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A DESCRIPTIVE ANALYSIS OF SOCIAL CONSEQUENCES FOLLOWING PROBLEM BEHAVIOR

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The social consequences delivered for problem behavior during functional analyses are presumed to represent common sources of reinforcement; however, the extent to which these consequences actually follow problem behavior in natural settings remains unclear. The purpose of this study was to determine whether access to attention, escape, or tangible items is frequently observed as a consequence of problem behavior under naturalistic conditions. Twenty-seven adults who lived in a state residential facility and who exhibited self-injurious behavior, aggression, or disruption participated. Observers recorded the occurrence of problem behavior by participants as well as a variety of consequences delivered by caregivers. Results indicated that attention was the most common consequence for problem behavior and that aggression was more likely to produce social consequences than were other forms of problem behavior.

DESCRIPTORS: descriptive analysis, assessment, functional analysis, self-injurious behavior, aggression, disruptive behavior

Functional analysis methodologies are widely used to identify sources of reinforcement for problem behavior. These procedures have been applied successfully across a variety of problem behaviors, including self-injurious behavior (SIB; Iwata, Dorsey, Slifer, Bauman, & Richman, 1982/1994), aggression (Lalli, Casey, & Kates, 1997), disruptive behavior (Richman, Wacker, Asmus, & Casey, 1998), bizarre speech (Mace & Lalli, 1991), and pica (Piazza et al., 1998). Results of early studies indicated that problem behavior can be maintained by social consequences such as positive reinforcement in the form of attention (Lovaas & Simmons, 1969) or negative reinforcement in the form of escape from task demands (Carr, Newsom, & Binkoff, 1980). A large body of research has shown that the influence of these contingencies can be identified by way of a functional analysis (see Iwata, Kahng, Wallace, & Lindberg, 2000, for a recent review). Nevertheless, the extent to which social consequences that maintain problem behavior in experimental situations are actually observed to follow such behavior in the natural environment is somewhat unclear.

Several investigators have attempted to identify naturally occurring antecedent and consequent[1] events associated with problem behavior through direct observation. For example, Schroeder et al. (1982) measured SIB and staff responses to SIB with 15 participants in a residential setting. However, because these observations were conducted within an ongoing treatment context, it is unlikely that the results were representative of more typical caregiver behavior. Maurice and Trudell (1982) also recorded a variety of staff responses to the SIB of 36 participants living in residential centers. Each participant was observed for almost 3.5 hr; however, low

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[1] The term *subsequent* is more appropriate in the present context because it implies a temporal relation but not necessarily a functional one. Nevertheless, *consequent* is used throughout the paper due to similarities between our data-collection methods and descriptive analyses based on antecedent-behavior-consequence recording.

levels of SIB (13.4% of intervals) and staff behaviors (15.2% of intervals) were recorded, and no antecedent or consequent events were recorded during the entire study for 12 of the 36 participants. In addition, staff responses were summarized as the aggregate number of antecedent and consequent events recorded for each participant and as the percentage of intervals during which staff behaviors were recorded (without regard to whether the behaviors were antecedent or consequent events). Therefore, the relative frequencies of specific consequences for SIB could not be determined.

More recently, several researchers have used descriptive analysis based on interval-observation procedures (Bijou, Peterson, & Ault, 1968) to quantify antecedent and consequent events associated with problem behavior. However, these studies have included small numbers of participants (e.g., Emerson, Thompson, Reeves, Henderson, & Robertson, 1995; Lerman & Iwata, 1993; Mace & Lalli, 1991; Sasso et al., 1992). Given the relative absence of objective data on the prevalence of social consequences for problem behavior, the goal of this study was to determine the extent to which those consequences that are typically manipulated during functional analyses were observed to follow problem behavior under naturally occurring conditions for a relatively large sample of individuals.

METHOD

Participants and Setting

Participants were 27 adults with developmental disabilities who lived at a state residential facility. Their ages ranged from 30 to 57 years (see Table 1 for demographic information). All participants had been diagnosed with severe to profound mental retardation, had some receptive language skills (e.g., could follow simple requests), but had severely limited expressive language. None of the participants had any intelligible vocal communication, and most communicated using idiosyncratic gestures or rudimentary manual signs.

Participants had been either referred for treatment of problem behavior or nominated for participation in the study by a staff psychologist. All participants were reported to display some form of SIB, aggression, or disruptive behavior on a daily basis. Individuals who were referred for treatment, in addition to participating in this study, participated in a day-treatment program consisting of (a) a functional analysis (Iwata et al., 1982/1994) of their problem behavior, (b) evaluation of treatment procedures by way of single-subject experimental designs, and (c) staff training upon the completion of treatment (results of these treatment programs were highly individualized and are not reported here). Individuals who were not referred for treatment participated in this study only; however, information obtained from the descriptive analyses was shared with their interdisciplinary teams, and general treatment recommendations were provided when appropriate.

Observations were conducted in a variety of locations throughout the residential facility at which participants spent time involved in daily activities (e.g., home, workshop, outdoors). The staff:participant ratio ranged from 1:1 to 1:10 over the course of the study. At the time of the study, formal behavior management programs were not in place for any of the participants.

Response Measurement and Interobserver Agreement

Target behaviors varied across participants and consisted of SIB (head banging, head and body hitting, hair pulling, self-biting, skin picking, and banging limbs on hard surfaces), aggression (hitting, kicking, scratching and biting others, and pulling the hair of others), and disruptive behavior (throw-

Table 1
Demographic Characteristics of Participants ($N = 27$)

Participant	Sex	Age (years)	MR level	Other diagnoses	Sensory impairment
1	F	44	Profound	Epilepsy	
2	F	30	Profound		
3	M	35	Profound		
4	F	32	Profound	CP, epilepsy	
5	F	45	Severe	Epilepsy	Visual
6	F	53	Profound	Epilepsy	
7	M	35	Profound		Auditory, visual
8	F	56	Profound		Auditory, visual
9	F	37	Profound		Visual
10	F	45	Profound		
11	F	39	Profound		Visual
12	M	35	Profound	Epilepsy	Auditory, visual
13	M	48	Profound	Autism	
14	F	52	Profound		Auditory, visual
15	M	42	Profound	Epilepsy	
16	M	48	Profound		Visual
17	M	37	Profound		Visual
18	M	38	Profound	Epilepsy	
19	M	42	Profound	Epilepsy	
20	M	50	Profound	Epilepsy	
21	M	57	Profound		Visual
22	M	42	Profound		Auditory, visual
23	F	45	Profound		Auditory
24	M	45	Profound		Visual
25	M	41	Profound		
26	M	51	Severe	Epilepsy	Visual
27	M	45	Profound	Epilepsy	Visual

ing objects, banging forcefully on objects with hands, and destroying property). Data were also recorded on several staff responses, including the presentation of tasks (demand), the delivery of attention (attention), the presentation of materials (tangible), and the termination of ongoing activities (escape). A demand was recorded when staff verbally or physically issued a request for the participant to engage in some response (e.g., "Stand up," "Take your medicine"), presented task materials to the participant (e.g., handed the participant a toothbrush), or completed a self-care task for a participant (e.g., washed the participant's face). Attention was recorded when staff initiated vocal or physical social interaction (e.g., pat on the back) with a participant without issuing an instruction. (The delivery of attention by peers was also recorded but occurred rarely and is not reported here.) A tangible event was recorded when staff presented food or leisure items to a participant, or if the participant gained access to a previously denied item following the occurrence of problem behavior (even if it had not been specifically delivered). Escape was scored when the caregiver terminated an ongoing interaction following the occurrence of problem behavior.

Observers recorded the occurrence of participant and staff behaviors on a data sheet that was partitioned into 90 intervals (10 s each; all sessions were 15 min in length). In each interval, the observer indicated the occurrence of three categories of events by circling the designated code. The antecedent event category consisted of codes for demands, attention (by staff), the presence of

materials, and peer attention; the problem behavior category consisted of codes for the occurrence of SIB, aggression, and disruptive behavior; and the consequent event category included codes for attention, escape, tangible items, and peer attention. Interobserver agreement was assessed during a minimum of 33.3% of sessions for each participant by having a second observer collect simultaneous but independent data. Observers' records were compared on an interval-by-interval basis, and the number of agreements within each category (e.g., antecedent events) was divided by the total number of agreements plus disagreements and multiplied by 100%. Mean interobserver agreement across participants was 95.9% (range, 89.4% to 100%) for antecedent events, 99.6% (range, 94.3 to 100%) for problem behavior, and 99.6% (range, 97.8% to 100%) for consequent events.

Procedure

Trained observers conducted a minimum of four observations (15 min each) with each participant. However, to insure that an adequate sample of problem behavior was obtained, additional sessions were conducted until at least 10 intervals of problem behavior were recorded. In addition, in an attempt to obtain samples of client and staff behavior in all relevant antecedent conditions, sessions continued until a minimum of 20 intervals of antecedent demands were recorded. There was no need to extend the number of sessions to obtain samples of behavior under other relevant antecedent conditions because these conditions (e.g., the absence of attention and materials) occurred relatively frequently during our observations. In addition, because we were primarily interested in staff responses following the occurrence of participants' problem behavior, data were recorded only when a staff person was present (the session timer was stopped, and data collection ceased when the caregiver left the observation area for brief periods).

Observations were scheduled based on observer availability (i.e., usually between 9:00 a.m. and 4:00 p.m.). When an observation period was scheduled, data were collected during the participants' regularly scheduled activities. Therefore, data were recorded not only in the participants' homes and worksites but also during activities such as physical therapy appointments, outdoor picnics, and barbershop visits. Prior to the start of a session, observers informed staff that they would be collecting data and requested that staff behave as they would ordinarily. No additional instructions were provided, no attempt was made to construct any particular antecedent situation, and no feedback was provided to staff following observations.

Data Analysis

When observations were completed for each participant, data were reviewed to identify antecedent and consequent events associated with problem behavior, which were defined as events occurring within the same 10-s interval as problem behavior or in an adjacent interval (Lerman & Iwata, 1993). These data were then used to determine which social consequences, if any, were correlated with problem behavior. The conditional probability of each consequent event given the occurrence of problem behavior was determined by dividing the number of intervals containing problem behavior followed by each specific consequent event (e.g., problem behavior followed by staff attention) by the total number of intervals containing problem behavior. For example, we observed that the problem behavior of Participant 23 occurred in a total of 11 intervals and that problem behavior was followed by attention on six occasions. Therefore, the conditional probability of attention

given problem behavior for this participant was .55 (6/11).

The formula was modified slightly to determine the conditional probability of escape. Observers recorded escape when any ongoing activity was terminated following problem behavior; however, in reviewing the data, we determined that escape was observed only during demand situations (i.e., the caregiver did not terminate other types of interactions when problem behavior occurred). Therefore, the conditional probability of escape was based only on those intervals in which a demand preceded the occurrence of problem behavior. For example, Participant 2 engaged in problem behavior following a demand on four occasions, and escape from the demand was provided on one occasion. Therefore, the conditional probability of escape for Participant 2 was .25 (1/4). Similar modifications were not made when calculating the conditional probabilities for the delivery of attention and tangible items because these events followed problem behavior under all antecedent conditions. The conditional probability of each consequent event was also calculated for each separate topography of problem behavior (i.e., SIB, aggression, disruption) for all participants. Conditional probabilities for peer attention given problem behavior were not calculated because peer attention was observed on only three occasions throughout the study.

RESULTS

Over the course of the study, 191 observations were conducted (15 min each, approximately 48 hr), which yielded a total of 1,105 intervals of problem behavior. The number of sessions conducted with individual participants ranged from 4 to 17 sessions (M = 7.1), and the number of intervals of problem behavior for individual participants ranged from 10 to 325 (M = 40.9). Figure 1 shows the percentage of individuals for whom attention, escape, and the presentation of tangible items were observed following problem behavior. Attention was observed following problem behavior for 24 of the 27 (88.9%) participants. Of the 27 participants, 22 engaged in problem behavior during the presentation of demands, but escape from demands followed problem behavior for only 8 of these participants (36.4%). Finally, tangible items were presented following problem behavior in only 8 of 27 (29.6%) cases. These data indicate that attention was, by far, the most common consequence for problem behavior.

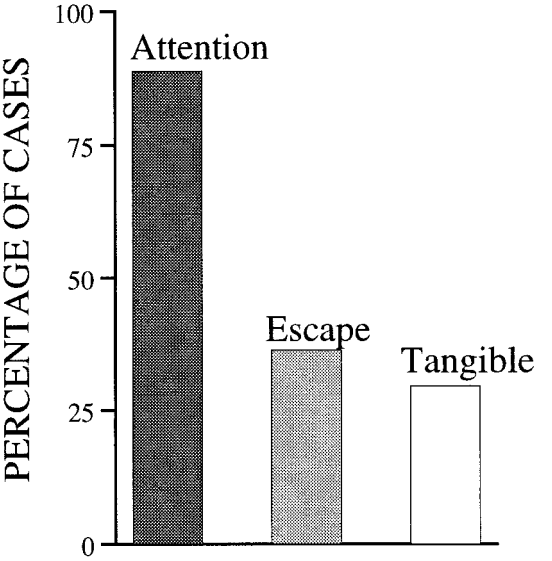

Figure 1. Percentage of cases for which attention, escape, or the presentation of tangible items was observed following problem behavior.

Table 2 shows the conditional probabilities of consequent events for individual participants. These data reveal a wide range of variability across participants in the schedules of delivery for attention, escape, and tangible items. Occurrences of problem behavior were associated with dense schedules of attention for some participants (e.g., .94 for Participant 26) but relatively thin schedules for other participants (e.g., .04 for Participant 1). Similarly, escape from task de-

Table 2
Number of Sessions Conducted, Number of Intervals with Problem Behavior, and Conditional Probabilities Generated Through the Descriptive Analysis

Participant	Sessions	Intervals problem behavior	Conditional probability of consequent events given problem behavior		
			Attention	Escape	Tangible
1	4	24	.04	.00	.00
2	14	12	.33	.25	.08
3	4	12	.33	.00	.08
4	4	26	.77	.00	.00
5	7	19	.58	.00	.05
6	4	31	.00	.00	.00
7	4	66	.26	.25	.03
8	4	69	.55	1.00	.00
9	6	14	.21	.00	.00
10	4	31	.19	.00	.10
11	5	325	.05	.00	.00
12	6	20	.35	.00	.00
13	4	74	.43	.04	.00
14	6	31	.26	.80	.10
15	17	10	.60	.00	.00
16	6	11	.55		.00
17	15	11	.46		.00
18	14	10	.30	.00	.00
19	6	17	.53	.60	.00
20	4	33	.09		.03
21	9	12	.33	.50	.00
22	4	126	.28	.50	.03
23	5	11	.55	.00	.00
24	8	21	.00		.00
25	4	10	.00		.00
26	12	17	.94	.00	.00
27	9	12	.42	.00	.00

mands was a virtual certainty (1.0) for Participant 8 but never occurred for other participants. Finally, tangible items were presented according to thin schedules in all cases: The conditional probability of tangible delivery given problem behavior did not exceed 0.1 for any participant.

We also conducted an analysis of the consequent events associated with separate topographies of problem behavior. Figure 2 shows the overall conditional probabilities of attention, escape, and tangible items given all problem behavior, as well as for separate topographies of problem behavior. These data show that aggression was most likely to be followed by attention and escape, and that disruptive behavior was also more likely to be followed by attention than was SIB. The data for the presentation of tangible items are more difficult to interpret because of the very low overall probability of this event.

DISCUSSION

Descriptive analyses were conducted with 27 participants to identify the most common social consequences for their problem behavior, and results indicated that attention was overwhelmingly the most frequent consequence. Escape was presented following problem behavior to a lesser extent, and tangible items were rarely presented following problem behavior. Results also showed a

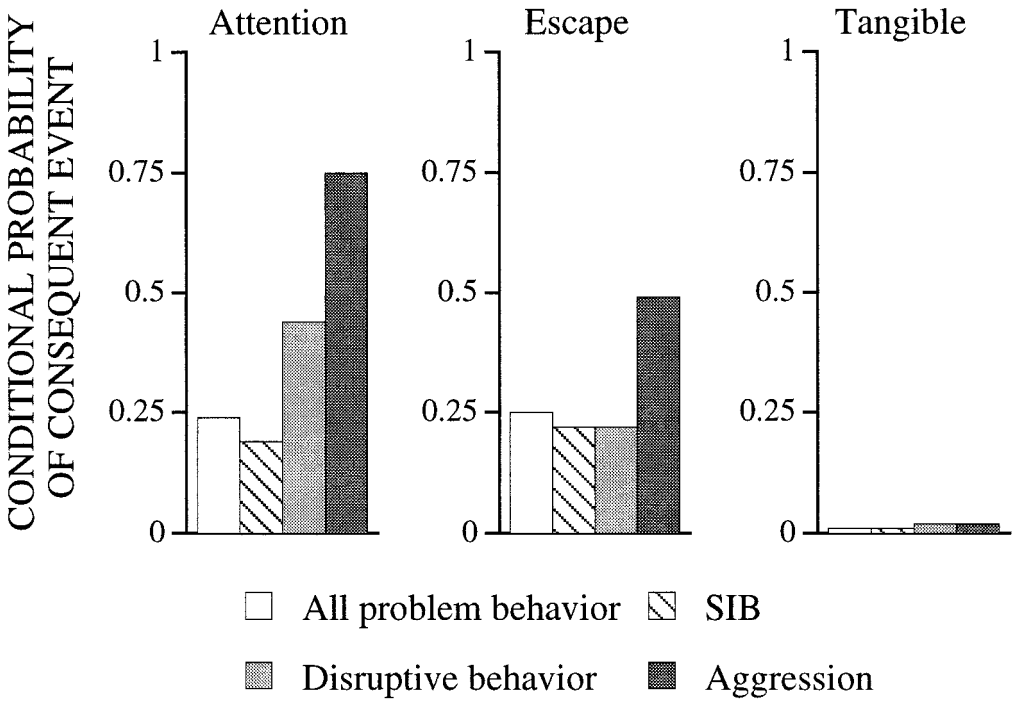

Figure 2. The conditional probabilities of attention (left panel), escape (middle panel), and the presentation of tangible items (right panel) given problem behavior (overall), SIB, disruption, and aggression.

great deal of variability in the conditional probabilities of these consequences. Finally, a comparison of the conditional probabilities for consequences associated with specific topographies of problem behavior indicated that aggression was more likely to be followed by both attention and escape than were disruptive behavior and SIB. These results address, in part, concerns expressed by several researchers (e.g., Lennox & Miltenberger, 1989; Mace, Lalli, & Lalli, 1991) that problem behavior may contact consequences arranged during a functional analysis that are not present in the natural environment. Our results indicated that the social contingencies most often manipulated in functional analysis (i.e., attention and escape) were, in fact, observed following problem behavior under naturalistic conditions. These data lend some support for the inclusion of attention and escape as consequences for problem behavior during functional analyses. By contrast, tangible items were rarely presented following problem behavior under naturally occurring conditions, suggesting that a more cautious approach to testing the effects of tangible reinforcement may be warranted. For example, the tangible condition might be included only when direct observation indicates that caregivers present tangible items following problem behavior.

Because data collection in the present study was based on interval recording, the conditional probabilities for various consequent events were not based on exact ratios. Nevertheless, these probabilities suggested that attention and escape were presented according to relatively dense schedules for some participants (i.e., Participants 8 and 26), in which case the fixed-ratio (FR) 1 schedule of consequences in most functional analyses may closely approximate the frequency with which these events follow behavior in the natural environment. By contrast, attention and escape were presented following problem behavior according to rel-

atively thin schedules for other participants, and in every case in which the delivery of a tangible item followed problem behavior, its conditional probability was very low. Dense schedules of reinforcement presented during functional analyses may not accurately simulate naturalistic conditions for these individuals. Mace and Lalli (1991) advocated the use of descriptive analyses to identify naturally occurring schedules of reinforcement, which can then be incorporated into experimental analyses, and suggested that this technique might increase the external validity of the functional analysis. However, the effects of varying schedule requirements on the results of the functional analyses have not been investigated. For example, although intermittent reinforcement schedules may approximate more closely those schedules found in the natural environment and may facilitate differential responding reflected as high rates of problem behavior, continuous schedules may reduce the risks associated with high rates or intensities of problem behavior and may facilitate discrimination. Thus, the benefits and risks associated with using schedules derived from descriptive analyses or any schedules other than FR 1 have not been well delineated.

Results of the descriptive analyses also indicated that the conditional probabilities of staff responses may have been influenced by the topography of problem behavior: Aggression was more likely to be followed by social consequences than were disruption and SIB. These results suggest that it may be important to consider the reciprocal influence of participant and staff responses during descriptive analyses. The goal of most descriptive analyses is to identify those features of staff behavior that contribute to the maintenance of the client's problem behavior. However, it is also possible that certain behaviors of the client function as more effective establishing operations for staff reactions aimed at terminating the behavior, which may account for the high conditional probability of attention following episodes of aggression. For example, Hall and Oliver (1992) conducted a descriptive analysis of staff responses to the SIB of 1 participant and found that the probability of staff attention was influenced by the duration of the self-injurious episode.

Finally, results indicated that attention was overwhelmingly the most frequent consequence for problem behavior. Attention was delivered following problem behavior for 24 of the 27 participants; for 19 of these, the conditional probability of attention was .25 or higher. These results are consistent with findings from other studies in which staff behavior was a variable of interest. For example, Maurice and Trudell (1982) asked staff to describe their responses to the SIB of 2,858 individuals living in psychiatric hospitals or public residential facilities, and the most frequently reported response was a verbal reprimand. Similarly, Warren and Mondy (1971) conducted direct observations of 49 children in a residential setting and found that inappropriate behavior was more likely to be followed by staff attention than was appropriate behavior. These data indicate a need for ongoing staff training to prevent inadvertent strengthening of problem behavior through the contingent delivery of attention.

The finding that attention was the most common consequence for problem behavior may appear to be inconsistent with results of previous research that indicated that escape was the most common maintaining variable for problem behavior (Derby et al., 1992; Iwata et al., 1994). However, it is important to highlight the fact that descriptive analyses identify events that are correlated with problem behavior and do not indicate whether problem behavior is functionally related to these events. Therefore, although attention was the most common consequence for the problem behavior of the participants

in the study, results of previous research suggest that it is unlikely that attention was the maintaining variable in each of these cases. Taken together, results of the present study and those from previous research (e.g., Maurice & Trudell, 1982; Warren & Mondy, 1971) indicate that descriptive analyses may be highly likely to suggest attention as a maintaining consequence for problem behavior, regardless of whether attention actually functions as a reinforcer.

Finally, it is important to note that the descriptive analyses in this study were undertaken to identify the most common staff responses to problem behavior. If one were conducting a descriptive analysis to develop hypotheses regarding variables that maintain problem behavior, several procedural modifications would be recommended. For example, because we were interested in staff responses to problem behavior, data were collected only when a staff person was present. However, an important means of distinguishing between behavior maintained by social versus nonsocial (automatic) reinforcement would involve comparing rates of problem behavior when staff are present and absent. The reader is referred to studies in which descriptive analysis was used specifically for the purpose of identifying behavioral function (e.g., Lerman & Iwata, 1993; Mace & Lalli, 1991; Sasso et al., 1992) for more complete information on the use of descriptive analysis as a behavioral assessment tool.

REFERENCES

Bijou, S. W., Peterson, R. F., & Ault, M. H. (1968). A method to integrate descriptive and experimental field studies at the level of data and empirical concepts. *Journal of Applied Behavior Analysis, 1,* 175–191.

Carr, E. G., Newsom, C., & Binkoff, J. A. (1980). Escape as a factor in the aggressive behavior of two retarded children. *Journal of Applied Behavior Analysis, 13,* 101–117.

Derby, K. M., Wacker, D. P., Sasso, G., Steege, M., Northup, J., Cigrand, K., & Asmus, J. (1992). Brief functional assessment techniques to evaluate aberrant behavior in an outpatient setting: A summary of 79 cases. *Journal of Applied Behavior Analysis, 25,* 713–721.

Emerson, E., Thompson, S., Reeves, D., Henderson, D., & Robertson, J. (1995). Descriptive analysis of multiple response topographies of challenging behavior across two settings. *Research in Developmental Disabilities, 16,* 301–329.

Hall, S., & Oliver, C. (1992). Differential effects of severe self-injurious behaviour on the behaviour of others. *Behavioural Psychotherapy, 20,* 355–365.

Iwata, B. A., Dorsey, M. F., Slifer, K. J., Bauman, K. E., & Richman, G. S. (1994). Toward a functional analysis of self-injury. *Journal of Applied Behavior Analysis, 27,* 197–209. (Reprinted from *Analysis and Intervention in Developmental Disabilities, 2,* 3–20, 1982)

Iwata, B. A., Kahng, S., Wallace, M. D., & Lindberg, J. S. (2000). The functional analysis model of behavioral assessment. In J. Austin & J. E. Carr (Eds.), *Handbook of applied behavior analysis* (pp. 61–89). Reno, NV: Context Press.

Iwata, B. A., Pace, G. M., Dorsey, M. F., Zarcone, J. R., Vollmer, T. R., Smith, R. G., Rodgers, T. A., Lerman, D. C., Shore, B. A., Mazaleski, J. L., Goh, H., Cowdery, G. E., Kalsher, M. J., McCosh, K. C., & Willis, K. D. (1994). The functions of self-injurious behavior: An experimental-epidemiological analysis. *Journal of Applied Behavior Analysis, 27,* 215–240.

Lalli, J. S., Casey, S. D., & Kates, K. (1997). Noncontingent reinforcement as treatment for severe problem behavior: Some procedural variations. *Journal of Applied Behavior Analysis, 30,* 127–137.

Lennox, D. B., & Miltenberger, R. G. (1989). Conducting a functional assessment of problem behavior in applied settings. *Journal of the Association for Persons with Severe Handicaps, 14,* 304–311.

Lerman, D. C., & Iwata, B. A. (1993). Descriptive and experimental analyses of variables maintaining self-injurious behavior. *Journal of Applied Behavior Analysis, 26,* 293–319.

Lovaas, O. I., & Simmons, J. Q. (1969). Manipulation of self-destruction in three retarded children. *Journal of Applied Behavior Analysis, 2,* 143–157.

Mace, F. C., & Lalli, J. S. (1991). Linking descriptive and experimental analyses in the treatment of bizarre speech. *Journal of Applied Behavior Analysis, 24,* 553–562.

Mace, F. C., Lalli, J. S., & Lalli, E. P. (1991). Functional analysis and treatment of aberrant behavior. *Research in Developmental Disabilities, 12,* 155–180.

Maurice, P., & Trudell, G. (1982). Self-injurious behavior: Prevalence and relationships to environmental events. In J. H. Hollis & C. E. Meyers (Eds.), *Life-threatening behavior: Analysis and in-*

tervention (pp. 81–103). Washington, DC: American Association on Mental Deficiency.

Piazza, C. C., Fisher, W. W., Hanley, G. P., LeBlanc, L. A., Worsdell, A. S., Lindauer, S. E., & Keeney, K. M. (1998). Treatment of pica through multiple analyses of its reinforcing functions. *Journal of Applied Behavior Analysis, 31,* 165–189.

Richman, D. M., Wacker, D. P., Asmus, J. M., & Casey, S. D. (1998). Functional analysis and extinction of different behavior problems exhibited by the same individual. *Journal of Applied Behavior Analysis, 31,* 475–478.

Sasso, G. M., Reimers, T. M., Cooper, L. J., Wacker, D., Berg, W., Steege, M., Kelly, L., & Allaire, A. (1992). Use of descriptive and experimental analyses to identify the functional properties of aberrant behavior in school settings. *Journal of Applied Behavior Analysis, 25,* 809–821.

Schroeder, S. R., Kanoy, R. C., Mulick, J. A., Rojahn, J., Thios, S. J., Stephens, M., & Hawk, B. (1982). Environmental antecedents which affect management and maintenance of programs for self-injurious behavior. In J. H. Hollis & C. E. Meyers (Eds.), *Life-threatening behavior: Analysis and intervention* (pp. 105–159). Washington, DC: American Association on Mental Deficiency.

Warren, S. A., & Mondy, L. W. (1971). To what behaviors do attending adults respond? *American Journal of Mental Deficiency, 75,* 449–455.

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STUDY QUESTIONS

1. Why is it important to know whether the behavioral consequences manipulated during functional analyses are actually observed under naturalistic conditions?

2. What types of responses were recorded, and how did the authors insure adequate sampling of these responses?

3. Describe how events were designated as antecedents or consequences with respect to the occurrence of problem behavior. How were the conditional probabilities of consequences determined?

4. Summarize the results shown in Figures 1 and 2.

5. What additional information provided in Table 2 suggests that the group data should be interpreted with caution?

6. What are some potential advantages and disadvantages of delivering consequences according to continuous versus intermittent schedules during functional analyses?

7. Assuming that staff attention was not the maintaining reinforcer for many participants' problem behavior, speculate as to why attention was, nevertheless, the most frequently observed consequence.

8. How might the authors have determined whether the results of the descriptive analyses identified consequences that were responsible for maintaining participants' problem behavior?

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