Using Positive Reinforcement Alone or in Conjunction With Negative Reinforcement to Increase Task Compliance of a Child With Down Syndrome

Ryan Thorson, Carrie Combs, Tara Harper, Tyree Starks, Henry Roane, and Kelly Bouxsein

**Introduction**

- Previous research (Lalli et al., 1999; Piazza et al., 1997) has used a combination of positive and negative reinforcement contingencies in the treatment of destructive behavior maintained by escape from nonpreferred tasks (e.g., self-help tasks).
- Specifically, positive reinforcement (Sr+) alone (Lalli et al.) or in combination with negative reinforcement (Sr+/Sr-; Piazza et al.) have both been demonstrated to be effective for reducing destructive behavior.
- Related to problem behavior during non-preferred tasks, a concern for many children with developmental disabilities is noncompliance with such tasks (e.g., Taplin & Reid, 1977; Wilder, Harris, Reagan, & Rasey, 2007).
- In the current investigation, Sr+ and Sr+/Sr- contingencies were implemented to evaluate the differential effectiveness of these procedures for increasing task compliance of a boy with Down Syndrome.

**Method**

- **Participant (Nathan):**
  - 14-year-old male diagnosed with Down Syndrome and Pervasive Developmental Disorder-Not Otherwise Specified
- **Setting:**
  - 10 ft. by 12 ft. padded session room in the clinic with a 1-way observation window
- **Experimental Design:**
  - 10-minute sessions conducted in a reversal design
- **Dependent Variable:**
  - Compliance: Completion of the task prior to implementation of physical guidance
  - Inappropriate behavior:
    - Inappropriate sexual behavior: exposing private parts, touching self or others below the waist, spanking self, or moving hips back and forth in suggestive manner.
    - Disruption: Projecting materials more than 3 feet unless intended for such use (e.g., a ball), forcefully hitting or kicking the wall or floor, hitting objects against another surface forcefully.

**Phase 1: Sr+/Sr- Analysis**

- **General Procedures:**
  - A task of cleaning up paper was implemented across sessions.
  - Therapists used successive verbal, gestured, and physical prompts to promote compliance with the task.
- **Baseline (BL):**
  - Inappropriate behavior resulted in a 20-s break from prompting.
  - Compliance resulted in brief verbal praise (e.g., saying, “Nice job, Nathan”).
- **Differential Negative Reinforcement condition (DNRA):**
  - Inappropriate behavior was placed on extinction.
  - Compliance resulted in brief verbal praise and a 60-s break from tasks.
- **Differential Positive Reinforcement (DPRA) + DNRA condition:**
  - Inappropriate behavior was placed on extinction.
  - Compliance resulted in brief verbal praise, a 60-s break from tasks, and 60-s access to music during the break.
- **DPRA condition:**
  - Inappropriate behavior was placed on extinction.
  - Compliance resulted in 60-s access to music, but no break (i.e., task presentation continued).

**Phase 2: Treatment utilizing a yoked demand procedure**

- In Phase 2, the BL, DNRA, DPRA + DNRA, and DPRA conditions were identical to those described for Phase 1.
- **Yoked DPRA + DNRA condition:**
  - Identical to the DPRA + DNRA condition described above except that the number of demands presented in each DPRA + DNRA condition was yoked to match the number of demands presented in the DPRA condition.

**Results and Discussion**

- Results of Phase 1 indicated that Nathan engaged in higher levels of compliance during the DPRA + DNRA condition when both Sr+ and Sr- were presented contingent upon compliance.
- Data from Phase 1 revealed higher number of demands presented during the DPRA condition, relative to the DPRA + DNRA condition.
- To account for this disparity, the number of demands presented during the DPRA + DNRA condition of Phase 2 were yoked to the number of demands presented in the DPRA condition to evaluate whether the difference in compliance between these conditions in Phase 1 were not due to differences in the number of demands presented.
- Results of Phase 2 suggested similar results as Phase 1, which suggest that the combination of Sr+ and Sr- was more effective for increasing compliance than either Sr+ or Sr- alone.
- On average, Nathan engaged in low levels of combined inappropriate behavior across both phases. The mean rate of combined inappropriate behavior was 0.5 per minute for all sessions in Phase 1 and 2.
- These data demonstrated that both the music (Sr+) and the break (Sr-) within the context of a DPRA + DNRA contingency were effective for increasing compliance during low preference tasks.
- Previous research has shown the benefits of using Sr+ contingencies for increasing levels of escape-maintained problem behavior; however, little research has been conducted on the separate and combined effects of Sr+ and Sr- contingencies for increasing compliance.
- One limitation of this study is that only one task was evaluated. Future studies would benefit from assessing a variety of tasks including everyday activities such as self-help skills or daily chores.
- Future research could also evaluate such treatments in more naturalistic environments with less intrusive stimuli. For instance, music could be downloaded on an MP3 player and available to a child via headphones contingent upon task compliance.

**Graphs**

- **Phase 1: Sr+/Sr- Analysis**
- **Phase 2: Yoked Demand Presentation**

---

*Image of Munroe-Meyer Institute for Genetics and Rehabilitation*

*A University Center For Excellences in Developmental Disabilities, Education, Research, and Service*