New Jersey Families Study

An Early Childhood Database
for the Global Research Community

Future Data Releases
September 2022

The New Jersey Families Study (NJFS) is a video ethnographic examination of how families support their children's early learning. We have collected 11,500 hours of in-home video recordings across 21 highly diverse families in the Princeton-Trenton, New Jersey area. The NJFS will revolutionize our understanding of the roles of parent-child interactions, family dynamics, and the home environment in helping children get off to a strong, healthy start in life. Five future data releases are currently contemplated.

Release 1.0

The NJFS project's inaugural data release will feature a user-friendly searchable database for 504,000 individual video clips spanning 11,500 hours of in-home video recordings. Video clips will be tagged with three kinds of metadata: (1) household demographic and socioeconomic characteristics, (2) temporal markers based on date and time stamps; and (3) room views (living room, kitchen, etc.). Easy-to-use filters will facilitate quick and efficient access to just those clips that match user preferences.

In addition, the project collected roughly six hours of interview data from five additional points of contact with participating NJFS families: a telephone interview, a home visit, a pre-observation interview, a debriefing interview, and a post-observation interview. In most cases, interviews were audio-recorded. These data will be part of Release 1.0.

Release 2.0

Release 2.0 will build on 1.0 and feature metadata tags for (1) who the participants are in the video clips and (2) their activities and behaviors. Given the sheer volume of data, metadata tags will rely on automated coding derived from state-of-the-art machine learning and computer vision technologies. Activities and behaviors selected for coding are based on recommendations from two expert panels of early childhood education and development researchers (Cecilia H. Kim. 2021. *A Report on the New Jersey Families Study's Focus Groups from December 2020.* Office of Population Research, Princeton University).

Release 3.0

Release 3.0 will incorporate an automated digital transcript of the audio on all 688,300 minutes of NJFS video/audio data. Each video clip will be linked to its unique

digital transcript. When one uses metadata filters to pull up a subset of video clips, one can automatically pull up the matching set of transcript files. Conversely, one can imagine querying the database to locate relevant transcript files using, for example, keywords or phrases. Then when one selects a subset of transcript files for analysis, one has the option of automatically pulling up the linked video clips. We are currently evaluating programs from two speech recognition software providers: Google Cloud Platform's Speech-to-Text software and Amazon's AWS software.

Release 4.0

Being able to locate easily and quickly transcript files that contain chosen words and/or phrases is analytically useful and an immense time saver. However, it doesn't identify the content of conversations. What are people talking about? Release 4.0 will uncover the topics being discussed based on the co-occurrence of words used in conversations.

Topic models take a collection of written digitized documents and return sets of words that communicate a common subject matter. For example, if a document contains such words as ball, bat, homerun, stadium, and shut out, these suggest that the topic being discussed is "baseball." With topic modeling, topics emerge inductively. Structural topic models use the co-occurrence of words to figure out the underlying topics of the document.

Conversational topics (for example, "work," "parenting," and "vacation") facilitate additional metadata tagging for video clips. We plan to construct a frequency distribution of all identified topics. Filters can then capture the most salient and frequently discussed topics. Reference: Justin Grimmer, Margaret E. Roberts, and Brandon M. Stewart. 2022. *Text as Data: A New Framework for Machine Learning and the Social Sciences*. Princeton, NJ: Princeton University Press.

Release 5.0

What earlier data releases fail to do adequately is capture and code the emotion and intensity behind conversational speech. Release 5.0 expands the utility of the early childhood database by engaging linguists and other scholars interested in the finer points of speech analysis and synthesis. A standard tool in the field is Praat software for linguistic research (https://www.fon.hum.uva.nl/praat/). Praat can be used for a variety of measurements and tasks, including opening sound files, measuring duration, formants, pitch, intensity, voice breaks, source-filter resynthesis, nasality measurement, and formula manipulation of sounds.

Release 5.0 will also include decibel readings to detect instances of raised voices or other loud noises. Because the same recording equipment is used repeatedly in every household, it should be possible to render comparative assessments across individuals in the same household or across households.