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Multisensory Emotion Perception and American Sign Language Proficiency

SYDNEY MINGLE
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Reviewed and approved* by the following:

Kathryn Suzanne Scherf
Professor of Psychology
Thesis Supervisor

Jeffrey Love
Associate Teaching Professor of Psychology
Honors Adviser

* Electronic approvals are on file.

ABSTRACT

Emotion recognition is a crucial element of communication that underlies interpersonal skills and empathy. Emotions can be expressed through facial expressions, posturing, gestures, and speech tone. American Sign Language (ASL) is a visual manual language that relies heavily on the use of facial expressions and gestures to convey emotion information during communication, as well as marking grammatical and syntactic properties. Thus, we suspect that frequent use and exposure to ASL may improve the perceptual abilities of its users to better identify emotions through facial expressions. Previous studies have supported that ASL experience provides an advantage in both encoding and decoding facial expressions of emotion (Goldstein & Feldman, 1996; Goldstein, Sexton, Feldman, 2000). However, the existing research only explores emotion recognition of the face. No research attempts to compare ASL users' performance in both facial and vocal emotion recognition tasks, nor are there investigations into the perception of affect more generally. The present study compares emotion recognition performance of ASL-users against non-ASL users in two affective conditions. Given the experience of ASL-users in extracting affective information from visual input, we hypothesize that they will outperform non ASL-users on the face task, but will show no advantage on the voice task.

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Chapter 1

Introduction

Faces have an overlay of 43 intricate muscles that serve many purposes. They allow the movement of the jaw for mastication (chewing), direct eye movement to guide attention and maintain eye contact, and they configure emotional expressions as crucial social signals. In American Sign Language (ASL), these muscles are used to supplement language markers through facial expressions. They provide information on emotion intensity and grammatical structure in addition to the signs being produced by one or both hands. Understanding expressions of emotion is a crucial tool in social interaction and interpersonal communication. Along with other non-verbal tools, facial expressions are near universal markers of body language. Often, facial expressions depend on the context in which they are used, and complement other communication methods.

Facial Expressions in American Sign Language

Facial expressions are important grammatical markers that can indicate the intention of a sentence. They are the primary indicators of negation and establishing sentence type, such as declaration, conditional or question. For example, furrowed eyebrows indicate a Wh- question, whereas raised eyebrows indicate a Yes/No question. Using the correct facial expression is crucial to conveying the desired meaning of a sentence. Emotion intensity can also be displayed as a function of the severity of the expression. There are distinct signs to represent emotion concept terms such as happy, sad, and angry, but the signer uses facial expressions to demonstrate intensity. For instance, a slight smile accompanied by the sign for “happy” conveys a weaker emotion intensity than wide eyes and cheek-to-cheek grin with the same sign.

Face Perception, Categorization, & Recognition

Face perception involves several hierarchical levels moving from course-to-fine information. Face categorization (e.g. mammalian face processing) is a superordinate level function in the hierarchy, whereas face recognition is a subordinate level that requires refined differentiation of faces within the superordinate category. This often entails discerning a human face from that of other animals, but can include other predetermined branches. Face recognition occurs within this higher level of perception. From birth, the face is a very specific perceptual signal from which newborns extract information. Newborns are more attracted to human faces than other visual stimuli, suggesting the presence of an innate mechanism for humans to extract and process perceptual variants of the face (Farroni, Johnson, Menon, Zulian, Faraguna, & Csibra, 2005).

Two theories of emotion perception have emerged in the field of psychology: categorical and dimensional perception. Categorical discrimination suggests the presence of six distinct, universal emotion expressions, whereas the dimensional theory proposes two fundamental dimensions for emotional space: valence and arousal. Valence refers to the hedonic tone or location on the pleasant-unpleasant continuum and arousal refers to the level of energy in the emotion expression. Despite the two opposing theories, hybrid processing can be induced to involve both categorical and dimensional perception of emotion (Fujimura, Matsuda, Katahira, Okada, & Okanoya, 2012). The underlying neural systems of this hybrid processing were investigated using an fMRI design and dimensional/categorical tasks. Activation in the right fusiform face area (FFA) increased in response to categorical processing of psychologically universal emotions; happiness, sadness, fear, angry, surprise, & disgust. The amygdala, insula, and medial prefrontal cortex exhibited increased activation during dimensional processing, correlating with physical changes in the face stimuli (Matsuda, Fujimura, Katahira, Okada, Ueno, Cheng, & Okanoya, 2013). The amygdala specifically is observed to act as an "intensity detector" for facial expressions, activating more in response to stimuli with higher intensity emotions (Bonnet, Comte, Tatu, Millot, Moulin, & Medeiros de Bustos, 2015). The present study will have participants use categorical discrimination to identify the perceived emotions from each condition of the task. While the participant may inherently interpret valence and arousal, the study will evaluate sensitivity to minute differences in emotion.

Face Perception in American Sign Language

As a method of communication, ASL differs from spoken language in several ways. ASL uses a novel signing space that spoken language does not, with several implications for the neural organization of the brain. The grammatical structure of ASL also differs from spoken language. English speakers utilize the left hemisphere during communication, with specific activation in Broca's and Wernicke's area within the frontal and temporal lobes, respectively. Visual information is also dominant in the left hemisphere. However, emotion and spatial information allows for more activation within the right hemisphere. The neural underpinnings of facial emotion recognition are not entirely clear, but evidence suggests that users of ASL have more bilateral organization of the brain for language (Macsweeney, Mairéad, et al., 2008).

Bettger, Emmorey, McCullough, & Bellugi, 1997 used five experiments to test signers' and non-signers' ability to discriminate human faces from non-human faces photographed under different orientation and lighting conditions. Given that ASL uses rapid discrimination of facial expressions, they proposed that ASL may enhance performance compared to non-signers.

Evidenced by deaf signers and hearing native signers performing better than hearing non-signers, enhanced performance was linked to ASL experience rather than auditory deprivation.

Another study compared ASL and nonverbal decoding ability by having undergraduates watch 20 silent video clips of people expressing spontaneous emotions. They would then select the target emotion from a provided list. It was suspected that students with ASL experience would outperform hearing non-signers, but, the effect was expected to vary for specific emotions. The results supported that hearing participants with ASL experience were generally more accurate than non-signers at identifying facial expressions of emotion. In addition, female participants were more successful at decoding emotions than male participants (Goldstein, & Feldman, 1996). In the subsequent study, they examined the relationship between ASL and emotion expression ability. Researchers asked college students to display 6 basic emotions in front of a video camera. Participants were identified as having ASL experience or no ASL experience. The expressions were recorded and rated by independent judges on their success in encoding the appropriate emotion. Their results show that the success rate for ASL users (66.5%) was greater than the non-signers (58.6%) (Goldstein, Sexton, & Feldman, 2000). These studies suggest that ASL provides an advantage in both encoding and decoding facial expressions of emotion.

Stoll, et al., 2017, investigated the influence of sign language on face processing by examining performance on face categorization and face recognition tasks. The categorization task had participants differentiate between human and non-human faces, while the recognition task required the use of short-term memory for subject identification. Participants fell into 3 groups: hearing non-signers (control), early profoundly deaf signers, and hearing signers. While there were little differences in performance during the categorization task, researchers observed that signers, both deaf and hearing, were slower too accurately recognize faces, but had a higher accuracy rate. This led to the conclusion that sign language experience drives a speed-accuracy trade-off during facial recognition, but not face categorization of human vs. non-human faces. Thus, regardless of hearing status, sign language may promote strategic differences in face processing at a subordinate level.

The Current Study

However, the existing research only explores emotion perception of the face. No research attempts to compare ASL users' performance in both facial and vocal emotion recognition tasks, nor are there investigations into the perception of affect more generally. The present study will compare emotion recognition performance of ASL-users against non-ASL users in two affective conditions. The condition of vocal emotion recognition will act as a control for emotion recognition ability. This will allow us to determine if ASL is responsible for providing a specific advantage to facial emotion recognition. We predict that frequent use and exposure to ASL may improve the perceptual abilities of its users to identify emotions through facial expressions. Given the experience of ASL-users in extracting affective information from visual input, we hypothesize that they will outperform non ASL-users on the face task, but will show no advantage on the voice task.

Chapter 2

Methods

Participants

The experiment is ongoing. It is being conducted remotely via Amazon Mechanical Turk via the Cloud Research MTurk toolkit, an online crowdsourcing marketplace where businesses can outsource jobs to workers with the appropriate qualifications (Litman, Robinson, & Abberbock, 2017). A total sample of 110 participants will be collected. This sample size was determined on the basis of an a priori power analysis using G Power. This sample size will provide 80% power to detect a small effect sized interaction between participant group (Signers, non-signers) and condition (face, voice) in a repeated-measures ANOVA with an alpha level of $p < .05$. To date, the data from 8 participants has been collected. Data collection will continue until we reach 110 participants. While more than 20 subjects indicated their interest in the study, they were either ineligible to participate or did not complete the task in its entirety. All participants signed a document of informed consent before data collection took place.

Participants were native English speakers, developmentally healthy, with no personal or first-degree family history of psychiatric or neurological disorders. Participants were asked to fill out information regarding prenatal, birth and development history, general medical history and psychiatric and neurological history. If they indicated yes to any of the following conditions, they were excluded from participation: born prior to 37 weeks' gestation, birth weight less that 5.5lbs, evidence of delay in developmental milestones, additional support services at school, grade repetition, diagnosed hearing loss, head injury with loss of consciousness, regular prescription medication use for mental illness, a diagnosis of autism spectrum disorder, developmental delay, a psychiatric diagnosis, or neurological condition.

Measures

ASL-Adapted LEAP-Q

The Language Experience and Proficiency Questionnaire (LEAP-Q; Marian, Blumenfeld, & Kaushanskaya 2007; Kaushanskaya, Blumenfeld, & Marian, 2019) is a self-report measure of language exposure, dominance, immersion, and proficiency for bilingual speakers of spoken languages. We adapted the LEAP-Q to assess language profile for individuals with experience using American Sign Language (ASL). For example, in addition to receptive and expressive ASL ability, participants are asked to identify the environments that contributed to their ASL knowledge and exposure. Questions were also added to reflect the acquisition experience. For example, Children of Deaf Adults (CODAs) are native hearing users of ASL and have likely learned to sign since birth. In contrast, later learners of ASL are typically exposed through close friends or family or learned ASL as a second language in formally in academia. See **Appendix A** for the list of questions in the ASL-Adapted LEAP-Q.

CAM Face-Voice Battery

The Cambridge Mindreading Face-Voice battery (adult version) assesses how adults perceive emotions in both facial and vocal stimuli (Golan, Baron-Cohen, & Hill, 2006). The CAM battery was developed on Psychopy, a free cross-platform package that accommodates a wide range of experiments in the behavioral sciences.

Using a novel taxonomy of emotion words that display mental states, the database includes 6 film and 6 voice recordings of each of the 412 emotions. The battery consists of two tasks: emotion recognition in the face and emotion recognition in the voice. Each task is 50 questions long and is preceded by two practice questions to ensure they understand the process.

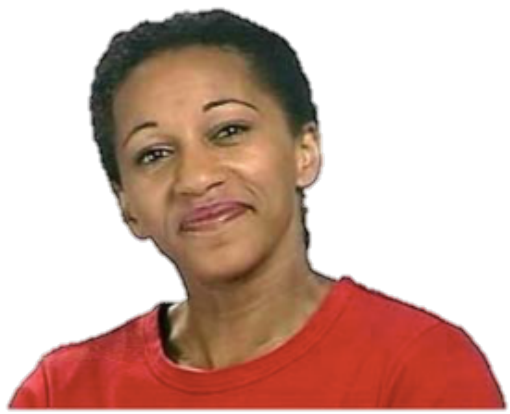
In the face task, participants watch 3-5 second videos of a silent actor expressing an emotion. See **Figure 1** for an example of the questions in the face task. The actors were of diverse ethnicities, ages, and genders. In the voice task, participants listen to short sentences without visual input to interpret speech prosody as emotion expression. Following the presentation of the stimuli, participants are given a list of 4 emotions, 1 target emotion and 3 distractor emotions. The goal of the task is for the participants to correctly select the emotion being portrayed through facial expressions and/or vocal prosody.

There are four unique scores for performance on the CAM task: overall recognition score, facial emotion recognition score, vocal emotion recognition score, and total concepts correctly recognized. The overall recognition score is a numerical value from 0-100, describing the sum of correct answers in both task conditions. Both facial and vocal emotion scores are rated from 0-50 as the sum of the items answered correctly. The final score represents how many concepts the participant has accurately recognized. The criterion for "passing" a concept is achieving recognition on 4 out of the 5 appearances for the emotion. Of the 20 concepts in the battery, half are determined by the following combination of 5 items: 3 faces and 2 voices. The other 10 concepts are measured using 2 faces and 3 voices.

Procedure

All procedures were approved by the Pennsylvania State University Institutional Review Board. Participants completed a survey using Qualtrics to evaluate their study eligibility, report demographic information and self-reported ASL proficiency. Ineligible participants exit the survey and are paid $0.25. If the participant was eligible, they moved on to the CAM battery in a randomized order (either face or voice task first). The stimuli within each condition was also presented in random order. In both tasks, 4 adjectives were shown following the end of each stimulus. The participants were asked to select their preferred answer by using the mouse and clicking on the answer choice. If they were unfamiliar with the given emotion words, definitions were available by using the right arrow key to toggle to a screen with item descriptions. Participants were instructed to complete the task as quickly and accurately as possible, without making mistakes. In entirety, the survey and battery tasks took about 30 minutes to complete.

Fig 1. Example from the emotion recognition in the face task
(showing only one frame from the full clip)



1. Needy 2. Turmoil 3. Admiring 4. Offended

Chapter 3

Results

The data collection is ongoing. Therefore, I am only able to plot descriptive data from the very small number of participants I have been able to collect to date. The results will not be interpreted for the relationship of interest, but the score means are detailed below.

Table 1 shows the individual performance scores of each participant on the ASL proficiency measure and CAM battery. In the current sample, 6 participants reported ASL proficiency and 2 participants reported zero ASL experience. Of those reporting some level of proficiency, scores on the ASL-Adapted LEAP-Q ranged from 8-28, with a mean of 15.5. The participants reporting no ASL experience are recorded with a score of 0 for ASL proficiency. **Figure 2** shows the mean accuracy for performance in the facial and vocal emotion recognition tasks for participants who reported ASL experience and participants who indicated no ASL experience.

In the emotion recognition face task, ASL users answered correctly on average 31/50 questions or 62%. Non-ASL users answered correctly on average 33/50 questions or 66%. In the emotion recognition voice task, ASL users answered correctly on average 37/50 questions or 74%. Non-ASL users answered correctly on average 16.5/50 questions or 33%. ASL users correctly identified on average 9.3/20 concepts, while non-ASL users correctly identified on average 7.5/20 concepts. The original use of this task was to compare emotion perception in adults with and without Asperger Syndrome, now Autism Spectrum Disorder (Golan, Baron-Cohen, & Hill, 2006). The control group was reported with the following scores: 43.53/50 (87%) on the face task, 42.76/50 (85.5%) on the voice task, and 16.76/20 concepts correctly identified.

Mean reaction times were generated for both conditions. The reaction time data for facial emotion recognition of Participant 2 was excluded from the mean calculation due to its significant, extreme difference from other participants. In the face task, the mean reaction time for ASL users was 2998.73 milliseconds. In the voice task, the mean reaction time for ASL users was 3044.22 milliseconds. In the face task, the mean reaction time for non-ASL users was 3107.48 milliseconds. In the voice task, the mean reaction time for non-ASL users was 3269.70 milliseconds. **Figure 3** shows the comparison of reaction times for both groups in both conditions.

Limitations

The COVID-19 pandemic dramatically affected the world in many ways. In March of 2020, all in-person data collection ceased under the mandatory quarantine and safety protocols. Research in the Lab of Developmental Neuroscience was no longer able to invite study participants to the lab for data collection. Considering this series of events, research through the Department of Psychology adapted to support online data collection for a plethora of studies through the summer and fall of 2020. As such, this research became reliant on several online platforms for participant recruitment, data collection, payment, and analysis.

Pavlovia is an online resource for researchers in the behavioral sciences to run, share, and explore experiments online (Chandler, Rosenzweig, Moss, Robinson, & Litman, 2019). On March 10, 2021, the company providing servers that support Pavlovia caught on fire, causing the site to shut down temporarily. While the Pavlovia servers and study data were fortunately undamaged by the fire, the platform remained under repair for the next several weeks. The delays in data collection prevented the study from launching until the site was restored. The data presented above represents one week of collection with Pavlovia fully-functional.

This study used audio stimuli to observe emotion recognition through the voice, but this required the exclusion of deaf individuals and those with hearing loss. As the primary users of ASL, it is important to understand how they may perceive faces as well. Gaze pattern studies observed that Deaf adults that use ASL have habitual fixation patterns that differ from users of spoken English. This may be explained by lip-reading spoken English when non-signers communicate with Deaf individuals. By resting their gaze on the bottom half of the face, ASL users use their peripheral vision to observe the signing space simultaneously with facial expressions. Deaf adults evenly split their gaze to make top and bottom half judgments, which may maximize their ability to perceive information from expressive faces (Letourneau & Mitchell, 2011). Visual cognition may also be influenced by atypical sensory experience. Early profound deafness leads to specific adjustments in processing that wouldn't be seen in hearing signers (Stoll, et al., 2017). Cochlear implantation in individuals with acquired and congenital deafness at different stages of development. Cochlear implants (CIs) thread a wire into a sea-shell shaped cochlea to stimulate sound impulses. When taking a Face/Voice emotion perception task, CI users were less efficient with auditory stimuli and struggled with an interference condition with incongruent facial stimuli. This effect was not observed in the face task, and the study explained that CI users show bias for congruent facial information (Fengler, Nava, Villwock, Büchner, Lenarz, & Röder, 2017). Deaf individuals, people with hearing loss and CIs are an understudied population and future research should continue to pursue this further.

Figure 2*:* Mean Emotion Recognition Scores as a Function of Condition and Sample Group in the Emotion Recognition Task

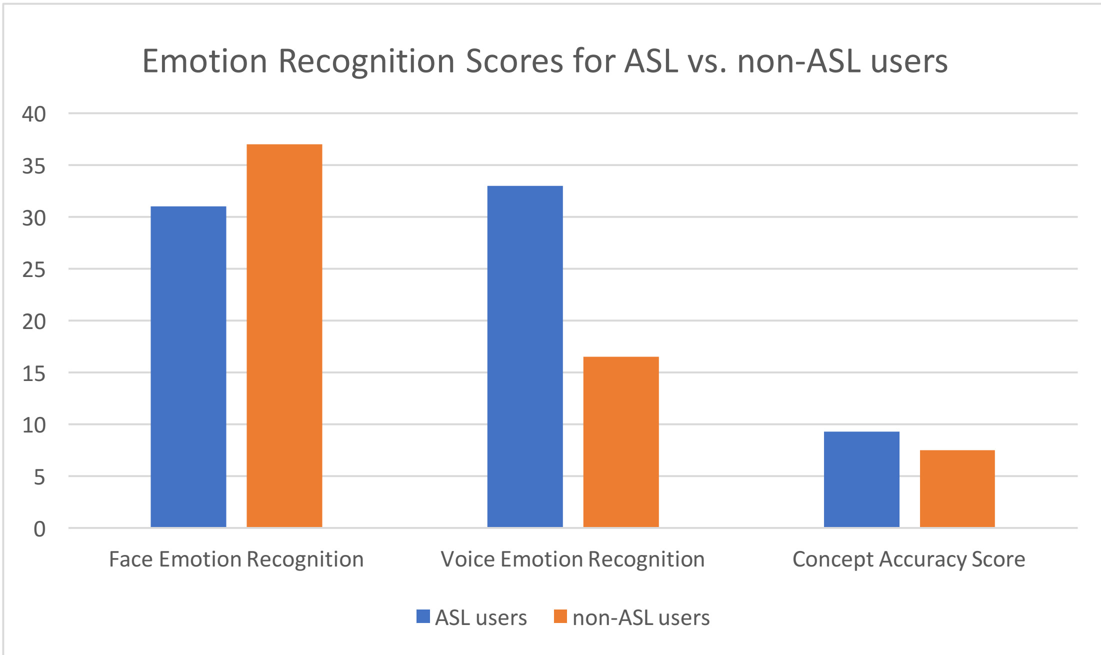


Figure 3. Mean Reaction Times as a Function of Condition and Sample Group in the Emotion Recognition Task

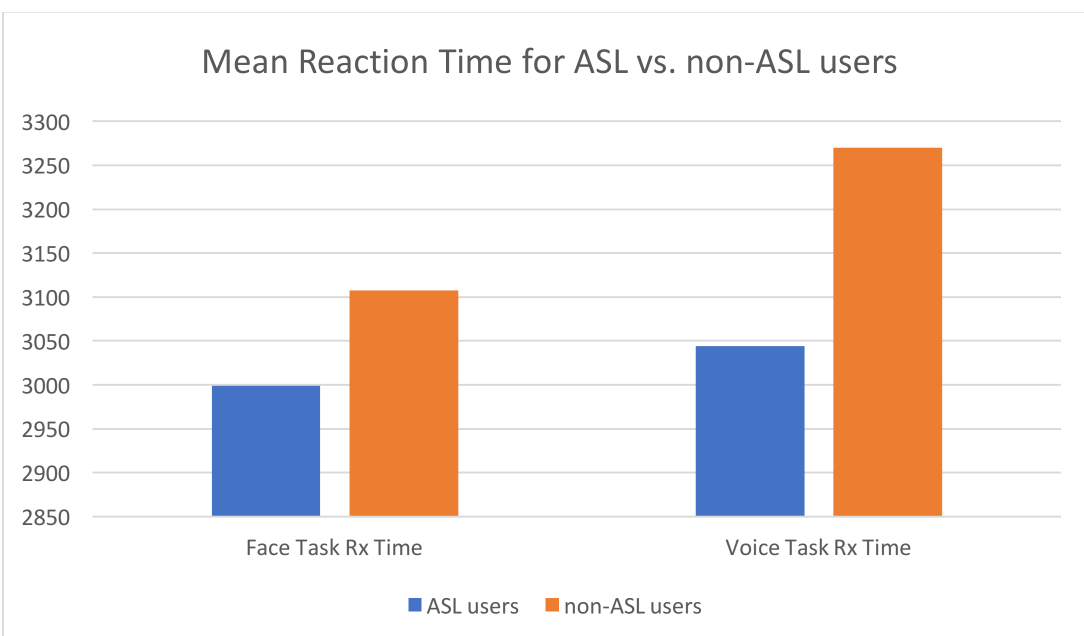


Table 1. Individual Performance on ASL Proficiency & CAM Battery

	Participant 1	Participant 2	Participant 3	Participant 4	Participant 5	Participant 6	Participant 7	Participant 8
ASL Proficiency Score	8	13	21	12	0	0	11	28
Average Voice Reaction Time (ms)	3406.61	1169.17	2658.56	4741.46	3629.39	2910	4818.16	1471.35
Average Face Reaction Time (ms)	3516.54	6284.39	2447.34	1935.76	3443.57	2771.38	5737.14	1356.85
Neutral Concept Score	2	1	1	1	2	0	1	2
Positive Concept Score	3	3	2	3	2	3	4	2
Negative Concept Score	7	8	4	1	5	3	5	6
Voice Recognition Score	43	43	32	36	32	1	36	34
Face Recognition Score	34	33	27	26	35	31	31	35

Chapter 4

Discussion

The results are too preliminary to draw any conclusions. The study will continue to collect data until the desired sample size of 110 is achieved. At that time, the data will undergo a full analysis to determine the relationship between ASL and emotion recognition. Other variables will be assessed such as age, race, education level, and method of ASL acquisition and maintenance.

As discussed, understanding facial expressions of emotion is crucial to adequate development of interpersonal relationships and social interaction. Deaf children benefitted from emotion recognition programs to improve their social skills and interpersonal connectivity, yet, their participant pool consisted of Deaf children that attended oral education programs and had no mention of ASL (or other signed language) experience (Dyke & Denver, 2003). Their findings are consistent that the social skills of the Deaf children were improved when they were enrolled in a program to improve emotion recognition. These results should extend to other groups who struggle with emotion recognition abilities. Namely, children and adolescents on the autism spectrum or with similar developmental disabilities. Given their findings, it holds that intervention focusing on emotion recognition abilities could improve the interpersonal skills of people with autism spectrum disorder (ASD) and other developmental disabilities.

While children with autism and neurotypical (NT) children show no differences in expression intensity, children with autism typically display facial expressions less often and for a shorter duration. The production of these spontaneous expressions is rated by observers and experimenters as lower in quality, and as “odd”, “stilted” or “mechanical” (Keating & Cook, 2020). Children with ASD often struggle with eye contact and as such, are perceived as antisocial or uninterested. Attending to the face is vital to sign language processing, which suggests that ASD children may have reduced understanding with the visual language. Deaf children with ASD are an understudied population that face the compounded difficulties of each diagnosis. An investigation of deaf children with ASD and British Sign Language showed that deaf children with ASD recognized fewer emotions compared to the deaf NT children. The study used a masking condition that blurred out the face, demanding the subjects to focus solely on the presented signs. The ASD group was impacted by the condition, therefore, they use some information provided by the face during sign language comprehension (Denmark, Atkinson, Campbell, & Swettenham, 2014).

A review of behavioral and neuroimaging studies into facial emotion recognition and ASD discusses the influence of abnormal eye gaze pattern, delayed event-related-potentials, and anomalous activity in emotion processing circuitry. Children with ASD also find difficulty in labeling and matching emotions compared to controls (Harms, Martin, & Wallace, 2010). A previous attempt to enhance emotion recognition ability involved an animated series, The Transporters, which grafted real-life faces of actors onto toy vehicles. By creating an “autism friendly” context for facial expressions of emotion, the series sought to teach children with ASD about appropriate uses of emotion. Following the intervention strategy, the ASD group improved significantly more than the NT group, proposing that *The Transporters* significantly improves emotion recognition in children with ASD (Golan, et al., 2010). If the hypothesis of the current study is supported by the results, ASL may be an additional intervention strategy to improve emotion reception skills and support interpersonal communication among children with ASD.

APPENDIX A

ASL-Adapted Proficiency Questionnaire

Q1. Please list all the languages you know **in order of dominance:** (including ASL)

Q2. Please list what percentage of time you are **currently and on average** exposed to each of the languages you listed.

Q3. When choosing a language to speak with a person who is equally fluent in all your languages, what percentage of time would you choose to speak each language? Please report percentage of total time.

Q4. Are you a CODA? (Child of a Deaf Adult)

__ Yes
__ No

Q5. Do any immediate family members or friends use ASL as their primary language?

__ Yes
__ No

Q6. Age when you…

Began acquiring ASL?

Considered yourself fluent in ASL?

Q7. How many years of formal education do you have?

Q8. Please check your highest education level (or the approximate equivalent to a degree obtained in another country)

__ Less than High School
__ High School
__ Professional Training
__ Some College
__ College

__ Some Graduate School

__ Masters

__ Ph.D./M.D./J.D.

__ Other

Q9. Please list the amount of time you spent in each language environment (specify years, months)

A family where ASL is used?

A school/working environment where ASL is used?

Q10. Please select your proficiency level in **expressive** ASL (ability to sign)

__ 0 - none

__ 1 – very low

__ 2 – low

__ 3 – fair

__ 4 – slightly less than adequate

__ 5 – adequate

__ 6 – slightly more than adequate

__ 7 – good

__ 8 – very good

__ 9 – excellent

__ 10 – perfect

Q11. Please select your proficiency level in **receptive** ASL (ability to understand ASL)

__ 0 - none

__ 1 – very low

__ 2 – low

__ 3 – fair

__ 4 – slightly less than adequate

__ 5 – adequate

__ 6 – slightly more than adequate

__ 7 – good

__ 8 – very good

__ 9 – excellent

__ 10 – perfect

Q12. Please select how much of each of the following factors contributed to you learning ASL (scale 1-10; 0 – not a contributor, 5 – moderate contributor, 10 – most important contributor)

__ Interacting with friends

__ Interacting with family

__ Language apps or websites/self-instruction

__ Watching TV

__ Courses in Academia

Q13. Please rate to what extent you are currently exposed to ASL in the following contexts: (scale 1-10; 0 – never, 5 – half of the time, 10 – always)

__ Interacting with friends

__ Interacting with family

__ Language apps or websites/self-instruction

__ Watching TV

__ Courses in Academia

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ACADEMIC VITA

Sydney Mingle
Sam762@psu.edu

Education

The Pennsylvania State University; *Schreyer Honors College* *University Park, PA*

- College of the Liberal Arts: Psychology: Life Sciences, B.S. Class of 2021
- College of Human and Human Development: Deafness and Hearing Studies, UMNR.
- Dean's List Student

Awards/Achievements

Northern Hemisphere Summer Research Scholarship

- **University of Auckland:** *Department of Psychological Medicine* June - August 2019

Grant Award for Honors Research

- **Pennsylvania State University:** *Schreyer Honors College* January 2021

Work Experience

Schwab Auditorium September 2019-present

Part-time Student Manager in Student Affairs *State College, PA*

- Operate stage equipment, i.e. lighting instruments, audio systems, and scenic elements
- Follow instructions from supervisors and problem-solve when complications arise during productions
- Attend pre-production meetings and serve as front-of-house management for assigned events

CommScope: *Catawba Facility* June 2018 – August 2018

3rd shift Worker on Drop Cable Line Manufacturing *Sherrills Ford, NC*

- Implement quality assurance protocol for every shipment, documenting results throughout shift
- Work closely and communicate with machine operators for efficient production of materials

Research Experience

Lab of Developmental Neuroscience January 2020 – Present

Undergraduate Researcher in LDN

- Conduct human subjects research with informed consenting protocols
- Follow real-time results to inform study participation and select behavioral tasks accordingly

Midlife in the United States September 2018 – May 2019

Research Intern for Collaborative Research on Adult Stress and Health

- Accurately identify and record medication and lifestyle information as provided by study subjects
- Construct data collection kits with instructions, saliva tubes, and shipping material

Leadership Experience

The Penn State Thespians Society September 2017 – May 2020

Multimedia Committee Chair; Stage Manager

- Organize photography for performances in coordination with graphic designer and film committee
- Develop rehearsal and audition schedules, communicating information to cast and production staff
- Coordinate a production timeline and manage questions throughout the production

THON 2018 & 2019; Rules and Regulations Committee Member September 2017 – February 2019

Security Leader, Education Liaison, Family Relations Specialist

- Maintain the safety of spectators, organization members and dancers during THON weekend
- Create and deliver education tools as an education liaison for committee members
- Support security committee members during THON weekend and ensure the safety of dancers