

Effects of Leisure Education on Self-Determination, Social Interaction, and Positive Affect of Young Adults With Mental Retardation

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A single-subject, multiple baseline across participants design was used to investigate the effects of a leisure education program on the self-determination, social interaction, and positive affect (the dependent variables) during the free time of a group of young adults with mental retardation. Participants were four adults with mental retardation who worked at a vocational training center in a small town located in the Southeastern United States. Results of the effects of a leisure education intervention were mixed. While participants had higher levels of positive affect at follow-up than during baseline, it appears that the leisure education program had little impact on the other dependent variables. Design considerations and issues related to leisure education are discussed.

KEY WORDS: *Leisure Education, Mental Retardation, Single Subject Research, Therapeutic Recreation, Self-Determination, Social Interaction, Positive Affect*

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Typically, people with mental retardation have an abundance of free time (Dattilo, 1991) without the knowledge and skills needed for them to take control over their leisure participation (Sands & Kozleski, 1994). Similar to findings by Sands and Kozleski (1994), Hoge and Dattilo (1995) reported that people with mental retardation engage in leisure-related activities less often than people without mental retardation. People with mental retardation often lack the skills important for social interaction and self-determination (Dattilo & Schleien, 1994, Wehmeyer & Metzler, 1995). The profession of therapeutic recreation is committed to helping people with disabilities develop and maintain an appropriate leisure lifestyle (National Therapeutic Recreation Society, 1993). Leisure education, an integral part of therapeutic recreation, offers potential solutions to the challenges faced by people with mental retardation (Dattilo & Schleien, 1994).

The effects of leisure services have been measured in various ways. Three behavioral measures that have been used include: (a) positive affect, which is considered an indicator of fun or enjoyment (Kleiber, Larson, & Csikszentmihalyi, 1986), (b) choice-making, which reflects the ability to be self-determined (Wehmeyer, 1994), and (c) social interaction, which plays an important role in the inclusion of people into community leisure services (Dattilo, 1994).

People with cognitive impairments are not likely to be self-determined during their free time (Kishi, Teelucksingh, Zollers, Park-Lee, & Meyer, 1988; Wehmeyer & Metzler, 1995); however, there is evidence that people with cognitive impairments can learn to make choices (Nietupski et al., 1986) and decisions (Mahon & Bullock, 1992; Mahon, 1994). Choice-making is critical to self-determination in leisure (Searle, Mahon, Iso-Ahola, Sdrolas, & van Dyck, 1995), and there are several examples of interventions enhancing self-determination for people with cognitive impairments which have focused

on choice-making. Results of such programs include increased initiations of leisure activities (e.g., Nietupski et al., 1986), increased feelings of control in leisure (e.g., Searle et al., 1995), and increased independence in leisure (e.g., Gaudet & Dattilo, 1994).

Researchers have examined the effectiveness of interventions on the acquisition of social skills relevant to leisure participation. For example, Foxx, McMorrow, Bittle, and Ness (1986) successfully taught social skills to a group of adults with mild mental retardation. In a follow-up study, Foxx and Faw (1992) determined that in the eight years since the original study, many social skills of participants had been maintained or had improved. In another example, Langone, Clees, Oxford, Malone, and Ross (1995) found that the skills learned during a social skills training program generalized across different social contexts.

While rare in the leisure education literature, studies have used positive affect as an indication of fun or enjoyment. Affective responses have been used in studies with children during play (e.g., Bullock & Lutkenhaus, 1988; Dattilo & Barnett, 1985; Kopp, Baker, & Brown, 1992), with adolescents during leisure (Dattilo & Hoge, in press; Kleiber, Larson, & Csikszentmihalyi, 1986), and with adults during discretionary time (Voelkl & Mathieu, 1993).

Despite many different vocational training programs, there are few programs that offer training in the use of free time for people with mental retardation (Dattilo & St. Peter, 1991). According to Dattilo and St. Peter, while it may be important to teach people with mental retardation skills needed for success in employment, it is also important to teach people how to experience leisure. Leisure education can impart the awareness, skills, and attitudes needed to allow an increase in the quality of day-to-day leisure expression (Peterson & Gunn, 1984).

In response to the need for additional leisure education materials for people with

mental retardation, a leisure education curriculum, based on the model presented by Dattilo and colleagues (Dattilo & Murphy, 1991; Dattilo & St. Peter, 1991) and evaluated by Dattilo and Hoge (in press), was developed as one component of a field-initiated research grant titled "Transition through Recreation and Integration for Life" (Project TRAIL). The purpose of this study was to determine the effects of a modified version of Project TRAIL, which included an eight week leisure education program. The program was designed to increase choice-making, social interaction, and positive affect during the free time of a group of young adults with mental retardation.

Methods

Participants

Four young adults (two women) ranging in age from 20–27 who were diagnosed with either mild or moderate mental retardation participated in the study. Participants were employed at a vocational training center during the study and were not involved previously in a leisure education program. Aliases are used for all participants to maintain confidentiality.

Sam was a 25-year-old man who lacked some academic skills such as reading, arithmetic, and telling time. Although the center had no record of an intelligence test, Sam was diagnosed as mentally retarded during elementary school. He did not graduate from high school, and he lived with his mother, siblings, and extended family in the home where he was raised.

Jane was a 27 year old woman who had "limited vision" and lacked full use of her right arm and hand due to a brain injury. Jane could see objects when she held them close to her face. She had a basic mastery of reading, spelling, and arithmetic. Jane was enrolled in special education and graduated from high school. Jane's IQ was reported to be 60 on the Stanford Binet Intelligence Scale (Thorndike, Hagen & Sattler, 1986).

Although Jane lived alone in an apartment, she was engaged to be married to a man who lived and worked in a neighboring city and who visited her most weekends.

Tracy was a 24 year old woman with partial hearing loss in both ears which was largely corrected with hearing aids. Tracy could read and write some words and add and subtract small numbers. Tracy had attended special education classes and graduated from high school. Tracy scored "less than 60" on the Revised Beta Examination (Kellogg & Morton, 1963). Tracy lived with her parents and one sister in the home where she was raised.

Shane was a 20 year old man. Although he had a partial visual impairment, he could see objects when he held them close to his face. Shane had a basic mastery of reading and arithmetic. His IQ was estimated to be 61 on the Wechsler Intelligence Scale Children-Revised (Wechsler, 1974). He lived with a roommate in an apartment, and he spent most weekends with his parents at their rural home.

Setting and Equipment

The study was conducted in a non-profit, non-residential vocational training center located in a moderately sized town in the southeast United States. The leisure education intervention and the recreation period were conducted in a large conference room at the center. During leisure education, participants were seated around a rectangular conference table. During recreation participants moved about the room freely.

The conference room contained a large rectangular conference table, a small table, chairs, a chalk board, storage cabinets, a radio, a television, and a video cassette recorder. Additional resources available during the recreation period included playing cards, board games, art supplies, puzzles, and video games. Participants were encouraged to bring in equipment to use during the recreation period.

Experimental Design

The study was conducted using a single subject, multiple baseline design across four participants which contained three phases: (a) baseline, (b) leisure education intervention, and (c) follow-up. In the multiple baseline across participants design, the start of the intervention is staggered to demonstrate any effect of the intervention while helping control for threats to internal validity (Kazdin, 1982; Tawney & Gast, 1984). Follow-up probes were taken up to four weeks after the final participant completed the intervention. Due to the staggered nature of the design, the number of baseline observations per participant varied from 16 to 29, and the number of follow-up observations varied from three to eight.

Independent Variable

The leisure education program employed in this study was a modified version of the TRAIL Leisure Education Curriculum (Dattilo & Bemisderfer, 1996) that contained specific units of instruction on leisure appreciation, self-determination, and social interaction. These three units were chosen to encourage participants to increase their self-determination, social interactions, and positive affect. The curriculum consisted of 24 lessons that were taught three times per week for eight weeks. Of the 24 lessons, six were devoted to leisure appreciation and nine lessons each were devoted to social interaction and self-determination.

Each unit contained several learning objectives and specific performance measures (Peterson & Gunn, 1984). The performance measures were designed to assess achievement of the respective objectives. According to Peterson and Gunn (1984), a performance measure is "a statement of the exact behavior" (p. 101) indicating that an objective has been met. There was at least one lesson designed to teach participants the necessary skills to achieve each objective. As suggested by Dattilo and Murphy (1991), each

lesson contained at least one of each of the following: an orientation activity, an introduction, a presentation of information, a learning activity, a debriefing, and a conclusion. The investigator was the teacher of the leisure education program. One graduate student who was familiar with the TRAIL leisure education curriculum and the principles of leisure education acted as the teacher assistant during certain portions of the intervention.

Dependent Variables

Choice-making. Wehmeyer (1992) defined self-determination as the condition of being "the primary causal agent" (p. 4) in making decisions, free from extraordinary external influence. Therefore, the condition of self-determination occurs when people take control of the freedom they have. For the purposes of data collection in this study, choices were used as an indication of self-determination. A choice was identified as a discrete act by the participant without prompting from another person and was socially responsible (e.g., did not harm self or others). A choice involved independently selecting from among a limited set of options presented by a situation (e.g., choosing a particular magazine from a rack of magazines).

Social Interaction. Blank and Franklin (1980) defined social interaction as conversations with another person consisting of at least one communicative turn. For the purposes of data collection in this study, social interactions consisted of both social initiations and responses. A social initiation was reported when at least one of the following criteria was met when a participant: (a) faced and spoke to a person with whom no conversation had preceded for at least 3 seconds, (b) addressed a person by name or a second person pronoun (e.g., you) while not facing that person when no conversation had preceded with that person within three seconds, or (c) asked a question of another person either facing the other person or using their name or a second person pronoun when no

conversation had immediately preceded with that person within three seconds. Responses were reported when a participant spoke to a person who had initiated a conversation within three seconds and addressed the topic introduced by the original speaker. Conversational boundaries were marked by a pause that exceeded three seconds or a change in conversation participants (Dattilo & Light, 1993).

Positive Affect. In this study, positive affect was considered to be a physical manifestation of fun or enjoyment. Positive affect was measured by the frequency of occurrence of smiles and positive vocalizations. Smiles were indicated by the opening of the mouth accompanied by an upward turn in the corners of the mouth (Beebe & Gerstman, 1980). Positive vocalizations were giggles, laughs, chuckles, and squeals (Dattilo & Barnett, 1985).

Experimental Procedures

A recreation period occurred three times per week for one hour throughout the study. All behavioral observations occurred during this recreation period. Although leisure materials (e.g., playing cards, art supplies) were available during the recreation period, no facilitation by the investigator occurred. With the exception of occasional absences, participants attended each recreation period.

Baseline. Tawney and Gast (1984) advised waiting to start an intervention until stability is reached. Stability was defined as a "zero celerating" trend in graphed data over the course of at least three observations (Tawney & Gast, 1984). Baseline lasted until no consistent patterns could be determined in the dependent measures for each participant with a minimum of six behavioral observations. The split middle method (Tawney & Gast, 1984) was used to help determine data trends. The split middle method involves dividing charted data points within treatment conditions into halves, determining the mode score for each half, and plotting a line between the two modal points (Tawney &

Gast, 1984). The line is examined for slope as an indication of trend.

Intervention. During the intervention phase, leisure education sessions were held three times per week for one hour immediately after the recreation period. Since participants began the leisure education program one-at-a-time, the number of participants attending the program at any time varied from one to four. Once participants began the program, they remained in the program until they completed all sessions. Once all sessions were completed and the first participant ended the intervention, the initial sessions were repeated so that each participant received each lesson once.

Follow-up. The first three participants to complete the intervention continued to attend recreation periods until the fourth participant completed the intervention. During this time observational probes were taken to monitor the three participants' behaviors. Once the fourth participant completed the leisure education program, observational probes were taken two and four weeks later for all participants.

Data Collection

A recreation period occurred throughout the study to provide an opportunity to conduct behavioral observations of the frequency of choices related to leisure expression, social interaction, and positive affect. The recreation period was open to participants and to a limited number of other employees from the vocational training center who were not otherwise involved in the study. The number of adults, other than participants, who attended the recreation periods averaged slightly more than two per session. A total of 15 different adults who did not attend the leisure education program attended the recreation period. Secondary data collection procedures included pre- and post-test assessment of performance measures from the leisure education program, initial and follow-up open-ended interviews, and a social validity questionnaire.

Videotaping Procedures. Each participant was videotaped in a random order for at least one six-minute segment during each recreation period. The video camera was aimed at the head and upper torso of a designated participant. If at any time the participant being videotaped moved out of range of the camera for more than 10 seconds, the camera was stopped, and the session was restarted because if participants were out of camera range for more than 10 seconds, target behaviors might be missed.

Observer Training and Agreement. The primary and secondary observers were trained to recognize choices, social interactions, and positive affect using criteria established by the investigator. Both observers were required to achieve 90% agreement with the principal investigator's criteria to begin recording data.

The primary observer recorded data by the point-by-point method described by Tawney and Gast (1984). For 33% of the videotapes, a secondary observer independently recorded data which were compared to the primary observer's data for the purposes of interobserver reliability. The formula for calculating agreement was: $[\text{Agreements}/(\text{Agreements} + \text{Disagreements})] \times 100 = \text{Percent of Agreement}$ (Tawney & Gast, 1984). Inter-observer agreement for all participants across all dependent measures was $M = 98\%$.

Performance Measures. Performance measures from each leisure education lesson were administered before and after the intervention and were designed to test a person's knowledge of the leisure education curriculum's content. As such, each performance measure was a question derived from a leisure education lesson. For example:

Given a verbal prompt, within one minute, participant will correctly identify one reason why it might be bad to exhibit aggressive behaviors. Possible answers: (a) you might hurt someone's feelings, (b) you might make

someone angry, and (c) it can be rude behavior.

No reliability or validity data were obtained for the performance measures.

Interviews. Interviews were conducted with participants during baseline and follow-up and consisted of five open-ended questions that addressed self-determination, social interaction, and appreciation of leisure. The questions were designed broadly enough to allow participants wide-ranging responses, and interviewers were encouraged to pursue participants' comments with follow-up questions. The interviews were conducted, tape recorded, and transcribed by trained graduate students majoring in recreation and leisure studies. The following five questions were used to encourage conversation in each interview: (a) "When do you feel like you are 'in charge' of what you do?"; (b) "When do you feel like someone else is 'in charge' of what you do?"; (c) "What makes your free time the most fun?"; (d) "What makes free time no fun?"; and (e) "Do you ever have fun at any times other than during your free time?". No reliability or validity data were obtained for the interview questions.

Social Validity Questionnaire. Two weeks after the last participants finished the intervention, social validity questionnaires were administered in person or on the phone to associates and family members of participants. The questionnaire consisted of five items with Likert-type responses scored with one as the lowest possible response and five as the highest. To limit experimenter bias, a staff member of the vocational training center administered the questionnaires.

Data Analysis

Each behavior was plotted on separate graphs (See Figures 1-3). Visual inspection of graphed data was used to determine differences in behavior within and across the three phases (Tawney & Gast, 1984). Visual in-

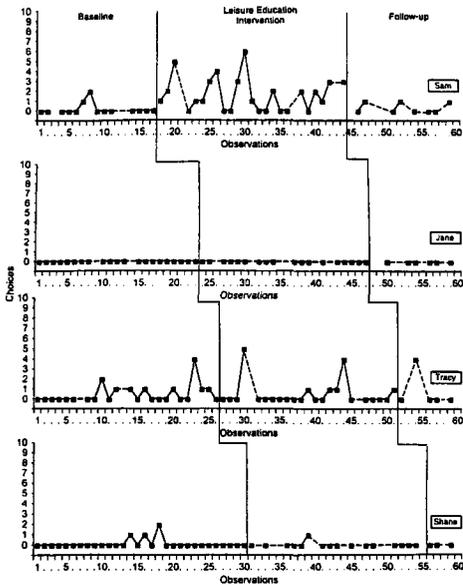


FIGURE 1. FREQUENCY OF CHOICES ACROSS PARTICIPANTS.

spection of graphed data helped determine levels, trends, and changes of levels and trends within and between phases (Dattilo, Gast, & Schleien, 1993). Behavioral measures taken during the follow-up phase of the study helped determine if behavior changes were maintained.

While behavioral observation was the primary source for data, other sources were used (e.g., interviews, performance measures). Data from the interviews were analyzed to identify emerging themes. Pre- and post-test performance measures were scored and compared on the basis of percent of correct responses.

Results

Choice-Making

The first research question asked what effect leisure education had on choice-making during free time of young adults with mental retardation. The frequency of choices related

to leisure expression was used to indicate self-determination. Frequency was determined by the number of choices related to leisure expression made during randomly chosen six-minute segments of the recreation periods.

Behavioral Observations. As seen in Figure 1, very few choices were made. Sam's frequency of choices increased from baseline to intervention, but then returned to baseline levels during follow-up. This pattern was not replicated across other participants. Jane was not observed making a choice during any sessions, and Tracy's and Shane's level of choices were similar across conditions.

Performance Measures. As seen in Table 1, while Tracy and Shane correctly answered more items during the post-test than pre-test, Sam correctly answered fewer items and Jane correctly answered all items during pre- and post-testing. Participants correctly answered an average of 5% more performance

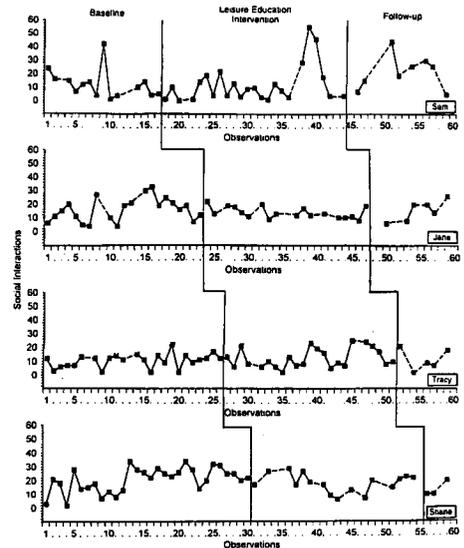


FIGURE 2. FREQUENCY OF SOCIAL INTERACTIONS ACROSS PARTICIPANTS.

measure items related to self-determination at post-testing.

Interviews. In initial and follow-up interviews, participants did not strongly equate feelings of self-determination with their free time. For instance, Sam identified work-related activities (e.g., raking, taking out trash) to feeling self-determined, and Shane initially said he never felt self-determined. When the interviewer asked Shane if he ever felt "in charge" during free time, Shane said, "I don't ever feel like that." During the follow-up interview, the same themes emerged but participants appeared to have a deeper understanding of self-determination than during the initial interview. For example, Sam continued to equate work-related activities with self-determination. He listed some typically leisure-related activities (e.g., driving a car, playing with his neighbors) as things that made him feel self-determined.

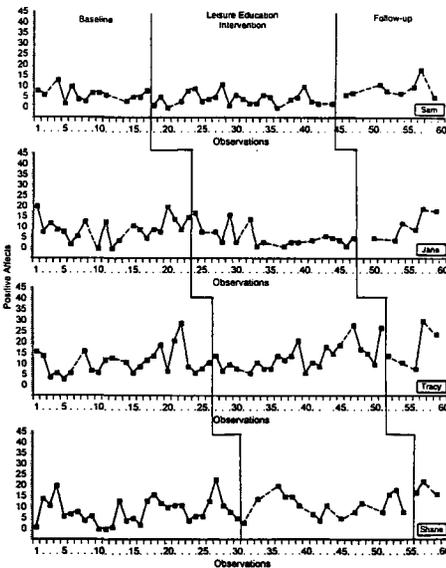


FIGURE 3. FREQUENCY OF BEHAVIORS ASSOCIATED WITH POSITIVE AFFECT ACROSS PARTICIPANTS.

Table 1.
Performance Measure Scores

Participant	Pre-test	Self-determination	
		Post-test	% Change
Sam	60%	0%	-60%
Jane	100%	100%	-0-
Tracy	0%	60%	+60%
Shane	80%	100%	+20%

Participant	Pre-test	Social Interaction	
		Post-test	% Change
Sam	0%	75%	+75%
Jane	75%	100%	+25%
Tracy	25%	50%	+25%
Shane	50%	100%	+50%

Participant	Pre-test	Leisure Appreciation	
		Post-test	% Change
Sam	40%	60%	+20%
Jane	80%	80%	-0-
Tracy	20%	40%	+20%
Shane	40%	80%	+40%

Social Interaction

The second research question asked what effect leisure education had on social interactions during free time of young adults with mental retardation. For each participant, social initiations and responses to social initiations were included as social interactions. Of the social initiations, 21% were directed toward adults who did not attend the leisure education program. Responses to social initiation were 10% of the total social interac-

tions. Frequency was determined by the number of social interactions made during randomly chosen six-minute segments of the recreation periods.

Behavioral Observations. As seen in Figure 2, although Sam's frequency of social interactions remained nearly constant during baseline and intervention, his frequency increased substantially during follow-up. The frequencies of social interactions for Jane, Tracy, and Shane remained nearly constant across phases and, at times, even decreased during and after the leisure education program.

Performance Measures. All participants correctly answered more items during post-testing than they had during pre-testing. Participants correctly answered an average of 44% more of the performance measure items at post-testing than at pre-testing.

Interviews. In the initial interview, friends and social interaction appeared important to the participants. Three participants stated that their free time was the most fun when they were with other people, while the fourth participant did not mention spending free time with others. The importance of friends and social interaction was discussed in the follow-up interview by all participants. Statements like, "Well, my free time to me is making new friends" indicated the importance of friends and social interaction to the free time of participants.

Positive Affect

The third research question asked what effect leisure education had on positive affect during free time of young adults with mental retardation. For each participant, the frequency of smiles and positive vocalizations during randomly chosen six-minute segments of the recreation periods were combined to produce a frequency of behaviors related to positive affect.

Behavioral Observations. As seen in Figure 3, frequency of positive affect were mixed with Sam and Jane showing lower mean scores during the intervention while Tracy and Shane showed higher scores dur-

ing the intervention. Although the incidence of positive affect was different during the intervention, for all participants the frequency of behaviors during follow-up was consistently higher than baseline and intervention.

Performance Measures. Sam, Tracy, and Shane correctly answered more items during post-testing than pre-testing, and Jane answered the same number of items correctly during both. Participants correctly answered an average of 20% more items at post-testing than at pre-testing.

Interviews. While some participants seemed confused during the initial interview as to what was meant by "free time," they all identified things that made their free time fun. While Sam identified activities, Jane and Shane identified other people as important to their enjoyment during free time. In her follow-up interview, Tracy identified friends as being important to her enjoyment of free time.

Social Validity

The staff member from the vocational training center administered social validity questionnaires to a person from each participant's home (e.g., parent, significant other) except for Sam and to one person from work (e.g., supervisor, counselor). As seen in Table 2, the overall high responses (4 = average score, 5 = highest) indicated that respondents supported the leisure education program.

Discussion

Results indicate that participation in an eight-week leisure education program may increase positive affect during the free time of young adults with mental retardation, although effects may not occur immediately. In addition, the four young adults with mild or moderate mental retardation learned information contained in a leisure education program. However, after participation in a leisure education program, the frequency of participants' choices and social interactions during free time did not increase.

Table 2.
Social Validity Questionnaire Responses

Question	Mean Response Score
1. How important is it for people to learn about recreation, leisure, and free time? (1) "Not Important," (2) "Little," (3) "Somewhat," (4) "Important," (5) "Very Important"	5.0
2. How strongly do you believe that people can be taught skills that can help them enjoy free time more? (1) "Not Strongly at all," (2) "Mildly," (3) "Moderately," (4) "Strongly," (5) "Very Strongly"	4.25
3. How strongly do you believe that people can be taught to make decisions and choices about free time? (1) "Not Strongly at all," (2) "Mildly," (3) "Moderately," (4) "Strongly," (5) "Very Strongly"	5.0
4. How strongly do you believe that people might enjoy their free time more after they learn social skills and choice skills? (1) "Not Strongly at all," (2) "Mildly," (3) "Moderately," (4) "Strongly," (5) "Very Strongly"	4.75
5. How much do you think vocational training centers should teach people about recreation and leisure? (1) "Not At All," (2) "Little," (3) "Some," (4) "A Lot," (5) "Very Much"	4.00

The literature contains examples of increased choices associated with increased positive affect (Dattilo & Barnett, 1985) and more satisfying leisure lifestyles (Mahon & Bullock, 1992). In addition, researchers have reported that social interaction is important to the leisure expression of people with mental retardation (Cheseldine & Jeffree, 1981; Malik, 1990). Although there was some evidence that for participants in this study, positive affect during free time increased after the completion of the leisure education program, neither self-determination nor social interaction increased. Possible explanations for

these results and insights gained while conducting the study are presented below.

One of the a priori assumptions of the study was that participants would have the same deficits in skills associated with the dependent measures that is typical of many people with mental retardation. Although it appears that the participants had some room for improvement, the baseline data collected on the dependent measures show reasonably high frequencies.

Choice-Making

Several studies (Dattilo & Rusch, 1985; Mahon & Bullock, 1992; Searle et al., 1995)

have focused on choice-making interventions and were more successful in promoting choice-making than this study. The leisure education program in this study was broader in its focus, encompassing many different elements.

Choices were used as an indication of self-determination in this study. The leisure education program had no apparent effect on the number of choices made during the free time of the participants, and the number of choices made by participants was low in comparison to other target behaviors. While no participant made many choices, Jane was never observed making a choice. These results are consistent with Kishi et al.'s (1988) observation that people with mental retardation make significantly fewer decisions than people without mental retardation. Other researchers found that people with mental retardation can learn skills needed to become self-determined but may need help knowing when to use the skills (Mahon & Bullock, 1992).

The low number of choices may be due in part to the degree to which participants were involved in activities during the recreation period. Participants rarely did nothing during the recreation period. Often they chose one activity and continued with that activity until the period ended. Perhaps frequency of choices made during a recreation period is not indicative of participants' choice-making abilities. If a participant made a satisfying choice, other choices may not have been desired.

Social Interactions

The leisure education program did not influence consistently participants' social interactions. Only Sam increased social interactions from baseline to intervention to follow-up. Similarly, Anderson and Allen (1985) found that a leisure education program did not lead to increased social interactions. It may be that some leisure education programs are ineffective in increasing social interactions, perhaps due to a lack of support

from other environments in which the participants live. Foxx, McMorrow, Bittle, and Ness (1986) concluded that social skills training may be futile without reinforcement from others in the environment because social behaviors may be contingent on situational and social factors. In the present study no attempt was made to include community-based instruction for the participants, nor were families contacted for support.

It may be difficult to accurately measure improvements in social interaction by frequency of initiations and responses. For some individuals, talking excessively is a problem, and for these individuals, their communication skills would improve if they spoke less rather than more. Anderson and Allen (1985) used increases in frequency and duration of social interaction as an indication of improved social skills, and, similar to this study, they concluded that participants' social skills did not improve. It may be helpful to develop methods designed to measure quality rather than quantity of social interactions.

Positive Affect

While two participants demonstrated slightly lower levels of positive affect during the intervention than during baseline, the levels of positive affect of all participants were higher during the follow-up probes than during baseline. It is not clear why there were more smiles and positive vocalizations during follow-up than during intervention. Perhaps, the time that elapsed between the end of intervention and the start of follow-up gave participants time to assimilate some information and a chance to apply newly acquired knowledge and skills. When participants used social skills from their social skills training program more at 15-week follow-up than during the intervention, Foxx, McMorrow, Bittle, and Ness (1986) theorized that the time between the intervention and follow-up gave participants a chance to practice and be rewarded for the skills. An alternative explanation is that participants

were in particularly good spirits during follow-up probes.

It may be that positive affect is not an accurate indication of fun or enjoyment. According to Dattilo and Kleiber (1993), enjoyment involves intrinsically motivated attention and actions and may or may not involve smiling and laughing. When people enjoy an activity, typically they become deeply involved in the activity and lose track of both time and themselves (Dattilo & Kleiber, 1993). Measurement of smiling and laughing rather than other behaviors may not have detected changes with enjoyment.

Skill Acquisition

Participants' performance measure scores increased from pre- to post-test. While Sam and Tracy answered only 43% and 50% of the performance measures correctly during post-testing, both showed an increase over pre-testing. Both Jane and Shane answered 93% of the performance measures correctly during post-testing, showing an increase over pre-testing. Similarly, Nietupski et al. (1986) found that individuals with mental retardation could learn the skills needed to initiate and sustain leisure involvement.

Interviews

Three participants discussed their leisure lifestyles in open-ended interviews. The ability to gain insights into the perceptions of participants in this study supports findings of Sigelman and colleagues (1983), Dattilo and Hoge (in press), and Dattilo, Hoge, and Malley (1996) that people with mental retardation can provide useful data when responding to open-ended interview questions.

Social Validity

People completing social validity questionnaires indicated support for leisure education and for participants learning skills associated with self-determination and social interaction. Bedini, Bullock and Driscoll (1993) attributed the lack of success of a

leisure education program in part to teachers and care givers who did not support the goals of leisure education. Similarly, Henderson (1994) reported that classroom instruction alone is not sufficient to cause "short-term changes in behavior" (p. 144), and reinforcement by people in the lives of the participants is critical.

The social validity questionnaire used in the present investigation was designed to broadly measure perceptions of leisure education. Since single-subject designs examine specific effects of interventions on individuals, it may be valuable to design instruments that add to the understanding of social validity of an intervention for each participant.

Overall Limitations

There was no attempt to relate the concepts taught during leisure education to behavior occurring during the recreation period. The absence of systematic instruction to encourage generalization of skills acquired in the classroom to other contexts may have reduced the effectiveness of leisure education. Nietupski et al. (1986) demonstrated that people with mental retardation can become independent in choice-making with gradually declining assistance. In addition, Mahon (1994) found that most participants needed occasional prompts to use skills related to self-determination that they had learned in leisure education. This type of help in transferring knowledge from the classroom to other situations would have been valuable in this study. Dattilo and colleagues (Dattilo & Murphy, 1991; Dattilo & St. Peter, 1991) proposed and Dattilo and Hoge (in press) documented the use of leisure coaches who help individuals practice skills learned in the classroom in leisure contexts within their communities.

The dependent measures may have been too complex for the data collection method employed. While observations determined frequency and duration, subtleties were lost. A smile can carry different meanings, only one of which relates to fun or enjoyment.

Social interactions can result in unpleasant experiences, yet both pleasant and unpleasant interactions were recorded as if they were the same.

While a plan was established to contact many different people in the lives of the participants to assess social validity, two questionnaires were completed for three participants, and only one questionnaire was completed for one participant. As a result, work and home environments are the only environments represented by the questionnaires. The difficulty finding people willing to respond to the questionnaire may indicate small social spheres of the participants and, perhaps, a lack of understanding of leisure education in those social spheres.

The leisure education lessons were offered in a different order for each participant. One sequence may have been more effective than others. Each participant experienced slightly different teacher-to-student ratios of between 1:1 to 1:2.5. Learning concepts related to leisure in a one-to-one environment may have influenced knowledge and skill acquisition. Since the extraneous variables of lesson sequence and teacher-to-student ratio were not held constant, the influence of these variables is not clear.

Conclusions

The purpose of this study was to determine the effect of leisure education on self-determination, social interaction, and positive affect during the free time of four young adults with mental retardation. While participants did not appear to increase the frequency with which they made choices or socially interacted, consistent with findings by Hoge and Dattilo (in press), frequency of smiles and positive vocalizations observed during follow-up probes were higher than baseline. Leisure education appeared to have some value in enhancing the free time of these young adults with mental retardation.

To better facilitate self-determination and social interaction, the use of supports such as leisure coaches who can work in the com-

munities and homes of people with mental retardation may be useful. Leisure coaches could reinforce principles of leisure education in the community that extend beyond the classroom. Incorporating family and friends of people with mental retardation may be helpful.

Since young adults with mental retardation experience extreme constraints to their leisure expression (Dattilo & Schleien, 1995), leisure education can be designed to ameliorate these constraints. Although leisure education programs have been successful in improving the leisure of people with mental retardation (e.g., Bedini, Bullock, & Driscoll, 1993; Dattilo & Hoge, in press; Lanagan & Dattilo, 1984; Mahon, 1994; Mahon & Bullock, 1992; Nietupski et al., 1986), it appears that classroom instruction alone may not be sufficient. It may be useful to examine not only the content of leisure education programs but the ways in which these programs are offered.

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