

Doctoral Student AAC Think Tank 2019

# Increasing use of AAC for aphasia rehabilitation

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Doctoral Research

How to increase  
the use of AAC  
devices?

How to set up a  
brain computer  
interface to access  
an AAC device?

A two-country survey to assess AAC device use  
for aphasia rehabilitation



## Aim

To investigate professional preparation and preference for high-tech augmentative and alternative communication (AAC) devices in aphasia rehabilitation in the United States of America and India.



## Method

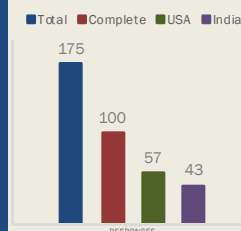


Questionnaire electronically distributed to speech-language pathologists in the US and India.



Descriptive analysis and Chi square test

## Results



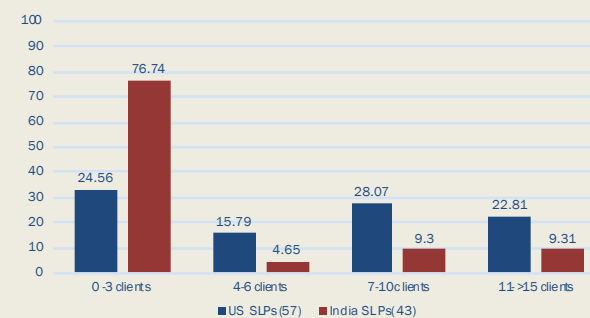
Country	Respondents	Gender	Number of SLPs	SLPs using AAC devices	Percentage
USA	57	Male	4	4	100%
		Female	53	30	56.60%
India	43	Male	10	2	20%
		Female	33	12	36.36%

Respondents and their AAC device usage

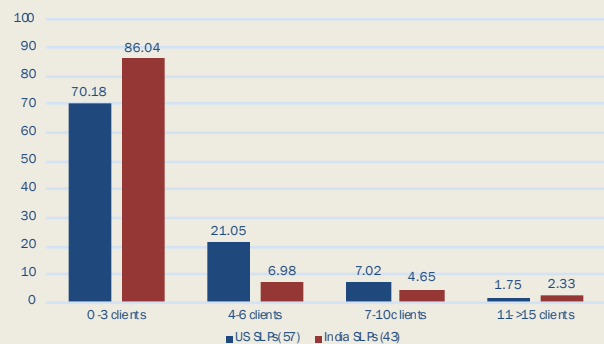
## AAC Education and Training

Training Avenues	USA	India
Graduate coursework	78.43%	78.37%
Clinical Practicum	41.17%	56.75%
Conference	49.01%	27.02%
In-service workplace	54.90%	16.21%

Hours of Training	USA	India
0-5 hours	11.76%	24.32%
6-10 hours	21.57%	32.43%
11-15 hours	11.76%	8.11%
16-20 hours	35.29%	27.03%
Others	19.61%	8.11%



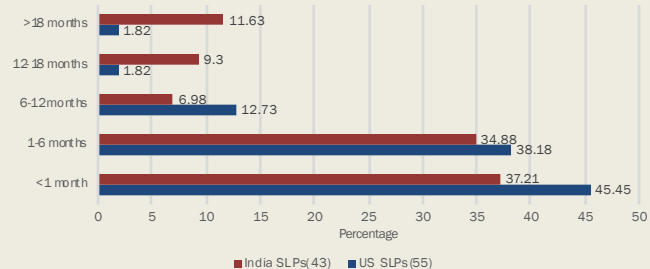
Adult caseload demographics of the survey respondents



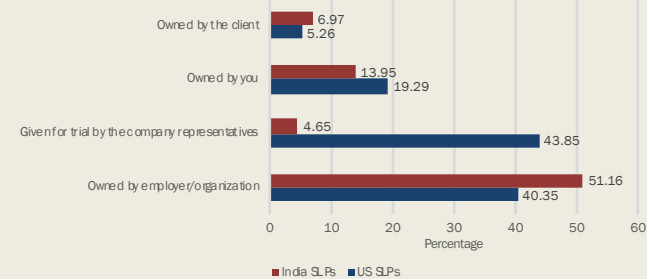
Aphasia Caseload for survey respondents

## SLPs' years of experience and work settings

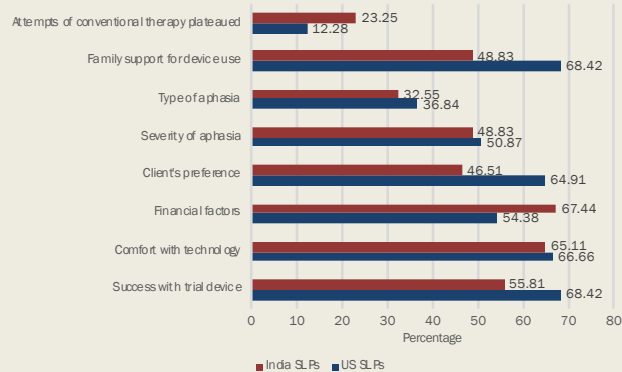
Years as an SLP	USA (57)	India (43)	Work settings	US SLPs	India SLPs
0-3 years	10.53%	48.83%	School	38.59%	20.93%
3-6 years	15.79%	32.55%	Private Clinic	21.05%	55.81%
6-10 years	21.05%	11.62%	Hospital	45.61%	44.18%
10-15 years	10.53%	4.65%	Skilled Nursing Facility	29.82%	0%
15-30 years	24.56%	0%	Residential Facility	5.26%	6.97%
>30 years	17.54%	2.32%	Long-Term Care Facility	17.54%	0%
			University Clinic	26.31%	25.58%



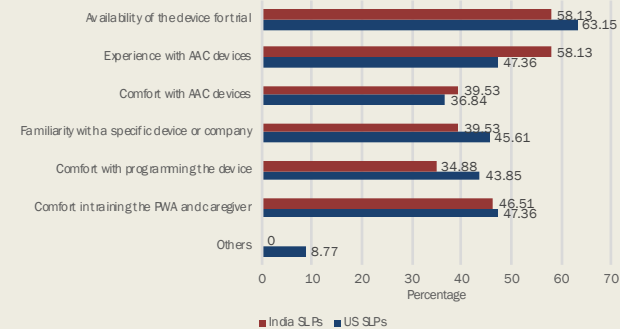
Timeline of AAC device prescription



AAC trial device ownership



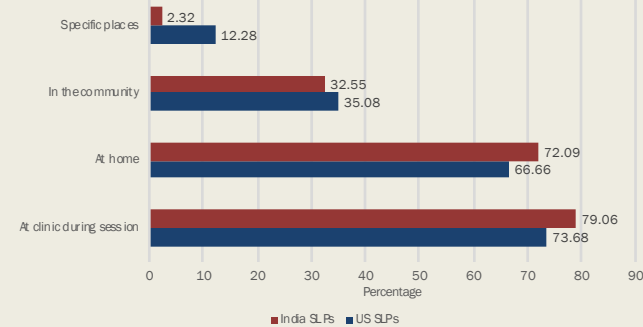
Client-driven factor for AAC device use



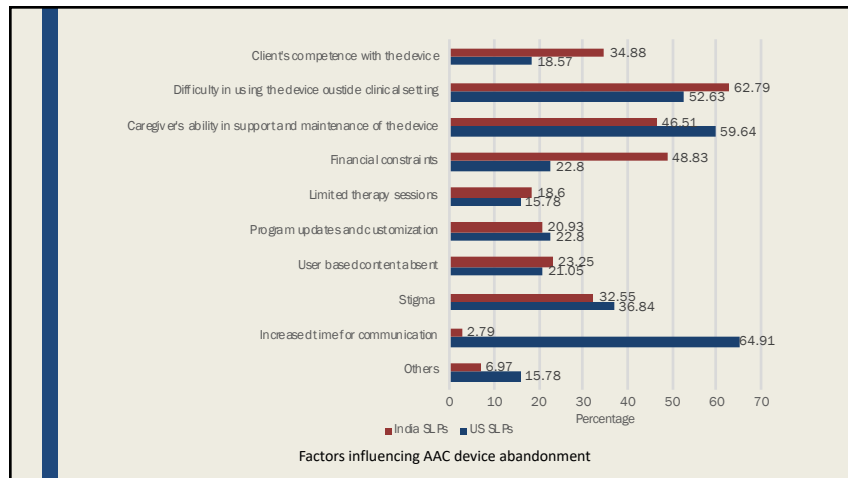
Clinician-driven factors for AAC device use

Recommendation of AAC device

Number of PWA recommended with an AAC device on our caseload	US SLPs	India SLPs
0	26.31%	41.86%
1	24.56%	30.23%
2	19.29%	9.30%
Half of the caseload	7.01%	9.30%
All the persons on your caseload	5.26%	2.33%
Specific number (N/A response)	14.03%	6.98%



Avenue of AAC device use



## Conclusion

- Shared factors between the US and India
  - Use of an iPad with AAC application over high tech AAC devices.
  - Increase caregiver training and opportunities for communication using the device.
  - Increase AAC training during college coursework for individualized programming of AAC devices.

### US

Increase the awareness of AAC device inclusion for aphasia rehabilitation.

Reduce the time of communication and encourage use of device outside clinical settings.

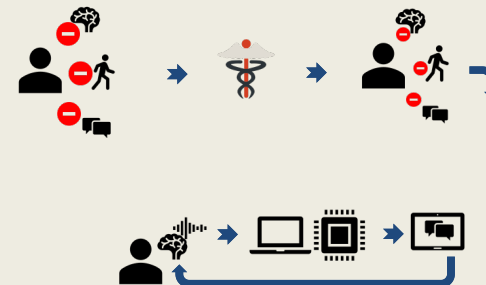
### India

Reduce stigma to communicate with an AAC device.

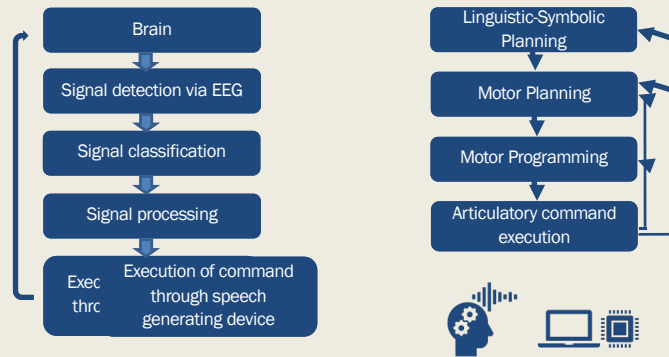
Availability of devices with vocabulary and page setup in regional languages.



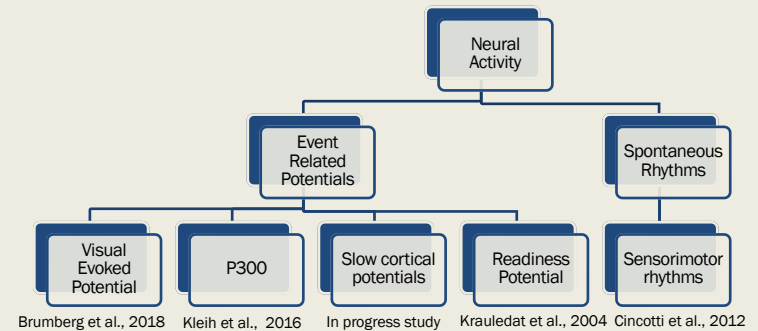
## Input signals of brain-computer interfaces for aphasia rehabilitation



## Application of BCI



## Aim: Signals used in BCI



## Can CNV indicate speech?



Aim:



Establish CNV as a neural marker of speech intention



Examine the effects of lexical variables on CNV morphology

## Method

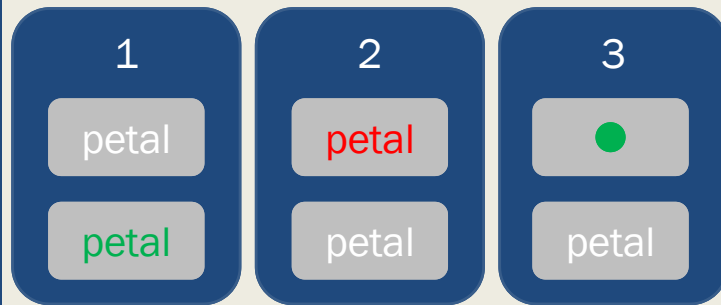
- Participants: 6 healthy adults for each of three presentation paradigms

- Stimuli words: /p/ words(SUBTLEX-US)

Syllable structure	Word frequency		
CVC (put)	Low-29	Mid-29	High-29
CVCV(papa)	Low-17	Mid-21	High-19
CVCVC(petal)	Low-37	Mid-38	High-37

- Equipment: EEG system with a 64 channel electrode cap and a photodiode

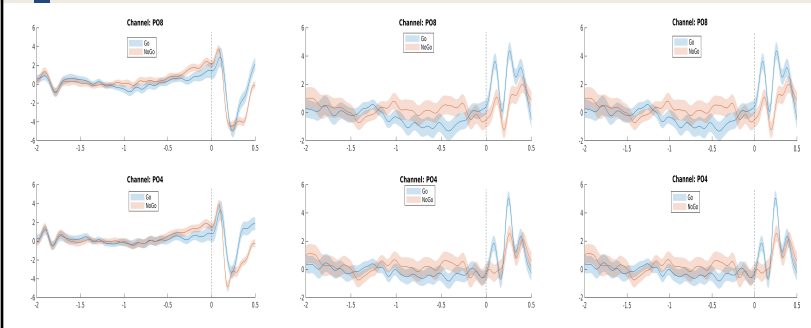
## Stimulus presentation protocols



## Protocol 1

## Protocol 2

## Protocol 3



## RESEARCH CHALLENGE

- Collect more data on neurotypicals and people with aphasia in limited time and money.
- Understand effect of lexical variables and measure with distinct words
- Set up a BCI paradigm

THANK  
YOU