhs. Participants then each took a turn presenting their speeches to the group while another student researcher video recorded each speech.

The video groups followed a similar procedure, but instead of being in a group with other participants, they presented in a room by themselves with a video camera. Participants followed the same steps to prepare for the speech. After they had their notecard ready, they watched a recording of our student researcher giving her sample speech about Gatorade. The video vocal filler group watched our student researcher give the sample speech with 15 ums and uhs per minute while the video non-vocal filler group watched the sample speech with no ums or uhs. Participants then presented their speech to the video camera in the room by themselves. After participants gave their speech, they filled out the demographic questions and questions regarding the speeches.

After all the speeches had been given, two psychology students in a research methods class coded the data. The number of ums and uhs were counted without the coder knowing which group the participant was from. For any discrepancies between the student coders, the authors listened to the speeches and came to a consensus. We chose to limit the vocal fillers we measured to ums and uhs to ensure consistent coding. Including other common vocal fillers such as like and you know would have opened up more room for interpretation. A speaker could use the word like or the phrase you know in a context other than a vocal filler. Including these terms would require deciphering the context in which the words were used. So, for the sake of consistency, we focused on vocal fillers we felt were straightforward and required minimum interpretation.

Results

Hypothesis 1

Hypothesis 1 predicted participants who watch a student experimenter give a speech with excessive vocal fillers will use more vocal fillers in their own speech than participants who watch a student experimenter give a speech with no vocal fillers. A one-way ANOVA was conducted to compare the number of vocal fillers produced by participants who witnessed vocal fillers in the sample speech and those participants who did not witness vocal fillers in the sample speech. Hypothesis 1 was supported. A statistically significant difference was found between the two groups $F(1, 98) = 4.48$, $p = .04$. Participants who witnessed vocal fillers in the sample speech produced a higher number of vocal fillers (M = 11.26, SD = 11.17) than those participants who did not witness vocal fillers in the sample speech (M = 7.04, SD = 8.36). Both the live and video groups who heard vocal fillers averaged 4.05

ums and uhs per minute. The live and video groups who heard a speech with no vocal fillers averaged 2.56 ums and uhs per minute. There was no significant difference in the average length of speech for the groups (165 seconds for vocal filler groups and 167 seconds for non-vocal filler groups).

Students were unaware of the contagion effect. There was no significant difference in the way participants rated their own speech regardless of which group they were in. Both live and video vocal filler groups rated their own speech slightly higher than live and video no vocal filler groups (2.92 vs. 2.66). The statistical insignificance is important. Despite a 37% increase in vocal fillers from the vocal filler groups, all four groups believed they did equally well on the speech.

The unconscious contagion also extends to how participants viewed our student researcher. Again, there was no statistical significance in the way participants rated her speech regardless of whether they watched her give a speech with excessive vocal fillers or with no vocal fillers. Those who watched her present a speech with 15 vocal fillers per minute gave her an average rating of 3.78 while those who saw her give the same speech with no vocal fillers rated her a 3.96. Students' unawareness confirms this as an example of the contagion effect and not an empathetic response.

This finding also seems to confirm the studies in the literature review finding a speaker's credibility may not be harmed by the use of vocal fillers. Also, the number of speeches a student had previously given had no bearing on the number of vocal fillers.

Hypothesis 2

Hypothesis 2 predicted participants who deliver a live speech in front of an audience will use more vocal fillers than participants who deliver a video recorded speech with no audience. The hypothesis was tested by conducting a one-way ANOVA to compare the number of vocal fillers produced by participants who witnessed a live sample speech and those participants who witnessed a videotaped sample speech. Hypothesis 2 was not supported. There was no statistically significant difference between the two groups $F(1, 98) = .33$, $p = .57$. Participants who witnessed a live sample speech produced a slightly lower number of vocal fillers (M = 8.70, SD = 8.63) than those participants who witnessed a videotaped sample speech (M = 9.86, SD = 11.49).

We proposed Hypothesis 2 because the presence of an audience might be responsible for a change in the amount of vocal fillers a participant would use.

Presumably participants would feel more connected to a person in front of them than to a video and would therefore feel more pressure to engage in mimicry to build rapport. Whether a participant was delivering a speech to an audience or to a camera had no significant effect on the number of vocal fillers. Ums and uhs were equally contagious in both types of groups leading us to believe the presence of an audience is not an important factor in the social contagion of vocal fillers.

Discussion

Vocal fillers, as indicated by the results of the current study, are contagious; they can act as a form of social glue for a public speaking classroom. Speaking in front of one's peers is an isolating experience, and unconsciously sharing linguistic bonds has the potential to build rapport which increases a sense of community. Such community may reduce anxiety. Our failure to support Hypothesis 2 demonstrates an audience need not be physically present for vocal fillers to be contagious. It seems the rapport built by sharing vocal fillers may extend beyond physical boundaries. Public speaking participants will form bonds across digital mediums. The results of this experiment demonstrated the validity of the scholarly consensus that vocal fillers are important linguistically. We believe understanding the contagion effect in vocal fillers offers a chance to teach students about the richness of linguistic community building.

Vocal Fillers in the Public Speaking Curriculum

Given the results of the current study we were interested in determining whether or not public speaking courses leverage the topic of vocal fillers to its full pedagogical potential. Our own experiences teaching the course and engaging in conversations with colleagues led us to believe vocal fillers are often not covered in ways which highlight their complexity.

To assess how vocal fillers are treated in current public speaking classrooms, we surveyed the 10 most popular public speaking textbooks. To determine the most popular textbooks we searched all public speaking textbooks on Amazon and reviewed the 10 with the most customer reviews (as of February 14, 2019). The list of reviewed textbooks is below.

- *The Art of Public Speaking* (12th Edition) by Stephen Lucas (2014) - 1,116 reviews
- *Public Speaking: An Audience Centered Approach* (9th Edition) by Steven Beebe and Susan Beebe (2015) -128 reviews

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- *Public Speaking for College and Career* (11th Edition) by Gregory Hamilton (2017) - 123 reviews
- *Essential Elements of Public Speaking* (6th Edition) by Joseph Devito (2017) – 68 reviews
- *Public Speaking: Concepts and Skills for a Diverse Society* (8th Edition) by Clella Jaffe (2016)- 51 reviews
- *Public Speaking: Finding Your Voice (10th Edition)* by Michael Osborn, Suzanne Osborn, Randall Osborn and Kathleen Turner (2014) - 24 reviews
- *The Speaker: The Tradition and Practice of Public Speaking* (3rd Edition) by Joe Valenzeno III and Stephen Braden (2015) - 22 reviews
- *Principles of Public Speaking (18th Edition)* by Kathleen German, Bruce Gronbeck, Douglas Ehninger and Alan Monroe (2013) - 13 reviews
- *Essentials of Public Speaking* (6th Edition) by Cheryl Hamilton (2014) - 10 reviews
- *Public Speaking: Strategies for Success* (8th Edition) by David Zarefsky (2016)- 7 reviews

Evaluating the most popular public speaking textbooks is obviously not a perfect instrument to measure how vocal fillers are covered in public speaking classrooms. Given we cannot feasibly observe course lectures from a representative sample of public speaking classes we believe it provides valuable information since much of the instructional content for classes likely comes from textbooks.

We do not consider this to be a content analysis since there was no formal coding. The exercise was instead intended to provide us with general guidance of how public speaking classes likely cover the topic of vocal fillers. To identify relevant material, we found the chapter on delivery in the table of contents, and then identified which section of the chapter covered vocal fillers. Each of the 10 selected textbooks include a section on vocal fillers, although they are often referred to by different terms such as; vocalized pauses, verbal fillers, filled pauses, vocal distractions. We then searched the index for the specific terms the book used in the delivery chapter to ensure we did not miss any relevant references.

There is little consensus among these public speaking textbooks about what vocal fillers are and why they happen. We were surprised there would be such confusion over a concept important enough to be included in all of these textbooks. Most of the textbooks actually contradict the relevant literature and prevailing understandings of vocal fillers in the field of psychology and linguistics.

By far the most popular textbook on public speaking is *The Art of Public Speaking* by Stephen Lucas (2014), which has the following to say about vocal fillers:

> Make sure you pause at the end of thought units and not in the middle. Otherwise, you may distract listeners from your ideas. Most important, do not fill the silence with "uh," "er," or "um." These vocalized pauses can create negative perceptions about a speaker's intelligence and often make a speaker appear deceptive (p. 245).

Lucas' point about deception is misguided as the literature cited earlier positively correlates audience trust and vocal filler usage (Villar & Castillo, 2017; Villar et al., 2012; Arciuli et al., 2010). More puzzling is the way vocal fillers are positioned at odds with a speaker's ideas. When a reader is told when using vocal fillers "you may distract listeners from your ideas" (Lucas, 2014, p. 245), vocal fillers are framed as if they fall outside of discourse.

Lucas treats this claim as if it is a self-evident claim. He is not alone, as many of these textbooks operate as if information about vocal fillers is self-evident. In the example above, Lucas treats vocal fillers as superfluous and does not introduce a serious conversation about why they exist, what role they play in a speaker's lexicon and why they are so persistent. The advice given in regard to vocal fillers is to simply not use them. The advice is consistent across all 10 of the surveyed textbooks.

Apart from the common advice offered to refrain from using vocal fillers, there is a puzzling lack of consensus among all 10 of the reviewed textbooks about what vocal fillers are and why they exist. Beebe and Beebe (2015) and Hamilton (2017) suggest vocal fillers exist because speakers are tempted to use them because silence is hard to deal with. Osborn et al. (2014) argue they fill in space while a speaker sorts through what to say next. Valenzano and Braden (2015) argue vocal fillers exist because speakers believe they need to be speaking all the time. Zarefsky (2016) explains they "almost always arise from nervousness" (p.43). Devito (2017), Jaffe (2016) and Hamilton (2014) do not provide any insights on why speakers use vocal fillers, instead they just instruct the reader not to use them.

While there is little consensus about why vocal fillers exist, an interesting thread across these textbooks is the way vocal fillers are treated as insubstantial and hollow. Some of the texts go so far as to call vocal fillers meaningless. Zarefsky (2016) writes "sounds such as 'uh' and 'umm' are ***vocalized pauses*** [bold in original], meaningless sounds that a speaker produces during moments of silence" (p. 43). German et al.

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(2013) explain "sometimes speakers fill silences in their discourse with sounds: um, ah, er, well-uh, you know1 and other meaningless fillers" (p. 166). The suggestions that vocal fillers are meaningless is in contradiction to the relevant literature in psychology and linguistics which understands vocal fillers as important and meaningful elements of speech (Laserna et al., 2014; Fox Tree & Shrock, 1999; Swerts,1998)

Another prevalent theme in the reviewed textbooks is the focus on the impact vocal fillers have on a speaker's audience. Hamilton (2014) instructs her audience to "try not to fill the silence with distracting vocalizations like 'ah,' 'uh,' 'um,' 'OK,' and 'uh', 'well uh' or 'you know'" (p. 240). Zarefsky (2016) argues they can be "distracting to listeners" (p. 43) and Jaffe (2016) argues "too many can be distracting, so work to minimize them" (p. 193). As indicated above, Lucas (2014) believes they are distracting as well. Many of the reviewed textbooks also claim the audience's perception of the speaker will be damaged by the use of vocal fillers. Devito (2017) stated "filled pauses will make you appear hesitant, unprepared and unsure of yourself" (p. 67). Beebe and Beebe (2015) argue "vocalized pauses will annoy your audience and detract from your creditability; eliminate them" (p. 227). German et al. (2013) explain "vocal intrusions convey feelings of hesitancy and a lack of confidence" (166). These conclusions are also at odds with the relevant literature. Use of vocal fillers does not negatively affect a speaker's credibility (Pykto & Reese, 2013) and the elimination of vocal fillers may actually make a speaker less trustworthy (Conrad et al., 2013). Additionally, in the survey data conducted in conjunction with our experiment, students did not rank the speaker using excessive vocal fillers any differently than the one using no vocal fillers.

If the top 10 textbooks for public speaking classes are any indication, the complexity and linguistic richness of vocal fillers revealed in our results are not being covered in most public speaking classes.

The Pedagogical Possibilities of Vocal Fillers

Some of the student apprehension surrounding use of vocal fillers (LeFebvre et al., 2018) potentially comes from the manner in which they are covered in public speaking classes. Students are told it is important to limit vocal fillers because using them will damage a speaker's credibility, but there is not much serious treatment given to understanding exactly what they are, why they exist, or how students should approach them theoretically. Students likely already feel anxious about how they

appear when they stand in front of their peers. Treating vocal fillers as if they are a hard to break and annoying habit with reputational consequences might not be helping students ease their nerves. Perhaps more nuanced conversations about vocal fillers as a natural part of metacommunication would make students feel more at ease.

As previously discussed, public speaking textbooks are far too dismissive of the depth and complexity of vocal fillers. We understand it is beyond the scope of public speaking textbooks to devote in-depth coverage to the discursive nuances of vocal fillers, but at the very least authors should stop referring to them as meaningless and annoying. Public speaking textbooks could instead hint at these "common sense" conceptions of vocal fillers as too shallow to fully understand them in a public speaking context.

The contagion effect of these vocalizations highlights the complexity. As vocal fillers can be passed from one party to another means they carry some information. There is some form of metacommunication being transmitted around a classroom. When we tell students to simply avoid these utterances because they are annoying and meaningless, we miss out on rich pedagogical opportunities to reflect on how complex linguistic communities are and what role public speaking can have in meaning-making in these spaces.

There is a rich pedagogical opportunity available given the contagion effect occurs unconsciously. Public speaking instructors could perhaps ask students to share their common-sense notions of how vocal fillers affect their perception of a speaker. Instructors could then complement those notions by explaining how vocal fillers both regulate discourse and help listeners process information. Class time could also be spent discussing how they are transmitted from speaker to speaker as a way to build rapport, which builds communities. Rather than simply directing students to avoid vocal fillers, perhaps public speaking teachers can instead try to help students become more conscientious about why they exist.

Strategies for Utilizing Vocal Fillers in the Classroom

Every class is its own linguistic community, and in a public speaking classroom every student has an outsized effect on the linguistic norms created in the community because each student spends ample time in front of their peers. Public speaking instructors should carefully consider how to handle contagious speech norms, including vocal fillers.

Most public speaking instructors will grade students lower if they use vocal fillers. But we doubt most teachers take into account the way the effects may be passed from one student to another when grading. Perhaps we can find ways to consider whether the previous speaker used an excessive amount of vocal fillers, and if so, grade a student less harshly.

If a teacher does want to help students reduce vocal fillers, maybe the answer lies in throwing out the random speech order and instead organizing student presentations starting with the ones who are most likely to avoid using vocal fillers and finishing with those who are more likely to use them. Since vocal fillers are contagious, perhaps starting with speakers unlikely to use vocal fillers would mitigate cumulative negative effects and amplify positive ones to make all the speeches better (the results may be compounding). Also, if students are taught about the contagious effect of vocal fillers, they can leverage their knowledge to be more conscientious in their own speech. If they notice the speech before theirs is filled with vocal fillers, they can make conscientious choices about their use of vocal fillers rather than unconsciously following the previous speaker.

The contagion effect also provides a new opportunity for public speaking instructors to address ethics. We can teach students their peers are relying on them to create the linguistic norms. If they realize their own individual speech affects how others will perform, preparation and rehearsal take on an ethical component. We can tell students "your classmates are relying on you to do your part to create productive speech norms rather than problematic ones. Everyone's grade will be better if we all chip in and do our part." Such an approach can create a classroom where students are aware of their own contributions to the speech community and are enlisted to help their fellow students.

Future Research and Limitations

There are two major limitations to the current study. The first is we only had a sample size of 100 students at one university. Getting a larger sample size was not feasible as students required financial incentive to participate, and our funding was limited. We originally attempted to conduct the study with less incentive (extra credit) and we only attracted two participants. The second limitation is one of self-selection, students who did participate in the study are likely to be students who do not have extreme public speaking anxiety. Those who chose to participate likely have some comfort with public speaking (or at least do not have debilitating speech

anxiety). Given emotions are socially contagious, perhaps the data generated would be different if the study included those students as well.

Finally, future research should replicate the current study using different delivery criteria as variables. We suspect other common delivery criteria may be contagious as well. Perhaps eye contact, volume, rate of speech, gestures, pitch, stance, etc. are transmitted from speaker to speaker. Further research testing the contagion effects of these components of delivery could be beneficial to help us further understand the complexity of public speaking delivery.

Conclusion

The current study established vocal fillers as socially transmissible. Subjects who heard a speech with excessive vocal fillers used more vocal fillers in their own speech. Additionally, they were unaware of the transmission, which further demonstrates this as an example of social contagion. The presence of an audience had no significant effect on the transmission of vocal fillers. The contagion effect of vocal fillers has not been previously studied. Based on a survey of popular public speaking textbooks, vocal fillers are often not given serious treatment in public speaking classes. The discovery that vocal fillers are subject to the contagion effect provides an opportunity for public speaking instructors to highlight their complexity and community building potential. Thus, the current study makes an important contribution to our understanding of vocal fillers and how public speaking teachers might utilize their full pedagogical potential.

Acknowledgment

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