

Psychometric evaluation of the Spanish version of the Children's Assessment of Participation and Enjoyment and Preferences for Activities of Children

WANDA I. COLÓN, School of Health Professions, Medical Sciences Campus, University of Puerto Rico
CARMEN RODRÍGUEZ, Filius Institute & School of Health Professions, MSC, University of Puerto Rico
MAX ITO, Department of Occupational Therapy, College of Allied Health & Nursing, Nova Southeastern University
CAROL N. REED, Department of Occupational Therapy, College of Allied Health & Nursing, Nova Southeastern University

ABSTRACT: *Culturally sensitive and valid assessments of participation in occupations are needed for Spanish-speaking children to enhance services offered to this population. The purpose of this study was to assess the validity and reliability of the newly developed Spanish version of the Children's Assessment of Participation and Enjoyment and Preferences for Activities of Children, the Evaluación de Participación y Disfrute de los Niños y Preferencias de las Actividades de los Niños (EPDN/PAN). The sample included 249 children with and without disabilities, aged 6 to 15 years. Statistically significant differences ($p < 0.05$) in the participation of children with disabilities and children without disabilities, and between younger and older children were found. No statistical significant differences were found between males and females in the dimensions of participation assessed. Adequate internal consistency (0.70–0.92) was found for the PAN scale and the Overall and Informal domain scores of the EPDN-Intensity scale. Further study is needed to evaluate the formal domain scale and gender differences by activity types. Copyright © 2008 John Wiley & Sons, Ltd.*

Key words: Children's Assessment of Participation, psychometrics, Spanish test translation

Introduction

Current literature has addressed the importance of measuring children's participation. Participation has been associated as fundamental to development, health and well-being (Ackermann et al. 2003; Law, 2002; Bronfenbrenner and Morris, 1998). However, measuring participation is a complex task. Participation and the factors that influence it create a complex set of relationships (Heah et al., 2007; King et al., 2006; Law et al., 2004). Culture, family, health status and contextual factors have been identified as some of the main determinants of children's participation (Engel-Yeger et al., 2007; Law, 2002; King et al., 2003; Larson and Verma, 1999; Brown and Gordon, 1987).

There are few instruments appropriate to measure participation in occupations (King et al., 2007; Coster, 2006). Recent occupational therapy literature supports the need to continue the development of assessments tools and practice congruent with the profession's philosophical basis, core premises and values (Kielhofner, 2007; Coster, 2006; Law and Baum, 2001). The complexity of measuring participation is magnified when children from different ethnicities or cultures need to be assessed for intervention. Existing measures of participation have been published mainly in the English language. There are no standardized and valid assessment tools in Spanish to assess children's participation. Occupational therapists serving Hispanic children face a major challenge when trying to assess participation in this population. Psychometrically sound and culturally competent assessments are required to accurately measure the participation of Hispanic populations.

Extensive literature supports that, besides an appropriate translation procedure, empirical analysis and research are needed to assess if a translated measure is adequate for the new intended population (American Educational Research Association et al., 1999; Beaton et al., 2000, 2002). Ensuring an accurate translation or language equivalency is not enough to maintain the reliability and validity of a measurement tool. The usefulness of a test for a new population needs to be examined and supported by evidence, especially when assessing constructs that are influenced by culture and environments (King et al., 2007).

The Standards for Educational and Psychological Testing (AERA et al., 1999) present five sources of validity evidence: evidence based on test content, response processes, internal structure, relationship to other variables and consequences of testing.

This study was initiated in response to the need posed in the occupational therapy literature to develop appropriate assessment instruments. The study's rationale was the need for a culturally sensitive, linguistically appropriate, occupation based and psychometrically sound measurement of children and youth leisure and recreation participation for Spanish-speaking children. Specifically, the two aims of the project were: (1) to develop a Spanish version of the Children's Assessment of Participation and Enjoyment and Preferences for Activities

of Children (CAPE/PAC) (King et al., 2004) for Puerto Rican Spanish-speaking children; and (2) to field-test evidence of validity and reliability of the newly developed Spanish assessment, the *Evaluación de Participación y Disfrute de los Niños & Preferencias de Actividades de los Niños (EPDN/PAN)*.

The purpose of this study was to assess the validity and reliability of the newly developed measure for Puerto Rican children. Two research questions were posed:

- (1) Is a translated and culturally adapted Spanish version of the CAPE/PAC valid for children living in Puerto Rico? To answer this question, three specific hypotheses were assessed:
 - Children with disabilities will demonstrate less variability, less intensity and more restricted participation ('With Whom' and 'Where') of leisure/recreation activities than typically developing children.
 - Older children (11–15 years old) will present less restricted participation ('With Whom' and 'Where') in leisure/recreation activities than younger children (6–10 years old).
 - Boys and girls will present different patterns of participation ('Intensity', 'With Whom', 'Where').
- (2) Is the new EPDN/PAN reliable when assessing Puerto Rican children?

Methods

A methodological research design was conducted to assess evidence of validity and reliability of the EPDN/PAN.

Subjects/sample

A sample stratified for age, gender and disability was used. It consisted of 249 children from 13 different municipalities of Puerto Rico. For sample characteristics see Tables 1 and 2.

The inclusion criteria for the typically developing children were: (1) children 6 to 15 years old; (2) no developmental diagnosis or health problem; (3) not a participant of a special education program; (4) Spanish speaking and living in Puerto Rico during the past 2 years or more; and (5) parental and child's assent to participate. Inclusion criteria for the children with disabilities included: (1) children 6 to 15 years old; (2) diagnosed with a developmental condition; (3) participant of a special education program full- or part-time; (4) Spanish speaking and living in Puerto Rico during the last 2 years or more; and (5) child assent or his/her parents consent to his/her participation. Exclusion criterion for the children with disability group: having a severe disability that impeded participation in almost all basic daily living tasks such as sitting, eating or visual contact.

Characteristic	Study sample (n = 249)		Typically developing children (n = 198)		Children with a developmental disability (n = 51)	
	n	%	n	%	n	%
Gender						
Female	123	49.4	98	49.5	25	49
Male	126	50.6	100	50.5	26	51
Age (in years)						
6–10	126	50.6	99	50	27	52.9
Boys	65		50		15	
Girls	61		49		12	
11–15	123	49.4	99	50	24	47.1
Boys	61		50		11	
Girls	62		49		13	
Child has a disability						
No	198	79.5	198	100		
Yes	51	20.5			51	100
Type of education						
Regular education	206	82.7	195	98.5	11	21.6
Special education	37	14.9	0	0	37	72.5
Mixed education (Regular and special)	6	2.4	3	1.5	3	5.9

Diagnostic category	Count
Cerebral palsy	9
Attention deficit and hyper activity disorder	5
Down's syndrome	5
Mental retardation	4
Attention deficit disorder	4
Autism	3
Pervasive developmental disorder (unspecified)	3
Motor delay	3
Learning disability	2
Language/speech problems	2
Hydrocephaly	2
Microcephaly	2
Hemiparesis	1
Others	6

Procedures

Five graduate students and the principal investigator recruited subjects, collected data and were trained to administer the test. The EPDN/PAN was administered to 253 children. Every parent and child who participated in the study was informed of all study procedures, risks and benefits. They signed consent and assent forms, and upon the completion of the demographic information sheet and the test questionnaire, they were given an incentive stipend of \$10.00 for travel or time expenses.

Data were collected through a self-administered or an interviewer-assisted method. Parents were given the opportunity to select which method they preferred.

Instrument

The EPDN/PAN is a culturally adapted Spanish version of the CAPE/PAN. It was translated using a careful multi-step process by two professional translators and the principal investigator. It was then culturally adapted by a focus group and an expert panel. The focus group participants were parents of children with and without disabilities, teenagers and a community recreation leader. The expert panel was composed of two occupational therapists, a psychologist and two recreation leaders. Both groups assessed the construct's comprehensibility and item appropriateness and relevance through a variety of qualitative and quantitative exercises.

The EPDN/PAN and the CAPE/PAC are criterion-reference assessments that measure five dimensions of participation: Diversity, Intensity, With Whom, Where and Enjoyment. They include the PAN/PAC scales, which measure preferences for activities. The EPDN/PAN consists of 49 items for the Overall scale, which can be further divided into Informal (41 items) and Formal (eight items) domains.

The EPDN/PAN was pilot tested with a sample of 20 children, and validity evidence based on test content and test structure was found. Moderate to good Cronbach's alpha reliability coefficient was found for the PAN (0.88) and EPDN-Intensity (0.67) overall scales in the pilot study.

Data analysis

All questionnaires with one or more answers missing in four or more items were eliminated. Descriptive statistical analyses were used to describe the patterns of participation of the sample groups and to explore the shape and variability of the dataset.

Known-group comparison was used to evaluate evidence of the relationship of the construct being measured to other related variables (disability, age and gender). Parametric statistics were used after testing for normal distribution of scores. Assumptions of homogeneity and normal distribution of scores seemed

to be met by visual examination of data histograms and by the normal probability plot test. *Effect size* and study *power* were also calculated to further explore relationships between groups.

Cronbach's alpha reliability coefficient was used to assess the internal consistency of the PAN and the EPDN-Intensity scales for the overall and informal and formal domain scores.

Results

Four questionnaires were eliminated because they were missing data. Descriptive data of the samples are presented in Table 3. The normal probability plot test exhibited data points plotted along the normal line, indicating that the

Dimension of participation/ overall scale	Mean	SD	Median	Mean	SD	Median
	Typically developing children (n = 198)			Children with disabilities (n = 51)		
Diversity	29.6 ^{††}	7.24	30.00	26.3 ^{††}	7.99	27.00
Intensity	2.84 ^{††}	0.81	2.79	2.61 ^{††}	0.93	2.76
Whom	2.59 [†]	0.49	2.53	2.48 [†]	0.61	2.39
Where	3.24 ^{††}	0.60	3.21	3.07 ^{††}	0.74	3.13
Enjoyment	4.13	0.48	4.15	4.10	0.60	4.22
Age groups	Young age group (Ages 6–10) (n = 126)			Older age group (Ages 11–15) (n = 123)		
Diversity	29.7*	7.21	30.00	28.1*	7.74	28.00
Intensity	2.91**	0.81	2.86	2.67**	0.85	2.67
Whom	2.51 ^{††}	0.47	2.47	2.63 ^{††}	0.56	2.53
Where	3.09 ^{†††}	0.56	3.14	3.33 ^{†††}	0.68	3.33
Enjoyment	4.28***	0.44	4.31	3.97***	0.53	4.07
Gender groups	Boys (n = 126)			Girls (n = 123)		
Diversity	28.29	7.47	28.00	29.65	7.51	30
Intensity	2.71	0.82	2.67	2.88	0.85	2.86
Whom	2.54	0.43	2.52	2.60	0.60	2.50
Where	3.27*	0.55	3.25	3.14*	0.70	3.16
Enjoyment	4.09	0.52	4.15	4.16	0.49	4.19
Number of items for overall scales = 49. $p < 0.10$ two-tailed; ** $p < 0.05$ two-tailed; *** $p < 0.01$ two-tailed; [†] $p < 0.10$ one-tailed; ^{††} $p < 0.05$ one-tailed; ^{†††} $p < 0.01$ one-tailed.						

data seemed to resemble a normal distribution of scores. However, the With Whom and Enjoyment scales exhibited skewness (0.80 and -0.60 , respectively). Caution was exerted when interpreting data from these scales even when the scores seemed to have a normal distribution, because gaps or skewness were observed.

Group comparisons

As hypothesized in the one-tailed alternative hypothesis, children with disabilities showed significantly lower mean scores on the overall participation dimension scales of Diversity ($t = 2.84$; $p = 0.002$), Intensity ($t = 1.75$; $p = 0.041$) and Where ($t = 1.75$; $p = 0.041$) in comparison with typically developing children (see Table 3). The With Whom scale exhibited a mean difference, but it did not reach statistical significance ($p = 0.08$). To further explore the magnitude of the differences found between the typically developing children and children with disabilities, *effect size* and the *power* of the study were calculated. The Diversity scale showed a computed effect size of 0.46. According to Portney and Watkins (2000), 0.46 can be considered a medium effect. Given an effect size of 0.50 and a sample size of 81 (using harmonic mean for different group sizes), the power of this test was above 83% of protection against a *Type II error* for the diversity scale, which can be considered adequate. The other three scales showed a small effect size (0.28 for the Intensity scale, 0.22 for With Whom and 0.28 for Where). The power for a sample of 80 with an effect size of 0.20 to 0.30 is from 41 to 68, which suggests that for these scales, the power was limited. An important observation from the sample of children with disabilities that participated in this study is that of the 51 children who had a disability, 14 (27%) participated in a regular education program.

A statistically significant difference was also found for the one-tailed hypothesis related to age groups. As hypothesized, older children showed significantly higher scores on the scales of the dimensions of With Whom ($t = -1.89$, $p = 0.03$) and Where ($t = -3.02$, $p = 0.002$) in comparison to the younger children (see Table 3). The null hypothesis of equal means was rejected. The sample of this study suggested that older children experience less restricted participation than younger children. A difference of more than 20% of children participating in an activity was found between older and younger groups in the following activities: *doing puzzles* (45% of older children vs. 64% of younger children), *hanging out* (72% vs. 51%, respectively); *playing with toys or things* (49% vs. 90%), *playing imaginary games* (22% vs. 58%); and in *playing on playground equipment* (33% vs. 66%). A difference of 10 to 20% of children participating in an activity was also found for nine other items. This supports evidence that there are items in this test that are more typical of older children and that other items are more typical of younger children.

No statistically significant difference was found on the patterns of participation (Intensity, With Whom and Where) between boys and girls. The null

hypothesis could not be rejected. The two-tailed *t*-test showed a $p = 0.11$ for the Intensity scale, $p = 0.33$ for the With Whom scale and $p = 0.09$ for the Where scale. One possible explanation for not finding statistical significant differences by gender could be that the test did not have enough power. For a two-tailed *t*-test ($\alpha = 0.05$) and a sample size of 100 subjects in each group, the power was calculated as 0.29 to 0.56 for a small difference (effect size between 0.20 and 0.30) between groups. This means that the study did not have enough power (>0.80) to test this hypothesis if the difference was small. It would have enough power in a sample of 100 subjects in each group when the difference between groups (effect size) was between 0.40 and 0.50. This means that there was not a good protection against Type II error for a small difference between means. This warrants further study of gender differences with a larger sample.

Reliability

Cronbach's alpha was calculated for the PAN on the Overall scale and for the Formal and Informal domain scales. All showed good internal consistency (0.92 Overall scale; 0.90 Formal domain and 0.70 Informal domain scale) with moderate to high internal consistency reliability coefficients. Cronbach's alpha also was calculated for the EPDN Intensity Overall and Formal and Informal scales. Good internal consistency was found for the Intensity Overall (0.85) and Informal domain (0.84). However, a moderate to low coefficient (0.46) was found for the Intensity Formal domain.

Discussion

Validity was examined by evidence based on test score relationship with other variables and on its internal structure. If the variability of test scores reflects what is expected based on theory, previous studies or general accepted assumptions, then one can deduce that the test scores are sensitive to or are influenced by expected variables (AERA et al., 1999). Three hypotheses examined the relationship of test scores to disability, age and gender variables.

The results showed a significant difference between children with and without disability in three of the four dimensions examined (Diversity ($p < 0.01$), Intensity ($p = 0.04$) and Where ($p = 0.04$)). These results are congruent to what was found in the literature. Extensive literature suggests that children with disabilities participate less than children without disabilities. According to the Healthy People 2010 document, people with disabilities often experience lack of access to health services and are at risk of secondary conditions, which in turn limit their participation (USDHHS, 2000). In a study of the perceived quality of life, adolescents with a disability reported a lower quality of life than those without a disability (Edwards et al., 2003). The authors found that 46% of adolescents with disabilities reported missing out on activities they wanted to do compared to only 16% of typically developing adolescents.

Bedell and Dumas (2004), in a study about social participation of children and youth with acquired brain injuries, found that more than 50% of these children demonstrated significant participation restrictions in home- and community-based activities. Specifically, they found a larger percent of children presenting restrictions compared to same age peers in structured events, social play, family chores and others. Brown and Gordon (1987) compared the patterns of activities of 239 children with disabilities and 519 children without disabilities. They found that the daily life pattern of children with disabilities had less variety and a slower tempo than typically developing children. Also, children with disabilities spend more time in dependent activities, quiet recreation and personal care, and less time in social engagements, active recreation, household tasks and activities away from home. They stated '...it is clear that disability status has an extensive impact on activity' (p. 830). They found differences that varied from minor to moderate, similar to what was found in this measurement study.

Even though extensive literature has documented that children and youth with disabilities present restrictions in their participation, it is important to understand that a disability is not a direct cause for limited or restricted participation. A number of factors have been associated with limited or restricted participation for both people with and without disabilities.

The dimension of With Whom was the only one that did not reach statistical significance ($p = 0.08$). It might have been related to a power issue, a Type II error. Because a small difference (effect size) was found, it is possible that a larger sample size is needed. The other factor that might have influenced the finding is that the With Whom dimension distribution of scores for the sample exhibited some gaps and skewness; even when the scores resembled a normally distributed curve. The gaps and skewness in scores might be factors affecting the extent of the difference, hence the confidence with which one can interpret the results of this dimension. The With Whom scale should be interpreted with caution and further analysis is warranted for this dimension.

The results related to age differences are also congruent to what was found in the literature. There is literature that supports theories that age is an important variable or determinant in what children do, with whom and where. Bronfenbrenner and Morris (1998) state: 'as children grow older, their developmental capacities increase both in level and range; therefore, to continue to be effective, the corresponding proximal processes must also become more extensive and complex to provide for future realization of evolving potentials' (p. 997). According to this theory, children keep expanding their proximal processes (environments) and developing more interpersonal skills as they grow older.

In a study about the participation of children with physical disabilities in relation to diagnosis, physical function and demographic variables, it was found that age, gender and physical functional ability were significant explanatory factors of children's participation (Law et al., 2004). This study found that the

diagnostic category did not significantly affect participation. Brown and Gordon (1987) found that the age of the child was the predominant factor affecting variation of activity patterns when comparing children with and without disabilities. Children with disabilities had less involvement in education and increased TV viewing with increasing age; and a similar pattern was shown for children without disabilities.

In a study of leisure activity predictors of participation and interest for typically developing adolescents, Garton and Pratt (1991) found that age was an important determinant of leisure participation, even though gender was found to be a stronger determinant. In that study, age, gender, ethnicity, school location and socio-economic status were all important predictors of leisure participation. They found that younger children participated more in sports and that older children participated more in gregarious and social activities. The results found between age and test scores are congruent with the literature that supports that age is a variable that influences participation.

No statistically significant difference was found between genders in test scores. This suggests that, according to the EPDN, boys and girls do not score differently on the dimensions of Intensity, With Whom and Where. Two possible explanations can be proposed. First, that sufficient power was not reached with the sample size ($n \approx 120$), given that only a small difference was found. The second and most possible explanation, according to the literature, is that gender differences do not vary by dimensions of participation (Diversity, Intensity, Whom and Where). Instead, gender differences vary by types of activities in which boys and girls participate (King et al., 2007); for example: physical activities, sports, sedentary activities, social activities and skill-based activities. When leisure gender differences literature was reviewed, most differences documented were related to types of activities and outcomes. Differences were not found for all activities or for the intensity as a whole; almost no information was found on the dimensions of With Whom and Where.

In a survey study based on a national sample of Icelandic youths, gender differences were found between the enrolment in organized sports and overall frequency of participation in physical activities (Vilhjalmsson and Kristjansdottir, 2003). They found less participation frequency of girls on strenuous activities. These authors state: 'Previous studies have repeatedly shown that boys outnumber girls in competitive, team, and high intensity sports and exercises ... and girls outnumber boys in non-competitive, individual and medium to low intensity sports and exercises' (p. 370). Their findings are congruent with a study reported by Shaw et al. (1995), where they found that males spent more time than females in sports, physical activities and watching TV, and found no difference between genders in time spent with friends in social activities or in free time activities.

Busser et al. (1996) studied differences in adolescent activity participation by gender, grade and ethnicity. They studied 112 leisure activities, and found that all youth preferred community-type activities, but that males were more

interested in outdoor activities, traditional and non-traditional sports while females were more interested in personal growth and artistic type activities. Vaughter et al. (1994) found that girls participated in a variety of leisure activities while boys' participation was dominated by team sports. Caldwell et al. (2004) also found gender differences; boys spent more time in natural places than females, while females spent more time in school and community clubs than males.

In a recent publication about predictors of leisure and recreation participation of children with physical disabilities, King et al. (2006) found that the direct predictors of children's intensity participation in formal and informal activities were child functional ability, family participation in social and recreational activities and child preferences for formal and informal activities, and that the indirect predictors were family cohesion, supportive relationships and others. They did not find that gender or age had a significant effect on intensity of leisure and recreation participation as a dimension, which is congruent with what was found in this study. They posit that participation and the factors that influence it are a complex set of relationships. In another recent publication of children with physical disabilities, it was found that females participated in significantly more social and skill-based activities (diversity), while male participation was significantly more intense for active physical activities (frequency) (Law et al., 2006). Larson and Verma (1999), in a study of how children spend their time worldwide, found that in literate post-industrial populations, gender differences in free time were minimal or absent.

In sum, the literature has identified gender differences by activity types (which were not explored in this study). Few generic or comprehensive differences by dimensions (Intensity, With Whom, Where) have been found in leisure participation between genders. We can conclude that the initial interpretation and expectation of gender differences by dimensions was not well supported neither in the literature nor in the EPDN scores. Differences documented in the literature are by specific activity types. This contributes some evidence to support the possibility of validity for this assessment. However, further research is needed that is related to gender differences in the EPDN by activity types. This is an important finding because even when gender differences were not found by dimensions, it points out the area where gender differences might be found, that is, by activity types, which may be more clinically significant.

Cronbach's alpha coefficients suggest that the PAN scale is measuring one construct – preferences for leisure activities – with good internal consistency. The moderate coefficients found suggest that the scale is adequately measuring the construct. The internal consistency of the Overall and Informal domain scores of the EPDN-Intensity scale were also adequate in supporting the construction of the scale. The formal domain of the EPDN-Intensity scale was the only one that exhibited a rather low internal consistency (0.46). Given that this reliability coefficient is so intimately related to the variability of scores and to

number of items, a low coefficient is not surprising. Even though the Formal domain was low, it can be considered sufficient given two reasons: that this scale contains few items, only eight; or that typically, these activities occur in a variety of frequencies.

Conclusions

It is important to recognize that no single study can provide sufficient evidence to conclude that an assessment is valid; a series of converging experiments are needed (Streiner and Norman, 1995). However, the results of this study support evidence of validity and reliability for using the EPDN/PAN with Puerto Rican children. Initial validity evidence based on the test scores' relationship with external variables and based on the test's internal structure was found to support the use of the assessment and to warrant further research with this assessment. Further research is required to examine if this instrument is valid and reliable with other Hispanic children populations. Having psychometrically sound Spanish assessments available is extremely valuable to the profession of occupational therapy because it will make it easier to culturally adapt to different Hispanic populations. This study is an additional piece of research that can contribute to strengthening the synergies between philosophy, theory, practice and research in occupational therapy, specifically in Puerto Rico and other Spanish-speaking countries or regions.

This measure contributes to the practice of occupational therapy in Puerto Rico by providing therapists with a new option to assess children's leisure and recreation participation. This new assessment can contribute to measuring outcomes and provide evidence for occupation-based practice.

Acknowledgement

This project was funded by the University of Puerto Rico-MSA Extramural Associates Research Development Award supported by NICHD, NIH grant number 1G11HD046326

References

- Ackermann L, Feeny T, Hart J, Newman J (2003). Understanding & evaluating children's participation: a review of contemporary literature. (Available at: <http://www.plan-uk.org/pdfs/literaturereview.pdf>) (Accessed 25 June 2005).
- American Educational Research Association, American Psychological Association, National Council on Measurement in Education (1999). Standards for Educational and Psychological Testing. Washington, DC: American Educational Research Association.
- Beaton D, Bombardier C, Guillemin F, Bosi M (2000). Guidelines for the process of cross-cultural adaptation of self-report measures. *Spine* 25: 3186–3191.

- Beaton D, Bombardier C, Guillemin F, Bosi M (2002). Recommendations for the Cross-Cultural Adaptations of Health Status Measures. American Academy of Orthopaedic Surgeons Institute for Work & Health. <http://www.dash.iwh.on.ca/assets/images/pdfs/xculture2002.pdf> [22 August 2006]
- Bedell G, Dumas H (2004). Social participation of children and youth with acquired brain injuries discharged from inpatient rehabilitation: a follow-up study. *Brain Injury* 18: 65–82.
- Brown M, Gordon W (1987). Impact of impairment on activity patterns of children. *Archives of Physical Medicine and Rehabilitation* 68: 828–832.
- Bronfenbrenner U, Morris P (1998). The ecology of developmental processes. In: Damon W, Lerner RM (eds). *Handbook of Child Psychology: Vol 1 Theoretical Models of Human Development* 5th ed (pp. 993–1028). New York: John Wiley.
- Busser J, Hyams A, Carruthers (1996). Differences in adolescent activity participation by gender, grade and ethnicity. *Journal of Park and Recreation Administration* 14: 1–20.
- Caldwell L, Baldwin C, Walls T, Smith E (2004). Preliminary effects of a leisure education program to promote healthy use of free time among middle school adolescents. *Journal of Leisure Recreation* 36: 310–335.
- Coster W (2006). The road forward to better measures for practice and research. *OTJR: Occupation, Participation and Health* 26: 121.
- Edwards T, Patrick D, Topolski T (2003). Quality of life of adolescents with perceived disabilities. *Journal of Pediatric Psychology* 28: 233–241.
- Engel-Yeger B, Jarus T, Law M (2007). Impact of culture on children's community participation in Israel. *American Journal of Occupational Therapy* 61: 421–428.
- Garton A, Pratt C (1991). Leisure activities of adolescent school students: predictors of participation and interest. *Journal of Adolescence* 14: 305–321.
- Heah T, Case T, McGuire B, Law M (2007). Successful participation: the lived experience among children with disabilities. *Canadian Journal of Occupational Therapy* 74: 38–47.
- Kielhofner G (2007). Respecting both the 'Occupation' and the 'Therapy' in our field. *American Journal of Occupational Therapy* 61: 479–482.
- King G, Law M, Hanna S, King S, Hurley P, Rosenbaum P, et al. (2006). Predictors of the leisure and recreation participation of children with physical disabilities: a structural equation modeling analysis. *Children's Health Care* 35: 209–234.
- King G, Law M, King S, Hurley P, Hanna S, Kertoy M, Rosenbaum P (2007). Measuring children's participation in recreation and leisure activities: construct validation of the CAPE and PAC. *Child: Care, Health and Development* 33: 28–39.
- King G, Law M, King S, Hurley P, Rosenbaum P, Hanna S, Kertoy M, Young N (2004). *Children's Assessment of Participation and Enjoyment & Preferences for Activities of Children*. Texas: Harcourt Assessment Inc.
- King G, Law M, King S, Rosenbaum P, Kertoy M, Young N (2003). A conceptual model of the factors affecting the recreation and leisure participation of children with disabilities. *Physical & Occupational Therapy in Pediatrics* 23: 63–90.
- Larson R, Verma S (1999). How children and adolescents spend time across the world: work, play and developmental opportunities. *Psychological Bulletin* 125: 701–736.
- Law M (2002). Participation in the occupations of everyday life. *American Journal of Occupational Therapy* 56: 640–649.
- Law M, Baum C (2001). Measurement in occupational therapy. In: Law M, Baum C, Dunn W (eds). *Measuring Occupational Performance: Supporting Best Practice in Occupational Therapy* (pp. 3–20). New Jersey: SLACK.
- Law M, Finkelman S, Hurley P, Rosenbaum P, King S, King G, Hanna S (2004). Participation of children with physical disabilities: relationships with diagnosis, physical function, and demographic variables. *Scandinavian Journal of Occupational Therapy* 11: 156–162.

- Law M, King G, King S, Kertoy M, Hurley P, Rosenbaum P, Young N, Hanna S (2006). Patterns of participation in recreational and leisure activities among children with complex physical disabilities. *Developmental Medicine & Child Neurology*, 48: 337–342.
- Portney L, Watkins M (2000). Power and sample size. In: Portney L, Watkins M (eds). *Foundations of Clinical Research: Application to Practice* 2nd ed (pp. 705–729). New Jersey: Prentice Hall Health.
- Shaw S, Kleiber D, Caldwell L (1995). Leisure and identity formation in male and female adolescents: a preliminary examination. *Journal of Leisure Research* 27: 245–253.
- Streiner D, Norman G (1995). *Health Measurement Scales* 2nd ed. Canada: Oxford University Press.
- US Department of Health and Human Services (2000). *Healthy People 2010: Understanding and Improving Health* 2nd ed. Washington, DC: US Government Printing Office (Available at: http://www.healthypeople.gov/Document/html/uih/uih_2.htm) (Accessed 15 November 2006).
- Vaughter R, Sath D, Vozzola E (1994). Sex similarities and differences in types of play in games and sport. *Psychology of Women Quarterly* 18: 85–105.
- Vilhjalmsson R, Kristjansdottir G (2003). Gender differences in physical activity in older children and adolescents: the central role of organized sport. *Social Science and Medicine* 56: 363–374.

Address correspondence to Wanda I. Colón, Urb. Veredas #482, Veredas de las Amapolas, Gurabo, Puerto Rico 00778 (E-mail: wandacoln@cprs.rcm.upr.edu).

Copyright of Occupational Therapy International is the property of John Wiley & Sons, Inc. and its content may not be copied or emailed to multiple sites or posted to a listserv without the copyright holder's express written permission. However, users may print, download, or email articles for individual use.