GS-LSAMP/NNJ-B2B
2021 Poster Guidelines

Your poster may be vertical or horizontal.
The templates in this file are horizontal; you should have also received a file of vertical templates.

You can choose one of the following templates, adjusting the boxes, color and font as you see fit. Do not make the font smaller than 24 pt. (References can go down to 20 pt.)

Please select the appropriate logos from the following page and insert them where indicated on the template you select. The NSF logo mut be on your poster if you received an LSAMP or B2B stipend. If you conducted research outside GS-LSAMP, you must ask your research mentor for the logo of that institution.

Example posters are attached after the logos and before the templates. One is for research posters and one is for lit review posters.

Watch this short (<4 minute) video for tips on how to make a great poster:
https://www.youtube.com/watch?v=AwMFhyH7_5g

Once you complete your poster, you must save the slide as a PDF file, **not more than 10 Mb**.

If you are wondering how to create your 2-5 minute video, you can use Zoom. Start a Zoom meeting with no other participants, record it, and give your presentation. You may share your screen to show your poster. If you would like to highlight your pointer, select “Annotate” from the menu bar once you start sharing, then select the wand. It will take several minutes after your meeting ends for the recording to be available; you will receive an email when it is. Follow the link and trim your video, if needed. Make sure your video is not password protected by clicking the “Share” button and making sure that “passcode protection” is deselected.

Once your abstract, poster and video are complete, fill out the form and upload your files to:
symposium.foragerone.com/gslsamp21/submission

GS-LSAMP and NNJ-B2B logos

If you received a research stipend, you must use one or both these logos:

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You must use the logo from your home school and the logo of the institution through which your research was conducted, if different:

NNJ-B2B School Logos:

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HUDSON COUNTY COMMUNITY COLLEGE

CCM County College of Morris

GS-LSAMP School Logos:

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MONTCLAIR STATE UNIVERSITY

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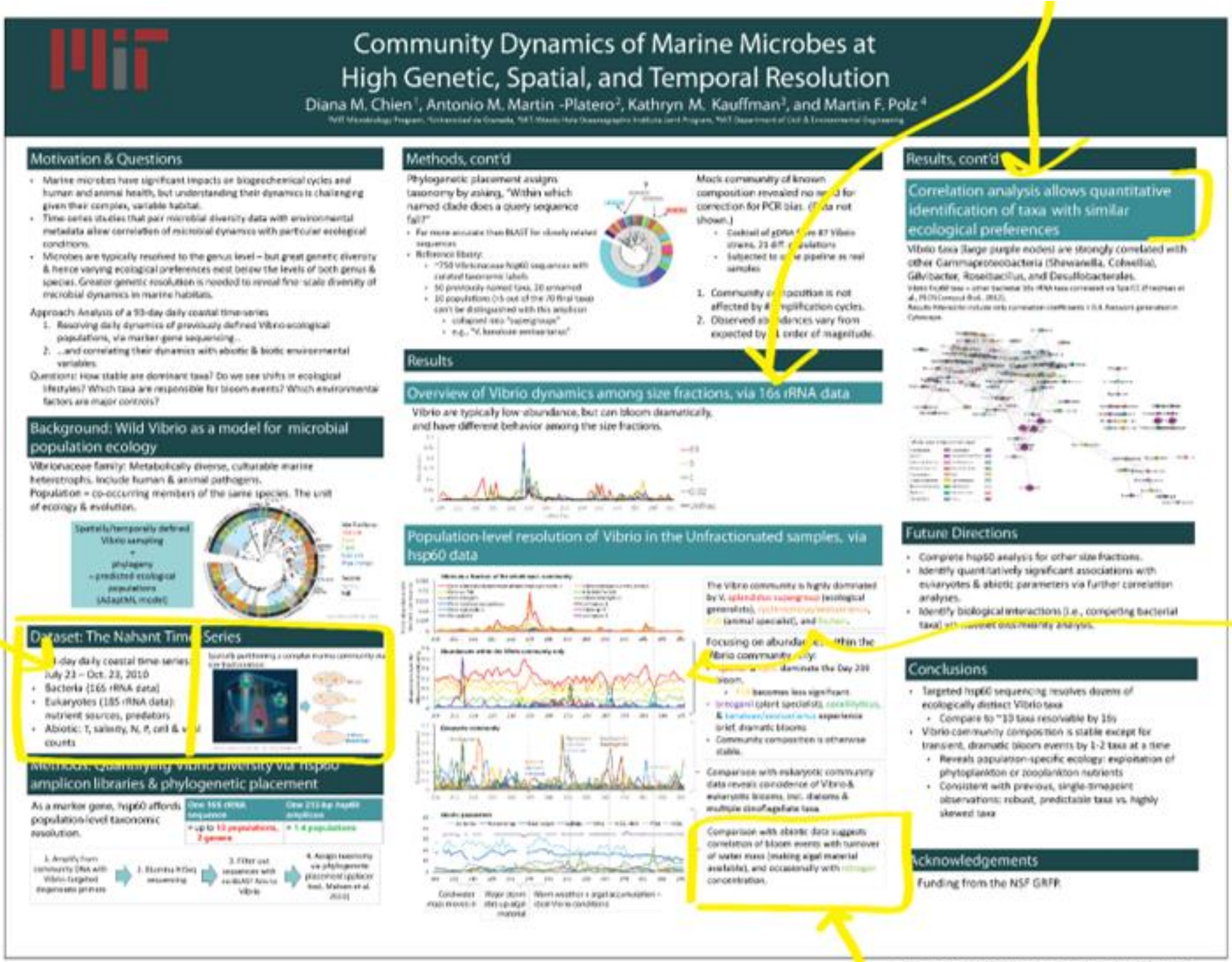
Example Horizontal Research Poster



Community Dynamics of Marine Microbes at High Genetic, Spatial, and Temporal Resolution

Diana M. Chien[1], Antonio M. Martin -Platero[2], Kathryn M. Kauffman[3], and Martin F. Polz[4]

Motivation & Questions

- Marine microbes have significant impacts on biogeochemical cycles and human and animal health, but understanding their dynamics is challenging given their complex, variable habitat.
- Time-series studies that pair microbial diversity data with environmental metadata allow correlation of microbial dynamics with particular ecological conditions.
- Microbes are typically resolved to the genus level – but great genetic diversity & hence varying ecological preferences exist below the levels of both genus & species. Greater genetic resolution is needed to reveal fine-scale diversity of microbial dynamics in marine habitats.

Approach: Analysis of a 93-day daily coastal time-series
1. Resolving daily dynamics of previously defined Vibrio ecological populations, via marker gene sequencing...
2. ...and correlating their dynamics with abiotic & biotic environmental variables.

Questions: How stable are dominant taxa? Do we see shifts in ecological lifestyles? Which taxa are responsible for bloom events? Which environmental factors are major controls?

Background: Wild Vibrio as a model for microbial population ecology

Dataset: The Nahant Time Series

- July 23 – Oct. 23, 2010
- Bacteria (16S rRNA data)
- Eukaryotes (18S rRNA data): nutrient sources, predators
- Abiotic: T, salinity, N, P, cell & viral counts

Methods: Quantifying Vibrio diversity via hsp60 amplicon libraries & phylogenetic placement

As a marker gene, hsp60 affords population-level taxonomic resolution.

Methods, cont'd

Phylogenetic placement assigns taxonomy by asking, "Within which named clade does a query sequence fall?"

Mock community of known composition revealed no need for correction for PCR bias. (Data not shown.)

1. Community composition is not affected by # amplification cycles.
2. Observed abundances vary from expected by 1 order of magnitude.

Results

Overview of Vibrio dynamics among size fractions, via 16s rRNA data

Vibrio are typically low-abundance, but can bloom dramatically, and have different behavior among the size fractions.

Population-level resolution of Vibrio in the Unfractionated samples, via hsp60 data

Results, cont'd

Correlation analysis allows quantitative identification of taxa with similar ecological preferences

Future Directions

- Complete hsp60 analysis for other size fractions.
- Identify quantitatively significant associations with eukaryotes & abiotic parameters via further correlation analyses.

Conclusions

- Targeted hsp60 sequencing resolves dozens of ecologically distinct Vibrio taxa
  - Compare to ~10 taxa resolvable by 16s
- Vibrio community composition is stable except for transient, dramatic bloom events by 1-2 taxa at a time
  - Reveals population-specific ecology: exploitation of phytoplankton or zooplankton nutrients
  - Consistent with previous, single-timepoint observations: robust, predictable taxa vs. highly skewed taxa

Acknowledgements

Funding from the NSF GRFP.

where possible, headers are complete thoughts that help me interpret the data

most "boxes" have are at least 50% pictures

matching colors in the figure and text help make a complex data set more accessible

almost all text is in bullets. each bullet is one sentence.

Example Horizontal Lit Review Poster

The Effects of Literacy Interventions on Single-Word Reading for Individuals who use Aided AAC: A Systematic Review

Kelsey Mandak, MA, CCC-SLP, Doctoral Candidate, Penn State University

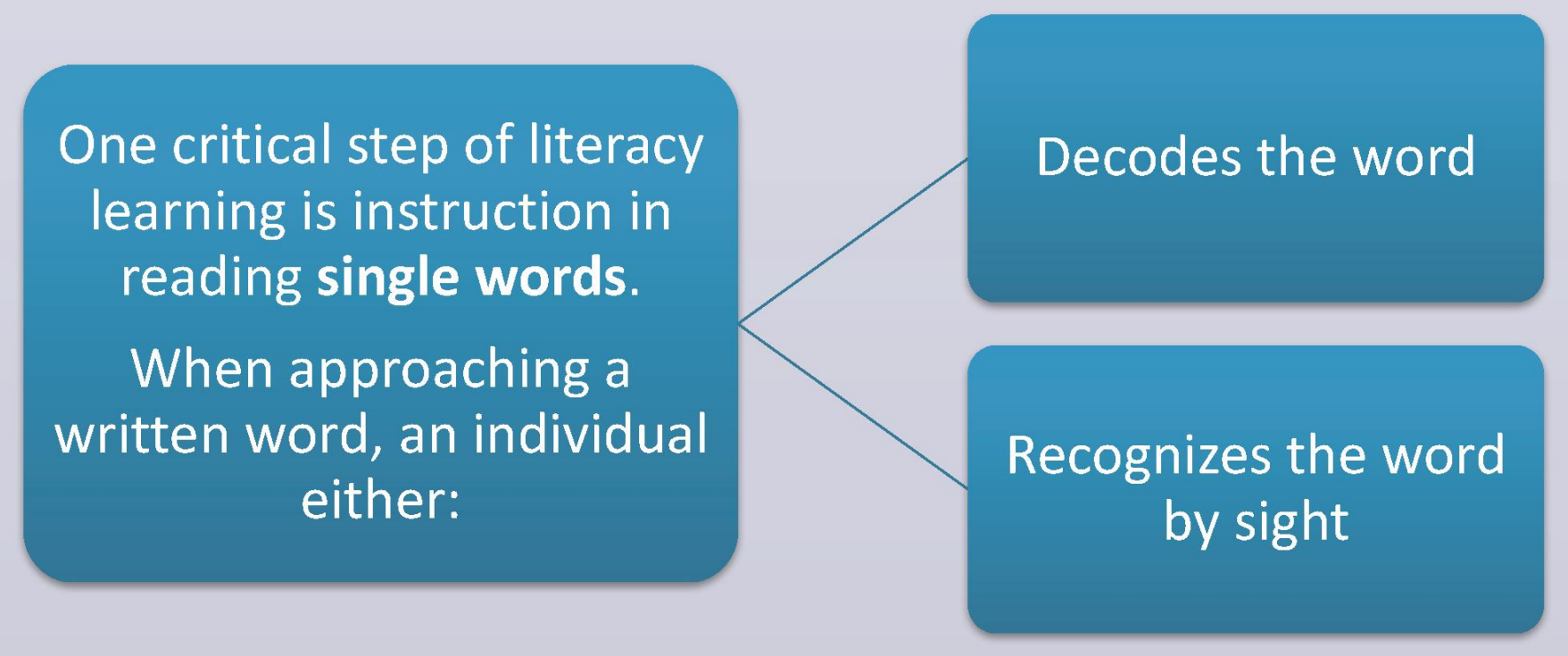
Janice Light, Ph.D., Penn State University, David McNaughton, Ph.D., Penn State University

Acknowledgements
This research was supported in part by The Hintz Family Endowed Chair in Children's Communicative Competence in the Department of Communication Sciences and Disorders at Penn State University
Grant #H325D110008 (The Penn State AAC Leadership Project) from the U.S. Department of Education.
I have no relevant financial or nonfinancial relationship(s) within the products or services described, reviewed, evaluated or compared in this presentation.

Introduction

- In today's world, the acquisition of literacy skills is necessary to participate successfully in education, employment settings, and society.
- The acquisition of literacy skills is especially important for individuals with complex communication needs (CCN) who use augmentative and alternative communication (AAC) (Foley & Wolter, 2010; Light & McNaughton, 2013).
- Up to 90% of individuals with CCN enter adulthood without functional literacy (Foley & Wolter, 2010).
- Without the acquisition of literacy, individuals who use AAC are bound to be restricted in their participation in:
  - Education
  - Employment
  - Relationships
  - Society
- **Thus, there is urgent need to find effective ways to promote literacy among individuals who use AAC and prevent such negative outcomes.**

Several skills play a role in literacy development (e.g., phonological awareness skills, letter-sound correspondences, decoding, etc.). Ultimately, individuals need to **integrate** these skills to read a wide range of texts fluently with comprehension.

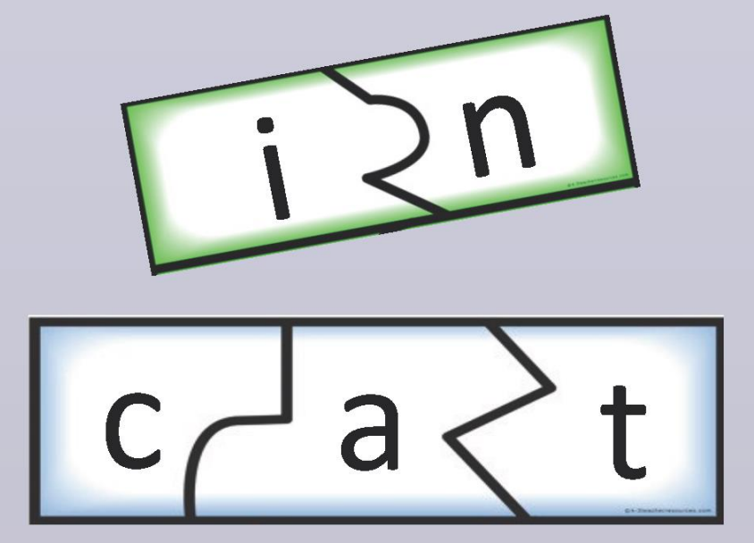


One critical step of literacy learning is instruction in reading **single words**.

When approaching a written word, an individual either:

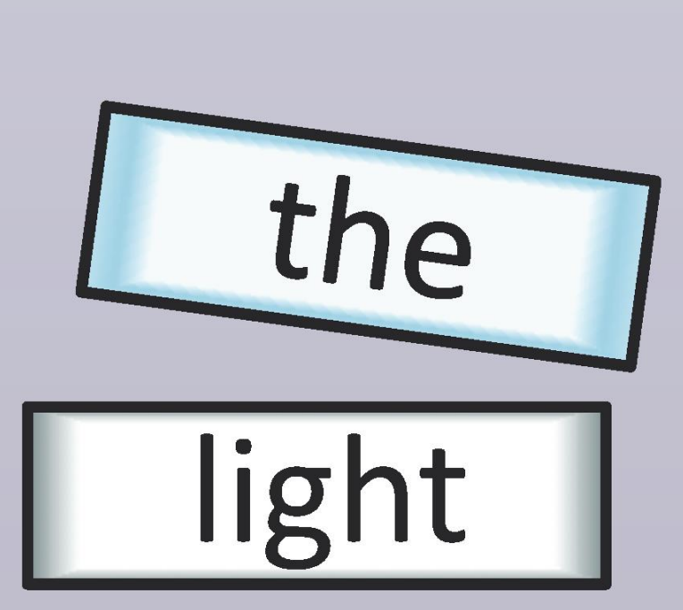
Decodes the word

Recognizes the word by sight



If decoding, the individual looks at the letters, retrieves the sound of each letter, blends the sounds, and thus determines the word.

Or an individual may focus primarily on the orthography of the word and associate it with its referent by sight.



Single word reading is vital, as once an individual with CCN can decode or recognize a few words by sight, this opens the door to meaningful, reading experiences (Light, McNaughton, Weyer, & Karg, 2008)

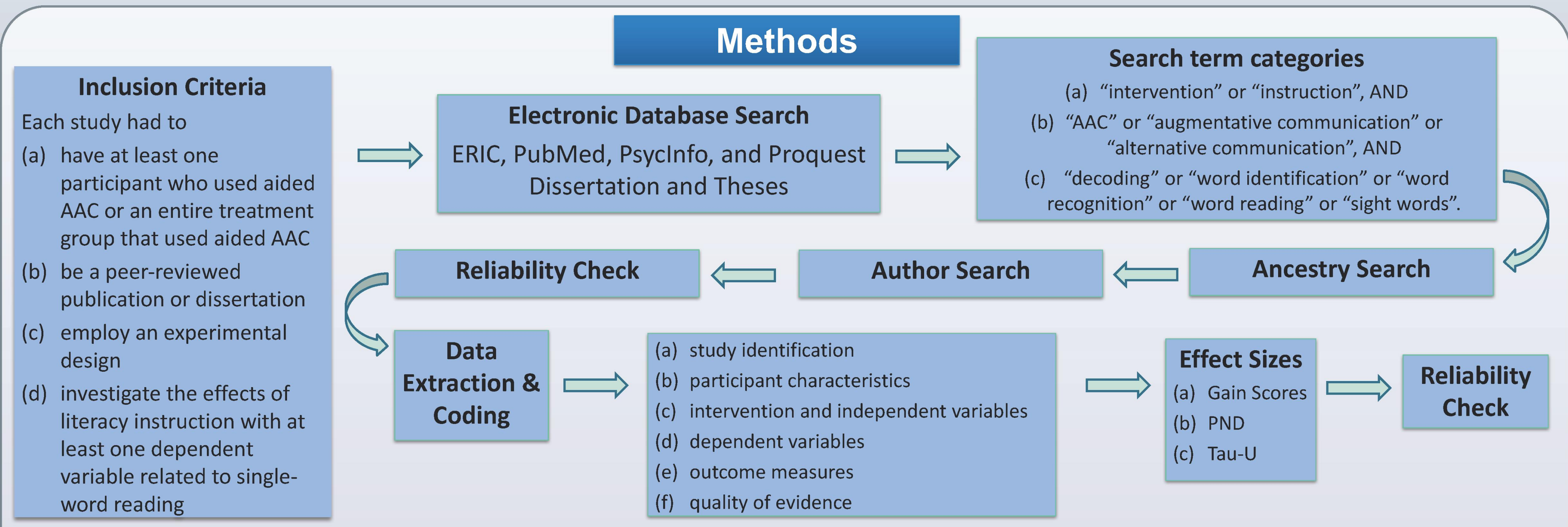
Purpose of Review

To investigate the effects of literacy instruction on single-word reading of individuals who use aided AAC.

(a) What are the effects of literacy interventions on the single-word reading of individuals who use aided AAC?

(b) Do effects differ across participant and intervention characteristics?

Methods



Inclusion Criteria

Each study had to

(a) have at least one participant who used aided AAC or an entire treatment group that used aided AAC

(b) be a peer-reviewed publication or dissertation

(c) employ an experimental design

(d) investigate the effects of literacy instruction with at least one dependent variable related to single-word reading

Electronic Database Search

ERIC, PubMed, PsycInfo, and Proquest Dissertation and Theses

Search term categories

(a) "intervention" or "instruction", AND

(b) "AAC" or "augmentative communication" or "alternative communication", AND

(c) "decoding" or "word identification" or "word recognition" or "word reading" or "sight words".

Ancestry Search

Author Search

Reliability Check

Data Extraction & Coding

(a) study identification

(b) participant characteristics

(c) intervention and independent variables

(d) dependent variables

(e) outcome measures

(f) quality of evidence

Effect Sizes

(a) Gain Scores

(b) PND

(c) Tau-U

Reliability Check

Results

The systematic search identified 24 individuals across 9 single-case experimental design studies.

Across participant, intervention, and outcome characteristics, these individuals were able to acquire single-word reading skills.

Participant Characteristics

- ranged from 6 to 22 years of age
- 11 (46%) were female and 13 (54%) were male
- Autism spectrum disorder (ASD) and cerebral palsy (CP) were the most prevalent diagnoses (42%)
- Type of aided AAC
  - 16 used a speech-generating device (SGD), 7 used low-technology AAC, 1 used a combination of the two

Effects?

Very Large Effects

Across all ages

Elementary (60-144 mo)

Adolescent (12 – 17 years)

Adult (≥ 18 years)

Across all Diagnoses

ASD, DS, CP, Intellectual Disability, Other

Intervention Characteristics

Intervention Approach

- 4 studies took a phonological approach, 4 studies took a sight-word approach, 1 study took a combination approach
- All in one-on-one setting
- Averaged 12 intervention sessions per participant
- Educators served as interventionists in 4 studies, Researchers in 5 studies
- Various instructional strategies were used

What was being measured?

- All studies had same dependent variable: Accuracy of reading single words
- Studies varied in measurement task used (*see below*)

Effects?

Very Large Effects across all intervention approaches, all interventionists, and interventions using various instructional strategies.

BUT, the largest effects were those studies that:

- Used a Phonological approach or Combination approach
- Included error correction and error analysis
- Had intervention implemented by educators, rather than researchers
- Included 15 or more intervention sessions
- Used the following measurement tasks
  - Text-spoken Choices
  - Text-Picture Choices
  - Spoken Word-Text Choices

Various measurement tasks

Text-Spoken Choices

Instructor presents written word.

dog

Instructor presents four spoken choices. Learner chooses from the spoken choices.

"*Your choices are MOP, DOG, DOLL, FROG. Is it MOP?*" [waits for response], and so on.

Text-Picture Choices

Instructor presents written word.

dog

Learner chooses a picture.

Spoken Word-Text Choices

Instructor says a word.

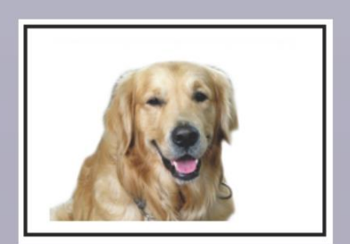
"dog"

Learner chooses a written word.

mop	dog
frog	doll

Picture-Text Choices

Instructor presents a picture.



Learner chooses a written word.

mop	dog
frog	doll

Discussion & Implications

Participants

It is not well understood which participants benefit most from which interventions.

- More research is necessary for specific age groups and diagnoses, with increased specificity when describing participants.

Most participants were elementary school-aged children or adolescents with ASD.

- Highlights the need for research with young children and adults who use AAC.

Educators must not allow individuals' ages, prior literacy experiences, and current language skills to impact their expectations for future skill acquisition.

Intervention

Instructional Approach

The effects of interventions including phonological awareness and phonetics instruction were greater than those that focused on sight-word instruction alone.

- Without fluency in foundational phonological skills, reading will require significant cognitive resources for individuals with CCN.
- There is still the need for sight-word identification, as not all words are decodable. Although both approaches were individually very effective, the combination of both bolstered the intervention effectiveness.

Educators should take both a phonological and sight-word approach to intervention by teaching the skills to decode as well as recognize whole words.

Instructional Strategies

The instructional strategies across the studies reveal the importance of direct and systematic instruction, appropriate scaffolding (e.g., modeling, time delay, etc.), feedback, and the use of error correction and analysis.

- Corrective feedback provides increased opportunities for learners to respond and practice new skills.
- Identifying learners' patterns of responses through error analyses can provide valuable information on how to adapt instruction as well as future interventions.

With both approaches, evidence-based instructional strategies are necessary to ensure success.

Alternative Response Modes

Learners with CCN are unable to participate via spoken responses and thus instructors must use adaptations to measure intervention outcomes and progress. There were four distinct tasks used to assess single-word reading across the studies.

- The demands of the tasks vary.
- LEAST DEMANDING → do not require phonological recoding
  - *Text-Spoken Choices*
  - *Spoken Word-Text Choices*
- MOST DEMANDING → require phonological recoding
- Closer to actual reading demands
  - *Picture-Text Choices*
  - *Text-Picture Choices*

Educators may need to adapt tasks to compensate for learners' inability to provide oral responses. It is necessary to be cognizant of the demands of reading and carefully analyze the tasks to replicate these demands.

Conclusion

- Across participant, intervention, and outcome characteristics, individuals who used aided AAC successfully acquired single-word reading skills with appropriate instruction.
- It is essential that professionals provide opportunities for individuals who rely on AAC to develop foundational literacy skills in order to increase their likelihood of becoming successful readers and participating fully in life.

Included Studies

*Ahlgrim-Delzell, L., Browder, D., & Wood, L. (2014). Effects of systematic instruction and an augmentative communication device on phonics skills acquisition for students with moderate intellectual disability who are nonverbal. *Education and Training in Autism and Developmental Disabilities*, *49*, 517-532.

*Caron, J. G. (2016). *Effects of adapted instruction on the acquisition of letter-sound correspondences and sight words by pre-adolescent/adolescent learners with complex communication needs and autism spectrum disorders.* (Doctoral dissertation, The Pennsylvania State University).

*Coleman-Martin, M. B., Heller, K. W., Cihak, D. F., & Irvine, K. L. (2005). Using computer-assisted instruction and the nonverbal reading approach to teach word identification. *Focus on Autism and other developmental disabilities*, *20*, 80-90.

*Crowley, K., McLaughlin, T., & Kahn, R. (2013). Using direct instruction flashcards and reading racetracks to improve sight word recognition of two elementary students with autism. *Journal of Developmental and Physical Disabilities*, *25*, 297-311.

*Fallon, K. A., Light, J., McNaughton, D., Drager, K., & Hammer, C. (2004). The effects of direct instruction on the single-word reading skills of children who require augmentative and alternative communication. *Journal of Speech, Language, and Hearing Research*, *47*, 1424–1439.

*Heller, K. W., Fredrick, L. D., Tumlin, J., & Brineman, D. G. (2002). Teaching decoding for generalization using the nonverbal reading approach. *Journal of Developmental and Physical Disabilities*, *14*, 19-35.

*Hetzroni, O. E., & Shalem, U. (2005). From logos to orthographic symbols: A multilevel fading computer program for teaching nonverbal children with autism. *Focus on Autism and Other Developmental Disabilities*, *20*, 201-212.

*Swinehart-Jones, D., & Heller, K. W. (2008). Teaching students with severe speech and physical impairments a decoding strategy using internal speech and motoric indicators. *The Journal of Special Education*, *43*, 131–144.

*van der Meer, L., Achmadi, D., Cooijmans, M., Didden, R., Lancioni, G. E., O'Reilly, M. F., ... & Green, V. A. (2015). An iPad-based intervention for teaching picture and word matching to a student with ASD and severe communication impairment. *Journal of Developmental and Physical Disabilities*, *27*, 67-78.

Logo of your school

Logo of school where research was done (if not yours)

Poster Title

Authors' Names - bold and underline presenter(s) name(s) – List your name first

Institution(s)

You MUST include your faculty advisor's name and institution!

Logo of GS-LSAMP or NNJ-B2B

Introduction/Background

Your Text Here – What did you look at and why?

Objectives / Hypothesis (optional)

Your Text Here

Materials and Methods

Text and/or Flowchart (Do NOT provide a detailed description of your methods)

Results

Figures/Charts/Timelines/Graphs (Text should be limited to figure captions only, if possible)

If doing a lit review, use this section to summary what you found (see example for how this can be done graphically)

Discussion and Conclusions

Your Text Here – What are the implications of your results? What next steps should be taken?

References and Acknowledgements

Your Text Here (You must acknowledge any stipend you received (GS-LSAMP or NNJ-B2B) as well as your faculty mentor/post-doc/graduate student, etc.)

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If you did a lit review, what were the criteria you used to find/include articles? (e.g., time period, particular assay, location, etc.)

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