

Background. Many areas have been shown to decline with age, including executive function and certain language production abilities. Specifically, older adults have displayed lower performance in inhibitory control and working memory as well as an increase in speech challenges (slower speech and increased disfluencies) [2,4]. Speech disfluencies can be defined as interruptions in fluent speech and include filled (e.g., *um*, *uh*, *like*, etc.) and unfilled pauses (silence between speech), repetitions (e.g., *th-the*, *I I*, etc.), revisions (*I went-We went across the road*), and prolongations (*I rannnn to the treeee*). Stable levels of executive functioning are crucial to effectively maintaining speech fluency. Previous literature has suggested links between certain cognitive functions and disfluency production, both overall and within disfluency types [1,3]. Filled pauses, for example, have been associated with speech planning. Because executive function performance has been shown to decline with age and speech challenges to increase with age, we hypothesize that executive function will mediate age-related increases in disfluencies.

Methods. Participants ($N = 88$) aged 20 to 81 ($M = 46.22$, $SD = 17.53$) cognitively healthy monolingual English-speaking adults completed a battery of screening and cognitive tasks (language history questionnaire, forward and backward digit span tasks, verbal fluency tasks, and a Stroop task). Additionally, each participant completed an open-ended prompt task where they were given three minutes to respond to the question “*What do you like or dislike about living in central Pennsylvania?*”. These responses were recorded and later transcribed using CLAN, a software designed for transcription, coding and analysis of speech data.

Results. Consistent with prior research, there was a relationship between speech rate and age ($t(87) = -2.46$, $p = 0.02$) where speech became slower with increasing age. Although there was no relationship between age and overall disfluency production, $t(87) = -0.47$, $p = 0.64$, there were differences between specific categories of disfluency production and age. There were significant relationships between age and the production of filled pauses ($t(87) = -2.44$, $p = 0.02$) and the production of repetitions ($t(87) = 2.55$, $p = 0.01$) where production of filled pauses decreased with age while production of repetitions increased. No other categories of disfluency were significantly related to age.

We also examined the relationship between disfluency production and executive function with the Stroop effect. Although there was no relationship between overall disfluency production and the Stroop effect, $t(87) = -1.63$, $p = 0.11$, we did find a relationship between the Stroop effect and production of filled pauses ($t(87) = -0.009$, $p = 0.01$) where the number of filled pauses decreased with an increased Stroop effect. This suggests that disfluencies and executive function are intertwined, but not in the way we expected.

Discussion. Overall, the data suggest a complex relationship between age and disfluency production as well as between disfluency production and executive function. The increased number of filled pauses in younger adults may be due to sociocultural factors where filler words such as “like” are more acceptable for this generation. In the future, we plan to tease apart filler words from traditional filled pauses (e.g., *um*, *uh*) to further investigate the nature of filled pauses. Additionally, although there was not a relationship between executive function and overall disfluencies, filled pauses were negatively associated with cognitive performance, further supporting the role of executive function in speech fluency.

References. [1] Bortfeld et al., 2001. Language and Speech. [2] Burke & Shafto 2004. Curr Dir Psych Sci. [3] Clark & Wasow 1998. Cog Psych. [4] Horton et al., 2010. Psych and Aging.

Demographics information

N	88
Age	46.22 (17.53)
Gender (F/M/Non-binary)	56/31/1
Education	17.76 (2.97)

Correlation with Age	<i>b</i>	<i>t</i> (87)	<i>p</i>
MoCA	-0.02	-2.50	0.01
Digit Span Forward	< 0.01	0.07	0.95
Digit Span Backward	-0.01	-1.04	0.30
Verbal Fluency	-0.15	-2.67	0.009
Stroop Effect	1.26	2.85	0.005

