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What is This?
Um . . . Who Like Says You Know: Filler Word Use as a Function of Age, Gender, and Personality

Charlyn M. Laserna¹, Yi-Tai Seih¹, and James W. Pennebaker¹

Abstract
Filler words (I mean, you know, like, uh, um) are commonly used in spoken conversation. The authors analyzed these five filler words from transcripts recorded by a device called the Electronically Activated Recorder (EAR), which sampled participants’ language use in daily conversations over several days. By examining filler words from 263 transcriptions of natural language from five separate studies, the current research sought to clarify the psychometric properties of filler words. An exploratory factor analysis extracted two factors from the five filler words: filled pauses (uh, um) and discourse markers (I mean, you know, like). Overall, filled pauses were used at comparable rates across genders and ages. Discourse markers, however, were more common among women, younger participants, and more conscientious people. These findings suggest that filler word use can be considered a potential social and personality marker.

Keywords
filler word, filled pause, discourse marker, LIWC, EAR

The way we use language in natural spoken conversation is revealing. For instance, certain aspects of language such as dialects and colloquialisms can be used to determine where a person was raised. How someone speaks can also indicate whether the listener is a friend or a stranger. Language may even reveal characteristics such as

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gender, age, and personality. One widely used but often overlooked feature of language are filler words, which are speech irregularities used in spoken conversation and commonly regarded as superfluous language spoken by careless speakers (Strassel, 2004). Surprisingly little is known about whether filler words have psychological implications with regard to communication. The current study examines filled pauses and discourse markers, two primary categories of filler words. Unlike traditional linguistic research, which investigates how filler words are used, we examined individual differences to determine who is using these filler words when they converse. To set the stage for our research, we review filled pauses and discourse markers in language use.

Filled pauses are short utterances commonly used in spontaneous speech (Brennan & Williams, 1995; Swerts, 1998), *uh* and *um* being two of the most frequently used filled pauses within the English language (Strassel, 2004). In verbal communication, filled pauses are hypothesized to either act as an unconscious sign of speech disfluency or serve as a signal sent by speakers to convey a certain message. The content of this message varies and may inform listeners that the speaker needs a pause to collect his or her thoughts (Fox Tree, 2007) or block the listener from taking the speaker’s turn away (Maclay & Osgood, 1959). The use of filled pauses tends to increase when a speaker is faced with challenging choices (Christenfeld, 1994), yet at the same time, listeners view speakers as less anxious when the speakers use filled pauses (Christenfeld, 1995). Listeners also tend to view filled pauses as an indication that speakers are unsure about what is being said, suggesting that filled pauses may be a more deliberate signal sent from the speaker (Brennan & Williams, 1995; Fox Tree, 2007). In either theory, filled pauses appear to be associated with the processing of complex thoughts.

Since filled pauses have a linguistic effect on spontaneous speech, is this effect influenced by any variables? In a study performed by Bortfeld, Leon, Bloom, Schober, and Brennan (2001) where transcriptions of conversation pairs were analyzed, an increase in the use of *uh* and *um* in addition to other disfluency rates were associated with being older, discussing unfamiliar domains, and taking on a directive role during conversation. Another study by Tottie (2011) analyzed the frequency of *uh* and *um* in two subcorpora from the British National Corpus that consists of transcribed telephone, face-to-face, and interview conversations. The study discovered that older people, males, and those with higher levels of education used more filled pauses in speech than younger people, females, and individuals with lower levels of education. In a sense, filled pauses may act as markers that identify speakers’ gender, age, and socioeconomic status.

Unlike filled pauses, discourse markers are short phrases that do not contain any grammatical information yet are prevalent in natural speech (Fox Tree & Schrock, 2002; Fuller, 2003; Matei, 2011; Strassel, 2004). Although they do not serve a grammatical purpose, both laypeople and researchers alike perceive discourse markers as purposeful signals to a listener rather than as mere signs of disfluency (Fox Tree, 2007). They are generally proposed to act as transitions between different sections of conversation (Clark, 1996), but discourse marker use seems to heavily depend on the specific discourse marker. Often, the actual basic meanings of the words that constitute a discourse marker determine its function. For example, the phrase *I mean* serves
as an indication that a speaker is planning to modify what is said, and *you know* is used when the speaker is asking a listener to make inferences about the conversation (e.g., Fox Tree, 2007). Other research suggests that another purpose of *you know* is to confirm the understanding of a listener (Erman, 2001). The purpose of the discourse marker *like* is more ambiguous, but some studies suggest that speakers use it as a hedge when they do not want to fully commit to what they say (Fuller, 2003; Sharifian & Malcolm, 2003). However, Liu and Fox Tree (2012) have countered the suggestion that *like* acts as a hedge by showing that this discourse marker exhibits different patterns from other hedges and likely has its own unique function.

Filled pauses and discourse markers are considered to be two categories of filler words. If the use of filled pauses is affected by certain demographic variables, is the use of discourse markers also affected by similar variables? A study has examined the frequencies of discourse markers *like* and *you know* with the MICASE corpus (Schleef, 2005). This corpus contains 68 people (18 instructors and 50 students) and consists of 8 hours of lectures and 10 hours of seminars from an equal number of male and female instructors. The results showed that female students used the discourse marker *like* more than male students. In addition, students were more likely to use *like* than professors. Since professors are generally older than students, this finding concerning conversational roles may suggest that age affects discourse marker use.

Although previous research has described the underlying meanings and functions of the two types of filler words, some limitations still exist in current literature. For instance, past research examined discourse markers and filled pauses within one study and discovered differences between these two categories (e.g., Fox Tree, 2006; Fox Tree, Mayer, & Betts, 2011), but little research has been conducted on exploring the personalities of the people who tend to use filler words. Although Mairesse and Walker (2008) have shown that it is possible to estimate personality by examining certain language parameters such as filled pauses (e.g., *I mean, err, you know*), their personality results were generated by human judges instead of original speakers and did not show any direct correlation with filler words.

Personality traits can be assessed by self-report measures or judges’ ratings, but little research examines the correlation between self-report personality traits and filler words. It may be worthwhile to determine if self-reported personality is comparable to assessed personality deduced from judges’ ratings on the use of filler words. In addition, if filler words are found to be reliable personality markers, further research using self-report personality measures may be able to use filler word frequency to quickly approximate personality traits in participants. Overall, the purpose of the current research was to investigate the psychometric properties of filler words and revisit the relationships between filler words, demographic variables, and personality traits.

The current research aimed to investigate how the frequency of filled pauses and discourse markers used in the English language varies with two basic demographic variables (gender and age) and personality traits. The present study focused on three common discourse markers in the English language (*I mean, you know*, and *like*) and two filled pauses (*uh* and *um*). The psychometric properties of these five filler words and two categories were examined. Because most past research on filler words has
Table 1. The Descriptions of Transcriptions From Each Study for Analysis.

<table>
<thead>
<tr>
<th>Study</th>
<th>Number of transcriptions</th>
<th>Percent female</th>
<th>Age (SD)</th>
<th>Word count (SD)</th>
<th>Days</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mehl and Pennebaker (2003a)</td>
<td>13</td>
<td>62</td>
<td>21.4 (3.50)</td>
<td>6,750 (2,784)</td>
<td>10</td>
<td>Analysis of participants’ reactions to September 11, 2001</td>
</tr>
<tr>
<td>Mehl and Pennebaker (2003b)</td>
<td>50</td>
<td>54</td>
<td>19.0 (1.31)</td>
<td>1,007 (590)</td>
<td>4</td>
<td>A study on patterns in the natural language of college students</td>
</tr>
<tr>
<td>Baddeley, Pennebaker, and Beevers (2013)</td>
<td>27</td>
<td>63</td>
<td>32.5 (13.8)</td>
<td>4,066 (2,950)</td>
<td>4</td>
<td>An examination of linguistic indicators of negative social functioning with depressive disorder</td>
</tr>
<tr>
<td>Fellows (2009)</td>
<td>76</td>
<td>51</td>
<td>35.2 (5.88)</td>
<td>4,786 (4,469)</td>
<td>1</td>
<td>A study about how preschool-aged children and parents use emotion language</td>
</tr>
<tr>
<td>Mehl, Gosling, and Pennebaker (2006)</td>
<td>97</td>
<td>47</td>
<td>18.7 (0.91)</td>
<td>995 (526)</td>
<td>2</td>
<td>A study that examined personality traits by using natural language</td>
</tr>
</tbody>
</table>

Note: The average word count for each participant was 2,692, and the total word count from the participants was 708,217.

been based on experimental data (Tottie, 2011), the present study focused on transcriptions that were transcribed from daily conversations recorded by Electronically Activated Recorders (EARs). The EAR is an electronic device designed for sampling natural spoken conversation during daily activities (Mehl, Pennebaker, Crow, Dabbs, & Price, 2001). By using the EAR, the present study could examine filler words within natural, extended interactions over the course of several days.

Method

Participants

The transcriptions of 263 participants (137 females) were included in the current study. The participants of the transcribed conversations ranged in age from 17 to 69 years ($M = 25.1$, $SD = 9.38$). The 263 participants were from five studies whose detailed information is shown in Table 1.

EAR Corpus and Coding

This study used a corpus of transcriptions obtained through the EAR, which is a device programmed to automatically take audio recordings after set intervals of time (Mehl et al., 2001). The EAR was worn by participants for a period of 2 to 3 days while they went about their daily lives, giving the EAR the ability to collect truly spontaneous conversation. Any clearly audible conversations between participants and the listener
were then transcribed. Those performing the transcribing were instructed to not omit filled pauses and discourse markers.

**Procedure**

The present study used the computerized text analysis program Linguistic Inquiry and Word Count (Pennebaker, Booth, & Francis, 2007) to calculate the rates of filled pauses and discourse markers used within each transcription as well as the total number of words spoken by an individual during a conversation. These calculations were then used to determine the proportion of conversation devoted to filled pauses and discourse markers. The proportions for each age and gender were then statistically analyzed and compared.

Three of the transcription sets were from studies where participants’ personalities were determined using the Big Five Inventory (Fellows, 2009; Mehl & Pennebaker, 2003a; Mehl & Pennebaker, 2003b). One study used the Ten-Item Personality Scale on participants (Baddeley et al., 2013), and one study used the NEO Personality Inventory on participants (Mehl et al., 2006). Since these three different versions of personality scales were highly related to each other (Gosling, Rentfrow, & Swann, 2003), all personality scores were standardized for the current study and examined according to the Big Five personality traits. Eleven participants did not complete any personality measure, resulting in a total of 252 participants included in personality analysis.

**Results**

The current study sought to examine three aspects of filler words. First, the psychometric properties of the five filler words were examined to clarify the associations between filler words. Second, filled pauses and discourse markers were correlated with age and gender. Third, the two types of filler words were examined according to personality traits.

Each of the five filler words was analyzed by its base rates, which are presented in Table 2. A one-way within-subjects analysis of variance showed that filler word rates were used at significantly different rates, $F(4, 1,048) = 141.8, p < .001$. The least significant difference post hoc comparison indicated that participants used *like* more than the other four filler words included in the study (*ps* < .001). Correlation analysis was performed to determine any associations between filler words. As shown in Table 2, *uh* was not related to the discourse markers *I mean, you know,* and *like,* implying that the underlying mechanism behind certain filler words might have different concepts. The correlations between gender, age, and each filler word are also reported in Table 2 as additional information.

To understand the structure of the filler words, we employed an exploratory factor analysis with the five filler words. A principal component method with a varimax rotation was used. The Kaiser-Meyer-Olkin measure of sampling adequacy was significant (Kaiser-Meyer-Olkin = .65, *p* < .001), indicating that these five filler words were factorable. The scree plot suggested two factors, and the two factors together accounted
for 60.8% of the total variance. The factor loading matrix is shown in Table 2. The first extracted factor included the discourse markers *I mean*, *you know*, and *like*, whereas the second extracted factor included the filled pause *uh* and *um*, supporting past theories of filled pauses.

Thus, the first factor referred to discourse markers, and the second factor referred to filled pauses. According to the findings of our factor analysis, the rates of *I mean*, *you know*, and *like* were summed to be the rate of discourse markers (*M* = 1.43; *SD* = 1.40), and the rates of *uh* and *um* were summed to be the rate of filled pauses (*M* = 0.64; *SD* = 0.63). Importantly, the rates of filled pauses and discourse markers were positively correlated with each other (*r* = .26, *p* < .001), strengthening the idea that both filled pauses and discourse markers belong within the same category. These two categories were used in the following analyses.

The rate of discourse markers was positively associated with gender (male = 1, female = 2; *r* = .20, *p* < .01) but negatively associated with age (*r* = −.50, *p* < .001), suggesting that female and young participants were more likely to use discourse markers. On the contrary, the rate of filled pauses was not associated with gender (*r* = −.04, *p* = .50) but associated with age (*r* = −.12, *p* = .05).

With these correlational findings, we became curious about the developmental trend of these two types of filler words. We divided participants into four categories: early college (17-19), late college (20-22), early adulthood (23-34), and adulthood (35 and older). Two 2 (gender) × 4 (age categories) between-subjects analyses of variance were conducted separately on the two categories of filler words. The mean rates are presented in Figure 1. With regard to discourse markers, there was a significant interaction effect between gender and age, *F*(3, 255) = 4.08, *p* < .01. The least significant difference post hoc comparisons indicated that females used more discourse markers than males in early and late college (ps < .001). The main effect on gender was significant, *F*(1, 255) = 8.71, *p* < .01, and so was the main effect on age, *F*(3, 255) = 45.2, *p* < .001. On the contrary, the interaction effect and the main effect of gender on filled pause rates were not significant. Only the main effect on age on filled pause rates was significant, *F*(3, 255) = 2.67, *p* = .05. Overall, the use of discourse markers and filled pauses displayed a developmental trend.

Last, to examine the relationship between filler word use and personality, we correlated personality scores with the rates of discourse markers and filled pauses while
controlling for gender and age ($df = 248$). Only conscientiousness was found to be related to discourse markers ($r = .14$, $p = .03$), which could, in theory, be attributed to a Type I error given the number of correlations tested. None of the Big Five personality traits were related to the use of filled pauses.

**Figure 1.** Mean rates of discourse markers and filled pauses by gender and age per person. *Note.* The sample size was 123 for early college, 36 for late college, 59 for early adulthood, and 45 for adulthood. The discourse marker category included *I mean, you know,* and *like.* The filled pause category included *uh* and *um.*
Discussion

Past research has mainly discussed filled pauses and discourse markers separately and neglected to examine the relation between these two types of filler words. The current research sought to look at a bigger picture and analyze filled pauses and discourse markers in relation to one another. There were several interesting findings regarding the psychometric properties of the filler words in this study. First, two factors were extracted from our factor analysis and were found to be related to each other. This finding suggests that the use of filled pauses and discourse markers is not identical despite both categories having been discussed together as filler words (e.g., Strassel, 2004). In addition to the factor analysis, the use of filled pauses was found to be associated with age but not with gender, whereas the use of discourse markers was found to be associated with both gender and age. This suggests that people who were young, female, or both young and female are more likely to use discourse markers. This result supports previous findings regarding the use of the discourse marker like (Schleef, 2005). Finally, the use of discourse markers was associated with conscientiousness, indicating that discourse markers can potentially serve as personality markers.

The present research has practical significance because it has shown that filler words can serve as markers for age and gender. Our results extended previous research by demonstrating a developmental trend that indicates that the gender effect on the use of discourse markers only emerges during early and late college. As people become older, the gender effect disappears. This trend may be indicative of a normative life transition into adult roles, such as when one graduates from college and enters a job market. A career role change may be the possible factor that leads people to change their use of filler words.

What type of people are more likely to use discourse markers or filled pauses? In our correlational results, conscientious people used more discourse markers. The possible explanation for this association is that conscientious people are generally more thoughtful and aware of themselves and their surroundings. When having conversations with listeners, conscientious people use discourse markers, such as I mean and you know, to imply their desire to share or rephrase opinions to recipients. Thus, it is expected that the use of discourse markers may be used to measure the degree to which people have thoughts to express. As for filled pauses, their use has been considered to be a reflection of anxiety (e.g., Christenfeld & Creager, 1996; Scherer & Scherer, 1981). However, our measure of neuroticism was not related to the use of filled pauses in this research. The claim that speaker anxiety is related to the use of filled pauses should be more carefully examined in future research.

Previous research has documented filler words as markers of people’s psychological states (Erman, 2001; Fuller, 2003). In the current study, we not only clarified the psychometric structure of the two types of filler words but also extended the work to personality traits. When people first meet people, they usually approximate strangers’ personalities and base their opinions on what is said and how they say it. From a methodological standpoint, the use of discourse markers can provide a quick behavioral measure of personality traits. More important, we used extended conversations with
speakers to study how filler words function in daily lives. This strategy provides better ecological validity to investigate filler word use. With an increased understanding of why and how filler words are used in verbal communication, we anticipate that people may one day be able to use the active interpretation of filler words to improve the quality of their communication with others.

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References


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James W. Pennebaker is a professor and chair for the Department of Psychology at the University of Texas at Austin. His most recent research focuses on the nature of language and social dynamics in the real world. The words people use serve as powerful reflections of their personality and social worlds.