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ANALYSIS OF RESPONSE CLASS HIERARCHIES WITH ATTENTION-MAINTAINED PROBLEM BEHAVIORS

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We replicated a method for clarifying inconclusive functional analysis outcomes via an extinction analysis of separate topographies of problem behavior with 2 participants. Results suggested that both mild and severe problem behaviors belonged to the same response class. An analysis of response latency was consistent with a response class hierarchy hypothesis, indicating that mild problem behavior nearly always occurred prior to severe topographies of problem behavior.

DESCRIPTORS: functional analysis, response class hierarchies

One explanation for inconclusive functional analysis results is that multiple target behaviors may be represented within a response class hierarchy (Lalli, Mace, Wohn, & Livezey, 1995). Response class members produce a common effect on the environment, may substitute for each other and, therefore, may occur in an ordered temporal sequence. If a response class hierarchy exists, then the reinforcement of milder forms of problem behavior may preclude the occurrence of more severe topographies. For example, Richman, Wacker, Asmus, Casey, and Andelman (1999) reinforced all topographies of problem behavior during an initial functional analysis. Results showed that reinforcement effects were evident only for milder forms of problem behavior. A second analysis was conducted in which milder problem behavior was placed on extinction and more severe topographies were reinforced. Results for 2 of 3 participants suggested a hierarchical sequence in which milder behavior occurred prior to severe topographies.

Following an inconclusive functional analysis, we exposed separate topographies of problem behavior to extinction and reinforcement schedules as a method of assessing response class hierarchies. Our objective was to evaluate whether these manipulations would identify functional relations between severe topographies of target behavior and environmental contingencies.

METHOD

Participants and Settings

Mandy, aged 2 years 6 months, had been diagnosed with Soto syndrome and developmental delays. Her problem behaviors included tantrums, aggression, and property destruction. Kim, aged 2 years 8 months, had been diagnosed with pervasive developmental disorder and moderate mental retardation. Her problem behaviors included tantrums and self-injury. All procedures were conducted by the children's mothers in their

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respective homes with coaching from the first author and were videotaped for subsequent data collection.

Response Definitions and Interobserver Agreement

A 6-s partial-interval recording system was used to measure the occurrence of mild and severe behaviors. *Mild behavior* was defined as tantrums and task refusal. *Severe behavior* was defined as any attempt to engage in self-injury, aggression, or property destruction. Interobserver agreement was assessed across 37% of sessions and averaged 97% (range, 90% to 100%).

An analysis of response latency for mild and severe behavior was completed for all attention sessions that were conducted during the functional analysis. All sessions were 5 min in duration. Latency data were collected on computers by two independent observers using the Observe program. Response latency was defined as the seconds from the initiation of the establishing operation (i.e., parent diverting attention from the child) to the first occurrence of each response. Each presentation of the establishing operation constituted a trial within each session. Number of trials per session ranged from 1 to 7 ($M = 4.4$). Interobserver agreement for response latency was assessed for the occurrence of the establishing operation, mild behavior, and severe behavior across 33% of sessions and averaged 94%, 94%, and 95%, respectively.

Experimental Design and Procedure

A functional analysis (Iwata, Dorsey, Slifer, Bauman, & Richman, 1982/1994) was conducted in two phases using a combination of multielement and reversal designs to evaluate the effects of reinforcement and extinction on response class members. During the reinforcement (A) phase, both mild and severe behaviors were reinforced. During the extinction (B) phase, there were no programmed consequences for mild behaviors and consequences were provided only for severe behaviors (property destruction and aggression for Mandy, self-injury for Kim). An ABA reversal design was used for Mandy, and a BAB reversal design was used for Kim.

For both children, we assessed attention, tangible, escape, and free play conditions within a multielement design during the initial reinforcement phase (A for Mandy, B for Kim). The results for Mandy suggested that problem behavior was maintained by attention and tangible items; therefore, we deleted the escape condition from subsequent phases. The results for Kim suggested that problem behavior was maintained by attention; thus, we assessed only attention and free play conditions during subsequent phases.

RESULTS AND DISCUSSION

Figure 1 displays the results of Mandy's and Kim's functional analyses. During the first reinforcement (A) phase, Mandy displayed high levels of mild behavior during the attention condition and, to a lesser extent, during the tangible condition. No severe behavior was observed during these conditions. During the extinction (B) phase, severe behavior occurred only during the attention condition and was correlated with high levels of mild behavior. A return to the reinforcement (A) phase showed severe behavior at near-zero levels across conditions and a decrease in mild behavior. These results suggested that (a) mild and severe behavior were in the same response class, and (b) reinforcing mild behavior reduced the probability of severe behavior.

Kim's results (Figure 1) were similar to Mandy's. During the first extinction (B) phase, severe behavior occurred only during the attention condition and was associated with high levels of mild behavior. When mild behavior was reinforced during the re-

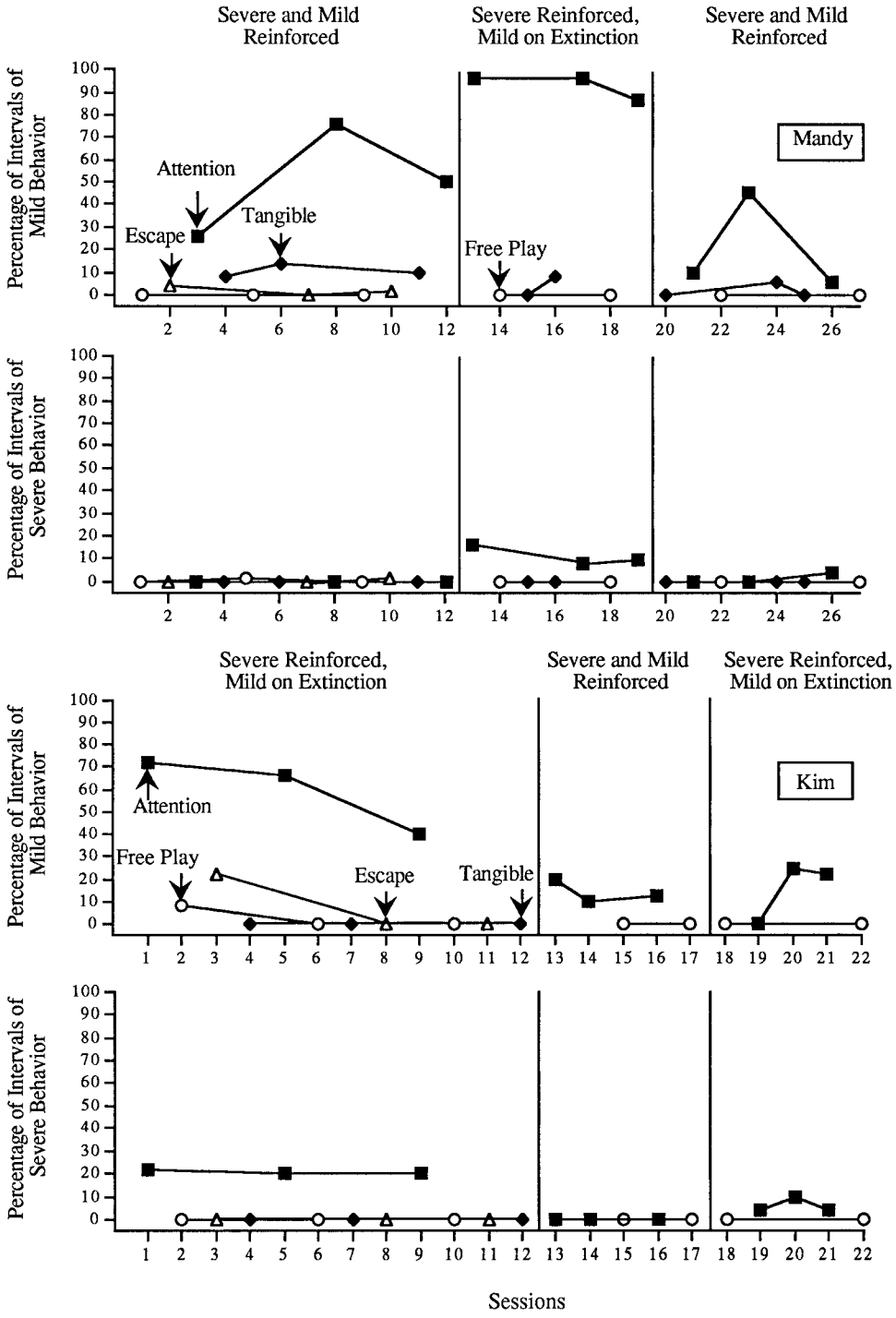

Figure 1. Percentage of intervals of mild behavior and severe behavior across reinforcement (A) and extinction (B) phases for Mandy and Kim.

inforcement (A) phase, severe behavior decreased to zero. A reversal to the extinction (B) phase showed an increase in severe behavior.

The response latency analysis suggested that the target responses were hierarchically related because applying contingencies to an earlier topography in the sequence (mild behavior) reduced the probability of a subsequent topography (severe behavior). During the reinforcement (A) phase for Mandy, mild behavior occurred relatively quickly after the presentation of the establishing operation (*M* latency = 18 s across trials) and severe behavior occurred in only two trials. Kim's results were similar in that mild behavior occurred quickly (*M* latency = 16 s across trials) and severe behavior never occurred during the reinforcement (A) phase. When mild behavior was placed on extinction, the predicted ordinal positions (i.e., mild behavior prior to severe behavior) were observed in 100% of trials for Mandy and 93% of trials for Kim.

This investigation replicated the procedures reported by Richman et al. (1999) for evaluating multiple topographies of problem behavior maintained by positive reinforcement contingencies. It extended the Richman et al. study by conducting a more precise evaluation of response latency using the methods described by Lalli et al. (1995). By treating a mild behavior that typically precedes a severe behavior, it should be possible to reduce the probability of severe behavior.

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