

**Conceptual paper**

# **Teaching Problem Solving to Promote Self-Determined Leisure Engagement**

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## **Abstract**

The purpose of this paper is to present a review of the literature that results in a description of a particular problem-solving strategy that uses multiple examples to teach people with disabilities to make choices associated with their leisure involvement and solve related problems. To achieve this purpose the paper begins with a description of the importance of empowering people who receive therapeutic recreation services to be self-determined and continues with the current challenges of practitioners to help them develop a sense of competence, relatedness, and autonomy. A rationale is provided to start early in people's lives to teach them to make leisure choices and solve problems that might arise when participating in these chosen activities. In addition, there is a need to develop interventions that empower participants, include families, and are likely to be implemented by practitioners. A particular approach to solve problems associated with leisure choices is based on using multiple examples of problem situations as one way to promote self-determined behavior. The approach was selected because of preliminary support for this technique to help individuals generalize problem solving to various situations, thus encouraging self-determination. The paper concludes with a call for therapeutic recreation service delivery and research on the effects of such an intervention.

**Keywords:** *Problem solving, disability, therapeutic recreation, self-determination, leisure choices*

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Self-determination theory (Deci & Ryan, 1985; Ryan & Deci, 2000) has been the foundation for a variety of educational interventions and randomized clinical trials (e.g., Ryan & Deci, 2007; Ryan, Patrick, Deci, & Williams, 2008) and is central to the delivery of leisure services and, more specifically, to therapeutic recreation (Dattilo, Kleiber, & Williams, 1998). Self-determination theory hypothesizes that new behaviors acquired by individuals via interventions that are self-empowering are more likely to be internalized and maintained when compared to those behaviors acquired with interventions that are externally conceived, introduced, and monitored (Ryan, Lynch, Vansteenkiste, & Deci, 2011).

An important skill that promotes the ability to be self-determined is problem solving. As individuals learn to make leisure choices and subsequently solve associated problems, they are then more likely to learn and apply new strategies to opportunities that are unique and represent challenging situations (Markland, Ryan, Tobin, & Rollnick, 2005). If people solve problems that prevent leisure participation, they create a reinforcing context for making choices since they will ultimately experience meaning and enjoyment associated with the leisure experience.

Researchers have linked the absence of choice-making and problem-solving skills (e.g., self-instruction, self-management, self-direction) to people with disabilities who trail their peers without disabilities in achieving community independence, becoming more socially connected over time, and developing skills to adapt to new settings such as those contexts that tend to promote leisure involvement

(e.g., fitness facilities, martial arts studios, performing arts venues) (e.g., Gumpel, Tappe, & Araki, 2000; Storey, 2002; Wehmeyer & Field, 2007; Wiener, 2004). Unfortunately, despite legislation focused on empowering people with disabilities (e.g., The Americans with Disabilities Act, Public Law 101-336), no significant gains are apparent in employment rates, leisure participation, and social adjustment among people with disabilities (Rusch, Dattilo, Stodden, & Plotner, in press). Many of these people do not possess the skills required to use strategies that promote making healthy choices, adapting to new challenges, and solving problems related to those challenges (Wehmeyer et al., 2012).

Given this lack of autonomy and competence by people with disabilities, we continue to miss the mark in meeting expectations of many people to participate in community life and to experience leisure within their communities. According to Wehmeyer, Agran, and Hughes (1998), a major reason for the inability to meet expectations for people with disabilities is that our service delivery systems do not prepare them to become self-determined. According to Wehmeyer et al., people with disabilities do not identify what they want to do in the community for their leisure, and they fail to determine how to achieve these goals.

Current practices must be called into question as many individuals who receive therapeutic recreation services often have limited knowledge and skills about how to experience leisure that brings meaning and enjoyment into their lives (Dattilo, 2012). Smith, Polloway, Smith, and Patton (2007) concluded that there is a need to teach

self-determination to individuals with disabilities. To help meet this need, a review of the literature and a description of a particular problem-solving strategy that uses multiple examples to teach people to make choices associated with their leisure involvement and solve associated problems is presented here.

### **Start as Early as Possible**

Evidence points to the importance of children and youth with disabilities being meaningful participants in their life planning (Carter, Lane, Pierson, & Stang, 2008; Field, Martin, Miller, Ward, & Wehmeyer, 1998). Hughes and Carter (2000) provided support for the need to ensure that all people achieve relevant and meaningful social and behavioral outcomes in school, work, community, and leisure contexts, suggesting a commitment must be made to enable these young people to become self-determined. There is evidence to support the contention that instruction promoting independent choice making and problem solving has a positive impact on post-high school outcomes (Wehmeyer et al., 2007), including improving overall quality of life (Wehmeyer & Schwartz, 1997).

Agran and colleagues have concluded that children and youth with disabilities can (a) form clear opinions about their education and leisure pursuits when they are taught skills that facilitate their empowerment and when they are provided with opportunities to act on their preferences (Agran & Hughes, 2008), (b) become more active participants as a result of forming these opinions (Agran, Wehmeyer, Palmer, & Cavin, 2008), and (c) ultimately participate in meaningful community life (Agran, Cavin, Wehmeyer, & Palmer, 2006). Because of the importance

of developing choice-making and problem-solving skills for people as they experience challenges associated with their leisure and with exploring their community, there is a need for therapeutic recreation specialists to increase their understanding of strategies designed to facilitate self-determination. Forming opinions, making choices, and assessing those choices are central to people becoming self-determined members of society. According to Martin, Marshall, and Maxson (1993), in order to promote enjoyable and meaningful participation it is helpful to teach people to direct their own leisure as early as possible in their lives and continue these efforts throughout the developmental period. The next section considers the role of making ample choices and engaging in those choices in promoting generalized problem solving.

### **Promote Generalized Problem Solving**

There is clear evidence demonstrating that individuals with a variety of disabilities can learn to be self-determined, with numerous books and articles attesting to teaching complex behavioral sequences, including how to solve new and different problems and transferring these skills to other contexts (e.g., Mithaug, Mithaug, Agran, Martin, & Wehmeyer, 2007; Powers, Singer, & Sowers, 1996; Wehmeyer & Field, 2007). Unfortunately, efforts to teach people to solve problems apart from instructional settings have typically not occurred. This limitation in instruction has created difficulty for individuals generalizing these newly taught problem-solving skills to other situations. "Outcomes that diminish rapidly after an intervention ends and/

or have little application across setting or behavior would not have generality” (Boutot & Hume, 2012, p. 27)

*Generalization* involves the ability of an individual to learn something in a particular context (e.g., how to operate a food vending machine in a high school cafeteria) and then to subsequently apply this learning to different contexts (e.g., operating a change machine at a car wash or operating a soft drink machine at a golf course). According to Boutot and Hume (2012), the learned behavior should last over time, after the intervention has been withdrawn, and ideally behaviors that were not targeted for intervention should also change. Therefore, it is helpful to actually teach people to perform multiple solutions in multiple contexts so that they generalize their responses.

Failure to teach generalized problem solving may be due, in part, to using teaching approaches that typically include using single instances of a solution to solve single problems. For example, Martin, Rusch, James, Decker, and Trtol (1982) provided initial support for the idea of teaching problem-solving strategies using multiple examples. Martin et al. unknowingly promoted generalization across untrained meals by utilizing picture cues to teach adults to make one of five complex meals. Three adults with moderate disabilities were taught to use pictures of each step in the preparation and cooking of five complex meals. One unintended outcome of using multiple meals during instruction was the spillover effect produced by using more than one meal during training. Participants learned to prepare untrained meals faster and with fewer errors, presumably

as a result of being trained to follow a picture-recipe using more than one meal. Baseline data indicated that one participant learned to prepare meals independent of learning to use the picture-recipe cuing system to regulate behavior. Learning to prepare complex meals appeared to promote preparation of meals that were not included in training and consequently use of more than one meal appeared to promote generalization meal preparation across the other four untrained meals.

We propose that when teaching people skills that therapeutic recreation specialists identify multiple examples of typical situations that demand an equally broad array of solutions. After instruction, participants are responsible for identifying salient responses to situations that allow them to independently generate solutions (e.g., by learning new solutions to multiple problems using multiple examples of the problem and generating multiple solutions rather than learning from a single example).

Teaching individuals to make leisure choices and solve associated problems using multiple examples is important because it relies on the identification of an array of representative stimulus conditions that can be selected to serve as training examples (Hughes & Rusch, 1989). This array of examples defines functional responses that result in correct responses and that serve as solutions. For example, a person who has chosen to walk for enjoyment is walking on a narrow path, finds an obstacle (stimulus condition), and needs to move around the obstacle (solution). The interventions we suggest combine multiple examples (e.g., moving around different obstacles in different situations) with problem

solving to promote more reliable responses to known and unknown situations that may arise in diverse settings (e.g., a walker moving around new and different obstacles).

Hughes and Rusch (1989) studied effects of a problem-solving intervention that used multiple examples during instruction. Individuals with severe disabilities were taught to solve problems related to those that were typically encountered in work settings (e.g., determining what to do when work-related materials are depleted, the tape dispenser is empty, the radio is unplugged). A process was developed for identifying "typical" problems and classifying these problems based on similarities (e.g., shared stimulus properties, such as something is missing, something is unplugged, or something is clogged), which allowed employees to determine similar solutions (e.g., responses to problems, such as retrieve materials, plug in electrical cord, or remove obstruction). Based on this, a model was created for evaluating acquisition of the problem-solving skills when confronted with multiple problems during instruction as well as generalization of the self-instructional model to trained and untrained problem situations during each person's actual work performance. Hughes and Rusch found that the combined effects of using multiple examples when teaching a problem-solving strategy resulted in participants learning to generalize their problem-solving skills to untrained problem situations.

Hughes (1992) subsequently examined effects of the application of this model on four individuals with severe disabilities. These individuals were taught to solve typical problems

that arose while completing daily residential chores in their respective residences. Similar to Hughes and Rusch's (1989), the training approach combined a problem-solving strategy with multiple examples that included typical, but not all, problems each of the individuals encountered on a daily basis. Results of this study supported findings by Hughes and Rusch (1989).

When practitioners teach decision-making and problem-solving strategies by incorporating multiple examples, they have been able to demonstrate task acquisition and generalization. For example, Horner, Jones, and Williams (1985) taught three individuals to cross streets (a valuable skill when attempting to independently access community leisure opportunities) using multiple examples. The primary strategy focused on teaching these people to cross more than one intersection while measuring their ability to cross untrained intersections after introducing additional intersections. All participants demonstrated the ability to cross untrained and more difficult intersections (intersections with lights and traffic) after instruction on less difficult intersections (intersections with stop signs and little or no traffic).

We propose teaching people receiving therapeutic recreation services to become self-determined by having them learn to identify different leisure opportunities, pursue those options, and solve various problems which may arise that create barriers to their participation. We recommend that therapeutic recreation specialists (a) present these options and associated situations by providing people with multiple options and, (b) while in the process of engaging them in their selections, promote community

and leisure participation by using multiple examples that result in various problems to solve. This focus is supported by McGuire and McDonnell (2008) who reported that the time adolescents and young adults with disabilities spend actively participating in recreation is predictive of higher levels of self-determination and that recreation may be a useful context for enhancing selection of activities that individuals find to be enjoyable and meaningful.

### **Consider Importance and Benefits to Multiple Audiences**

In this next section of the paper we identify who can assist in promoting generalized problem solving for people receiving therapeutic recreation services. Important stakeholders in the process include people with disabilities, their families, and service providers such as therapeutic recreation specialists.

#### **Individuals with disabilities.**

Carter, Owens, Trainor, Sun, and Swedeen (2009) found professionals typically report people with disabilities as showing limited knowledge about self-determined behavior, ability to perform these behaviors, and confidence about the efficacy of their self-determined efforts. Also, Agran and Wehmeyer (2008) and Thoma and Getzel (2005) noted that individuals with disabilities involved in various educational experiences identified the instruction they received to promote self-determination as being the most critical for their success, especially an education that promoted problem solving and self-direction. Without constant direction from others, individuals using these strategies rely on their own abilities to perform a

variety of skills independently, under new circumstances, and at different points in time. Being self-determined allows individuals to become causal agents in their lives instead of targets of others interested in directing and managing their behaviors and routines. This ability to be self-determined is critical if people in their free time are to experience leisure and independent choices.

After analyzing almost 200 studies including nearly 1,400 participants with disabilities, Hughes et al. (1997) concluded that there is an increasing trend to involve people with disabilities as active participants in their own programs by targeting outcomes related to self-determination, autonomy, and choice. Following an analysis of quality of life and self-determination of 50 adults with cognitive disabilities, Wehmeyer and Schwartz (1997) concluded that self-determination contributes to a more positive quality of life. Therefore, there is a need to teach individuals to make choices and demonstrate preferences that promote a sense of self-determination and develop a sense of respect (Hughes & Agran, 1998).

**Families.** Family participation is a central tenet of the Individuals with Disabilities Education Improvement Act of 2004 (Harry, 2008). Families strongly influence the extent of inclusion experienced by a family member who happens to have a disability, and these family members are a primary outlet for leisure participation (Dodd, Zabriskie, Widmer, & Eggett, 2009; Eisenman, Tanverdi, Perrington, & Geiman, 2009). In addition, "family leisure involvement is an integral component of satisfaction with family life" (Agate, Zabriskie, Agate, & Poff, 2009, p. 220).

There is consensus that family-centered approaches to service delivery are meritorious (Meadan et al., 2009). Worcester, Nesman, Raffaele-Mendez, and Keller (2008) interviewed families that have a member who has a disability and concluded that it is important to hear the voice of families when designing interventions for individuals with disabilities. Families can provide the necessary diversity in opportunities and choices central to moving an individual toward being self-determined. Therefore, to increase the likelihood of interventions having a positive impact, it is suggested that therapeutic recreation practitioners obtain and include input from families regarding effectiveness and usefulness of interventions. Parents, siblings, and children can be an excellent source for identifying multiple examples of problem situations that occur within a family member's free time.

Since it is the contention of the authors that it is important to promote informed problem solving and choice making, involving families is critical given considerable evidence suggesting individuals better generalize skills with family involvement (Batu, 2008). Since challenges associated with facilitating inclusion for family members with disabilities can be stressful (Hoffman, Sweeney, Hodge, Lopez-Wagner, & Looney, 2009), empowering all people with disabilities to become problem solvers about their leisure choices will enhance their self-determination. As individuals develop a sense of self-determination, family stress should decrease.

**Service providers.** Strategies to promote self-determination must be cost effective if they are to be incorporated into everyday practice. For

example, Cardon, Haerens, Verstraete, and de Bourdeaudhuij (2009) examined perceptions of children, teachers, and parents about a self-management program designed to promote an active lifestyle and reported that teachers perceived program implementation to be difficult and that this difficulty discouraged them from using the program. Cardon et al. concluded that "self-management" techniques must be practical and usable for people with disabilities, service providers, and families.

Teaching people with disabilities to make leisure choices and solve associated problems that include multiple examples of problem situations occurring during their leisure pursuits can be implemented by therapeutic recreation practitioners. Learning to make leisure choices and solve problems associated with a variety of examples can provide a rich context for developing a sense of self-determination.

### **Call for Service Delivery: The Use of Multiple Problem Situations in Leisure Contexts**

Despite the promise of self-directed learning and the growing body of literature demonstrating positive effects of self-determination instruction for individuals with disabilities, Agran and Wehmeyer (2008) reported few human service professionals feel competent enough to teach skills leading to self-determination. According to Agran and Wehmeyer, it is unfortunate that efforts to promote these social and behavioral outcomes for individuals with disabilities are, at best, underutilized and often given low instructional priority.

Carter et al. (2008) encouraged professionals to expand opportunities

for people with disabilities to become more self-determined and suggested that practitioners focus on identifying evidence-based practices for promoting self-determined behavior. To help therapeutic recreation specialists implement problem-solving strategies using multiple examples, we provide an example of one particular approach to promote problem solving associated with leisure choices and a few examples of multiple situations that can be used to provide such instruction.

**Potential problem-solving strategy.** There are a variety of ways people can be taught to independently make leisure choices and solve associated problems. One way as highlighted in Figure 1 is to begin by providing participants with a rationale

for acting as a causal agent making leisure choices and solving associated problems. This action is followed by modeling the correct response while verbally describing actions needed to solve the problem. The participant can then be asked to demonstrate the same response (e.g., moving a chair to a table filled with art equipment and materials) while the therapeutic recreation specialist speaks aloud. The practitioner can provide several opportunities for practice with participants performing the same responses while they verbally tell themselves what to do.

Next, the specialist can provide corrective feedback and/or additional prompting if the participant does not execute the correct response (e.g., moving a chair to a table). Prompts can

1. Provide participant with a rationale for acting as a causal agent making leisure choices and solving associated problems.
2. Model correct response while you verbally describe actions needed to solve the problem.
3. Ask participant to demonstrate the same response while speaking them aloud.
4. Provide several opportunities for practice with participants performing the same responses while verbally telling themselves what to do.
5. Provide corrective feedback and/or additional prompting if the participant does not execute the correct response.
6. Teach participant to make the following statements including a statement of
  - a. the problem (“The bench is not in the right place.”),
  - b. the generic correct response (“I need to move it.”),
  - c. the specific response (e.g., “Move the bench in front of the weightlifting machine.”),
  - d. self-report (“I moved the bench.”), and
  - e. self-reinforcement (“I did a good job, now I get to exercise.”).
7. Instruct participant to whisper the sequence of self-instructions and eventually “mouth” the sequence after the participant reliably produces the sequence of verbal statements.
8. Base the number and length of instructional sessions on participant’s ability to learn to independently produce the verbal sequence.

*Figure 1.* Potential Problem-Solving Strategy: Practitioner Directions



be divided into ones that are verbal, ones that are gestural, and those that involve modeling or the provision of partial or full physical assistance (for details of these strategies see Dattilo, 2008, pp. 158–159). Self-instruction includes verbal statements made by participants that guide their responses. This form of informational self-talk is positively associated with positive affect (Oliver, Markland, & Hardy, 2010).

Each participant can be taught statements including a statement of (a) the problem (“The bench is not in the right place.”), (b) the generic correct response (“I need to move it.”), (c) the specific response (“Move the bench in front of the weightlifting machine.”), (d) self-reporting (“I moved the bench.”), and (e) self-reinforcement (“I did a good job, and now I get to exercise.”). When the participant reliably produces the sequence of verbal statements, the participant is instructed to whisper the sequence of self-instructions and eventually “mouth” the sequence. The number and length of instructional sessions are based on the ability of the participant to learn to independently produce the verbal sequence that leads to the participant eventually “thinking” of the self-instructions.

The next section provides five problem situations that may be encountered within a preferred leisure context (e.g., an obstacle is in the way, a floor mat is wet with someone else’s sweat, one dumbbell is missing from a pair). For the purpose of illustration, two examples are provided for each instance that could be used as situations in which the participant learns and practices the problem-solving strategy.

When actually teaching participants to solve problems associated with their leisure choices, additional examples would be identified and used.

#### ***Potential problem situation–walk.***

First, the individual selects walking from among several physically active recreation activities (e.g., swimming, bicycling, and step aerobics). Next, when walking the participant (a) encounters an obstacle in the path of taking a walk for exercise, for example, a car parked in a driveway blocking the sidewalk (problem situation), thus requiring the participant to move (response solution) around the obstacle, or (b) encounters a person in the path when window shopping at the shopping mall (problem situation), thus requiring the participant to move around (response solution) the obstacle.

***Potential problem situation–lift weights.*** Based on options associated with strengthening activities (e.g., calisthenics), the individual selects weight training. When attempting to lift weights, the participant (a) encounters dumbbells lying on the workout bench (problem situation), thus requiring the participant to remove the weights (response solution), or (b) encounters a chair on the mat (problem situation) where the participant does stomach crunches, thus requiring the participant to remove the chair (response solution).

***Potential problem situation–use electronics.*** The individual chooses to use a light to read a magazine when given options of using various electronic devices (e.g., computer, music player, and fan). When relaxing, the participant (a) attempts to turn on the light to read a magazine, and the lamp does not illuminate

(problem situation), thus requiring the participant to plug the lamp into the electrical socket (response solution), or (b) attempts to turn on the light, and the light does not turn on (problem situation), thus requiring the participant to press the “on” switch (response solution).

**Potential problem situation–stay fit.** After given the options to use a stationary bicycle, elliptical machine, stair master, treadmill, or rowing machine, the person chooses to use the stair master. When attempting to use the stair master the participant (a) finds the stair master to be wet (problem situation), thus requiring the participant to wipe off the equipment (response solution), or (b) finds water on the mat in front of the stair master (problem situation), thus requiring the participant to wipe off the mat (response solution).

**Potential problem situation–play basketball.** The participant chooses to play basketball after being given the choice to play a variety of recreation activities (e.g., volleyball and dodgeball). When beginning to play a basketball game, the participant (a) encounters no basketball (problem situation), thus requiring the participant to obtain the basketball from a bin (response solution), or (b) encounters no basketball (problem situation), thus requiring the participant to obtain the ball from an activity cabinet (response solution).

### **Call for Research: Examine Effects of Teaching Problem Solving with Multiple Examples**

Researchers (e.g., Mooney, Ryan, Uhing, Reid, & Epstein, 2005; O’Shaughnessy, Lane, Gresham, & Beebe-Frankenberger, 2002) have exam-

ined effects of choice-making and problem-solving strategies on people with disabilities and have suggested that current instructional practices are limited related to producing generalized learning. For example, after conducting a review of a particular choice-making and problem-solving strategy identified as “self-management” targeting academic outcomes for people with emotional and behavioral disorders, Mooney et al. reported that of 22 studies only two examined generalization beyond maintenance of behaviors. These authors concluded that additional research associated with maintenance and generalization of self-management strategies is needed.

Conclusions by Mooney et al. (2005) supported observations by O’Shaughnessy et al. (2002) that generalization of “self-management” treatment effects is a particularly important area in need of research. Research suggests that few studies using problem-solving strategies measure the extent to which learning generalizes beyond specific tasks being taught (cf. Rusch & Kostewicz, 2008). Storey (2007) reported that four of 14 studies included in his narrative review reported measuring generalization across untrained tasks (e.g., Hughes & Rusch, 1989; Sowers, Verdi, Bourbeau, & Sheehan, 1985; Storey & Gaylord-Ross, 1987; Taber, Alberto, & Fredrick, 1998). Rusch, Hughes, and Wilson (1995) indicated that two of 13 studies reported generalization across tasks or settings. Most studies that failed to address generalization also did not show that participants could produce the problem-solving strategy without some external mediation (i.e., they were prompted by researchers).

## Conclusion

A problem-solving approach associated with leisure choices that incorporates multiple examples directs people to identify that a problem exists and that the problem requires a solution guided by the individual. The importance of this approach is that the individual learns to guide current and future behavior to similar and dissimilar problem situations. There are important advantages to teaching all people, especially people with disabilities, to independently make choices and perform tasks within a leisure context.

In this paper, and highlighted in the associated figure (see Figure 1), we suggest combining the overarching goals of self-determination with emerging evidence-based practices that rely on the participants assuming most of the responsibility for making leisure choices, identifying problems, and solving those problems associated with their leisure choices. Unfortunately, there is little evidence to support the effectiveness of traditional interventions when attempting to

teach individuals with disabilities to generalize their ability to solve problems associated with their leisure choices. However, there is emerging evidence that suggests these practices may be more effective if more examples of the solution are presented. Therefore, in general, therapeutic recreation specialists who encourage people to become self-determined may find that participants are able to more readily experience leisure. More specifically, it may be helpful if practitioners attempt to teach people who have disabilities to make leisure choices and solve related problems that they consider including the problem-solving strategy described here.

We believe that all people can be taught to make meaningful choices and solve problems necessary for independent community living and active leisure participation if they learn to become self-determined. Teaching people to be self-determined includes having them learn to make leisure choices as well as identify and seek solutions to any problems that may inhibit them from experiencing leisure.

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