Feasibility and effectiveness of Cognitive Orientation to daily Occupational Performance (CO-OP) with children with executive functions deficits following acquired brain injury: a single case experimental design

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Introduction

Executive functions (EF) deficits are frequently observed following childhood acquired brain injury (ABI). These deficits have a strong impact on everyday life and occupational performance (the ability to choose, organize and perform meaningful activities providing satisfaction). CO-OP (Cognitive Orientation to daily Occupational Performance) is a cognitive approach for problem solving, that consists in guiding the individual towards discovery of efficient strategies, in order to improve their performances in daily life activities. CO-OP has rarely been used in childhood ABI.

Aims

(1) To explore if the use of CO-OP with children with EF deficits following ABI could improve their occupational performance and their everyday executive functioning.

(2) To evaluate if the O’Hope French pilot tool (Outil Thérapeutique pour l’aide au déterminant d’activité Pédagogiques et Ergothérapeutique [therapeutic tool for self-determination of pedagogical goals in occupational therapy]) can facilitate the determination by the child of his/her problematic occupations.

Methods

- **Participants**
  Two children, at least 7 months post-severe ABI (an 9-year old boy who sustained severe traumatic brain injury and a 11-year old girl who sustained severe arterial ischemic stroke).

- **Study design**
  Single case experimental design with multiple baselines across individuals and behaviours (and associated measures).

- **Outcomes measures**
  - **COOP** (Canadian Occupational Performance Measure)
  - **O’Hope** (therapeutic tool for self-determination of pedagogical goals in OT)
  - **GAS** (Goal Attainment Scale)
  - **BACS-C subscores** (Behavioural Assessment of Social Cognitive Development for Children)
  - **BREF** (Behavior Rating Inventory of EF)
  - **CCT** (Children’s Cooking Task)

- **Intervention**
  Included within the child’s conventional rehabilitation program, following the key principles described in the original CO-OP protocol, with some adjustments to adapt it to the childhood ABI population (e.g. 2 rather than 3 goals; 14 rather than 10 sessions, over 7 weeks given the relatively severe impairments). Among the 3 problematic occupations identified during baseline, the first 2 were used as target goals during sessions, and the third served as a control goal.

- **Data analysis**
  Visual analysis by Dual Criteria Method, statistical analysis by Non-overlapping of All Pairs (NAP) and Baseline Corrected Tau.

Results

- **Child’s chosen COOP goals and pre/postoutcomes scores**
  - Significant effect of the intervention (large)
  - Significant effect of the intervention (medium)

Discussion

Both children were receptive to how to approach problematic situations through CO-OP. They were able to achieve the goals they had set and their occupational performance improved significantly. The effect of the CO-OP intervention on the goals, measured by repeated judgment criteria was consistent and significant.

The neuropsychological test results improved.

For P1, according to the BREF, parents and teacher ratings tended to be congruent at the end of the follow-up phase, with scores within age-expected norms, and significant progress displayed by statistical analysis. P2’s teacher, although she reported more difficulties than parents, qualitatively perceived positive changes, especially at the beginning of the intervention.

The performance in a ecological complex cooking task improved for P1 in immediate post-intervention (number of errors) and the task duration decreases for both patients.

O’Hope was very useful in defining the goals, especially for P1.

Conclusion

These results are encouraging and suggest the effectiveness of CO-OP with children with executive functions deficits following acquired brain injury. They should be replicated in a larger number of cases, in order to refine the application of CO-OP to this population.