Promoting Independence in Individuals with Autism and Related Disabilities Using Photographic Activity Schedules

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Objectives

- Describe how photographic activity schedules can be used to promote independence
- Describe how social scripting/script fading can be used within activity schedules to promote social interaction
- Demonstrate how these two techniques can be combined to promote complex social behavior
Acknowledgments

The Innovators at PCDI

Lynn McClannahan  Pat Krantz
Greg MacDuff
(and others)

My Students

Kara Reagon  Alison Betz  Joy Pollard
Matt Brodhead  Jessica Akers  Nina Gerencser
Impairments in Social Interaction, Communication, & Independence

- Deficits in spontaneous language and social behavior are defining characteristics of students with ASD.
- Even students who acquire extensive verbal skills through behavioral intervention often do not exhibit spontaneous social interactions or initiations without extensive training.
- They also make fewer social initiations compared to typical peers and spend more time playing alone.
- Many have difficulty initiating tasks independently and transitioning from one task/activity to another.
- Photographic activity schedules and social scripts are tools that have been shown to be effective in addressing these deficits.
What Is An Activity Schedule?

“…a set of pictures or words that cues someone to engage in a sequence of activities.”

(McClannahan & Krantz, 1999, p.3)

Beginning schedules are often comprised of a set of photos of stimuli that are presented sequentially in a small 3-ring binder.

The learner independently completes the sequence using the schedule to prompt him/her instead of adult instructions.
Why teach children to follow schedules? Because everybody uses them!

- Schedules provide visual/auditory prompts to engage in certain activities at certain times.
- They make our lives more predictable and allow us to plan future activities.
- Examples of schedules include:
  - Smartphones
  - Planners
  - Calendars
  - “To-Do” lists
  - Sticky notes
- Schedule following is a lifelong skill!
Why Activity Schedules?

- **Promote Independence**
  - Decreases the need for adult prompting and guidance
  - Promotes increasingly longer response chains

- **Choice**
  - Provides framework for teaching choice making

- **Social Interactions**
  - Can be used to prompt initiations of social interactions and conversations when social scripts are included

- **Planning**
  - A prompting and tracking sequence for tasks to be completed
Schedule Formats

- Binder with pictures or words on each page
- To do lists containing pictures or words
- Written or typed schedules
- Calendars
- Smartphones
- Audio-taped schedules
Types of Schedules

- Across Activities
  - Daily
    - Teaching lessons
    - Outdoor/exercise
    - Independent
      - Play, work, bedtime, morning
  - Morning schedule
    - Social interaction
    - Eat breakfast
    - Wash face
    - Brush teeth
    - Get dressed
      - Dressing schedule
    - School

- Activity specific
  - Meal-time activities
  - Snack making
  - Setting table
  - Cooking meals
  - Household chores
  - Loading dishwasher
  - Self help
    - Dressing
    - Brushing teeth
  - Leisure
    - Model building
Example of Schedule Combinations at School

School Schedules
  Daily
    Various teaching lessons
    Several social interactions
  Lunch
    Lunch preparation schedule
    Social interactions
    Various teaching lessons
  Play
    Independent play schedule
Example of Schedule Combinations at Home

- Home Schedules
  - Morning schedule
    - Social interaction
    - Eat breakfast
    - Wash face
    - Brush teeth
    - Get dressed
      - Dressing schedule
    - School

- After school schedule
  - Social interaction
  - Snack
    - Snack preparation schedule
  - Homework
  - Leisure
    - Leisure schedule
Pre-requisite Skills

- Picture/background discrimination
- Identity Matching
- Picture/object correspondence
- Motivational System
- Tactile tolerance
- Acquired play/work skills
Preparing the Environment

 Use natural locations if possible for materials

 Have materials always in the same location and within reach (perhaps on a shelf or on the floor in a specific location)

 Set the schedule up in close proximity of the materials initially

 Activity schedule is always placed in the same location on the work surface

 Reinforcers are within easy reach of the work area
Sequence of Schedule Following

- Opening schedule book
- Point to page
- Obtain item
- Perform activity
- Return item to original location
- Return to schedule book
- Turn page
- Repeat for all pages
- After terminal reinforcer, turn last page and put schedule away
Materials for a Beginning Schedule

- Three ring binder (flat when open) appropriate size for the learner’s age
- Velcro
- Sheet protectors
- Construction paper (same color)
- Pictures or photographs
- Containers for holding materials
- Shelf
Preparing a First Independent Play Schedule

- Beginning activity schedule should be short (5 activities or less)
- Select activities/toys with a clear beginning and end, easy to manipulate
- Include at least one social initiation in schedule when possible
- Schedule should end with a preferred snack/reinforcer
Selecting Activities

- Shape sorters
- Picture lotto
- Insert puzzles
- Color matching games
- Bead threading
- Nesting cups
- Pop up toys
- Hammer ball
- Pegboards
- Books on tape
- Dot to dot
- Music on tape
- Drink of juice
- Cup of popcorn, chips, candy
- Picture books
- Make curriculum!!!!!
Closed-Ended Activities
Adjusting Difficulty of Closed-Ended Activities

- Stringing beads
  - Limit the number of beads
- Matching
  - Limit the number of card pairs
- Coloring/Drawing
  - Give a partially completed picture or simplify the picture
Pre-Teaching Procedure

- If needed, pre-teach component skills in a structured format
  - Turning pages
  - Pointing
  - Getting and putting away materials
  - Setting timer
  - Reading text prompts
Discussion Activity

- Think about one of the students/clients with whom you work who could benefit from an activity schedule
- Generate a list of closed-ended activities that you could use in an initial activity schedule with your student/client
- Discuss these ideas with your group
Teaching Procedure

- Give beginning instruction
  - “Go play”
  - “Find something to do”

- Once the initial instruction is given DO NOT talk until the schedule is finished (unless the schedule indicates a social interaction)

- Do not use gestures (pointing, head nodding, or smiling in approval)

- Do not make eye contact with the learner

- Be close enough to prompt if needed but, otherwise, get out of the way!
“Prompts are instructions, gestures, demonstrations, touches or other things that we arrange or do to increase the likelihood that (the learner) will make a correct response (McClannahan & Krantz, 1999, p. 37).”

Not necessary for learners to demonstrate all skills independently (in the absence of adults, or a beginning instruction)

Activity schedules teach learners to initiate and complete a sequence of activities without verbal directions
Prompting

- Schedule following is taught using physical guidance exclusively.
- A prompting/prompt fading system of most-to-least intrusive prompts is used to prevent errors and promote fluid schedule following.
- Physical guidance is faded as quickly as possible.
- Do not prompt using gestures (e.g., pointing) or verbal instructions.
Prompting Continued

- Fading Procedures:
  - Full physical/Hand over hand
  - Partial Physical
  - Light Physical
  - Proximity

- Fade within activities

- Fade across schedule sequence
Did we mention, *NO* VERBAL OR GESTURAL prompts?
Prompting Continued

Example

- full physical/hand over hand
- at wrist
- at forearm
- at elbow
- at shoulder
- no physical assistance but shadowing (right behind)
- 2 feet away
- 5 feet, etc.
Delivering Reinforcers Within Schedule

- Some students may need additional reinforcement to begin using an activity schedule
- High rate when beginning a new schedule
- Always deliver reinforcers from behind
- If you are using a token board make sure the learner sees the token being delivered
- Use a combination of tokens and reinforcers if necessary
- Time delivery of last token to coincide with the completion of the whole schedule
Reinforcers Within Schedule

- Do not pair with praise
- Reinforce any step in the chain the learner performs appropriately
  - Initially reinforcing steps completed with manual guidance
- When fading manual guidance, make reinforcers contingent on independent behavior
- DO NOT reinforce for delayed responses, errors, resisting manual prompts, engaging in tantrum behavior or stereotypic behavior
Fading Reinforcers Within Schedule

- Fade reinforcers within the schedule as the learner becomes more independent.
- Eventually fade out all reinforcers, including terminal reinforcer.
- The independent play schedule itself should be reinforcing at this time.
- May want to consider adding in social interaction opportunities.
Teaching Learners to Reinforce Themselves Within Schedule

- Tokens are placed at the bottom of the schedule page.
- Learner is taught to remove them and place on token board after returning materials and returning to schedule page.
- Number of tokens correspond to number of pages in activity.
Terminal Reinforcer (On Last Page)

- Point to picture
- Obtain reinforcer (or request)
- Return to table
- Consume
- Return plate or bowl
- Return to the schedule
- Close the schedule
- Return the schedule
Terminal Reinforcer Continued

- Independently accesses
- Requests from adult or peer
- “Finished” or “All done” icon
- Once the schedule is completed and returned social praise can be delivered
What About Mistakes/Challenging Behavior?

- Return to the previous prompting procedure
- Re-teach entire schedule with manual guidance
- Begin the session again
- Consider motivation for activities in the schedule
- Consider adding additional reinforcers if challenging behavior persists
- Implement rehearsals
  - Have the learner do it again so that behavior chain is free of inappropriate behaviors and or mistakes.
Discussion

What challenging behaviors do your children/students exhibit that might interfere during an activity schedule?

Are there any limitations in the general procedures that may be addressed/modified for your students?
Making Changes

- Adding new activity sequences
  - Always change the order of the pictures in the schedule to ensure ‘picture reading’ occurs
  - Rearrange materials so they do not reflect order in the book and the child has to find them
  - Begin to add new activities into schedule in order to lengthen the amount of time the learner is engaged in independent play and to prevent boredom
Choice Options
(Basic to Advanced)

- Choice of terminal reinforcer prior to teaching session
- Choices on left page, places photo of choice on right
- Photo of larger group of choice items (e.g., book shelf, toy shelf, several DVD cases)
- Photo or icon of choice board, chooses and places in book
- Arbitrary choice icon
Adding ‘Timed’ Activities into Activity Schedules

- Timed activities
  - Reading books, playground equipment, playing with toy cars, computer time, music, watching t.v. or video, drawing
  - Food preparation- using the microwave oven

- Use manual guidance within schedule to teach setting the timer

- Picture cues prompts learner to
  - Clear timer, set timer for number of minutes, start timer
Discussion Activity

- Create a list of open-ended activities that you could include in an activity schedule with one of your students/clients
- Discuss your ideas with your group.
Introducing Textual Cues

- Teach sight word reading
  - Via structured reading program
  - Incidentally
  - Using discrete trials (match to sample)

- Sight word reading and schedule following can be taught simultaneously

- Pair sight word with picture in schedule page
Use stimulus control fading to transfer control from picture to text

Schedules can then be changed to list format

Completed activities can be checked off, crossed out, or use tokens to keep place

For learners with writing skills, begin using appointment books or a daily planner
Teaching Social Interaction Skills

- Including social scripts in the activity schedule teaches learners to initiate
  - Social interactions/activities with others
  - Comments about activities

- For non-verbal learners
  - Social interactions consisting of picture giving, signing, or use of an AAC device

- Video Example #4
Incorporating Scripts

- Text (for readers OR nonreaders) or auditory
- Requesting items
- Initiating play
- Requesting attention (e.g., “Look at this!”)
- Commenting
- Asking questions
Measuring Progress on Activity Schedules

Why?
- Collecting data is critical to using an activity schedule.
- Helps identify where errors occur in the response chain (and therefore assist in error analysis).
- Assists in decisions regarding prompt-fading.
- When to make changes to schedule.
How/What to Measure?

- Score each component of the schedule
  - Opening schedule book/turning page
  - Looking at or pointing to picture
  - Obtaining materials
  - Completing activity
  - Putting materials away
  - Returning to schedule
  - Setting timer
  - Total duration

- Score as +/-, or record the prompt level

- Data sheet available on the ASSERT website: sper.usu.edu/ASSERT
# Activity Schedule Following Data Sheet

<table>
<thead>
<tr>
<th>Learner</th>
<th>Activity Schedule</th>
</tr>
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Number of components completed correctly _____ Total number of components _____
% of components completed correctly ______

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Combining Social Scripting and Photographic Activity Schedules to Promote Complex Social Behavior

Joint Activity Schedules and Linked Activity Schedules
Joint Activity Schedules

- 2 children share one book
- Each page has photo of one child (that child is responsible for that activity)
  - Photo of child
  - Photo of activity, or choice
  - Script, or other cue for student to initiate to peer:
    - “Play with me.”
    - “Want to play?”
    - “Let’s play ________.”
Joint Activity Schedules
Continued

- Games
- Socio-dramatic play
- Cooperative tasks (e.g., art projects, chores)
- Incorporate play scripts (e.g., comments and questions related to the play sequence)
Teaching Preschoolers with Autism to Engage in Peer Play Using Joint Activity Schedules and Script-Fading Procedures

Alison Betz, Kara Reagon, & Thomas S. Higbee

Utah State University
The purpose of the current study is to extend the research of MacDuff, Krantz, and McClannahan (1993) by examining the effects of teaching two children with autism to follow a joint activity schedule with scripts on play initiations and engagement with a peer during play.
Methods

Participants:
- 3 dyads of preschool aged children with autism
  - 5 boys, 1 girl
  - Ranging from ages 3-5
  - All fluent independent activity schedule followers

Dependent Variables:
- Social engagement - Both participants engaged in the activity specified by the schedule (or appropriately playing the same game during baseline)
- Play initiations - Repeating the script to the other child

Design
- Non-concurrent multiple baseline design across dyads
Methods

Joint Activity Schedule

- 4 activity pages
  - 2 pages per participant
  - One pre-chosen game page
  - One choice page

- Discrimination of the pages
  - Picture of the participant on the top

- Pre-chosen page
  - A picture of the game they were to play with displayed under the picture of the participant

- Choice page
  - An empty page under the picture of the participant
  - Choice board consisted of 4 choices

- Video Example #5
Conclusions

- All three dyads in this study followed a joint activity schedule and maintained schedule following without adult prompts.
- One dyad maintained schedule following during resequencing and the introduction of new games.
- The use of scripts and scripts fading procedures embedded in a joint activity schedule increased play initiations toward peers in all participants.
- Scripts were successfully faded for all participants except for Ali in dyad 2.
- Therefore, joint activity schedules using play initiation scripts is a promising tool to increase peer engagement with two children with autism.
The Use of Linked Activity Schedules to Promote Social and On-task Behaviors During a Game of Hide-and-Seek

Matthew T. Brodhead, Thomas S. Higbee, Joy S. Pollard, Jessica S. Akers, and Nina Gerencser

Utah State University
Current Research Goal

- Extend Betz, Higbee, and Reagon (2008) by using activity schedules to maintain on-task and social behavior in the participant’s immediate, natural environment

- **Hide and seek** typically occurs in a large-scale environment where the child cannot see the entire area at once
  - Requires stimulus control by the immediate, natural environment
  - Social interactions dominate the game
  - Time pressure
  - Lots of potential hiding places
  - More potential for distractions and off-task behavior
  - One schedule per participant
Methods

- Non-concurrent multiple baseline design
- Six children (3 pairs)
  - Fluent activity schedule followers
- Setting
  - On-campus preschool for children with autism
- Prior to the beginning of the study, we taught
  - Textual responses (i.e., script following)
    - Three second constant time delay
  - Picture-location correspondence
    - Manual guidance
  - Locations
    - Under tables
    - Offices
    - Hallways
    - Remote corners of the room
Methods

Measures

- Percentage of correct responses
  - Social behavior
  - Schedule behavior
- Videotaped all sessions
- IOA for at least 30% of each condition
  - Above 95% for all participants
Hider

“Oh, no!”

Seeker

“Go hide”

1 2 3 4 5
6 7 8 9 10
11 12 13 14 15
16 17 18 19 20

“I found you”
Methods

- Baseline (10 min)
  - “Time to play hide and seek. Arlo, you are the hider, Isis, you are the seeker. Go.”
  - No schedule in place for either participant
    - Off task behavior included:
      - Sitting in the corner reading a book
      - Crawling on the floor
      - Noncompliance
        - “I don’t want be the hider!”

- Schedule probe (10 min or until game is finished)
  - Introduced the schedules prior to teaching the sequence
Methods

- Teaching (10 min or until game is finished)
  - Standard activity schedule prompting procedures
    - Manual guidance
    - Faded within and between sessions

- Re-sequencing
  - Systematically randomized the hider and seeker locations
  - Rotated which participant started as the hider and seeker at the beginning of each session
Methods

- No schedule probe (10 minutes)
  - Removed each participant’s activity schedule
  - This condition also serves as an additional form of experimental control (brief reversal)

- Generalization
  - Introduced four new hiding and seeking locations
  - Hiding and seeking locations were randomized as in the re-sequencing phase

- Video Example #6
Discussion

- Linked activity schedules can maintain social and on-task behavior during a complex social game like hide-and-seek.
- As predicted, social and on-task behaviors did not occur when the schedule was removed.
- Demonstrates the potential of activity schedules for teaching complex social behaviors.
Activity Schedules-Summary

- Promote independence
- Develop choice making skills
- Teach selection and sequencing of activities
- Prompt social interactions
- Increase on-task behavior
- Decrease adult prompts
- Decrease stereotypy
Activity Schedules: Future Directions

- Parent implemented joint activity schedules
  - With siblings with and without autism
- Expanding the range of activities included within activity schedules
- Exploring ways to incorporate new technology to deliver schedules
- Fading the activity schedules and transferring stimulus control to the natural environment
Thank you!!!

For further information contact:

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