

Harnessing Technology for Collecting and Analyzing Caregiving Narratives

NIMLAS Pilot Project Final Report

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Note: Document formatting prioritized guidelines for digital accessibility.

A. Project Specific Aims

Dr. Mroz and colleagues proposed these Aims in the original pilot project proposal:

Aim 1: To develop and test a set of best practices for embedding narrative data collection tasks into online, self-guided studies for ADRD caregivers:

- **Aim 1a:** collect feedback on the design of a self-guided, virtual narrative data collection approach by conducting focus group discussions with diverse groups of ADRD caregivers and narrative experts
- **Aim 1b:** build a user-centered process for narrative audio recording using participant feedback
- **Aim 1c:** test the feasibility, acceptability, and appropriateness, and quality of the new process compared to standard practice

Aim 2: To develop and test an approach for autonomous quantitative data analysis of ADRD caregivers' narratives.

- **Aim 2a:** develop a fully automated software application to annotate linguistic markers that characterize themes of communion, facilitating an abbreviated communion coding process
- **Aim 2b:** examine within-narrative differences in presence of communion coded via the tool compared to standard practice (i.e., human coders) by applying the new tool to collected ADRD caregiver narratives

B. Activities Accomplished

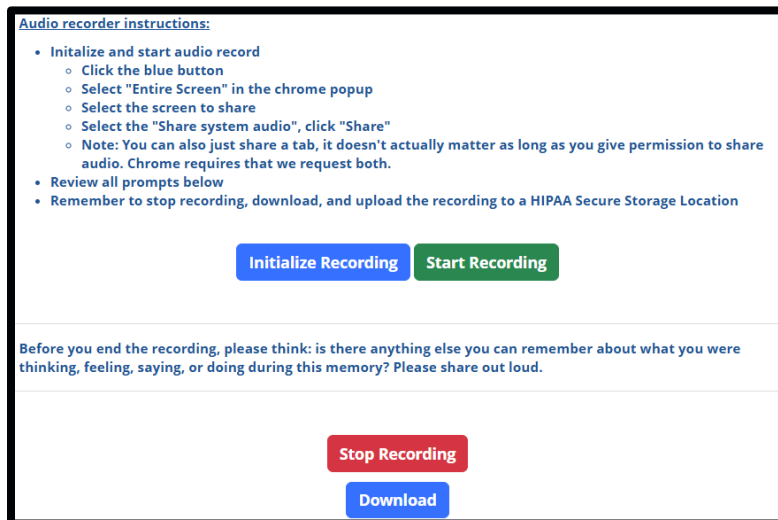


Figure 1.1: A Partial Visual of Version 1 Prototype of Audio Recorder Tool

AIM 1

Dr. Mroz and colleagues first worked with Consultant Adam Nunez to design a prototype narrative data collection tool (Figure 1.1). This tool was built as an external module for REDCap because a) Mr. Nunez had already built a previous audio-recorder tool into REDCap (<https://github.com/uwctri/AudioRecorder>), allowing us to build from his prior work rather than design an entirely new tool, and b) REDCap modules can be downloaded from central storage platforms (e.g., github) and launched in any REDCap system used by any university, increasing possibilities for easy future uptake.

To address **Aim 1a.**, Dr. Mroz recruited two groups to provide audio recorder prototype testing and feedback. First, she recruited 13 current and former caregivers of family members and friends living with dementia and, alongside Co-I Dr. Jane Chung, completed three focus group discussions with 3-5 members per group. In these focus group sessions, she demonstrated the audio recorder prototype. Transcripts from group session discussions were analyzed using rapid template analysis, and results focused on opportunities to improve the prototype audio recorder too.

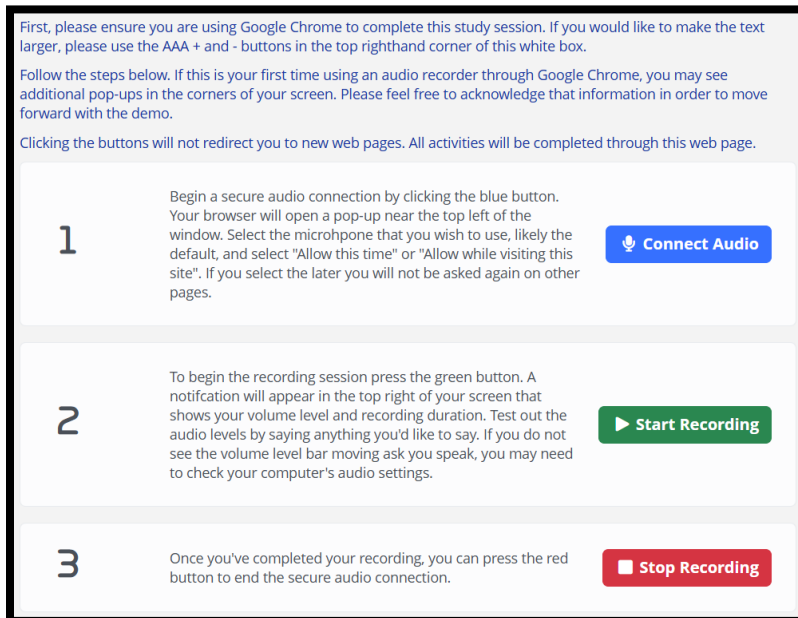


Figure 1.2: A Partial Visual of Version 2 Prototype of Audio Recorder Tool

Focus group participant feedback spanned five topics: user instructions, page features and layout, recording process, participant safety and comfort, and narrative quality. These results were presented to a group of 4 narrative researchers with expertise in caregiving, user experience testing, gerontology, and narrative methods. These expert participants completed independent testing of the audio recorder prototype and reviewed the feedback from the caregiver participants. They offered additional insights on participant feedback and opportunities for tool improvement. Findings from both sets of participants were incorporated into the final audio recorder revision plan.

Dr. Mroz, Mr. Nunez, and colleagues then addressed **Aim 2b** by revising the audio recorder tool with guidance from Aim 1 results (Figure 1.2). Revisions were made to the structure, instructions, functionality, and aesthetic.

In tandem, to address **Aim 1c**, Dr. Mroz and contributor Dr. Jenna Wells completed data collection from approximately 130 current and former caregivers of family and friends living with dementia. This data collection included having participants complete a standard practice of narrative sharing, whereby a study team member would prompt the participant to share memories live, via videoconference, while being recorded. Participants then responded to surveys measuring: a) memory/ narrative quality, 2) feasibility, acceptability, and appropriateness of the narrative sharing experience, and c) emotional comfort while sharing. Dr. Mroz and Dr. Wells are currently awaiting IRB approval to use Dr. Well's Cornell infrastructure alongside Dr. Mroz's REDCap platform to collect data from n ~ 30 participants who will use this new audio recorder tool. This will allow them to compare narrative sharing across self-guided and standard practice conditions.

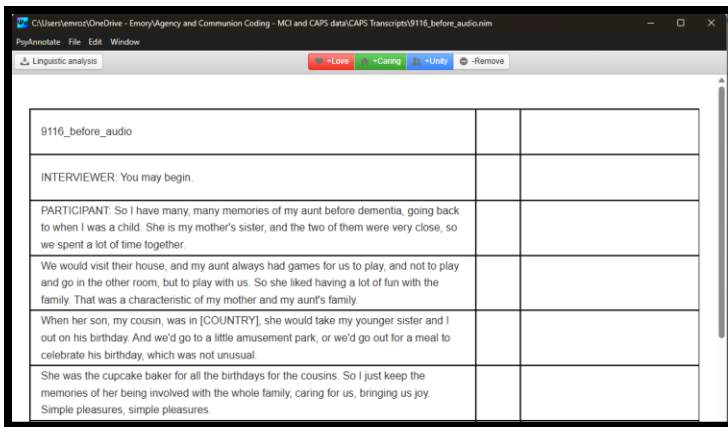


Figure 1.2: A Partial Visual of Version 1 of PsyAnnotate

Aim 2

To address **Aim 2a**, Dr. Mroz and colleagues first worked with Consultant Max Silberstein to develop a software application that could annotate linguistic markers to characterize themes of communion in caregivers' narratives. In tandem, Dr. Mroz began training a team of coders to manually code caregivers' narratives for communion. These processes were synergistic: manual coding pointed out specific considerations for coding caregivers' narratives, allowing the team to develop linguistic rules for the developing software.

The resulting software, PsyAnnotate (Figure 2.1), can automatically analyze narratives according to three sub-constructs of communion, Love and Friendship, Caring and Help, and Unity and Togetherness, by counting the presence of linguistic markers in narratives' idea units. You can see the separation of idea units into individual rows (cells) in Figure 1.2.

To address **Aim 2b.**, Dr. Mroz and a team of two student research assistants analyzed approximately 260 narratives from Dr. Wells' 130 participants in her study of current and former caregivers (approximately two narratives per participant). They then compared these results with those from PsyAnnotate. They did not find strong associations between the output from PsyAnnotate and the results from manual coding. These results mirror their own observations of the limited capacity of PsyAnnotate to use linguistic markers to analyze complex constructs. The team next plans to do a three group comparison of manual coding, PsyAnnotate linguistic coding, and coding through a publicly accessible, Large Language Model- based chatbot, to compare coding accuracy with the standard (i.e., the reference group, manual coding). We are currently waiting for IRB confirmation that it is permissible to share de-identified narrative through chatbots.

These early results have led us to conclude that linguistic analysis is not sophisticated enough to carry out automated coding of complex narrative constructs like communion, even though it shows promise with more straightforward text constructs like emotion language. Exploring the frontiers of LLM-based chatbots will allow us to understand what possibilities there are, if any, for automated analysis.

C. Project Products and Dissemination

Dr. Mroz was happy to share initial results from this project at the 2026 NIMLAS Plenary Meeting. She plans to present additional results at the Bi-Annual Society for Applied Research in Memory and Cognition (SARMAC), which is likely to occur in June 2027.

The team is also planning several manuscript products. We are currently writing a manuscript describing patterns of communion in caregivers' narratives, with plans to submit this manuscript this Fall.

Working paper:

Mroz, E. L., Gad, D., Tso, E., Mohandoss, G., & Wells, J. (in preparation). Communion in Memories from Caregiving. Planned, invited submission to a Special Issue in *Frontiers in Developmental Psychology*: Family

Storytelling: Discourse and Narratives as Developmental Processes and Methodological Tools Across the Life Span

Presentations:

Mroz, E. L. (2026, February). Harnessing Technology for Collecting and Analyzing Caregiving Narratives. Project update presented at Annual Plenary Meeting of the Network for Innovative Methods in Longitudinal Aging Studies