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ORIGINAL RESEARCH

Child-Focused and Context-Focused Behaviors of Physical and Occupational Therapists during Treatment of Young Children with Cerebral Palsy

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ABSTRACT. *Aims:* To (1) describe the child- and context-focused behaviors of physical and occupational therapists, and (2) compare the behaviors of therapists in a standard therapy session with those of therapists trained to deliver child- and context-focused services. *Method:* Videos of 49 therapy sessions provided by 36 therapists were analyzed using the intervention domains of the Paediatric Rehabilitation Observational measure of Fidelity (PROF) to examine the therapeutic behaviors of physical and occupational therapists with young children with cerebral palsy (CP) (24 to 48 months) in a Dutch rehabilitation setting. The PROF ratings of 18 standard therapy sessions were compared with the ratings of 16 child- and 15 context-focused therapy sessions. *Results:* Therapists who provided standard therapy demonstrated a mix of child- and context-focused behaviors. PROF ratings indicated fewer child- and context-focused behaviors during standard therapy sessions compared with sessions where therapists were instructed to use either child- or context-focused behaviors. *Conclusions:* A sample of Dutch physical and occupational therapists of young children with CP demonstrated a mix of child- and context-focused therapy behaviors during standard therapy. Further research is recommended on clinical reasoning and the effect of setting to better understand therapists' use of child- and context-focused behaviors during therapy sessions.

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There is an increasing demand for evidence-based interventions in rehabilitation practice, particularly in relation to their efficacy and effectiveness (Cieza & Bickenbach, 2014). The content of rehabilitation interventions, however, is poorly described, and how therapeutic components relate to outcomes is often unclear (Cieza & Bickenbach, 2014; Whyte & Hart, 2003). These difficulties may be attributed to a lack of theory-driven research and unambiguous ways of describing rehabilitation intervention (Cieza & Bickenbach, 2014). Dijkers (2014) developed a conceptual framework and rehabilitation treatment taxonomy to define and measure the active ingredients of interventions. The model includes ‘active ingredients’ (i.e., what the therapist does); ‘mechanism of action’ (i.e., how the treatment is expected to work); and ‘target’ (i.e., aspect of functioning directly targeted for change) (Hart et al., 2014). The active ingredients (Whyte & Hart, 2003) and mechanisms of action (Cieza & Bickenbach, 2014) are suggested as the proposed focus of rehabilitation research.

With a prevalence of 2 to 2.5 per 1,000 live births (Oskoui et al., 2013), Cerebral palsy (CP) is the most common physical disability affecting children in pediatric rehabilitation. In the literature on pediatric rehabilitation, a shift in assumed mechanism of action from remediating physical impairments (i.e., child-focused approach) toward a focus on the importance of making changes in the broader context (i.e., context-focused approach) has been described (Darrah et al., 2011; Law & Darrah, 2014; Wade & de Jong, 2000). As a result, constraints in environmental factors (e.g., constraints in the task or in the child’s environment) and personal factors (e.g., motivation) are also used and accepted as a starting point for rehabilitation interventions (i.e., context-focused approach) (Darrah et al., 2011). It is hypothesized that different mechanisms of action will result in different active ingredients, and thus differences in therapists’ behaviors (Hart et al., 2014). In a child-focused approach, therapists’ behaviors focus on completion of activities in a ‘typical’ way. In contrast, therapists’ behaviors in a context-focused approach focus on adapting an activity and/or the environment to enable the child to complete the activity.

Rehabilitation researchers have begun to objectively examine and define therapists’ behaviors by way of measuring intervention content through the development of various observational instruments (Blauw-Hospers et al., 2010; Di Rezze et al., 2013; Hashimoto & McCoy, 2009; Meghi et al., 2012). One such measure is the Paediatric Rehabilitation Observational measure of Fidelity (PROF) developed by Di Rezze and colleagues (2013, 2014). The PROF includes two intervention-specific domains that measure therapist ‘child-’ and ‘context-focused’ focused behaviors. With the PROF, video observations of treatment sessions can be rated to examine behaviors of therapist, child, and parent.

The objective of this study was to describe child- and context-focused therapy behaviors of physical and occupational therapists during sessions with young children with CP in a rehabilitation setting. Behaviors of therapists in standard therapy practice were compared with those observed in intervention approaches that were either child- or context-focused. The results may help provide insight in the specific

therapy focus during physical and occupational therapy sessions for young children with CP provided in a rehabilitation setting in the Netherlands and help to begin to understand the active ingredients utilized in therapy practice.

METHODS

This study took place within the context of the LEARN 2 MOVE 2-3 Study—a randomized controlled trial comparing the efficacy of child- and context-focused and standard intervention approaches of physical and occupational therapy in improving daily functioning of young children with CP in the Netherlands (Ketelaar et al., 2010). Forty-three physical therapists (PT) and occupational therapists (OT) from 13 rehabilitation centers in the Netherlands were randomized in one of the three study interventions by block randomization with a block size of six, in concealed order. Sixty-eight children with CP followed their therapist into the allocated intervention group. Videos were recorded aiming to describe the standard therapy intervention and fidelity of the child- and context-focused interventions. The Medical Ethics Committee of the University Medical Centre Utrecht, The Netherlands, approved the study. All parents gave written informed consent.

Participants

Data from 36 therapists (22 PT and 14 OT) were available for analysis, representing 49 therapy sessions with children with CP, aged 2 to 3 years. Details on participant selection have been described (Ketelaar et al., 2010). For 16 of the 68 participating children, the treatment session video was missing, mainly due to the inability of therapists to videotape a treatment session. An additional three videos were excluded from the sample because the video only showed how the child performed on the goals that had been set, or the session-demonstrated goal development rather than a treatment session. In total, there were 49 videos: 18 standard therapy intervention videos, 16 child-focused intervention videos, and 15 context-focused intervention videos. Each video represents the therapy session of only one child. Some therapists treated more than one child in the study, within the standard therapy intervention group the therapist–child ratio was 1.8, as presented in Table 1. Descriptive information of the participating children and therapists is also presented in Table 1.

Measure

Treatment session videos were coded using ‘child-’ and ‘context-focused’ domains of the PROF (Di Rezze et al., 2013, 2014). This instrument was developed to examine fidelity of pediatric rehabilitation treatment videos of children with physical disabilities within the context of the focus on function study (Law et al., 2011); a randomized controlled trial comparing child- and context-focused interventions. The LEARN 2 MOVE 2-3 Study was based on the focus on function study and adds the comparison of standard therapy intervention with that of a child- and context-focused approach. The PROF includes four items pertaining to the child-focused domain and four items pertaining to context-focused domain, and 20 items on general therapy behaviors that were not analyzed in this study (Table 2). The frequency of the observed therapist behaviors for each item is scored on a 5-point scale with

TABLE 1. Descriptive Information for Children and Therapists

	Intervention			
	Standard therapy	Child-focused	Context-focused	Total group
<i>Video</i>				
<i>N</i>	18	16	15	49
<i>Therapist</i>				
Discipline				
Physical therapy	8	8	6	22
Occupational therapy	2	5	7	14
Years of experience (years), mean (SD)	14.1 (8.5)	18.4 (10.9)	21.6 (9.5)	18.4 (10.0)
Therapist-child ratio	1.8	1.2	1.2	1.4
<i>Child</i>				
Age (month), mean (SD)	39.6 (6.0)	38.1 (7.0)	42.5 (4.6)	40.1 (6.1)
Sex				
Male	15	9	5	29
Female	3	7	10	20
GMFCS level				
I	10	7	9	26
II	3	3	1	7
III	2	2	4	8
IV	3	3	2	8

Note: SD: standard deviation; GMFCS: Gross Motor Function Classification System.

scores: 1 = not at all, 2 = a little (i.e., once or twice), 3 = somewhat (i.e., half of the time), 4 = considerably (i.e., most of the time), and 5 = extensively (i.e., too many to count). Following domain ratings, an overall impression rating of the intervention is provided ranging from 1 (change the environment or activity to enable function) to 5 (remediate impairments and improve the child's skills). The PROF has demonstrated sound psychometric properties for this population of children with CP (Di Rezze et al., 2013).

TABLE 2. Items of the Child- and Context-Focused Domain of the Paediatric Rehabilitation Observational measure of Fidelity (PROF)

Child-focused domain

1. The therapist focuses on remediating the child's movement or skills.
2. The therapist focuses on if the child completes activities in a specific way.
3. The therapist focuses on the quality of the child's movement and/or skills.
4. The therapist facilitates repetition in the practice of movements or motor skills addressed in the intervention session.

Context-focused domain

5. The therapist focuses on changing the environmental constraints that influence the child's activity performance.
6. The therapist focuses on adapting an activity to enable the child to complete the activity.
7. The therapist provides opportunities for the child to practice activities for the purpose of completion.
8. The therapist focuses on the most efficient way that best suits the child to perform the activity.

Procedure

The eight PTs and five OTs who provided the child-focused intervention and the six PTs and seven OTs who provided the context-focused intervention received separate one-day training on the intervention principles, and were provided feedback on their treatment goals and intervention plan to ensure that they followed the study protocol. The eight PTs and two OTs who provided the standard therapy intervention did not receive training for the study and were instructed to provide therapy the way they were used to do (i.e., treatment as usual).

During a period of six months, children received the assigned intervention (i.e., child- and context-focused or standard therapy). At the fourth month, therapists in all three intervention groups were asked to videotape one treatment session that was representative of their treatment during the study. Therapists were instructed to start the video camera before their treatment session began and to stop the camera after the session had ended. The 49 videos that were included in the analyses lasted on average for 20.3 min ($SD = 8.7$), with the shortest video lasting 6.49 min and the longest for 43.27 min. All treatment sessions had been recorded at the rehabilitation centers. In most cases, only the child and therapist were present; in four of the 49 videos, one of the parents was also present (once in the standard therapy intervention, and thrice in the context-focused group).

Two video raters (Mariëlle Ellens and Anne J. A. Kruijsen-Terpstra) reviewed the PROF rating manual, conducted a trial of rating on selected videos, and consulted with the developer of the PROF to ensure that videos were being rated appropriately. In previous research, only clinicians rated videos using the PROF (Di Rezze et al., 2013). Since Mariëlle Ellens is not a clinician, an additional one-day didactic training session was provided to ensure that Mariëlle Ellens was able to rate consistently.

Reliability and Procedural Fidelity

To establish inter-rater reliability, a second rater (Anne J. A. Kruijsen-Terpstra) evaluated 20% of the videos. Independent ratings were made by each rater and checked with the developer of the PROF until acceptable (a priori) agreement of 75% (Di Rezze et al., 2013) within two points in item frequency scores was reached. Inter-rater reliability was examined by computing the overall percentage of agreement on item scores between the two raters (Mariëlle Ellens and Anne J. A. Kruijsen-Terpstra) and their agreement on the score for overall impression. The reliability of scoring the videos between the two raters (Mariëlle Ellens and Anne J. A. Kruijsen-Terpstra) was high. There was complete agreement on scores for 71% of the items. The raters differed by one point for 26% of the items, and there was a two-point difference for 3% of the items. For overall impression, there was 60% complete agreement and 40% of the scores differed by one point. Validity of the PROF was supported by the videos that belonged to the child-focused intervention scored on average higher on the child-focused domain than on the context-focused domain and vice versa.

Data Analyses

All videotapes were evaluated by the first rater (Mariëlle Ellens) who was masked to randomized intervention allocation of the children. Each video was viewed twice. The first time was to get an overall impression of the treatment session and the second to code therapist behaviors. The second viewing of the video occurred immediately after the first viewing. For each of the items of the PROF, medians, ranges, and inter-quartile percentage scores were computed. Mean domain scores for each of the three intervention groups were calculated for four child- and four context-focused items. To compare the mean domain scores of the standard therapy intervention group with those of the child- and context-focused intervention groups, a one-way ANOVA was used. In case of a statistically significant difference ($p < .05$), Bonferroni post-hoc analyses were performed to determine between which groups the difference occurred.

RESULTS

Standard Therapy

Therapist behavior during standard therapy intervention was a mix of child- and context-focused approaches, with a wide variation in scores between the videos. On average, therapists' behavior was child-focused just over half of the time; the mean score was 2.8 (SD = 0.8) (Figure 1, Table 3). Context-focused behavior was observed for slightly less than half of the treatment session time; the mean score was 2.0 (SD = 0.5) (Figure 2, Table 3).

The behaviors of therapists in the standard therapy intervention demonstrated wide variation, but were not concentrated on any one item of the PROF, as presented in Table 3. In general, behavior of the therapist in the standard therapy intervention was a mix of three child-focused items: (a) remediating the child's movements or skills; (b) whether the child completes the activities in a specific way; and (c) repetition in the practice of movements, and two context-focused items: (d) practicing activities for the purpose of completion; and (e) promoting the most efficient way that best suits the child. There was little focus on the quality of the movements or skills of the children. No changes in environmental constraints were observed in the standard therapy intervention, and adaptations in activities were rarely observed.

Comparison of Standard Therapy with Child- and Context-Focused Interventions

The mean child-focused domain ($p = .90$) and context-focused domain ($p = 1.0$) scores of therapists who provided the standard therapy did not differ compared with the scores of therapists who provided the child-focused intervention approach (Figures 1 and 2, Table 3). In contrast, therapists who provided the standard therapy had higher scores on the child-focused behavior domain ($p < .001$) and lower scores on the context-focused behavior domain ($p < .001$) than the therapists who provided the context-focused intervention.

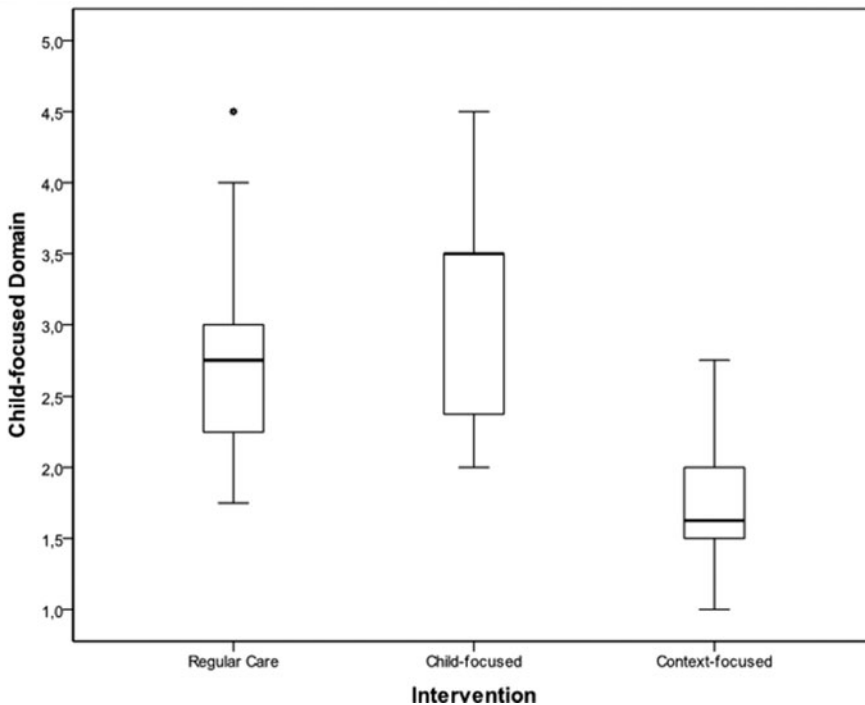


FIGURE 1. Box-plot of mean scores on the child-focused domain of the Paediatric Rehabilitation Observational measure of Fidelity for the three types of interventions.

DISCUSSION

This study describes the child- and context-focused behaviors of physical and occupational therapists during standard therapy provided to young children with CP in a rehabilitation setting in the Netherlands. When instructed to provide treatment as usual (standard therapy), the therapists demonstrated both child- and context-focused behaviors with wide variation between therapists. Overall, therapy behaviors from standard therapy practice sessions resembled most a child-focused approach and were significantly different from a context-focused intervention approach.

The therapists who provided the standard therapy intervention showed both child- and context-focused behaviors, with child-focused just over half of the time. Although the difference was non-significant, the increased number of child-focused behaviors could be explained by the characteristics of the therapy setting in the study. Young children with CP in the Netherlands often receive therapy within a rehabilitation setting without their parents present during treatment. Under such circumstances, it might be more difficult for the therapist to gain a complete view on all contextual factors that play a role in the child's life. Because of this, it was perhaps more difficult for the therapists to use the contextual mechanism of action as the starting point of their intervention than a mechanism based on remediating impairments.

TABLE 3. Item Scores for the Paediatric Rehabilitation Observational measure of Fidelity (PROF) According to Intervention Type

	Intervention								
	Standard therapy			Child-focused			Context-focused		
	Median	Range (min-max)	Inter-quartile (25-75%)	Median	Range (min-max)	Inter-quartile (25-75%)	Median	Range (min-max)	Inter-quartile (25-75%)
Child-focused domain									
1. Remediation	3	1-5	2-4	4	2-5	3-4	2	1-3	1-2
2. Specific way in completion	3	1-5	2-3.3	3	2-5	3-4	2	1-3	1.3-2
3. Quality of movements or skills	2	2-3	2-3	3	2-4	2-3	2	1-3	2-2.8
4. Repetition in practice	3	1-3	2.8-3	4	1-5	2-4	1	1-3	1-2
Context-focused domain									
5. Changing the environment	1	1-1	1-1	1	1-2	1-1	1	1-5	1-2
6. Adapting activity	1	1-2	1-1	1	1-2	1-1	1	1-3	1-1
7. Purpose of completion	3	1-4	2-3.3	2	1-4	2-4	4	2-5	4-5
8. Most efficient way	3	1-5	2.8-4	2	1-4	2-4	4	1-5	4-5

Note: Min: minimum; max: maximum. Scores representing: 1 = not at all, 2 = a little (i.e., once or twice), 3 = somewhat (i.e., half of the time), 4 = considerably (i.e., most of the time), and 5 = extensively (i.e., too many to count).

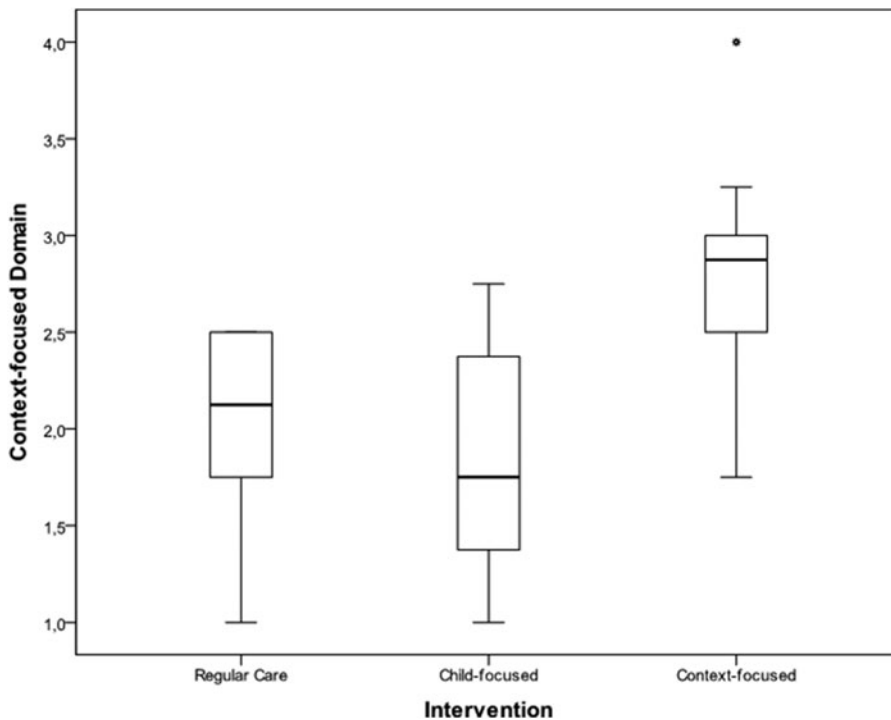


FIGURE 2. Box-plots of mean scores on the context-focused domain of the Paediatric Rehabilitation Observational measure of Fidelity for the three types of interventions.

The standard frequency scale which was used in the PROF might not be a suitable scale for scoring context-focused behaviors. It seems that the active ingredients of a context-focused approach were more difficult to observe, as reflected by relative overall low scores on two of the four items of the context-focused domain. For example, one effective change of an environmental constraint such as adapting a handrail so that a child can walk up and down stairs independently might be sufficient for serving the child's needs. This would, however, result in a low score on a frequency scale and thereby underestimation of the power of context-focused active ingredients. The low scores on the context-focused domain in our study are comparable with the scores found in the reliability study of the PROF (Di Rezze et al., 2013). Perhaps dichotomous (i.e., yes or no) scoring for the items 'observe or change environmental constraints on a child' and 'adapting the activity' would be more appropriate in future work.

Some methodological issues should be considered when interpreting the results. In this study, the PROF was applied by a non-clinician, which may have influenced the scoring. However, acceptable reliability agreement scores support the use of the PROF by raters trained to use the tool, and may not be required to be a physical or occupational therapist. The standard therapy intervention group that we studied was part of a randomized clinical trial to study the efficacy of a child- and context-focused and standard therapy intervention. Even though therapists were asked to perform their treatment session the way they were used to, it might be

that the content and behavior toward the child during therapy was influenced by being part of a study (i.e., Hawthorne effect). Using videos recorded during daily practice rather than for research purposes would protect against this potential bias. Furthermore, the study had a relatively small sample size and physical and occupational therapists were not equally distributed in the standard therapy intervention group. Therefore, we could not examine whether there were differences between disciplines. Ideally, physical and occupational therapists should use both mechanisms of action dependent on the child they are working with and their context. However, a context-focused approach might be more difficult for physical therapists than for occupational therapists (Di Rezze et al., 2013).

While training therapists in the child- and context-focused intervention approach for the LEARN 2 MOVE 2-3 Study, we experienced that occupational therapists regularly incorporate environmental components into their scope of practice, and hence were more familiar with a context-focused approach than physical therapists. Although we did not find indications in our data, years of experience of therapists might play a role in how child- or context-focused standard therapy intervention is performed. Therapists who were educated longer ago might have received a more traditional child-focused training than therapists who were educated more recently and whose training included insights into the context mechanisms of action. Alternatively, therapists with more experience might have the skills to address all relevant factors and more insight into the kinds of contextual factors that influence therapy outcomes. In generalizing the results, cultural differences should also be acknowledged. In the Netherlands, standard physical and occupational therapy for young children with CP is typically located within rehabilitation centers. Within other cultures, therapy is also performed in a home-based setting (Novak et al., 2009). As argued before, the center-based therapy setting might be partly responsible for the standard therapy intervention being predominantly child-focused.

Therapists working with children with CP have a broad range of interventions from which to select, but evidence and understanding are needed on the effectiveness of interventions (Novak et al., 2013). An analysis of the active ingredients of interventions might contribute to theory development and our understanding the effectiveness of different approaches. We did not address why therapists made certain choices. Extensive analysis, for example, by combining videos with analysis of session documentation or by in-depth interviews with therapists on the reasoning behind their treatment might serve as a next step in gaining insight in content of rehabilitation interventions and thus enhancing our understanding of the complexities of intervention. Furthermore, specification of the active ingredients of the intervention, that is the therapists' behaviors, would also be valuable for education purposes (Dijkers, 2014). The PROF can assist in this by offering a method for analysis of therapists' behaviors during treatment sessions. Having data on the active ingredients of interventions will contribute to the improvement of evidence supporting the use of specific types of interventions.

Although therapist behaviors during the standard therapy intervention for young children with CP were observed to be a mix of behaviors, therapists demonstrated more child-focused than context-focused behaviors. This suggests that a shift from a more child-focused to a more context-focused approach has not been

fully adopted in this sample of Dutch rehabilitation centers. Recent research has suggested that child- and context-focused and standard therapy approaches for preschool children with CP are equally efficacious (Law et al., 2011; Kruijsen-Terpstra et al., 2015). Therefore, physical and occupational therapists can also select, depending on a child's individual situation, a more context-focused approach. Why and when physical and occupational therapists select a child- or context-focused approach and how the two are combined needs to be further studied.

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