

## Feature Article

# Implementing the Cognitive Orientation to daily Occupational Performance (CO-OP) approach in a group format with children living with motor coordination difficulties

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**Background/aim:** Children with developmental coordination disorder demonstrate limited participation in daily occupations which negatively impacts on their physical and psycho-social wellbeing. Literature is emerging supporting the use of the Cognitive Orientation to daily Occupational Performance (CO-OP) within a group format. The purpose of this study was to explore the feasibility of the CO-OP approach in a group format for children with motor coordination difficulties.

**Methods:** A single group mixed-method approach was employed. Four children with motor coordination difficulties between seven-to-nine years of age and their mothers, participated in a CO-OP group intervention once a week over 10 weeks. The study examined performance (perceived and actual) and satisfaction of family-chosen goals, gross and fine motor functioning and parental experience of participating in the intervention.

**Results:** Improvements in performance (perceived) and satisfaction ratings of family-chosen goals bordered on achieving statistical significance. Fine and gross motor functioning and performance (actual) improved, however, the change in performance was variable between participants and among the overarching goals. Semi-structured interviews were thematically analysed. Themes included: formation of the group, moving from disabling to enabling, belonging and the importance of small successes.

**Conclusions:** CO-OP offers a feasible intervention approach when delivered in a group format. Parental perceptions are valuable in shaping the delivery of the CO-OP in future studies. More research is needed to support these findings and contribute to evidence-based practice.

**KEY WORDS** Cognitive Orientation to daily Occupational Performance (CO-OP), Developmental coordination disorder, group therapy, parent perspectives, mixed methods design.

## Introduction

Developmental coordination disorder (DCD) is defined as a marked impairment in motor coordination which interferes with successful participation in everyday tasks (American Psychiatric Association (APA), 2013). These difficulties in motor coordination persist into adulthood and are not the result of an intellectual disability, visual impairment or a neurological condition (APA, 2013). DCD affects approximately 5–6% of school aged children and four times more boys than girls are referred for intervention due to motor coordination difficulties (Missiuna *et al.*, 2008; Wilson, 2005). Children with DCD demonstrate limited participation in daily occupations which negatively impacts on their physical and psycho-social wellbeing (Chen & Cohn, 2003; Rivard, Camden, Pollock & Missiuna, 2015).

The Cognitive Orientation to daily Occupational Performance (CO-OP) approach is a client-centred, meta-cognitive intervention that enables skill acquisition through the use of global and domain specific cognitive strategies (Missiuna, Mandich, Polatajko & Malloy-Miller, 2001). Children learn and apply the global problem-solving strategy of goal-plan-do-check to an occupational performance issue. Learning occurs when children practise their plan and are encouraged by the therapist through guided discovery to develop domain

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Accepted for publication 24 February 2018.

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specific cognitive strategies to support their performance. In CO-OP, the therapist engages in the dynamic performance analysis of the child's motor skills and facilitates the child's use of verbal self-guidance to problem-solve through their chosen goal (Polatajko & Mandich, 2004). The CO-OP approach has received strong support within current literature as an effective treatment approach for children living with motor coordination difficulties (Miller, Polatajko, Missiuna, Mandich & Macnab, 2001; Taylor, Fayed & Mandich, 2007). Current research supporting the use of the CO-OP approach has focussed primarily on a one-on-one therapy model, however, there is emerging research evaluating its effectiveness when delivered in a group format.

Group interventions have been shown to be effective in decreasing feelings of isolation and increasing self-esteem (Camden, Tétreault & Swaine, 2012). Literature has reported that participating in group therapy facilitates meaningful social opportunities and helps to build self-confidence in children (McWilliams, 2005). Group interventions offer a cost effective way of delivering therapeutic services within the current health-care climate (Martini, Mandich & Green, 2014).

## Literature review

Evidence is beginning to emerge supporting the use of the CO-OP approach within a group format for children with DCD (Martini, Mandich, & Green, 2014; Martini *et al.*, 2014). Current literature that examines the delivery of the CO-OP approach in a group format supports positive outcomes in levels of self-rated performance and satisfaction by both parents and children. Evaluation of these studies highlights a number of important factors which must be considered when applying the CO-OP approach in a group format. These include: having therapists that have experience with the CO-OP approach leading groups; adhering as closely as possible to the CO-OP protocol; providing a balance of group and individual supports as each child will advance towards his/her goals differently; ensuring similar developmental levels among group members to allow for use of similar strategy types; and placing children with similar goals into groups in order to facilitate skill development and socialisation (Dunford, 2011; Martini, Mandich & Green, 2014; Zwicker *et al.*, 2015). Broader literature on this topic reinforces the importance of child-chosen goals which provides the opportunity for children to develop autonomy and contributes to the building of intrinsic motivation that is required to persist in task engagement (Case-Smith, 2015; Poulsen, Ziviani & Rodger, 2006). Dunford (2011) and Thornton *et al.* (2015) suggest that opportunities for socialisation and peer support are increased when groups of children share similar goals. Hammell (2014) confirmed that a sense of connectedness develops when doing and learning occupations with others and through that connectedness, occupations come to have meaning. Engaging in

similar occupations can provide the opportunity to share individual strengths, contribute to others learning and in turn foster a sense of value, self-worth and competence (Hammell, 2014; Wilcock & Hocking, 2015).

Mandich, Polatajko and Rodger (2003) and Thornton *et al.* (2015) confirmed that providing education to families as part of an intervention decreases their sense of isolation and empowers parents to help their child develop an understanding of the condition and how it affects their daily lives. The crucial role of parental involvement is highlighted within the CO-OP literature to encourage children to apply what they learn during intervention sessions to other tasks, resulting in generalisation and transfer of skills (Dunford, 2011; Zwicker *et al.*, 2015). Learning new strategies to approach a task, understanding the use of dynamic performance analysis and verbal self-talk (a part of the key features of the CO-OP approach), can result in children having a higher level of perceived competence, therefore, resulting in increased levels of engagement and participation in life (Mandich *et al.*, 2003).

Research has begun to explore parent perspectives of engaging in the CO-OP approach with their children. Jackman, Novak, Lannin and Froude (2016) described the experience of parents' with children with cerebral palsy participating in an intensive group CO-OP intervention. Parents highlighted how CO-OP was 'worth it' despite the challenges and voiced CO-OP was an effective intervention for addressing their child's motor-based goals (Jackman *et al.*, 2016). Parents described aspects of the CO-OP intervention that were important in supporting their child, many of which aligned with the key features of the approach. In addition, parents expressed how the CO-OP approach challenged their parental roles and beliefs by requiring them to step back and hand over control to their child to allow them the opportunity to solve their own problems, therefore, fostering a sense of empowerment and motivation (Jackman *et al.*, 2016). Practical considerations were also discussed by parents regarding the delivery of the CO-OP approach in a group. Ensuring groups were made up of children close in age, at a similar skill level and who shared common interests were deemed by parents as important factors to group cohesion. Parents also requested that groups be kept small, that there were staggered start times and/or therapy was a combination of individual and group sessions to increase the opportunity for one-on-one therapist support (Jackman *et al.*, 2016).

Further research needs to investigate the feasibility of the CO-OP approach when delivered in a group format and particular attention needs to be paid to the way in which the structure of the group and the delivery of the CO-OP approach differs from the original protocol (Scammell, Bates, Houldin & Polatajko, 2016). In addition, parent involvement is a key feature of the CO-OP, however, there is limited literature exploring parents'

perceptions of their involvement and the overall benefit of the intervention to their child. Therefore, the purpose of this study is to build upon the current body of evidence by:

- Investigating the feasibility of implementing the CO-OP approach in a group format with children with motor coordination difficulties.
- Describe the experiences of parents participating with their child with motor coordination difficulties in the CO-OP intervention delivered in a group format.

## Methods

### Methodology

A mixed method explanatory sequential design (Creswell & Plano Clark, 2015) was utilised in order to provide a robust feasibility study investigating the application of the CO-OP approach within a group format. The purpose of a feasibility study is to test parameters that are required for a larger, quantitative study; such parameters could include recruitment, outcome measures, follow up rates and appropriate sample sizes (Arain, Campbell, Cooper & Lancaster, 2010). Using an explanatory sequential design utilises both quantitative and qualitative data to enhance the meaningfulness of any drawn conclusions and works towards creating a complete and detailed picture of a situation (Ivankova, Creswell & Stick, 2006). In this study, the quantitative data was collected first to generate a general idea regarding the feasibility of implementing the CO-OP approach in a group format. Then qualitative data was collected through semi-structured interviews with the parents to refine and explain their experience of the intervention and utility of the approach (Ivankova *et al.*, 2006).

For the quantitative portion of the study a single group, experimental design was utilised (Bailey, 1997; Berg & Latin, 2008; Kumar, 2014). This approach is an appropriate design for use in a feasibility study, to ensure ethical treatment of all participants (all children received therapeutic intervention) and because of constraining pragmatic reasons around participant recruitment (Kumar, 2014).

Quantitative measures were enhanced by the inclusion of qualitative semi-structured interviews conducted with the purpose of gaining insight into the experiences of the families involved in the study. Qualitative description was the methodology underpinning the qualitative data analysis in this study. Qualitative description is interpretive in nature, which suggests that the researcher attempts to make sense of the participant's experience of their lived world (Braun & Clarke, 2013). The use of semi-structured interviews to gather data was utilised to add depth and help to contextualise quantitative research (Braun & Clarke, 2013; Creswell & Plano Clark, 2015).

Ethics approval was granted from James Cook University (Approval number - H6244)

### Participants

Four participants were recruited for this study from the [University Occupational Therapy Clinic]. Recruitment of participants used a purposive sampling approach (Kumar, 2014). Participants were initially identified by the [University] Health Occupational Therapy Clinical Educator, provided with a participation information sheet and invited to take part in the study. Once participants expressed an interest in participating they were assessed in order to ascertain if they met the criteria for a diagnosis of DCD as set by the American Psychiatric Association in the Diagnostic and Statistical Manual for Mental Disorders, Fifth Edition (DSM-5) (American Psychiatric Association (APA), 2013).

In addition, participants were screened using the Movement Assessment Battery for Children (MABC-2) (Henderson, Sugden & Barnett, 2007) and the Developmental Coordination Disorder Questionnaire (DCDQ'07) (Wilson *et al.*, 2009) for a suspected diagnosis of DCD. Scores on the MABC-2 that are below the 15th percentile and outcomes of the DCDQ'07 that are <47 are frequently used within the occupational therapy and CO-OP literature to indicate a strong indication of DCD (Barnett, 2008; Polatajko, & Mandich, 2004). All the children recruited in this study scored within numerical ranges on both assessments that indicate clear motor coordination difficulties (meet the criteria for DCD).

The four participants were all boys, aged between seven and nine years and were enrolled in mainstream schools. Due to CO-OP relying on verbal self-guidance and parent-involvement (key features of the approach), the boys had to be able to understand and speak fluent English and the parents had to be prepared to engage in the intervention sessions. The sample size of four was sufficient for a single-group experimental design and for qualitatively exploring the parental experience of the CO-OP approach within a group format for the purpose of this mixed-methods feasibility study (Braun & Clarke, 2013; Kumar, 2014).

### Study design and intervention

The intervention adhered to the CO-OP protocol of 10-week duration (Polatajko & Mandich, 2004). The first session was used to conduct assessments and provide parents and their children with information and education about the CO-OP approach. Sessions two–nine consisted of 90-minute group sessions held once per week for a period of eight weeks. Over the course of the eight week treatment period, participants engaged in their three chosen goals during every session. However, a specific goal was highlighted each week allowing every goal to be the main focus of the session twice over the course of the eight-week treatment period. There was a

non-treatment period of four weeks before and after the intervention, therefore, participants effectively acted as their own control in alignment with the single-group experimental design methodology (Bailey, 1997; Berg & Latin, 2008; Kumar, 2014).

Following the initial intake sessions, the research team reviewed the individual goals identified using the Canadian Occupational Performance Measure (COPM) (Law *et al.*, 2014). These goals were identified and set by the child. Some parental support was provided in the form of collaborative goal setting if the child demonstrated difficulty selecting the goals independently. Through this process, it was determined that all participants shared at least three of the same goals and ranked them as 9 or 10 in terms of importance on the COPM. Three overarching goals were then identified (handwriting, dressing and ball skills) for use in the group intervention format, however, the specific focus of the goal may have differed among the participants. For example: child 1 chose ball skills focussed on catching and throwing to improve his occupational performance related to cricket, however, child 4 focussed his plan around catching and passing to improve his competence at basketball. During the sessions activities were completed in pairs or small groups in order to promote the sharing of ideas as well as give the participants the opportunity to support and encourage each other. Individual guidance was also provided to each participant as required, to allow for more in-depth support related to the development of domain specific strategies important to the achievement of the unique child specific needs related to the overarching goals (Martini *et al.*, 2014).

Parents were encouraged to be involved throughout the programme. They were provided with an initial information package and were given the opportunity to share ideas with each other providing a safe, collaborative environment for learning.

## Assessments

A series of assessments were conducted at recruitment, pre-treatment, post-treatment and at follow-up sessions to provide a holistic picture of each child's occupational

functioning. Assessments conducted over the study period included the following:

- Developmental Coordination Disorder Questionnaire (DCDQ'07) (Wilson *et al.*, 2009) which was paired with the Movement Assessment Battery for Children Version 2 (MABC-2) test and checklist (Henderson *et al.*, 2007).
- Canadian Occupational Performance Measure (COPM) (Law *et al.*, 2014) which was conducted collaboratively with each parent and child.
- Performance Quality Rating Scale (PQRS-OD) (Martini, Rios, Polatajko, Wolf & McEwen, 2015).

In addition, an anonymous parent satisfaction questionnaire adapted from Hung and Pang (2010) and semi-structured interviews were conducted. Timing of all assessments during the study are summarised in Figure 1.

The anonymous parent satisfaction questionnaire, adapted from Hung and Pang (2010) was issued following the final intervention session. Confidentiality was maintained by having parents fill out the questionnaire in their own time and providing them with a pre-paid envelope to return it to the researchers once it was completed.

Semi-structured interviews were conducted after the completion of the post-test assessments with the mothers of each participant. Interviews lasted for approximately 1 hour and were conducted by the principal researcher. The interviews were used to explore in greater detail the experiences of the parents' involvement in the group intervention, as well as their understanding of their child's experience. This approach offered parents the opportunity to inform future group intervention sessions, to enhance the utility of the CO-OP approach in a group format and provided contextualisation of the quantitative findings of the study.

Interviews were transcribed verbatim by the first author to ensure immersion in the data analysis process. Data were analysed thematically using Braun and Clarke's (2006) framework for thematic analysis. Each phase of the data analysis process was completed collaboratively between the members of the research team

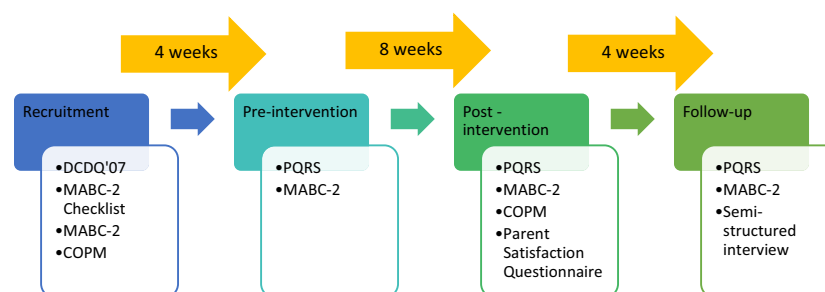


FIGURE 1: Representation of assessment timeline. [Colour figure can be viewed at [wileyonlinelibrary.com](http://wileyonlinelibrary.com)]



to ensure rigour and transparency. Initial open-ended readings of the transcripts was completed by the researchers to familiarise themselves with the data. After which, line by line in vivo coding was employed to honour the voice of the participants and their experiences. Saldana (2016) recommends using in vivo coding instead of descriptive coding for studies with small sample sizes to ensure the depth of the participants' experiences are more accurately reflected. Searching, reviewing and naming of themes were conducted iteratively to ensure a thorough and accurate representation of the complexity of participants' experiences (Braun & Clarke, 2013).

### Quality criteria

Consent was gained prior to this study, with parents and children signing informed consent forms. This study was allocated ethics approval by the Human Research Ethics Committee at James Cook University.

All of the assessments used in this study have well established reliability and sound psychometric properties (Henderson *et al.*, 2007; Law *et al.*, 2014; Martini *et al.*, 2015; Wilson *et al.*, 2009). In addition, they were performed consistently during the study by the same researcher who was trained in administering the assessments. The variety of outcome measures employed established a holistic overview of the participant's fine and gross motor skills, perceived satisfaction and performance and any subsequent changes.

The intervention session was jointly conducted by the principal researcher and her supervisor who is an experienced paediatric occupational therapist and a certified CO-OP trainer. The principal researcher is an occupational therapy honours student with paediatric experience who has experience in applying the CO-OP

approach with children with movement coordination difficulties in a supervised environment.

Findings of the semi-structured interviews are supported with verbatim quotes from the parents in order to confirm the trustworthiness of the results. Transcripts of the semi-structured interviews were provided to the parents for member checking either in person or by electronic mail (Braun & Clarke, 2013). The principal researcher and her supervisor maintained reflexivity throughout the data collection and analysis process by keeping a journal and participating in regularly scheduled debriefing sessions (Braun & Clarke, 2013).

## Results

### Quantitative measures

A descriptive approach was used to analyse the quantitative measures given that the focus of the study was on examining the feasibility of the approach and, therefore, the number of participants does not have the power to detect a significant difference if it exists (Berg & Latin, 2008). Comparative analysis at this stage would likely be misleading regardless of the result. To understand the outcome of this particular study, as a starting point for further research, the most appropriate approach is to look at each individual participant coupled with the qualitative experiences of their parents.

Results of the COPM can be seen in Table 1. Performance scores for handwriting were the least improved, with only one of the performance scores increasing at the follow-up assessment. Three of the parent's ratings had no change in the performance score, yet all satisfaction scores increased. Nine of the twelve performance scores improved, yielding an average increase of 2.33. In addition, satisfaction scores increased by an average

**TABLE 1:** Summary of COPM results

Child	Goal	Initial assessment		Follow-up assessment	
		Performance	Satisfaction	Performance	Satisfaction
1	Handwriting	4	3	4	5
	Dressing (+ shoelaces)	2	5	6	8
	Ball skills	5	5	9	9
2	Handwriting	3	2	3	4
	Dressing (+ shoelaces)	4	1	7	3
	Ball skills (+ throwing)	5	5	6	7
3	Handwriting (+ drawing)	6	3	6	4
	Dressing (+ shoelaces)	5	5	7	7
	Ball skills	3	3	5	5
4	Handwriting	3	4	5	5
	Dressing (+ independence)	5	6	7	8
	Ball skills	4	5	6	7

of 2.09. Current research provides evidence that a change of 2.5 or more points on the COPM is clinically significant (Law *et al.*, 2014).

Results of the MABC-2 are summarised in Table 2. Three of the four children produced a steady increase in standard scores between selection and follow-up testing. Total test scores are presented in relationship to the 'traffic light system' which is the method used in the MABC-2 for reporting children's performance results (Henderson *et al.*, 2007). All children were assessed to be in the red or amber zone prior to the intervention which indicated the child either had a significant movement difficulty or was 'at risk' of having a movement difficulty. Follow-up assessment results for child 1, 2 and 3 placed them in the green zone indicating no movement difficulty. Child 4 remained in the red zone throughout the intervention.

Results of the PQRS-OD are summarised in Figure 2. Two independent assessors rated video footage of the participants completing their goals across three time points. Each of the raters participated in an education session about the PQRS-OD and practised rating video tape of two other children performing the same skills as the participants in order to develop confidence and competence in their ability to use the PQRS-OD. Video recordings were taken at the pre-intervention, post-intervention and follow-up points in the study, and were blinded, randomly allocated and presented to the raters for review.

With each individual being rated across eight activities at pre, post and follow-up points a total of 96 scores were generated. Of the 96 scores, 54% (52 scores) were rated exactly the same by each rater while 43.75% (42 scores) differed by one point. Scores from the two raters were averaged for use as descriptive results. Scores were analysed for inter-rater reliability using the Statistical Package for Social Sciences (SPSS) version 22 for windows (IBM LTD) returning Cronbach's alpha coefficient results ranging from 0.762 to 0.990. This result suggests a high level of agreement across all activities (Spiliotopoulou, 2009).

The parent satisfaction questionnaire revealed all parents perceived an increase in their knowledge of motor activities to practise at home and an increase in their awareness of the importance of completing home recommendations. Parents also reported an increase in their motivation to assist their child with their motor goals and felt supported in their role to do so.

All parents believed their child had been provided with adequate opportunity to work on their motor goals and this had resulted in an improvement in their child's motor performance in daily activities. Parents reported that their child had an increased motivation to learn new motor tasks and also experienced an increase in confidence while performing motor tasks generally. Two of the four parents reported no increase in their child's social relationships, while another reported a

**TABLE 2:** Summary of MABC-2 results

Child	Timing of assessment	Component scores			Total test score (percentile rank – zone)
		Manual dexterity	Aiming and catching	Balance	
1	Recruitment	13	12	9	34 (0.5 – red)
	Pre-intervention	13	13	12	38 (1 – red)
	Post-intervention	17	21	18	56 (5 – red)
	Follow-up	27	20	33	80 (50 – green)
2	Recruitment	22	16	23	61 (9 – amber)
	Pre-intervention	30	17	23	70 (25 – green)
	Post-intervention	32	16	30	78 (50 – green)
	Follow-up	32	16	29	77 (37 – green)
3	Recruitment	18	17	9	44 (2 – red)
	Pre-intervention	16	12	22	50 (5 – red)
	Post-intervention	19	14	25	58 (9 – amber)
	Follow-up	28	17	30	75 (37 – green)
4	Recruitment	13	15	17	45 (2 – red)
	Pre-intervention	17	14	16	47 (2 – red)
	Post-intervention	14	8	18	40 (1 – red)
	Follow-up	14	11	16	41 (1 – red)

Red zone denotes a significant movement difficulty. Amber zone suggests the child is 'at risk' of having a movement difficulty. Green zone indicates no movement difficulty detected.

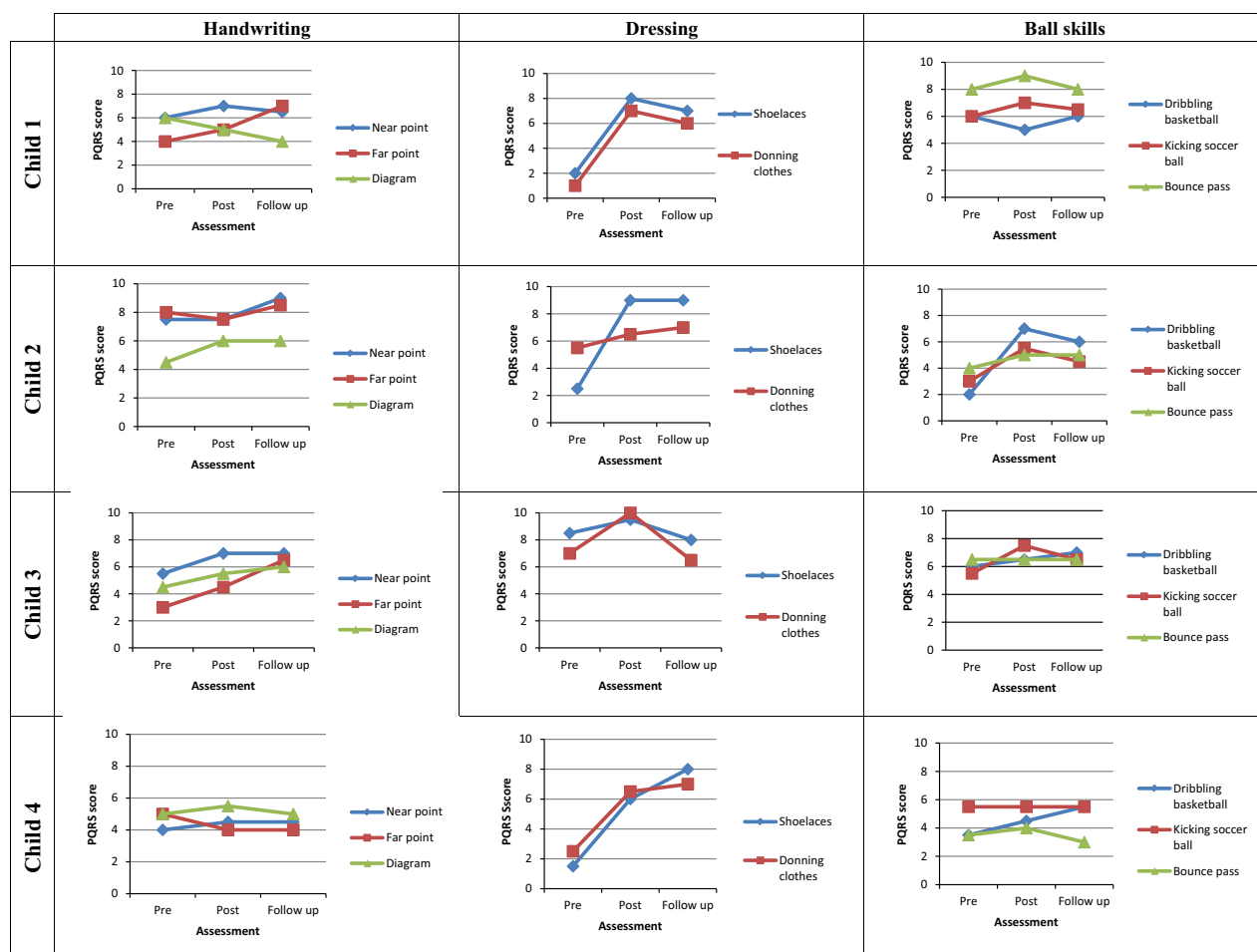


FIGURE 2: PQRS results. [Colour figure can be viewed at [wileyonlinelibrary.com](http://wileyonlinelibrary.com)]

small increase and one felt there had been a large increase in this area.

The parent satisfaction questionnaire offered parents an opportunity to voice their thoughts, concerns and suggestions about the intervention in a confidential manner. This contributed to the rigour of the qualitative findings as there were no conflicting perceptions noted between the questionnaire and qualitative interviews.

## Qualitative measures

### Semi-structured interviews

Four main themes emerged from the semi structured interviews: *formation of the group, from dis-enabling to enabling, belonging and the importance of small successes.*

**Formation of the group.** Parents discussed their previous experiences with occupational therapy services when describing what motivated them to attend the group sessions. They identified the feeling of services 'blurring', the frustration of endless testing and the significant financial commitment necessary to attend

individual sessions. Parents identified that their children often plateaued in their skills during traditional one on one occupational therapy sessions therefore negatively impacting on their commitment to attend.

... and we stopped with [therapist] a while ago because he just wasn't doing, achieving anything, he wasn't progressing ... (Parent 3)

Parents explained how these experiences influenced them to seek new approaches to occupational therapy treatment for their children and participate in a group approach.

We had a full assessment with a private occupational therapist but we didn't realise how much sessions would cost ... that was unsustainable to do it privately ... (Parent 4)

On an individual level, parents identified the benefit of their child being introduced to others with similar

struggles and interests whom were of similar age and gender, therefore, providing an immediate sense of safety within the group.

Pragmatic elements, including the ideal size of the group and timing of the sessions were discussed by parents as important elements to the successful running of future groups.

These procedural and practical elements of the intervention were highlighted as just as important as the improvement in their child's skills and contributed to the parents' confidence in, and enjoyment of, the programme. All parents suggested four children to be the optimal number of participants. Due to the sessions being run after school, two of the four parents suggested slightly shorter sessions would be better to fit in with family routines.

*From 'dis-enabling to enabling'.* All parents identified the application of the CO-OP approach involved a change in their thinking and the way in which they supported their child in the development of their motor skills.

It was a challenge to my thinking ... it was really interesting ... you get that perspective ... no-one ... likes to admit that they need to change their thinking. (Parent 4)

Handing over responsibility to the children to come up with their own solutions was identified as an important and difficult challenge. One parent described their previous behaviour as 'dis-enabling', by not allowing their child figure things out for themselves.

... to realise that the approach that you've been using hasn't necessarily been the most helpful, or ... hang on, you've been giving him the answers, you've been 'dis-enabling' him – that can be a little bit confronting. (Parent 4)

Parents discussed the ways in which they had to stop themselves from interfering with their child discovering their own domain specific cognitive strategies to solve their performance problems.

So I sat there and held my tongue... (Parent 2)

I metaphorically 'sit on my hands' a little bit more now ... If we want him to succeed he has to be able to figure things out for himself. (Parent 4)

Through the process of moving from dis-enabling to enabling, parents voiced their newly found acceptance of their children's on-going challenges. They also acknowledged an improvement in their child's willingness to give things a go and an overall improvement in their task persistence.

He's getting the idea that he's capable – just sometimes it's not gonna work out. (Parent 3)

*Belonging.* The theme of belonging was discussed by parents as an important concept for both themselves and for their children. Parents reported feeling safe in the collective learning space, being able to talk openly with other parents about their own feelings of frustration and the shared challenges faced by their children and families.

... (to) hear about the challenges that the other mothers had, (it's) good to know that you're not the only one ... (Parent 1)

Parents acknowledged the differences between the families in terms of background and socio-economic terms, however, felt connected in their challenges. A shared feeling of relief was expressed knowing that there are other families with the same issues and sharing ways to cope with their child's challenges.

...different demographics and whatever, probably people I wouldn't have normally associated with ... just different people, ... lovely mums just trying to do the same thing, trying to help their kids to achieve their goals in life ... (Parent 4)

Parents reported the importance of feeling that their child also belonged within the group. This was reflected in the ways in which the parent's discussed their child's role within the group, their emerging sense of partnership with other participants (affording learning opportunities) and their excitement about attending the intervention sessions.

... he was just excited to know that there were other kids out there that have struggles like he does ... so for him to be around other kids I think was a big boost for him just to know he's not alone... (Parent 3)

... to get the boys to help each other, and feed each other ideas on their own without someone telling them what they should be doing, I think that is a big pro (benefit)... (Parent 3)

*The importance of small successes.* Parents reported that being able to master the everyday tasks that most people take for granted made a significant positive impact on the lives of their children and their families.

So for a little thing, it's a big win for us. (Parent 3)  
(on being able to tie shoelaces)



In the big scheme of things that's not huge, but for him it's a breakthrough. (Parent 4) (on mastering upper and lower case letters when writing his name)

Achieving competence in a task, led to an increase in confidence to try new things and a level of persistence when things did not go to plan.

... yeah I think he doesn't give up straight away, you know, normally if he gets it wrong you know, he's like oh well that's it I'm not doing it again ... but he tries a lot harder ... (Parent 1)

Parents voiced that achieving childhood milestones like bike riding were initially not attainable for their children due to their motor coordination difficulties, lack of confidence and poor task persistence. These often taken-for-granted occupations had significant meaning for families and children when they were achieved.

... the bikes wonderful 'cos we can go for family rides now...it just sort of seems to have all had (...) a light bulb moment ... it all came together. (Parent 4) (discussing child's performance in bike riding post-intervention)

## Discussion

This study supports the feasibility of implementing the CO-OP approach in a group format for children with motor coordination difficulties. The results from the MABC-2 indicate a steady improvement in motor coordination performance from pre-testing through until follow-up assessment for three out of the four participants. It is important to note that the increase in MABC-2 scores could be due to the short time frames between assessment points indicating possible practice effects (Berg & Latin, 2008). To adjust for this confounding factor a robust selection of assessments were conducted to gain a holistic picture of the feasibility of employing the CO-OP in a group format.

The COPM scores revealed an increase in perceived performance and satisfaction by an average of 2.33 and 2.09 respectively, nearing the currently accepted level of clinical significance of 2.5 (Law *et al.*, 2014). Performance scores for the goal of handwriting did not change for three of the four participants, however, the corresponding scores for satisfaction all increased, signifying a positive change in parents overall satisfaction with their child's performance of handwriting. These improvements in satisfaction could be due to the shift in the parent's perspectives by altering their focus to a more enabling approach in managing and supporting their child's motor performance difficulties. Parent's reported that this change in perspective from disabling to enabling was confronting and difficult because they had

previously been telling their child how to perform the task and not allowing them to discover their own strategies. This was supported by Jackman *et al.* (2016) who explains this shift from 'doing' to 'guiding' and handing over control to the child as a challenging but enlightening process. It is important as therapists to provide parents with adequate time and support as they undergo this shift in perspective. Offering parent's meaningful resources, building strong and supportive lines of communication and ensuring enough time is built into the intervention sessions will afford parents the opportunity to ask questions and practise the approach, therefore, supporting them through this change.

Small improvements in handwriting as displayed in the PQRS-OD results could indicate that a longer period of intervention is necessary to improve a child's performance of this skill. The participant's limited improvement in handwriting could also be due to the fact that it was more of a child-parent collaborative goal and the children did not feel motivated to work towards improving it. These findings confirm the importance of child-chosen goals when implementing future CO-OP interventions in order to maintain participant motivation. This is supported in the literature by Jackman *et al.* (2016) who highlights the necessity of motivation to ensure the success of the CO-OP approach. Poulsen *et al.* (2006) confirms motivation is generated through the client-centred nature of CO-OP and its theoretical links with Self-determination theory (SDT). Therapists must be transparent with parents about the necessity of the child choosing their own goals in order to effectively engage in the CO-OP approach. This could be challenging when working with parents who are paying for therapy and have goals that differ from their children's (example: handwriting vs. playing soccer).

This study highlights that by creating supportive environments while allowing the children to develop their own domain specific strategies to improving their task performance in their chosen goals fosters and maintains motivation. As the child's ability to utilise the CO-OP approach improves, their competence increases and they are able to apply the global and domain specific strategies to other areas of their everyday life. All parents reported their child had experienced an increase in their levels of motivation and confidence. Similarities exist between this study and Mandich *et al.* (2003) who reported successful participation built confidence to try new activities. Zwicker *et al.* (2015) further supports that the CO-OP approach offers the child the opportunity to develop confidence and self-esteem which facilitates their willingness to participate in new and challenging activities.

Parents reported they experienced a sense of belonging when participating in the intervention and voiced that they felt their children also belonged within the group. Parents expressed feelings of authentic acceptance by other members of the group, which they reported was not possible for them to achieve with

family and/or close friends. This sense of belonging as connectedness with others who experience similar difficulties and challenges, creates a sense of unification that offers a safe space for learning and personal growth. Hammell (2014) explores the notion of belonging as a 'safe haven' (pp. 44) where individuals feel a part of a caring and accepting group who offer each other reciprocal support. Having other individuals you can relate to and share your successes with can be a vital support for parents as highlighted by Jackman *et al.* (2016).

The parents expressed their perception of their child's belonging within the group which mirrored their own experiences. Parents voiced that their children talked about how they enjoyed being with others who experienced the same challenges as they did and felt they had a role and a purpose within the group. Martini *et al.* (2014) highlights the importance of CO-OP in a group format in supporting a collaborative atmosphere and allowing children the chance to be the learner as well as the coach. In addition, practical aspects of the formation of the group when implementing the CO-OP approach such as, working on similar goals, ensuring similar ages among the participants and, including children with common interests, were voiced by parents and are supported in the literature by Jackman *et al.* (2016) and Martini *et al.* (2014).

Therapists whom are utilising the CO-OP approach in a group format must be cognisant of the importance of the formation of the group to support the learning for both children and parents. Considering how to create and maintain a safe and collaborative learning space prior to the start of the intervention session is imperative for the cultivation of successful outcomes. Defining child and parent roles within the group, allowing space and time for collective learning (between parents, between children and between parent and child) and ensuring that the therapist maintains their position as a coach/guide, can support the CO-OP's successful implementation in a group format.

### Limitations

Allocating more time to conduct this study would have allowed longer pre- and post-assessment periods in order to gain a more accurate indication of the effects of the intervention. Difficulties in recruitment resulted in a small sample size for this study which, although a suitable size for a feasibility study, restricts generalisation of the findings. In addition, different parents could have offered alternative insights. In future research the children could also be interviewed regarding their perceptions of participating in the CO-OP approach within a group format. This would help to gain a more complete understanding of the utility and meaningfulness of the intervention.

### Conclusion

This study contributes to and supports current literature which indicates CO-OP is an effective approach when

applied in a group setting for children. It provides an opportunity for autonomous self-directed learning, a sense of belonging for parents and children and supports the development of occupationally relevant motor-based goals. Further research using the CO-OP approach in a group format is needed to explore the effectiveness of its application, provide sufficient data for comparative analysis and determine the long-lasting effects of the group approach. Additionally, gaining the perspectives of therapists, parents and children using a CO-OP in a group format would be beneficial in helping to shape the group delivery of this client-centred approach.

### Key points for occupational therapy

- This intervention has the potential improve the performance and satisfaction of child-chosen occupationally based goals.
- Parents have the opportunity to develop skill-based competencies and experience social-emotional benefits from their participation.
- Additional research needs to explore how to better involve parents and understand the experience of the children.

### Acknowledgments

Thank you to the parents and children who gave their time to participating in the study.

### Conflicts of interest

The authors report no conflicts of interest.

### Funding

There is no funding to report for this study.

### Author declaration

All authors declare that this manuscript is original and has been read and approved by all authors. We confirm that all authors fulfil the authorship requirements and are listed in the correct order. We confirm that we have given due consideration to the protection of intellectual property associated with this work and that all necessary contact information for the corresponding author has been provided and is accurate.

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