

Assessment of Leisure Preferences for Students with Severe Developmental Disabilities and Communication Difficulties

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Abstract: The purpose of this study was to develop and to evaluate the Preferences for Leisure Attributes (PLA) Assessment, a forced-choice computer software program for students with severe disabilities and communication difficulties. In order to determine content validity of the PLA Assessment, four experts in related fields assigned critical attributes to pictures of leisure activities, resulting in an overall agreement rating of 90%. Retest reliability resulted in a correlation coefficient of .87 for the entire assessment. Transition-age youth (14 to 22 years old) with severe developmental disabilities and communication difficulties do indeed have leisure preferences; and the PLA Assessment (a forced-choice presentation of leisure activity photographs) can assist them in indicating their leisure preferences.

People with developmental disabilities need the same balance of work, relationships, and recreation in their lives as people without developmental disabilities. Halpern (1985) recognized this need for balance when he introduced the three pillars of transition: employment/postsecondary education, independent living, and personal and interpersonal relationships. Furthermore, the IDEA Amendments (2004) mandate that educators address the three areas of work, relationships, and recreation by requiring transition plans to consider outcomes in the areas of employment or postsecondary education, independent living, and community participation, and that those outcomes are established from students' choices.

The ultimate goal of special education is to assist individuals with developmental disabilities to attain a level of interdependence and participation in community life as an adult, including participation in community leisure activities. For individuals with developmental disabilities, meaningful leisure activities are a vital component in the balance of their lives and are essential for enhancing their competence and acceptance. Leisure engagement

can be an effective way to provide students with opportunities for health and fitness, as well as for learning appropriate communication and social skills (Schleien, Ray, & Green, 1997). Leisure involvement can also assist the individual with the disability by supporting successes in residential and employment outcomes (Heyne, 1997; Stein & Sessions, 1983).

Often overlooked, recreation programs and leisure activities are effective means to provide students with opportunities to learn appropriate communication and social skills (Russell, 1996) as well as other important transition outcomes such as developing self-determination, meaningful relationships, and satisfaction in life (Cordes & Ibrahim, 1996; Schleien et al., 1997). Unfortunately, individuals with developmental disabilities often have few friends other than family and paid support staff. The lack of recent research in this area is indicative of the lack of attention given to leisure education for individuals with developmental disabilities; however, providing leisure opportunities and choices can open the door to opportunities that could lead to relationship building and other positive postschool outcomes.

Assisting individuals with developmental disabilities to choose their own future is a key to effective transition planning (IDEA Amendments, 1997; Individuals with Disabilities Education Improvement Act [IDEIA], 2004).

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However, providing choices to individuals with severe developmental disabilities and determining their preferences and interests are confounded when the individual has limited communication and/or cognitive skills. A second confounding variable, when providing choices to individuals with developmental disabilities, is the ability to make choices when their experiences and opportunities have been limited. Third, when choices have been provided to these individuals, the choices have often had no significant impact on control over their daily routine (Bambara, Koger, Katzer, & Davenport, 1995; Brown, Belz, Corsi, & Wenig, 1993).

The assessment of education and transition needs is used in making decisions (Ysseldyke, 2004) about the interests and preferences, as well as programming and educational strategies. Likewise, leisure assessment is critical to the determination of leisure interests and preferences for individuals with disabilities as well as to the structuring of leisure programming (Schleien et al., 1997). Unfortunately, most leisure assessments are not formatted in a way that affords access for transition-age students with severe developmental disabilities and communication difficulties. When the presentation design of the leisure assessment is not taken into consideration, these students can display various response factors (Sigelman, Budd, Winer, Schoenrock, & Martin, 1982; Strand, 1995; Topf, 1986) that may inhibit the communication of their choices or the facilitator's interpretation of their choices.

Although IDEIA 2004 mandates the implementation of leisure programming for individuals with developmental disabilities, it generally has been neglected (Schleien et al., 1997; Sitlington, 1996). However, current leisure assessment tools do not meet the communication needs of individuals with severe developmental disabilities. The purpose of this research was to develop and to assess an interactive software program that uses a forced-choice presentation of photographs to assist transition-age youth and adults (16 to 22 years old) with developmental disabilities and communication difficulties in making and communicating choices regarding leisure interests and preferences. In this study, the Preferences for Leisure Attributes (PLA) Assessment was

developed and tested for reliability and validity.

The purpose of the PLA Assessment is to provide special education teachers, therapeutic recreation specialists, rehabilitation counselors, and other service providers with a method of determining leisure and recreation interests of transition-age students with developmental disabilities and communication difficulties, in an efficient and reliable manner. The PLA Assessment provides students with a choice between two pictures of activities presented on the computer screen, and students select the picture of the activity they prefer. The student has the option of selecting a "neither" button if they don't prefer either of the pictures. Associated with each picture, but not shown on the computer screen, is a database of attributes related to that activity. As the student makes selections of preferred activities, the computer program compiles a profile for that student consisting of his or her preferred leisure attributes. The program provides the student, teacher, and service providers with a leisure profile, thereby helping to narrow down the list of possible activities so that students can spend their valuable transition years validating leisure interest areas and choices, experiencing and developing skills in their preferred activities, making connections with lifelong community leisure and recreation options, experiencing successes, and increasing self-esteem.

The following questions were addressed in this study: (a) Does the PLA Assessment (a computerized, forced-choice presentation of leisure activity photographs) have content validity? (b) Is the PLA Assessment reliable? (c) Does the PLA Assessment have construct validity? (d) Is the PLA Assessment an effective tool to assist transition-age youth with severe developmental disabilities and communication difficulties in indicating their leisure preferences?

Method

Development of the PLA Assessment

Content selection. To develop a broad range of leisure activities, a comprehensive list of adult leisure and recreation activities was compiled by cross referencing lists of activities ob-

tained from leisure references, therapeutic recreation references, the Education Resources Information Center (ERIC), and the internet. A key word search of terms related to leisure and recreation activities for adults was conducted using each resource. Adult activities, rather than children's activities, were selected because the ultimate goal of special education for transition-age students is to prepare them for adult interdependence and community life, including lifelong leisure activities. Pictures of each activity were obtained by searching the Internet, specifically, www.webshots.com. Pictures were downloaded, saved, and transformed to bitmap format for ease of use. Leisure activity attributes were selected based on a review of several commonly used leisure assessments (DeGrazia, 1962; Hawkins, Eklund, & Martz, 1992; McKechnie, 1974; Witt & Ellis, 1985), each of which uses attributes, or a similar categorization, as part of their assessment procedure. After comparing each of these lists, a comprehensive list of leisure activity attributes was developed for the purposes of this study, with the intent of including all of the possible attributes (Table 1).

Content validity. To select the attributes that best describe each picture or activity, and vice versa, four experts were consulted for their input. The four professionals represented the fields of leisure, recreation, physical education, adapted physical education, and special education. All four consultants had a Ph.D. and all were professors in their fields at major colleges or universities. Each consultant was given a collection of the pictures along with the attributes, in checklist format. Consultants rated each picture according to attributes in each of the categories. Checklists from each of the consultants were then evaluated for inter-rater agreement using descriptive statistics.

The four experts rated each on of 73 pictures of leisure activities according to critical attributes in the categories of activity, cost, equipment, location, degree of motor skills required, level of physical activity, and level of social activity. Inter-rater agreement was determined on each category of attributes as well as on the test as a whole (Table 2). Percent agreement on the categories of attributes ranged from 87.3 to 93.8, with overall agree-

TABLE 1

Leisure Activity Attributes in the PLA Assessment

<i>Attribute Category</i>	<i>Attribute</i>
Type of Activity	Participation sports
	Spectator sports
	Arts
	Social Activities
	Hobbies
Location	Indoor activities
	Outdoor activities
	Home activities
	Community activities
Social Attributes	Individual activities
	Small group activities
	Large group activities
	Minimal physical activity required
Physical Activity	Moderate physical activity required
	Maximum physical activity required
Motor Skill Required	Good fine motor skills
	Fair fine motor skills
	Good gross motor skills
	Fair gross motor skills
Equipment Needed	Minimal equipment
	Moderate equipment
	Maximum equipment
Cost	Minimal cost
	Moderate cost
	Maximum cost

ment on the ratings at 89.6 percent. For each picture, the attributes with the highest agreement ratings were then incorporated into the computer software program.

TABLE 2

Inter-Rater Reliability of the PLA Assessment across Four Raters

<i>Category</i>	<i>% Agreement</i>
Activity	91.1
Cost	87.3
Equipment Needed	87.3
Location	87.7
Motor Skills Required	90.4
Physical Activity	93.8
Social Attributes	89.0
Whole Assessment	89.6

Assessment administration. After the pictures of leisure and recreation activities were collected and the database of critical attributes was applied to each picture, a computer program—the PLA Assessment—was written using Microsoft Visual Basic 6.0 Professional Edition. The PLA Assessment works in the following manner: an assessment facilitator (e.g., special education teacher, therapeutic recreation specialist, rehabilitation counselor, or other service provider) inputs identifying data (such as name and age) for the individual taking the assessment. Once the identification screen is completed or updated, two pictures of activities are randomly selected and displayed on the computer screen side-by-side; the student selects the picture of his or her choice by (a) touching a touch screen, (b) pointing and clicking with a mouse, or (c) pointing to the screen while the assessment facilitator uses the mouse to point and click. Once the choice is made another set of pictures is displayed on the screen, from which the student can choose a preferred activity. This process continues until the student finishes the set, becomes distracted, or tires. If the student does not finish an adequate dataset (for this study, a minimum of 36 pairs of pictures was required so that the subjects had a chance to view and chose between all available pictures), results can be saved, and the assessment can be continued at a later time for completion.

As the student selects his or her preferred activity from the set of pictures, the computer program compiles data regarding his or her preferences in terms of critical attributes of the activities. The program then compiles a report based on critical attributes of selected preferences, as well as the actual activity selected. The assessment facilitator is able to save the report to electronic storage, to view the report on screen, or to print out a hard copy of the report.

Participants. For a preliminary test of the psychometric properties of the PLA Assessment, 29 transition-age students with developmental disabilities were recruited as participants. These students were from special education classes for students with multiple disabilities from local school districts in northeast Ohio. Subjects ranged in age from 13 to 21, with a mean age of 17.8. Thirteen of the

students were female and sixteen were male. Once informed consent was obtained from each subject's parent(s), and assent was obtained from the subject, he or she was administered the PLA Assessment two times, for at least 36 selections each time.

Reliability and validity of the PLA assessment. To be interpretable, a test must be reliable (Kerlinger, 1986). In other words, will the PLA Assessment demonstrate repeatability by students making the same choices at two testing sessions—does it give a true score of the individual's preferences for attributes associated with leisure activities? The two trials were compared for test/re-test reliability using the Spearman rho test for correlation. Discriminability, the ability to differentiate between preferences and the ability to point out what is unrelated (e.g., does the individual choose the picture on the left each time) was evaluated using descriptive statistics.

To determine whether transition-age youth (16 to 22 years old) with severe developmental disabilities and communication difficulties have leisure preferences, the PLA Assessment data that were collected for the 29 subjects were compared to the probability of selecting each attribute. A chi square test was implemented to determine whether the attribute preferences selected by the subjects were different from what would be expected by chance with the given set of attributes.

Additionally, the parents of each of the subjects were asked to complete a written questionnaire about their child's leisure preferences. Results of the parent questionnaire and the subject's PLA Assessment were compared for convergence (evidence gathered from both sources indicate the same or similar results) using the Spearman rho test for correlation.

Results

Test-retest reliability was evaluated using the Spearman rho test for correlation, resulting in bivariate nonparametric correlations in each attribute category. Positive correlations were noted in each category, significant at the .01 level (Table 3). Correlation coefficients of categories ranged from .715 to .878. Test-retest reliability on the PLA Assessment as a whole

TABLE 3

Test-Retest Reliability of PLA Assessment Categories

Category	Correlation	Level of Significance	Actual Significance
Cost	.878	.01	.000
Equipment Needed	.873	.01	.000
Location	.832	.01	.000
Motor Skills Required	.715	.01	.000
Physical Activity	.767	.01	.000
Social Attributes	.740	.01	.000
Whole Assessment	.871	.01	.000

resulted in a correlation coefficient of .871, significant at the .01 level.

To determine whether subjects tended to choose the picture on the same side each time (e.g., to determine whether the individual chose the picture on the left each time), discriminability was evaluated using descriptive statistics (Table 4). On the first implementation of the PLA Assessment (Test A), the mean percentage of left hits was 52.5% and the mean percentage of right hits was 47.5%. Standard deviation for each was 10.5. On the second implementation (Test B), the mean percentage of left hits was 48.2%, and the mean percentage of right hits was 51.8%. Standard deviation for each in Test B was 12.9.

TABLE 4

Discriminability of the PLA Assessment

Test	Range	Mean	Standard Deviation
Test A (n = 29)			
% Left hits	33–87	52.5	10.5
% Right hits	13–67	47.5	10.5
# Neither hits	0–88	13	23.9
Test B (n = 29)			
% Left hits	19–71	48.2	12.9
% Right hits	29–81	51.8	12.9
# Neither hits	0–64	11.9	19.7
Combined Tests (n = 58)			
% Left hits	19–87	50.3	11.9
% Right hits	12–81	49.7	11.9
# Neither hits	0–88	12.9	21.7

On the combination of Test A with Test B, the mean percentage of left hits was 50.3%, and the mean percentage of right hits was 49.7%. Standard deviation for each was 11.9 for the combination of tests.

Three measures of construct validity were determined to assess whether the PLA Assessment is an index of leisure preference. The first measure used participants without developmental disabilities and correlated the PLA assessment with rated preference of leisure attributes in written form. Counter balanced for order, nine of seven, Spearman rho bivariate correlations were significant and ranged from .30 to .45 with the total attribute scores correlating .36.

A second measure was to determine if attribute selection could be considered a preference by comparing choices of participants with severe disabilities to the probability of random selections. Through chi-square tests, observed attribute choices were found to significantly differ from random probability for location ($p = .03$), motor skills required ($p = .05$), and PLA Assessment overall ($p = .001$).

Finally, student participant leisure preferences as measured by the PLA Assessment and parent’s selection of the participants attribute preferences from a written questionnaire were correlated. Spearman rho coefficients were not significant for any of the individual attributes, but the correlation was significant (.95) for the assessment as a whole.

Discussion

The psychometric properties of the PLA Assessment were found to be acceptable for use with transition students, given that the assessed preferences obtained would be appropriate as a starting point for exploration of preferences. Content validity was achieved with high inter-rater agreement for the attributes overall. Test-retest reliability was significant. Findings on validity of the PLA Assessment were similar to the results of the *Leisurescope Plus*, *Leisure Assessment Inventory (LAI)* and the *Assessment of Leisure and Recreation Involvement (LRI)* (Burlingame & Blaschko, 2002) in that construct studies for these scales resulted in low positive to negative correlations.

Discriminability results for the PLA Assess-

ment also indicated that students were not selecting pictures just on the left or just on the right; there was a relatively even distribution of left and right hits. This even distribution of left and right picture selections demonstrates that the PLA Assessment can successfully eliminate this one source of response bias (Topf, 1986) that was demonstrated in a study by Sigelman, et al. (1982) and that is common for people with developmental disabilities.

On individual attributes parent and student selections did not correlate. However, this seeming discrepancy between parent and student selections suggests that although individual attributes did not appear to have agreement, the combinations of leisure attribute preferences that the students selected on the PLA Assessment were in agreement with the combination of attribute selections their parents made on the written questionnaire. These results imply that the PLA Assessment must be interpreted as a whole, not by component parts. It is not enough to say that as individual prefers participation sports when in fact they prefer participation in sports that are indoors, individual in nature, with minimal physical activity, and require fast gross motor skills.

The individuals with disabilities in this study demonstrated that they indeed have preferences for attributes associated with leisure activities. This is consistent with previous studies which showed that individuals with severe developmental disabilities demonstrate preferences for certain tasks (e.g., Bambara et al., 1994; 1995; Dattilo & Mirenda, 1987; Parsons, Reid, Reynolds, & Bumgarner, 1990). Furthermore, the current study demonstrated that individuals with developmental disabilities and communication difficulties in this study were able to make choices regarding their preferences by using the PLA Assessment tool. The PLA Assessment provided a mechanism for individuals with disabilities to communicate their preferences to service providers, whereas currently available leisure assessment tools do not. Because we know that individuals with developmental disabilities have preferences (e.g., Bambara et al., 1994; 1995; Dattilo & Mirenda, 1987; Parsons et al., 1990), and can make choices (e.g., Dattilo & Mirenda) when given appropriate means to communicate, the PLA Assessment tool can be used as

the means of communicating their leisure preferences.

When students with developmental disabilities can communicate their leisure preferences, then decisions about leisure programming can be made more efficiently and effectively by teachers and others. Consequently, valuable learning time can be spent developing skills in leisure activities, including the concomitant physical, emotional, psychological, and social benefits of leisure (Cordes & Ibrahim, 1996). Because the PLA Assessment is an effective tool to determine leisure preferences for individuals with developmental disabilities, time traditionally spent exploring activities in order to determine those preferences can instead be used to develop skills in preferred leisure activities. When students with disabilities are afforded the opportunity to choose and participate in their preferred leisure activities, they are also afforded the opportunity to benefit from the physical, emotional, psychological, and social aspects of leisure that are beneficial to all individuals (Cordes & Ibrahim), This benefit in the long run could result in improving their self-concept and quality of life (Williams & Dattilo, 1997).

In this study, it appeared that individuals with developmental disabilities used their experiences differently than individuals without disabilities, when making choices. It was apparent during this study that individuals without developmental disabilities tended to use a different level of reasoning to make decisions about their preferences than individuals with developmental disabilities. In this study, individuals with developmental disabilities made choices about which leisure attributes they favored, but it was unclear as to how or on what basis their choices were made. In contrast, individuals without developmental disabilities used past experiences and a deeper level of reasoning to select their leisure preferences. Therefore, it seems that the difference between a choice and a preference may be the addition of experience and reasoning.

If this difference between choice and preference is true, then individuals with developmental disabilities must be afforded meaningful experiences that will facilitate a progression from merely making choices to developing preferences, in order to more fully

develop their self-determination. Martin, Marshall, and Deprey (2008) and Wehmeyer and Schwartz (1997) have defined self-determination as the ability to make choices and decisions regarding one's own quality of life free from unnecessary external influence or interference. Leisure is an avenue to develop self-determination (Mannell & Kleiber, 1997), and the PLA Assessment is a tool that can be used with some confidence for individuals with disabilities to exercise their choices, consequently increasing self-determination. This increased self-determination can carry over to other aspects of an individual's life, such as community living and career, thus improving quality of life.

Limitations of the Study

One limitation of this study is the inequality of the representation of attributes in each category of the PLA Assessment. For example, it was possible for the picture representation of attributes in each category to range from 4 pictures to 25 pictures for activity, or even from 6 pictures to 45 pictures for cost. Although the unequal distribution of attributes did not seem to affect the probability of selecting the attributes of the leisure activities in this study, one still should question the distribution of attributes in terms of representativeness. Even though each attribute was not represented equally, they may have been represented proportionately in terms of the broad range of activities. Nonetheless this representation of attributes should be investigated. If the inequality of representation of attributes in the PLA Assessment is demonstrative of the universal distribution of attributes in leisure activities, then the results of this study are indeed strengthened. However, if the universal distribution of attributes in leisure activities is discovered to be more equally distributed, then the PLA Assessment should be revised to reflect the universal set of leisure attributes, so individuals with disabilities can have the opportunity to choose from the universal set of options.

Another limitation is that the pictures were presented randomly. This is problematic because subjects could have been presented with the same picture more than once, and consequently the same choices of attributes, before

having the opportunity to choose another activity, and consequently different attributes. Although this did not seem to make a difference statistically, a future adjustment of the PLA Assessment software program should be a more systematic presentation of the pictures so that pictures are not repeated, until all pictures have been presented once. This adjustment would ensure that more pictures (and therefore attributes) are shown and have had the opportunity to be selected.

Another possible adjustment to the PLA Assessment could be to purposefully pair pictures of chosen activities with other pictures of chosen (or non-chosen) activities in order to more precisely narrow down students' choices of attributes. A more systematic presentation of pictures in the PLA Assessment could afford a student with severe communication limitations the ability to more accurately communicate their preferences to service providers. Again, the pairing of pictures during the PLA Assessment is an area for future consideration.

Future Research

The results of this study bring up several questions that merit further investigation. First, the psychometrics of the PLA Assessment should be replicated in order to assure confidence in the assessment results. In this study the positive results in content validity, test-retest reliability, and overall test convergence are noteworthy; however, replication of these results with more subjects, and possibly subjects of a variety of backgrounds and ability levels would strengthen confidence in the tool as well as the generalizability.

A second area that merits further study is the role experience plays in the determination of one's preferences. In this study, it seemed that individuals with developmental disabilities used levels of reasoning to make their choices that were different than their counterparts without disabilities. It would be interesting to study the role of reasoning ability on choice-making, as well as the role of past experiences on that reasoning process. In addition, once an individual with a developmental disability chooses a leisure activity, and has had the opportunity to experience that activity, the role of that experience on future

choices (or on changing one's mind) needs to be studied.

Although not a topic included in this study, adding of the attribute of disability to the photos used in the PLA Assessment would be interesting, as well as helpful in the individual planning process for individuals with developmental disabilities. In other words, do individuals with developmental disability prefer to participate in activities with others who also have developmental disabilities or with individuals without developmental disabilities?

Conclusion

This study demonstrated that the PLA Assessment is a valid and reliable tool to afford individuals with developmental disabilities and communication difficulties a means of communicating their leisure preferences. The PLA Assessment, as demonstrated in this study, can reduce response bias from assessment, permitting service providers to more confidently implement person centered planning. Further, the results of this study confirmed that individuals with developmental disabilities indeed have leisure preferences. Specifically, this study results in a tool (PLA Assessment) that will assist service providers in special education, leisure education and rehabilitation in providing meaningful leisure experiences for individuals with disabilities based on their own choices. In turn, these meaningful leisure experiences can be used to allow individuals with disabilities to make more informed choices based on these actual experiences. The cycle of choosing, experiencing, and using experiences to refine choices is self-determining for individuals with disabilities.

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