Interactive Video Visual Scene Displays (Video VSDs)

David McNaughton, Tom Jakobs, Erik Jakobs & Janice Light

Communication

- Speech will not meet communication needs of 4 million people in the US
  - 40% of adults with autism spectrum disorders
  - 50% of adults with Down syndrome
- Less than 10% of adults with developmental disabilities who **need** communication supports **receive** communication supports

Participation

- New expectation for societal participation
  - Independent living
  - Employment
  - Community participation
- video modeling to support participation

Challenges

- Traditional grid displays
  - Please cognitive demands on user
    - Decontextualized vocabulary

Visual Scene Displays

- Many individuals with CCN benefit from visual scene displays (VSDs) to support communication

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Participation and communication

Videos with integrated VSDS – Video VSDs

- Use video of dynamic routines to increase participation in real world settings
- Support communication within real-world contexts using visual scenes

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7

Video visual scene displays (VSDs)

- Capture video of events/ interests
- Allow pause of video
  - Create VSDs at these junctures
  - Create hotspots with speech output
- Allow deletion of VSDs
  - Re-splice video
- Support simple video editing
- Invotek – Easy VSD

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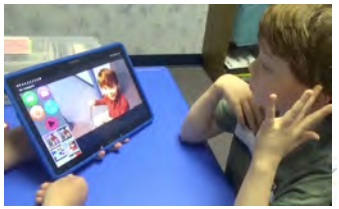
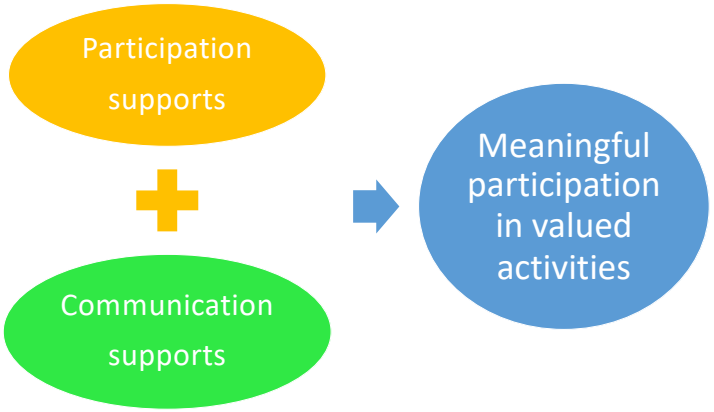
Evaluation of video VSDs

- Individuals with CCN
  - social interaction
  - **independent participation in community-based activities / employment**
- Partners of individuals with CCN





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Effects of videoVSD on participation in community & vocational activities by adolescents with ASD:

Tara O'Neill (Penn State University)

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Research Question

- Do videos with integrated VSDs increase the percent of steps completed during community and vocational activities by an adolescent with ASD and CCN?

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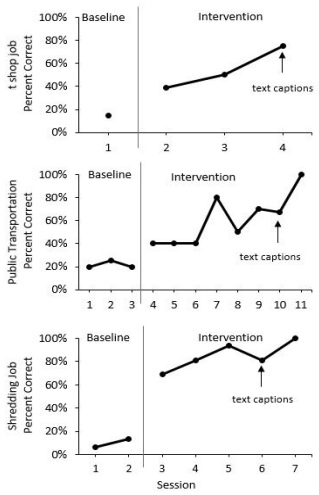
Participant

- 16 year old with autism spectrum disorder
  - Verbal, but highly prompt dependent for both participation and communication in community and vocational settings

Procedures

- Developed task analyses for 3 settings to identify task steps
- Phases
  - **Baseline**: no video VSD app
  - **Intervention**: video VSD app containing videos with integrated VSDs



Video VSDs

- may help to maximize independent participation and communication in real world contexts.
- create increased opportunities for employment and independent participation
  - reduce dependence on aides (e.g., job coaches, paraprofessionals)

Effects of videoVSD on participation in community & vocational activities by adolescents with ASD:

Salena Babb & Jessica Gormley
(Penn State University)

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Research Question

- What is the effect of videos with integrated VSDs on the percent of steps completed successfully during community and vocational activities by an adolescent with ASD and CCN?

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Participant

- 18 year old male with autism
  - High school student
  - No functional speech
  - A few signs – mostly yes/no, thank you
  - Prompt dependent

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Procedures

- **Baseline** – Participant performance on vocational tasks prior to intervention (no video VSD app)

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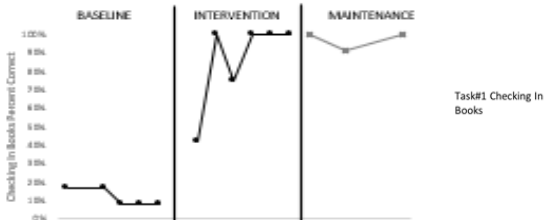
Procedures

- **Baseline** – Participant performance on vocational tasks prior to intervention (no video VSD app)
- **Model/Instruction** – Participant was instructed on the use of the application
- **Intervention** – Participant performance on vocational tasks with tablet and video VSD application

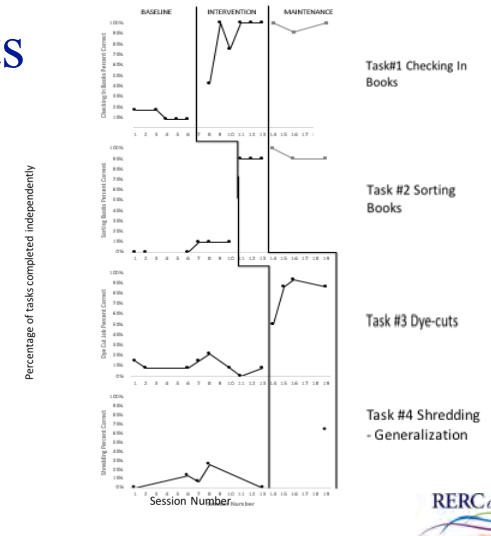
Results



Procedures

- **Baseline** – Participant performance on vocational tasks prior to intervention (no video VSD app)
- **Model/Instruction** – Participant was instructed on the use of the application
- **Intervention** – Participant performance on vocational tasks with tablet and video VSD application
- **Maintenance** – Participant performance on vocational tasks with tablet application present 1 week, 3 weeks, and 6 weeks after intervention
- **Generalization** – Participant performance on vocational task with tablet and application, but without prior model/instructional sessions

Results



Conclusions

- videos with integrated VSDs may serve as an effective means to maximize independent participation and communication for individuals with CCN and ASD in real world contexts.
- Current Status:
  - Journal of Special Education Technology

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Increasing Independence with AAC Video Visual Scene Displays

Salena Babb, David McNaughton, Janice Light, Kirk Wydner, & Lucas Pierce

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1 in 4 Americans volunteers

- Benefits of volunteering
  - Learn and practice new skills
  - Meet new people and develop friendships
  - Build self confidence and self-esteem

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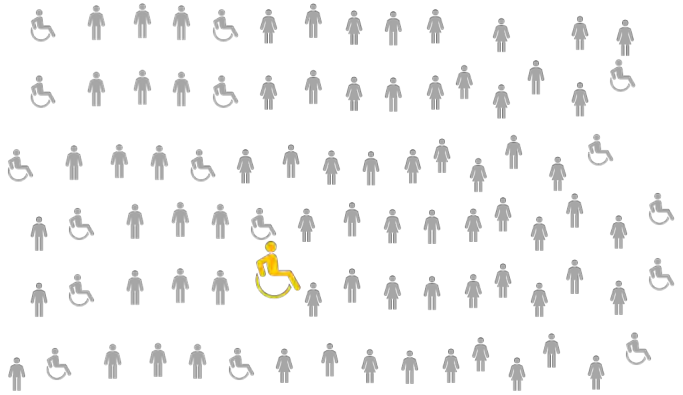

- Benefits of volunteering
  - Learn and practice new skills
  - Meet new people and develop friendships
  - Build self confidence and self-esteem

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participation supports

+

Communication supports

→

Meaningful participation in valued activities

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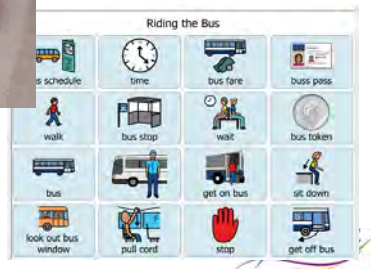
Participation and communication



Videos with integrated VSDS – Video VSDs

- Use video of dynamic routines to increase participation in real world settings
- Support communication within real-world contexts using visual scenes

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31

Backpack Volunteer Program

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32

Research Questions

- What is the effect of the video VSDs on the percent of steps completed (including communication opportunities) during a volunteer vocational activity for four adolescents with complex communication needs?
- Are the skills maintained overtime?
- Is the intervention deemed effective, efficient, and socially valid by key stakeholders?

Materials

- Tablet and App

- Operating the app

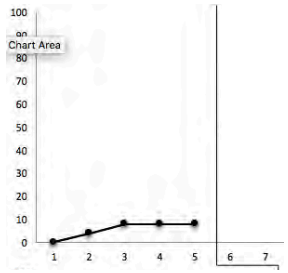
1. Press the play button
2. Watch the video segment portraying one step from the task analysis
3. Perform the step or fulfill the communication opportunity depicted in the segment
4. Select the thumbnail of the next video from the left menu
5. Repeat steps 1-5 for each video segment to complete the task

Task Analysis

1. Enter the office
2. Greet secretary: **Hi, how are you?**
3. Respond to secretary: **I'm okay** (or sign/vocalization)
4. Ask to enter the storage room: **I'm here to fill the backpacks.**
5. Ask to be let in to the storage room: **Can you let me in the storage room?**
6. Thank secretary: **Thank you**
7. Enter storage room and pick up backpacks
8. Carry the backpacks to the cafeteria
9. Put the backpacks at the end of the table
10. Look at the menu

Results

Participant 1 - Ivan



Videos: 3 repetitions of phrase

- As seen and heard by participant when viewing video in video model
  - 2 x
- When used by the participant

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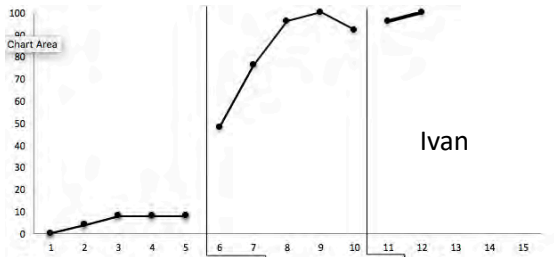
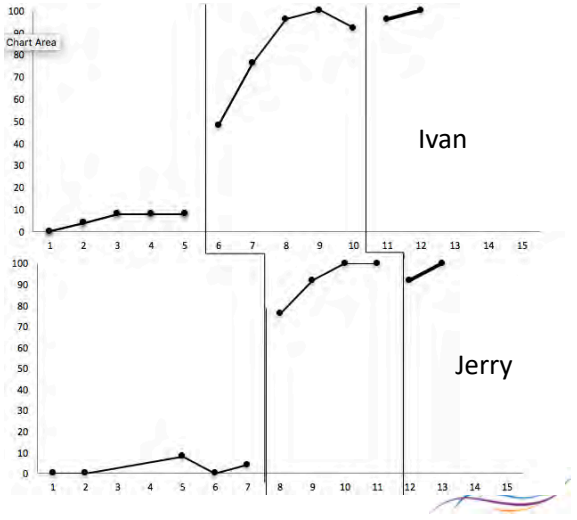
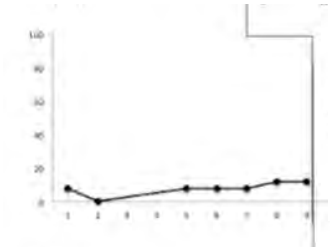




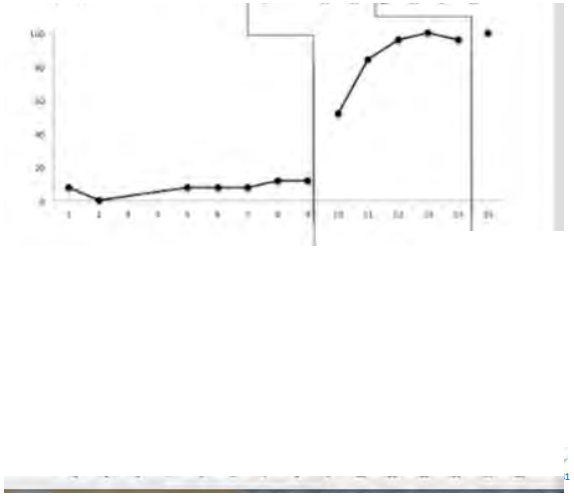
Results

Participant 3 - Keith



Results

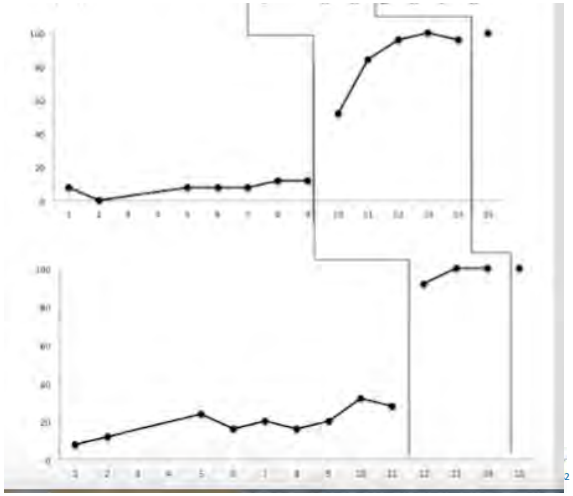
Participant 3 - Keith



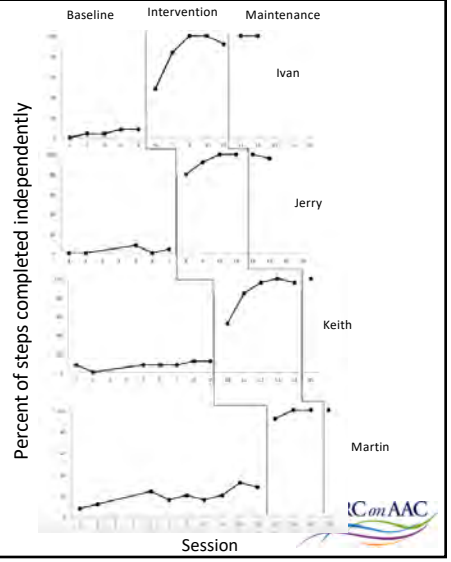
Results

Participant 3 - Keith

Participant 4 - Martin



Results



"It exceeded our expectations. I didn't know that the kids would be able to completely do it independently by the end."

"I think it's very powerful to see them go from where they started and then, in a matter of a couple of months, to be able to work independently. That was just absolutely incredible."

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The image part with relationship ID rId3 was not found in the file.

- Most important aspect?
- "That those kids were able to feel success. I think they felt like they were a productive adult within this building. I think it built a whole lot of self-esteem with those kids."

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The picture can't be displayed.

- "A lot of teachers stopped by to check it out, not just special education teachers, there were other teachers that came by that were interested… Even the parents that were coming in the door were checking it out. We got a lot of people; it's like a little community all involved in it. It wasn't just us, it was other people cheering them on and wanting them to do well."

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- "You could see the pride in the videos you showed that the kids were feeling very successful. I'm hoping a benefit would be that our teachers are going to pick up on some of this and take off with it, that they don't feel like it's too big of a hurdle and that they will actually put it into place and transfer it onto others.

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Benefits of volunteering

- Learn and practice new skills
- Meet new people and develop friendships
- Build self confidence and self-esteem

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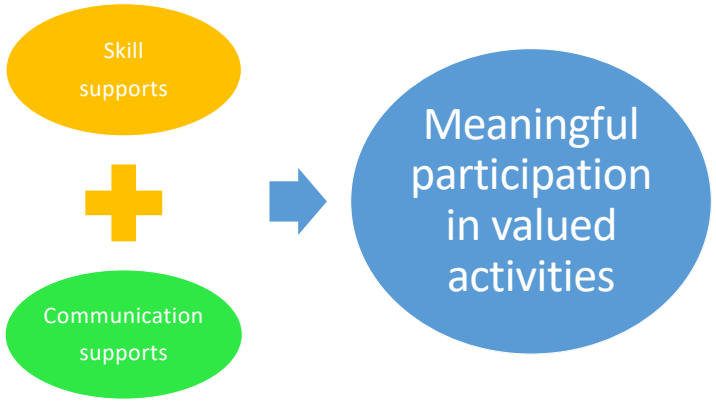

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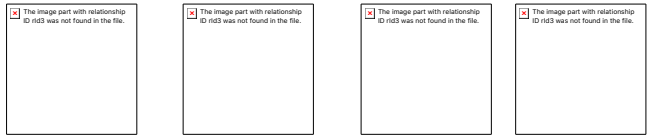

Volunteering enabled the participants to be providers, rather than recipients of services

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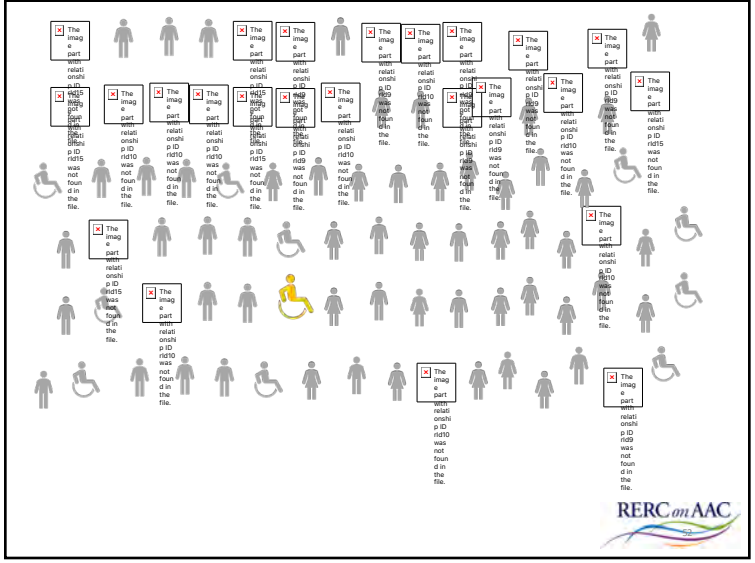

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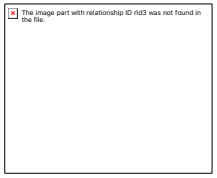
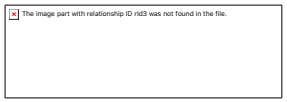
Technologies currently available

- Snap Scene





Supports the use of still VSDs with embedded hotspots

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    - ASHA and ACVREP forms must be submitted before departing the conference. AOTA and IACET forms may be submitted online.
- Handouts
  - Handouts shared by the speakers are available for 3 months after the conference ends. Find handouts here (www.atia.org/orlandohandouts).

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54

Supporting Grocery Shopping for a Student with Developmental Disabilities using a Video VSD App

May 21, 2019 Think Tank
The Pennsylvania State University
Sojung Jung, Ciara Ousley, David McNaughton, & Janice Light

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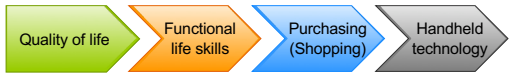
Introduction



Purchasing skills (Mechling & Gast, 2003)
-Knowing which items to purchase
-Navigating in the store
-Locating the items
-Reading price
-Paying for items

* Communicating with store staff

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Research Question

How can we improve shopping skills including communication skills for students with disabilities by using handheld technologies?

Design

- Design: AB case design (pilot study)
- Participant: 21-year old male with Down syndrome and complex communication needs (intelligibility <10%)
- Setting: Large grocery store in suburbs
- IV: iPad with Video visual scene displays (VSD) application + Guided practice
- DV: Correct percentage of task analysis

Task analysis

8. Navigate to item 3 (deli counter)
9. Talk to the clerk ("Hi, how are you?")
10. Talk to the clerk ("I would like a quarter pound of 'Dietz & Watson' American cheese sliced thin.")
11. Talk to the clerk ("That's good")
12. Talk to the clerk ("No, thank you")
13. Talk to the clerk ("Thank you! Have a great day")
14. Take the item from the clerk and put the deli item in the shopping cart

Rules for scoring dependent variables

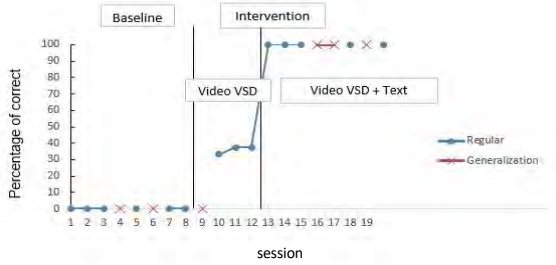
- *1 minute rule*
  - The participant has one-minute after completing a task to begin the next task, with the exception of appropriate wait time (i.e., waiting for meat to be sliced at the deli counter)
  - If the participant failed to complete a task within one-minute, the session was ended.
- Pros: Researchers can prevent participant's learning from probes (i.e., isolate impact of IV)
- Cons: Student may feel frustrated in Baseline

Baseline

<Shopping lists>

1. Ortega taco shells (20% Larger Tacos, Yellow Corn Taco Shells)
2. 2 Bananas
3. Quarter pound of Premium American Cheese (Dietz & Watson)

Graph



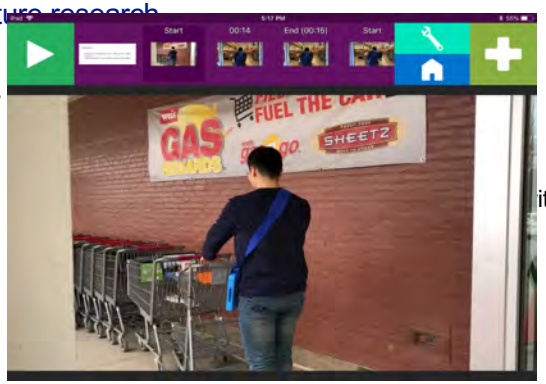
- Regular list: Taco shells, 2 bananas, American cheese (Dietz & Watsons)
- Generalization list: Yogurt, 2 green apples, Turkey (Weis premium honey)

Upcoming Schedule - Maintenance

- 3 maintenance sessions with regular list
- 2 maintenance sessions with generalization list

Future research

-
- ith VSD



Future rese

- Multiple
  - 3 ~ 4
- Fading fr st with VSD
  - Supp

<Visual shopping list & VSD hotspot for communication>

Ortega taco shells

2 Bananas

** Hotspot for checkout counter

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Future rese

- Multiple
  - 3 ~ 4
- Fading fr st with VSD
  - Supp

<Word shopping list & VSD hotspot for communication>

1. Ortega taco shells
2. 2 Bananas
3. Quarter Pound of Premium American Cheese (Dietz & Watson)

** Hotspot for checkout counter

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Future research

- Multiple probe design across participants
  - 3 ~ 4 participants with CCN
- Fading from Video VSD → VSD → Shopping list with VSD
  - Supports for participation and communication

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Discussion topic

- Rules for scoring dependent variables
  - 'One minute rule' OR 'Complete step for the participant and give opportunity for the next step'

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Discus

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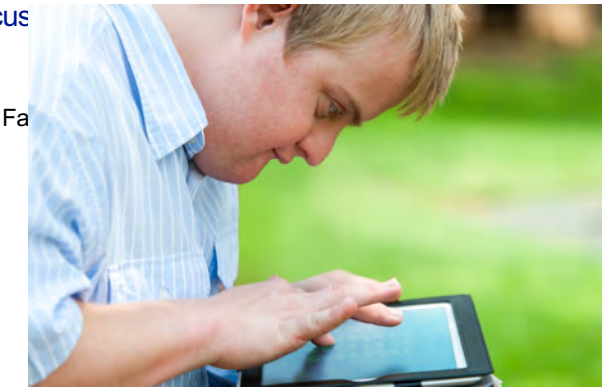

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Discussion topic

- Fading from tablet to smart phone or smart watch

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- This research was supported by grant #90RE5017 to the Rehabilitation Engineering Research Center on Augmentative and Alternative Communication (The RERC on AAC) from the National Institute on Disability, Independent Living, and Rehabilitation Research (NIDILRR). NIDILRR is a Center within the Administration for Community Living (ACL), Department of Health and Human Services (HHS). This research does not necessarily represent the policy of NIDILRR, ACL, HHS, and you should not assume endorsement by the Federal Government.

Speaker Disclosures

- The EasyVSD app was developed under a grant from the National Institute on Disability, Independent Living, and Rehabilitation research (NIDILRR grant number #90RE5017) to the Rehabilitation Engineering Research Center on Augmentative and Alternative Communication (RERC on AAC). http://rerc-aac.org
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- Disclosure: The author has no relevant financial relationships or relevant non-financial relationships to disclose

Question & Advice

Thank you!