

BRIEF REPORT

Validation of Environmental Content in the Young Children's Participation and Environment Measure



Mary A. Khetani, ScD, OTR

From the Department of Occupational Therapy, Colorado State University, Fort Collins, CO.

Abstract

Objective: To evaluate the concurrent validity of the environment content in the newly developed Young Children's Participation and Environment Measure (YC-PEM).

Design: Cross-sectional study.

Setting: Data were collected online.

Participants: Convenience and snowball sampling methods were used to survey caregivers of children (N=381; 85 children with developmental disabilities and delays and 296 children without developmental disabilities and delays) aged 0 and 5 years (mean age, 36.49±20.18mo).

Interventions: Not applicable.

Main Outcome Measures: The YC-PEM includes an assessment of the effect of environment on children's participation for 3 settings: home, daycare/preschool, and community. Pearson and Spearman correlational analyses were used to examine the concurrent validity of the YC-PEM environmental content according to a criterion measure, the Craig Hospital Inventory of Environmental Factors—Child and Parent Version (CHIEF-CP). The YC-PEM and the CHIEF-CP items were first mapped to the International Classification of Functioning, Disability, and Health—Children and Youth Version to identify items for pairwise comparison.

Results: We found small to moderate negative associations for 51 of 66 pairwise comparisons involving CHIEF-CP and YC-PEM environment items ($r = -.13$ to $-.39$; $P < .01$). Significant associations were found for items in all 5 International Classification of Functioning, Disability and Health—Children and Youth Version environmental domains.

Conclusions: Results lend further support for the use of the YC-PEM for valid caregiver assessment of the physical, social, attitudinal, and institutional features of environments in terms of their effect on young children's participation within the home, daycare/preschool, and community settings.

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Participation in activities is important for early childhood health and development.¹ Participation difficulties for young children with developmental disabilities and delays are related to their abilities, family factors, and environmental effects.² Instruments are needed to advance research on the relative impact of young children's environments on participation to guide care planning on this outcome.³

The Young Children's Participation and Environment Measure (YC-PEM)⁴ assesses for participation in home, daycare/preschool, and community activities and environmental qualities that affect

participation. Similar to the Craig Hospital Inventory of Environmental Factors for Children—Parent Version (CHIEF-CP), which was adapted from Craig Hospital Inventory of Environmental Factors to be suitable for use in children with and without disabilities between 2 and 12 years,⁵ the YC-PEM assesses for a broad range of environmental effects (eg, physical layout, activity demands, attitudes, and policies). However, the combined format in the YC-PEM may help to clarify the effect of environmental factors, compared with child and family factors, on children's participation in specific settings.

The YC-PEM was field-tested to examine its psychometric properties before use in large sample pediatric rehabilitation research.⁶ In this article, we establish the concurrent validity of the YC-PEM environmental content to provide further evidence of its research utility. Significant negative item-pair associations are expected when comparing environmental content from the YC-PEM

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and the CHIEF-CP because the CHIEF-CP assesses for environmental barriers and the YC-PEM captures the extent to which the child's environment is perceived to support participation.⁷

Methods

Participants

Using a cross-sectional design, the YC-PEM was field-tested online with 395 caregivers of young children in a 3-part study (from June to October 2013). Recruitment and sampling methods have been described elsewhere.⁶ This study involves secondary data analysis of part 1 data collection, which included participants completing the demographic questionnaire, the YC-PEM, and the CHIEF-CP online. Participants (1) could read and write in English, (2) resided in the United States or Canada, (3) identified as a 18 years or older parent or legal guardian, (4) had a child between 0 and 5 years old, and (5) had Internet access.

Measures

Three questionnaires were administered to participants.

Demographic questionnaire

Caregivers reported on (1) family factors (education), (2) household factors (income), (3) child factors (age and sex), and (4) their child's functioning in 12 areas related to participation² (0=no problem vs 1=little/big problem).

Young Children's Participation and Environment Measure

Caregivers were asked to evaluate their young child's participation in broad types of activities in the home (13 items; eg, mealtime, cleaning up, and indoor play), daycare/preschool (3 items; eg, group learning, socializing with friends, and field trips), and community (12 items; eg, dining out, classes, and community attractions) settings.⁴ The caregiver was provided with examples.

After completing participation items for a setting, caregivers evaluated the effect of environmental features (eg, physical layout, activity demands, and policies) and resources (eg, transportation, equipment, and money) on the child's participation (13 items for home, 16 items for daycare/preschool, 17 items for community). For example, parents were asked, "Does the physical layout help or make it harder for your child to participate in these activities at home."⁴ The perceived effect of environmental features on participation was assessed on a 3-point scale (3=no impact/usually helps to 1=usually makes harder). Perceived support of resources for participation was also assessed on a 3-point scale (3=not needed/usually yes to 1=usually no).

Craig Hospital Inventory of Environmental Factors for Children—Parent Version

The CHIEF-CP⁵ was adapted from Craig Hospital Inventory of Environmental Factors, which is based on the International

Classification of Functioning, Disability, and Health framework and has shown discriminant validity in psychometric testing in adults with and without disabilities.⁵ The CHIEF-CP has been validated for use in studies involving children with disabilities (eg, cerebral palsy and autism spectrum disorder). The CHIEF-CP contains 10 items pertaining to environmental barriers that affect the child's participation in school and work, community, recreational, social, and civic activities. For example, caregivers were asked, "How often did your child need someone else's help at preschool, school or work and could not get it easily."⁵ For each item, caregivers reported on (1) frequency (1 = never to 5 = daily) and (2) magnitude of impact (1 = no problem to 3 = big problem). Frequency-magnitude product scores (representing overall item impact) were computed by multiplying the frequency and magnitude responses for each item. The CHIEF-CP has adequate internal consistency ($\alpha = .76-.78$) and test-retest reliability (intraclass correlation coefficient = .73).⁵

Data analysis

Data collected online were saved in a central data repository and exported to IBM SPSS Statistics for Windows (version 22.0)⁸ for analyses. Data were screened via visual inspection (histogram) and normality statistics (absolute values of >2 for skewness and >7 for kurtosis) to reveal 6 CHIEF-CP items and 5 YC-PEM environment items that violated assumptions of normality, resulting in the use of nonparametric tests for analyses on items. Fourteen cases with missing data for all CHIEF-CP items were excluded. Most YC-PEM environment items contained random missing data (range, 1–14; $<11\%$ of the cases) and were retained with the use of pairwise deletion.

Addressing the concurrent validity of the YC-PEM environmental content required identifying item pairs by mapping those items along with CHIEF-CP items to the 5 International Classification of Functioning, Disability, and Health—Children and Youth Version (ICF-CY) environmental domains: (1) products and technology; (2) natural environment and human-made changes to the environment; (3) support and relationships; (4) attitudes; and (5) services, systems, and policies.⁷ Pearson or Spearman rank correlations were computed on item pairs that were identified through the ICF-CY mapping to determine the degree of association between items using these criteria ($r = .10-.29$ as weak; $r = .30-.49$ as moderate; $r \geq .50$ as strong association).⁸ Internal consistencies of the CHIEF-CP scales were computed for our sample ($\alpha = .83$ for frequency; $\alpha = .84$ for magnitude). The alpha value was set to .01 to reduce type 1 error.

Results

Child and family characteristics

Participants were 381 caregivers of children aged between 1 and 71 months (mean age, 36.49 ± 20.18 mo) and residing in the United States (91.0%) and Canada (8.9%). Most respondents were mothers (95.8%) and married (90.0%) and had earned an associates-, college-, or graduate-level education (78.8%). Eighty-five children were reported as receiving early intervention or early childhood special education services. The 3 most common functional issues reported by caregivers were related to managing emotions (34.9%), controlling behavior (31.0%), and paying attention (27.6%) (table 1).

List of abbreviations:

CHIEF-CP	Craig Hospital Inventory of Environmental Factors – Child and Parent Version
ICF-CY	International Classification of Functioning, Disability, and Health – Children and Youth Version
YC-PEM	Young Children's Participation and Environment Measure

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