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Caregiver-Implemented Digital Activity Schedules with Virtual Coaching

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Introduction

- COVID-19 Pandemic
- Telehealth
  - "use of electronic information and telecommunication technologies to support and promote long-distance clinical healthcare, patient and professional health-related education, public health, and health administration" (Health Information Technology, 2017, para 1).
  - Synchronous vs. Asynchronous
- Beyond COVID-19
- Additional information is needed on how telehealth affects client outcomes

(APBA, 2020; CASP, 2020, Cicoria, 2020, Pollard et al., 2017; Pollard et al., 2021)

Bug-in-ear (BIE) coaching

- The Interventionist wears a wireless earpiece while a coach provides real-time feedback through the earpiece from a distance
- Meets Association of Professional Behavior Analysts (APBA) Practice Guidelines for funding telehealth services

BIE has been used to teach…

- Functional communication training (FCT)
- Incidental teaching
- Functional living skills

(Artman-Meeker et al., 2017; Craig et al., 2021; Rosenberg et al., 2020)

Activity Schedules

- **Used to improve skills and increase independence**
- **Paper-based activity schedules**
- **Digital activity schedules**

(Betz et al., 2008; Cihak, 2011; Deel et al., 2021; Jimenez-Gomez et al., 2021; Krantz & McClannahan & Krantz, 1993; 1999)

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TECHNICAL AND TUTORIALS

Creating Digital Activity Schedules to Promote Independence and Engagement

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Brodhead et al, 2018; Carlile et al., 2013; Cihak, 2011; Dauphin et al., 2004; Giles & Markham, 2017; Gourwitz, 2014; Osos et al., 2021; Rehfeldt et al., 2005; Reinert, 2015; Stromer et al., 2006)

Purpose

- The effectiveness of a digital activity schedule created using Google Slides
- The effectiveness of using a BIE procedure to coach caregivers to implement digital activity schedules to increase independent play behavior for preschoolers with ASD

Materials

TECHNOLOGY

CLOSE ENDED ACTIVITIES

DIGITAL ACTIVITY SCHEDULES

Technology

- Handheld digital device (i.e., smartphone, an iPad, or a tablet)
- Digital device for Zoom® (i.e., a smartphone, tablet/iPad, or computer)
- Bluetooth wireless headphones with a mic

Close-ended activities

- Close-ended activities include a clear beginning and end
- Caregivers provided 4 close-ended activities, or they were provided for them
  - Four novel activities were used for generalization
- 3-5 preferred edibles

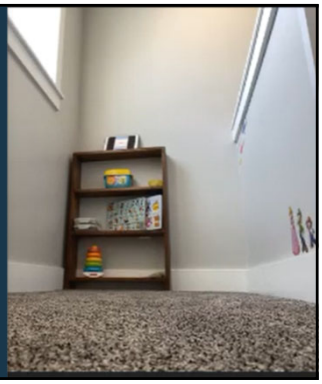
Digital Activity Schedules

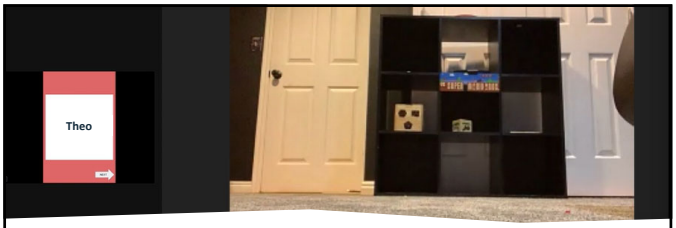
Participants

- Three preschool-aged child with ASD and caregiver dyads
- No prior experience with activity schedules
- Prerequisite skills (Gerenscer et al., 2017)
  - Picture-to-object correspondence
  - Tolerance of physical contact
  - Ability to complete four close-ended activities.

Research Setting

- Each family selected the appropriate location for research sessions in their home
  - Child's playroom
  - A den in the basement
  - ABA therapy room
- A shelf or area that housed the activity schedule materials
- An area to complete the close-ended activities





Technology Set-up

- The researcher and caregiver were connected in a Zoom® video call
- Two devices were connected to the zoom call
- The device sharing the activity schedule was in "screen sharing" mode
- Bluetooth headset was connected to the "viewing" device

Response Measurement

Primary Dependent Variable

- The child participant's independent schedule completion
  - The number of activity schedule components completed within 5 s without adult assistance
- Activity schedule components included single occurrence or repeated occurrence steps
- Mastery: 80% across 3 sessions

Activity Schedule Steps	Performance (+ or –)				
Obtains tablet	-				
Progresses slide	P				
	Page 1: PUZZLE_	Page 2: RING STACKER	Page 3: DINOS	Page 4: Shape sorter	Page 5: Fish Treat
Points to picture	+	+	+	-	+
Obtains Materials	P	+	+	P	P (verbal)
Completes activity/consumes treat	+	+	P	P	+
Cleans up/return material	P	+	+	+	-
Returns to tablet	+	+	+	+	+
Progresses slide	+	+	+	+	+
Returns tablet	-				

+ = Independent P = Prompt

# of independent/total # =__22____ / __33___ = __66.66___ %

Response Measurement

Secondary Dependent Variable

- The caregiver's and the coach's treatment integrity
  - Coaching: prompting instruction was delivered to the caregiver within 3 s of the completion of the last successful step
  - Caregiver: Prompt was delivered immediately (w/in 2 s) after being instructed to do so. Or prompts missed by coach if delivered within 5 s.
- Caregivers received feedback on incorrect prompts if they occurred during two consecutive sessions
- Successful Interobserver Agreement (IOA) was completed on 33-100% of sessions for both dependent variables.

Experimental Design

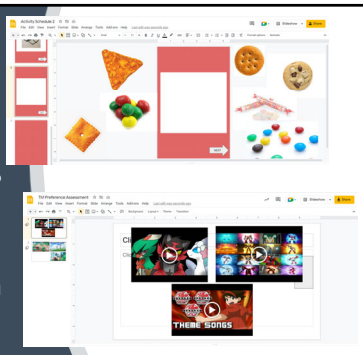
Non-concurrent multiple baseline design across caregiver and child dyads

Caregiver Training

- Prior to baseline caregivers underwent a synchronous 20-minute scripted didactic training via teleconference
- PowerPoint training included instructions, images, and video models:
  - The importance of activity schedules
  - How to set up a teaching environment
  - The components of a digital activity schedule
  - Graduated guidance procedures
  - Different types of manual prompting
  - Details on how to conduct a preference assessment
- Components of activity schedule and different types of manual prompting reviewed prior to the first teaching session

Preference Assessments

- Caregivers presented three to five edible reinforcer and asked child participants to "pick one" or "what do you want to work for?"
- The coach placed a picture of the selected item into the digital activity schedule
- Video Reinforcers
  - Digital reinforcers were presented as YouTube© videos displayed on a Google Slide® page



General Procedures

- Session set up over Zoom® lasted about 10-15 min
- Pre-session instructions:
  - Clear research area of possible distractions
  - Preparing activity schedule materials
  - Loading the digital activity schedule and setting "guided access" features
  - Zoom® meeting set up (e.g., screen sharing and Bluetooth headset)
- Caregiver is instructed to give instruction "It's time for activity schedule"
- Termination criteria:
  - Activity schedule was complete
  - The child moved out of the video frame or stopped contacting materials for 60 s
  - Challenging behavior prevented the presentation of physical prompts for 30 s
  - Caregiver or child could terminate the session at any time

Baseline

- Coaches reviewed script asking caregivers to avoid aiding their child during the activity schedule
- Caregivers gave instructions "It's time for activity schedule"
- Some caregivers provide prompts during baseline which were counted as incorrect steps in child activity schedule completion and during caregiver treatment integrity

General Teaching Procedures

- A script was read reminding caregivers about graduated guidance and physical prompting
- Coaches provided bug-in-ear coaching to the caregiver on using manual guidance
  - 3 s constant time delay was used following completion of each activity schedule component
  - Caregivers were expected to implement prompt within 2 s
- At the end of activity schedule completion, caregivers were asked to provide the child with social praise

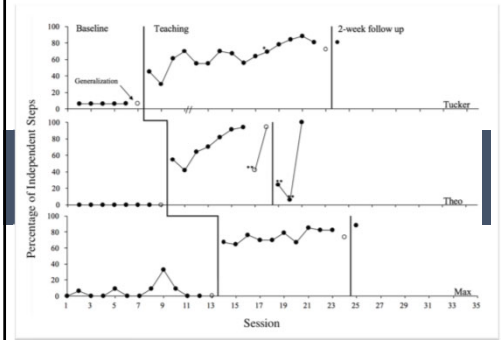
Generalization & Maintenance

Generalization

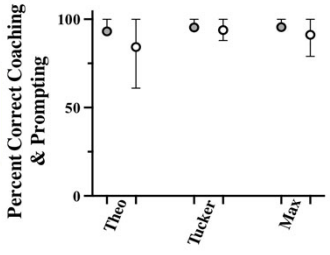
- Probes conducted post-baseline and post-training with novel close-ended activities
- Identical to baseline sessions

Maintenance

- Two weeks post-training
- Identical to baseline sessions
- Additional booster training planned, but not needed



Child Participant Data



Caregiver and Coaches Treatment Integrity

Findings

- Google Slides® is an effective modality to disseminate and implement digital activity schedules
- BIE appears to be an effective means to help caregivers implement digital activity schedules with their children in the home
- Participants were able to generalize schedule following to novel activity schedule activities
- Participants were able to maintain responding 2-weeks post-training

Discussion

- BIE produced levels of treatment integrity that were within treatment integrity standards
  - Lower caregiver TI did not seem to adversely affect child participant responding
- Pros to digital format:
  - "Guided Access" was available on iPads and Android tablets
  - Allowed flexibility to edit and disseminate materials
  - Could embed alternative forms of reinforcement to digital activity schedules

Limitations & Future Research

Limitations

- Families required access to multiple pieces of technology
- Access to a stable internet connection
- Knowledge and experience with technology and telehealth software
- Technical difficulties
  - Progressing slides within the schedule

Future Research

- Survey caregivers and child participants regarding social validity measures
- Training child participants to self-correct technical difficulties

Thank you!

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