

## 1. Background

- Children and youth with acquired brain injuries (ABI) and other disabling conditions often experience environmental barriers that hinder their participation.<sup>1-10</sup>
- In one study, children with ABI were more restricted in their participation than children without disabilities and lesser extent of participation was related to higher extent of environmental barriers.<sup>1</sup>
- Environmental factors that affect children with ABI are classified into 5 categories in the International Classification of Functioning (ICF)<sup>11</sup>: (1) Products and technology:<sup>2,3,6,10</sup> (2). Natural and human-made changes.<sup>8</sup> (3). Support and relationships.<sup>2,3,6,8,10</sup> (4). Attitudes of others.<sup>2,3,6,8,10</sup> (5). Services, systems and policies.<sup>2,3,6,8,10</sup>

## 2. Purpose

- To describe patterns of environmental barriers that affect participation of children with ABI and to examine differences in participation and environmental factors in terms of type and severity of impairment, age, and time post-injury.

## 3. Research Design & Methods

### 3.1 Data Collection & Measures

- Data were collected in the USA, Canada and Australia from 2002-2005.
- 212 children with ABI were included from the Child and Family Follow-up Survey (CFFS) study.<sup>1</sup>
- The CFFS, a parent report-survey, includes 3 separate measures:
  - The *Child and Adolescent Scale of Participation (CASP)*: 20 home, school, and community activities. 4-point rating scale: (1) unable, (2) somewhat limited, (3) very limited, (4) age expected/full participation. Higher scores reflect greater extent of participation.
  - The *Child and Adolescent Scale of Environment (CASE)*: 18 environmental factors related to the home, school or community. 3-point rating scale (1) No problem, (2) Little problem, (3) Big problem. Higher scores reflect greater extent of environmental problem.
  - The *Child and Adolescent Factors Inventory (CAFI)*: 15 impairments. Uses the same rating scale as the CASE. Higher scores reflect greater extent of impairment.

### 3.2 Data analyses

- 5 impairment groups were created based on CAFI item scores: Group1-No/mild, Group2-PHYsical, Group3-COGnitive, Group4-PSYchological, Group5-MULTIple impairment/s.
- 4 CASE environment sub-scores were created based on the 5 ICF categories. ("Products & technology" and "Natural and human-made changes" were combined to create the 1st subscore.)
- Descriptive statistics, one-way ANOVA, and post-hoc (Tukey) tests were used to identify environmental barriers and to examine differences in environment (CASE) and participation (CASP) scores.

## 4. Results

### 4.1 Sample Demographics (n=212)

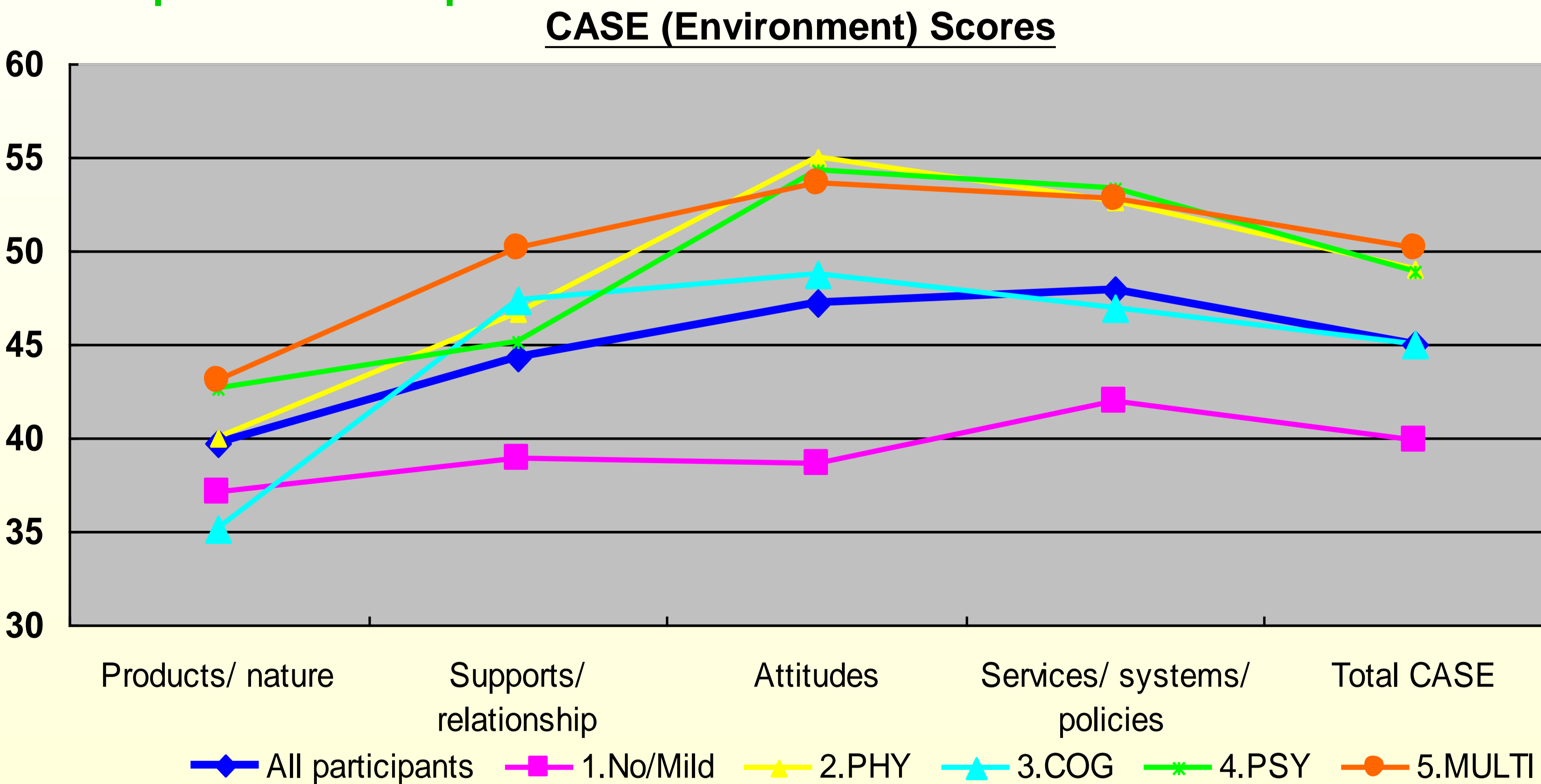
Characteristic	n	%	Characteristic	n	%
<b>Age (years old)</b>					
6 or younger	15	7.1	<b>Diagnosis</b>		
6-12	55	25.9	TBI	167	78.8
12-15	46	21.7	Stroke	19	9.0
15-18	44	20.8	Infection	3	1.4
18 or older	51	24.0	Tumor	7	3.3
Unreported	1	0.5	Anoxia	1	0.4
<b>Gender</b>					
Male	109	51.4	Seizure	4	1.9
Female	101	47.6	Other	3	1.4
Unreported	2	0.9	Unreported	8	3.8
<b>Ethnicity/Race</b>					
Caucasian	55	25.9	<b>Time since injury (year)</b>		
Black	7	3.3	< 1	24	11.4
Hispanic/Latino	4	1.9	1-2	55	25.9
Asian/Other	2	1.0	2-3	31	14.6
Unreported	144	67.9	3-5	53	25.0
			>5	48	22.6
			Unreported	1	0.5

### 4.2 Most frequent environmental problems\*

- Family stress (57%)
- Inadequate/lack of information (37%)
- People's attitude at school/work (36%)
- Inadequate school programs/services (34%)
- Inadequate community programs/services (32%)
- Lack of support at school/work (32%)
- Government agencies/policies (32%)
- Inadequate family finances (30%)
- Inadequate assistance at school/work (29%)
- People's attitudes in the community (28%)

\*Big and Little problems combined

### 4.3 Impairment Groups: Differences in CASE & CASP Scores



### CASP (Participation) Scores

	All Participants (n=212)	1.No/Mild (n=89)	2. PHY (n=10)	3. COG (n=14)	4. PSY (n=31)	5. MULTI (n=68)
<b>Mean (SD)</b>	87.03 (14.23)	93.70 (9.01)	91.53 (9.01)	88.97 (10.08)	83.17 (13.34)	78.94 (14.94)

- Significant differences were found in the CASP total scores ( $F[5,219]=12.0, p<.001$ ) AND the CASE total scores & sub-scores among impairment groups ( $[F[8,203]=3.28-7.03, p<.001]$ ), except among the 3 groups with a single impairment.

### 4.4 Age & Time Post-Injury Groups: Differences in CASE & CASP Scores

- Age:** No significant differences and no consistent patterns.
- Time Post-injury:** Significant differences were found in the CASP scores ( $F[4,206]=4.63, p<.01$ ) and the CASE total scores and subscores ( $F[4,206]=2.46-4.28, p<.05 - p<.01$ ), except for "supports/relationships."
- Children who were < 1 year post-injury had the highest CASE total score, highest environmental subscores for "products/nature" & "services/systems/policies," and the second lowest CASP Total score.

## 5. Discussion

- Results are consistent with previous studies that identify problems related to government agencies, family stress, people's attitudes, inadequate information and lack of supports from school and community.<sup>1-10</sup>
- Greater complexity or severity of impairment is linked to greater environmental barriers and less participation.<sup>1,2</sup>
- Attitudinal issues were the most often reported problems of children with more severe and multiple impairments. Unfamiliarity with or fear of disabilities may result in negative attitudes from others.<sup>7,9,10</sup>
- Psychosocial impairment may be less visible than other impairments which might affect the provision of appropriate services and programs for children with psychosocial problems.<sup>10</sup>
- Uncertainty about the child's prognosis and lack of knowledge about appropriate resources may be particularly challenging in the first year post-injury.
- Results provide an overall picture of where greater efforts might be needed to promote participation of children/youth with ABI.

## 6. Limitations & Future Directions

- The small size of the 3 single impairment groups could explain why significant differences were not found related to environmental sub-scores.
- There are alternate ways to create environmental sub-scores and to form impairment groups.
- Only parents' perspectives were reported. Reports from children and youth would likely provide additional or different insights.
- Data on other variables (socio-economic status, severity of brain injury) might have provided additional insights.
- Future inquiry should include a larger & more diverse sample. Issues related to missing data for race / ethnicity need to be addressed in the future.

## 7. References

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