9-1-1993

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Published version. *Education and Training in Mental Retardation,* Vol. 28, No. 3, (September 1993): 257-261. Publisher Link.

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Abstract: The Milestone Reinforcer Survey was developed to assess reinforcer preferences of adults with mild to profound retardation living in a variety of community settings. The survey, which includes 42 items in three categories—primary, secondary, and self reinforcers, can be administered by all levels of staff in about ten minutes. Psychometric properties of the survey were established with 120 adults, 15 males and 15 females representing each level of retardation. The total reinforcer scores for the survey are internally consistent (r = .90), consistent across raters (r = .68) and stable over time (r = .93). The potential uses for this survey for research and practice are discussed.

Regulatory bodies, such as the Federal Health Care Financing Administration, require Intermediate Care Facilities for adults with mental retardation to develop Individual Habilitation Plans (IHP) for each resident, based on comprehensive functional assessments (Federal Register, 1989). Behavioral treatment programs represent a significant component of an IHP for many residents. Effective behavioral programs require, in part, accurate and current data regarding an individual's preferred reinforcers.

As one means of identifying a person's reinforcer preferences, reinforcement surveys were developed for use with adults (Cautela & Kastenbaum, 1967), school-aged children (Phillips, Fischer, & Singh, 1977), preschool children (Fox & Wise, 1981), children with special needs (Dewhurst & Cautela, 1980), children and adults with severe and profound mental retardation (Rotatori, Fox, & Switzky, 1979), and for children and adults with moderate to profound mental retardation (Bihm, Poindexter, Kienlen, & Smith, 1992). No similar survey is available for use with adults who function across the entire range of mental retardation, from mild to profound.

The primary purpose of this study was to develop a psychometrically sound reinforcer survey that: (1) was appropriate for use with adults with mild to profound retardation who reside in a variety of community living environments; (2) could be efficiently administered and scored by all levels of staff who work with this population; and (3) would provide an ongoing assessment of an individual's reinforcer preferences for use in developing behavioral programs.

The secondary purpose of this study was to determine whether individuals' preferences for reinforcers were related to their sex or level of retardation. Bihm, Poindexter, Kienlen, and Smith (1992) reported significant level of retardation effects for several classes of reinforcers (e.g., consumables, social) as well as significant sex effects. Our hypothesis was that individuals functioning in the severe to profound levels of mental retardation would have more restricted ranges of reinforcer preferences compared to persons with moderate to mild mental retardation. Based on the limited literature, we also hypothesized that females would be responsive to a greater range of reinforcers than males.

Method

Subjects

Subjects for this study were 120 adults from the midwest with 15 males and 15 females at each of the mild, moderate, severe, and profound levels of mental retardation. Level of retardation was determined using appropriate intellectual and adaptive measurement criteria (Grossman, 1983). Intelligence test scores were taken from the most recent psychological evaluation, which was updated

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every three years. Adaptive ages were taken from the most recent annual administration of the Scales of Independent Behavior (Bruininks, Woodcock, Weatherman, & Hill, 1984). A summary of subject characteristics is shown in Table 1. For the sample, the mean chronological age was 35.9 years (range = 18-68), the mean adaptive age was 5.9 years (range = 0.5–19), and the mean IQ was 39 (range = 9–79). An analysis of the sample's chronological age showed no significant differences between groups for level of retardation or sex; no interaction effects were found. Subjects were selected from an agency that provides a variety of living arrangements for its residents (e.g., Intermediate Care Facility; Community Integrated Living Arrangement). A total of 16 separate residences were represented.

Instrument

The Milestone Reinforcer Survey was developed for this study. Items for the survey were written to include three categories of reinforcers: primary (14 items), secondary (14 items), and self (14 items). Within each category, general items (e.g., fruits, games, unsupervised eating out) were included rather than specific items (e.g., eating an apple, playing checkers, going to a McDonald's restaurant) to provide greater flexibility and range of application. For each subcategory of reinforcers such as food, tangibles, and activities, an additional "Other Item" was included for raters to write the favorite reinforcer of a particular resident.

Survey items are rated by staff familiar with the resident using a simple three point scale with 0 = Doesn't Like/Not Applicable, 1 = Likes, and 2 = Likes A Lot. The Survey takes about 10 minutes to complete.

Separate reinforcer scores are derived for the Primary Reinforcer Score (range = 0 to 28), Secondary Reinforcer Score (range = 0 to 28), Self Reinforcer Score (range = 0 to 28), and Total Reinforcer Score (range = 0 to 84). Items designated as "other" were not included in the reinforcer scores.

Procedure

Raters were selected from staff members who had worked with a resident for at least six months. A total of 32 staff members participated in rating the reinforcer preferences for the 120 subjects. Staff positions included technician/aide, shift lead, home supervisor, and resident services coordinator/qualified mental retardation professional.

Interrater and test-retest reliabilities of the Survey were assessed for a subset of the original sample (n = 40) including five males and five females at each level of mental retardation. A second staff person completed the survey independent of the first rater for the interrater data. For the test-retest data, the same rater completed the Survey twice separated by a one to two week time interval.

TABLE 1

Means ($\bar{X}$) and Standard Deviations (SD) for Characteristics of Subjects Participating in Study

Level of Retardation	Sex	Chronological Age (yrs)		Adaptive Age (yrs)		IQ	
		$\bar{X}$	SD	$\bar{X}$	SD	$\bar{X}$	SD
Mild	Male	32.7	10.8	11.3	3.5	64.0	.3
	Female	33.7	11.8	7.6	3.4	60.4	7.4
Moderate	Male	35.0	8.2	7.0	1.5	46.1	12.5
	Female	33.5	10.0	5.9	2.3	43.9	5.7
Severe	Male	37.2	8.2	5.3	1.3	31.5	3.3
	Female	36.1	9.5	4.9	1.1	31.5	7.3
Profound	Male	35.8	10.8	2.8	2.4	17.1	3.7
	Female	42.8	11.3	2.6	0.4	18.4	1.7

TABLE 2

Correlations between the Milestone Reinforcer Survey's Primary, Secondary, Self, and Total Reinforcer Scores

	Primary Reinforcer Score	*Secondary Reinforcer Score*	*Self Reinforcer Score*
Secondary reinforcer score	.38		
Self reinforcer score	.05[a]	.53	
Total reinforcer score	.56	.87	.78

[a] $r = .05$ was not significant; all other correlations were significant at $p < .01$

Results

The psychometric properties of the Survey were determined first. Using coefficient alpha as a measure of internal consistency, the resulting values for the four Survey reinforcer scores were: primary = .83; secondary = .84; self = .83; and total = .90. Using Pearson's correlations, interrater and test-retest reliability coefficients for the primary reinforcer score, the secondary reinforcer score, the self reinforcer score, and the total reinforcer score were, respectively: primary = .33, .81; secondary = .69, .94; self = .86, .93; and total = .68, .93. Correlations among the four Survey scores are shown in Table 2.

Separate scores for the entire sample of 120 subjects were computed by summing the item ratings for the primary, secondary, and self reinforcer categories, and for the entire Survey. A summary of these scores by subject sex and level of retardation are shown in Table 3.

Primary, secondary, self, and total reinforcer scores were analyzed by separate 2 (sex) by 4 (level of retardation) analyses of variance. A significant sex effect [$F(1,112) = 4.2$, $p < .05$] and interaction effect [$F(3,112) = 3.8$, $p < .01$] were found for the primary reinforcer scores; no main effect for level of retardation was found. Females obtained higher primary reinforcer scores ($X = 20.6$) than males ($X = 19.0$). Contributing to the interaction effect were significant sex differences in the mild range (females = 20.3; males = 17.0) and in the severe range (females = 22.7; males = 18.1). A significant sex effect [$F(1,112) = 8.7$, $p < .004$] and level of retardation effect [$F(3,112) = 8.1$, $p < .001$] were found for the secondary reinforcer

TABLE 3

Milestone Reinforcement Survey Scores Including Means ($\bar{X}$) and Standard Deviations (*SD*) for Primary, Secondary, and Self Reinforcers, and for the Total Survey by Subjects' Sex and Level of Retardation

Level of Retardation	*Sex*	*Primary Reinforcers*		*Secondary Reinforcers*		*Self Reinforcers*		*Total Survey*	
		$\bar{X}$	*SD*	$\bar{X}$	*SD*	$\bar{X}$	*SD*	$\bar{X}$	*SD*
Mild	Male	17.0	3.4	13.7	5.6	12.3	4.9	43.0	12.3
	Female	20.3	4.2	19.8	5.8	13.6	7.2	53.7	12.7
Moderate	Male	19.1	4.4	17.8	5.4	10.6	6.5	47.5	13.8
	Female	20.3	4.0	20.3	4.7	9.6	7.0	50.1	12.1
Severe	Male	18.1	5.4	14.0	5.0	6.7	3.6	38.9	11.1
	Female	22.7	3.8	16.3	5.9	4.3	3.8	43.3	10.2
Profound	Male	21.5	4.0	12.4	4.8	1.9	2.3	35.8	8.4
	Female	19.1	4.9	12.8	4.3	1.3	1.3	33.1	7.2

scores; no interaction effect was found. Females obtained higher scores ($X = 17.3$) than males ($X = 14.5$). Scheffe's post hoc test indicated that the significant level effect was due to individuals with mild ($X = 16.8$) and moderate ($X = 19.0$) retardation having significantly higher secondary scores than those with profound retardation ($X = 12.6$). A significant effect for level of retardation was found for the self reinforcer scores [$F(3,112) = 30.2, p < .001$]; no main sex effect or interaction effect were found. Contributing to this significant level effect was the finding that persons with profound retardation had the lowest self reinforcer scores ($X = 1.6$) followed by persons with severe retardation ($X = 5.5$). Persons with moderate ($X = 10.1$) and mild retardation ($X = 12.9$) did not differ significantly from each other. A significant effect for level of retardation was found for the total survey score [$F(3,112) = 11.2, p < .001$]; no main sex effect or interaction effect were found. Scheffe's post hoc test indicated that the significant level effect was due to individuals with mild ($X = 48.3$) and moderate ($X = 48.8$) retardation having significantly higher total scores than those with profound retardation ($X = 34.5$). None of the other between group comparisons were significant.

Discussion

The Milestone Reinforcer Survey was found to be easy to understand, administer and score by staff at all levels, working with individuals with mild to profound retardation across a variety of living environments. The preliminary psychometric properties of the Milestone Reinforcer Survey are promising. The items are internally consistent and the reinforcer scores are stable over time. The test-retest reliability coefficient of .93 for the entire survey improves on that in other surveys (.67—Fox & Wise, 1981; .60—Phillips, Fischer, & Singh, 1977). The inter-rater reliability correlations (total score = .68; range = .33—primary reinforcer score to .84—secondary reinforcer score) were not as solid as the test-retest reliability. The relatively low correlation of .33 for the primary reinforcers may be due to the general nature of these items. For example, when rating the "Fruits/Vegetables" item on the primary reinforcer scale, one staff may be thinking about the clients preference for apples and another staff may be rating a client's preference towards string beans. Using such general categories of reinforcer items, while more efficient in terms of keeping the total number items at a reasonable number, also may reduce interrater reliabilities.

Validity of the Survey was partially established by its ability to distinguish between different levels of retardation. One would expect to find higher levels of retardation associated with higher scores on reinforcer categories that are developmentally more sophisticated (e.g., self reinforcers). For this Survey, persons with mild and moderate retardation had higher secondary, self and total reinforcer scores than individuals with profound retardation. Some evidence for maintaining the separate reinforcer scores was provided in Table 2. The low correlations found between the primary scores and the other reinforcer scores suggests that these items are measuring a unique preference that may otherwise be lost if only the total reinforcer score was used.

Considering a person's reinforcer scores is a novel approach in the reinforcement survey literature. Historically, an individual was rated on specific reinforcer items (e.g., apples, tennis). Test-retest reliability was then based on item correlations as opposed to category correlations (Dewhurst & Cautela, 1980).

Using reinforcer scores as opposed to item ratings allows potentially greater application of the reinforcer survey. For research, reinforcer scores could be used as independent variables to determine group membership (e.g., high self-reinforcer; low self-reinforcer). For clinical work, finding that a person has a preference for secondary versus primary reinforcers, should impact treatment decisions, regardless of a person's level of functioning. A person's reinforcer preferences may change over time. An annual administration of the Survey would alert staff to evolving reinforcer preferences of clients. Appropriate adjustments in reinforcer programs could be made in light of this changing

information. Also by including "other items" under each reinforcer category, specific reinforcer preferences of individuals could be identified and updated.

References

Bihm, E. M., Poindexter, A. R., Kienlen, T. L., & Smith, B. L. (1992). Staff perceptions of reinforcer responsiveness and aberrant behaviors in people with mental retardation. *Journal of Autism and Developmental Disorders, 22*, 83–93.

Bruininks, R. H., Woodcock, R. W., Weatherman, R. F., & Hill, B. K. (1984). *Scales of independent behavior*. Allen, TX: DLM Teaching Resources.

Cautela, J. R., & Kastenbaum, R. (1967). A reinforcement survey schedule for use in therapy, training, and research. *Psychological Reports, 20*, 1115–1130.

Dewhurst, D. L. T., & Cautela, J. R. (1980). A proposed reinforcement survey schedule for special needs children. *Journal of Behavior Therapy & Experimental Psychiatry, 11*, 109–112.

Federal Health Care Financing Administration. (1989). Interpretive guidelines for intermediate care facilities for the mentally retarded or persons with related conditions. *Federal Register, 54 (No. 21)*.

Fox, R., & Wise, P. S. (1981). Infant and preschool survey. *Psychology in the Schools, 18*, 87–92.

Grossman, H. J. (1983). *Classification in mental retardation*. Washington, D.C.: American Association on Mental Deficiency.

Phillips, D., Fischer, S. C., & Singh, R. (1977). A children's reinforcement survey schedule. *Journal of Behavior Therapy & Experimental Psychiatry, 8*, 131–134.

Rotatori, A. F., Fox, B., & Switzky, H. (1979). An indirect technique for establishing preferences for categories of reinforcement for severely and profoundly retarded individuals. *Perceptual and Motor Skills, 48*, 1307–1313.

Received: 26 August 1992
Initial Acceptance: 20 October 1992
Final Acceptance: 2 December 1992