

*FALSE-POSITIVE MAINTENANCE OF
SELF-INJURIOUS BEHAVIOR BY ACCESS TO
TANGIBLE REINFORCERS*

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Results of a functional analysis indicated that the hand mouthing of a woman with developmental disabilities was maintained by multiple sources of control (sensory stimulation and access to a leisure item). Further assessment revealed that access to several other items also produced high rates of hand mouthing. However, direct observation conducted in the woman's home indicated that none of these items was delivered contingent upon hand mouthing. When the consequence observed most frequently in the home was incorporated into the functional analysis, rates of hand mouthing were no higher than they were during an alone condition. We concluded that hand mouthing, although maintained by automatic reinforcement, was also susceptible to social contingencies when exposed to them during assessment, thereby producing a partially false-positive outcome.

DESCRIPTORS: functional analysis, incidental reinforcement, self-injurious behavior

Attempts to identify the function of behavior problems sometimes fail to isolate a single source of reinforcement. Factors that typically account for such findings include multiple control (Smith, Iwata, Vollmer, & Zarcone, 1993), maintenance of different response topographies by different contingencies (Derby et al., 1994), or maintenance by idiosyncratic (unidentified) sources of reinforcement (Bowman, Fisher, Thompson, & Piazza, 1997). Another possibility, and one not reported in the literature to date, is that behavior maintained by one contingency may also increase if exposed to other contingencies during the course of assessment. For example, although a behavior problem may be maintained by automatic reinforcement (sensory stimulation), it may also increase if

its occurrence is followed by access to highly preferred items, even though these items are not delivered as consequences for the behavior in the natural environment. Such "incidental maintenance" may produce either uninterpretable or erroneous results (e.g., false positives) while conducting functional analyses.

The purpose of this study was to determine whether an individual whose functional analysis indicated that her self-injurious behavior (SIB) was maintained by multiple reinforcers represented a case of incidental maintenance.

METHOD AND RESULTS

Stephanie, a 26-year-old woman who had been diagnosed with profound mental retardation, had been referred for assessment and treatment of hand mouthing. During functional analysis sessions, data were collected on the frequency of hand-mouth contact (responses per minute). During naturalistic observations, data were collected on hand mouthing and on staff responses that fol-

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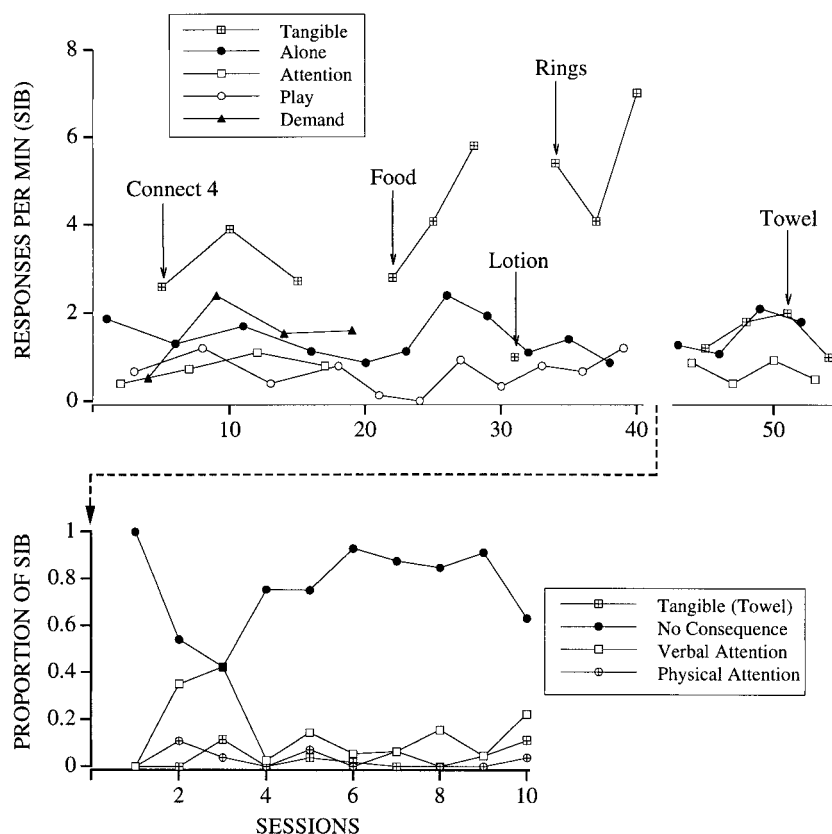


Figure 1. Number of responses per minute of SIB during functional analysis sessions (top panel), and proportion of SIB responses followed by various consequences from staff during naturalistic observations (bottom panel).

lowed instances of hand mouthing within 20 s (using 10-s continuous interval recording), and were used to calculate the proportion of hand-mouthing responses followed by various consequences. An independent observer collected data during 23% of the functional analysis sessions (reliability data were not collected during naturalistic observations), and comparison of observers' records yielded a mean interobserver agreement score of 94%.

We first conducted a functional analysis based on procedures described by Iwata, Dorsey, Slifer, Bauman, and Richman (1982/1994), consisting of attention, demand, alone, and play conditions. We also included a tangible condition, in which brief access to a Connect 4 game was available

contingent on hand mouthing, based on results of a preference assessment indicating that Stephanie played with the game for long periods of time. As can be seen in Figure 1 (top left panel, Sessions 1 through 20), hand mouthing occurred to some extent during all conditions, but the highest rates occurred during the tangible condition. We then substituted other preferred stimuli in the tangible condition (Sessions 21 through 40) and found that access to food or plastic rings also maintained hand mouthing, whereas access to lotion (which Stephanie would rub on her hands) did not.

Because high rates of hand mouthing were observed under a variety of tangible conditions, we conducted a series of 15-min observations in Stephanie's home to identify

those stimuli delivered most frequently as consequences for the behavior. Observations were conducted for a total of 2.5 hr, mostly during leisure (nontraining) activities. The bottom panel in Figure 1 shows the results of these observations, expressed as the proportion of hand-mouthing responses followed by access to tangible items, verbal attention, physical attention, or no consequence. These data indicated that the vast majority of hand mouthing responses resulted in no consequence; that is, staff generally ignored the behavior. A small proportion of responses was followed by physical or verbal attention, which did not appear to be reinforcers for SIB (see Figure 1, top left panel, attention condition). A small proportion of responses also produced access to a tangible item, which consisted almost entirely of the presentation of a towel, accompanied by a prompt for Stephanie to wipe her hands.

Because the reinforcing effects of access to a towel had not been assessed previously, a supplementary functional analysis was conducted, which included alone, play, and tangible (towel) conditions. Results of this analysis (see Figure 1, top right panel) indicated that hand mouthing was no higher during the tangible (towel) condition than it was during the alone condition.

DISCUSSION

We conducted a detailed assessment of an individual's hand mouthing, which initially seemed to be multiply controlled. Results of a functional analysis showed that Stephanie's hand mouthing was maintained by automatic reinforcement (sensory stimulation) as well as by access to a Connect 4 game, and additional tangible conditions revealed that other materials also served as reinforcers for the behavior. However, naturalistic observations revealed that items found to maintain hand mouthing in the functional analysis were not delivered as consequences for hand

mouthing in the home. The one item observed to be presented following hand mouthing (a towel) was not found to be a reinforcer for the behavior.

Thus, it appeared that Stephanie's hand mouthing was maintained by automatic reinforcement, and that increased rates of responding under the tangible conditions of the functional analysis were a result of incidental maintenance (access to preferred stimuli). These findings indicate that functional analyses may produce false-positive outcomes under certain conditions and that particular care should be taken when assessment results suggest multiple sources of behavioral maintenance. Smith et al. (1993) used treatment data to verify or rule out multiple sources of control; this study illustrates the combined use of functional and descriptive analyses as an additional strategy.

The fact that Stephanie's SIB increased when a variety of tangible stimuli were delivered also raises the possibility that reinforcers identified through preference assessments may sometimes obscure the results of functional analyses by identifying stimuli that do not currently maintain a target behavior but may do so if delivered on a contingent basis. Our findings must be considered preliminary because they are based on data from 1 participant and because inter-observer agreement was not assessed for the descriptive data. It is, of course, possible that Stephanie's hand mouthing *was* maintained in part by access to tangible items but that these items were delivered (a) very intermittently in the home or (b) only by specific persons or in contexts not included during the course of naturalistic observations.

Finally, although Stephanie's hand mouthing was primarily self-stimulatory in nature, the fact that it could be increased through contingent access to preferred items was nevertheless a useful finding because it revealed a susceptibility to maintenance by tangible reinforcers. This information has important

implications for prevention because it suggests that attempts to redirect the individual away from SIB through the presentation of preferred activities would exacerbate the problem.

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