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► **To cite this version:**

A Laurent, J Lareng-Armitage, C Lewandowski, P Abeilhou, A.-C Ballouard, et al.. The effects of psychomotor therapy in DCD children with or without comorbidities. 11th International Conference on Developmental Coordination Disorder DCD-11, Jul 2015, Toulouse, France. Journal of Comorbidity, 2015. hal-01228932

**HAL Id: hal-01228932**

**<https://hal.science/hal-01228932>**

Submitted on 22 Nov 2015

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# The effects of psychomotor therapy in DCD children with or without comorbidities

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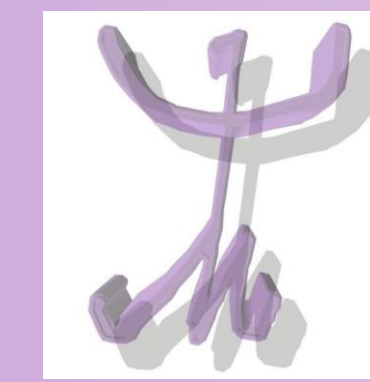
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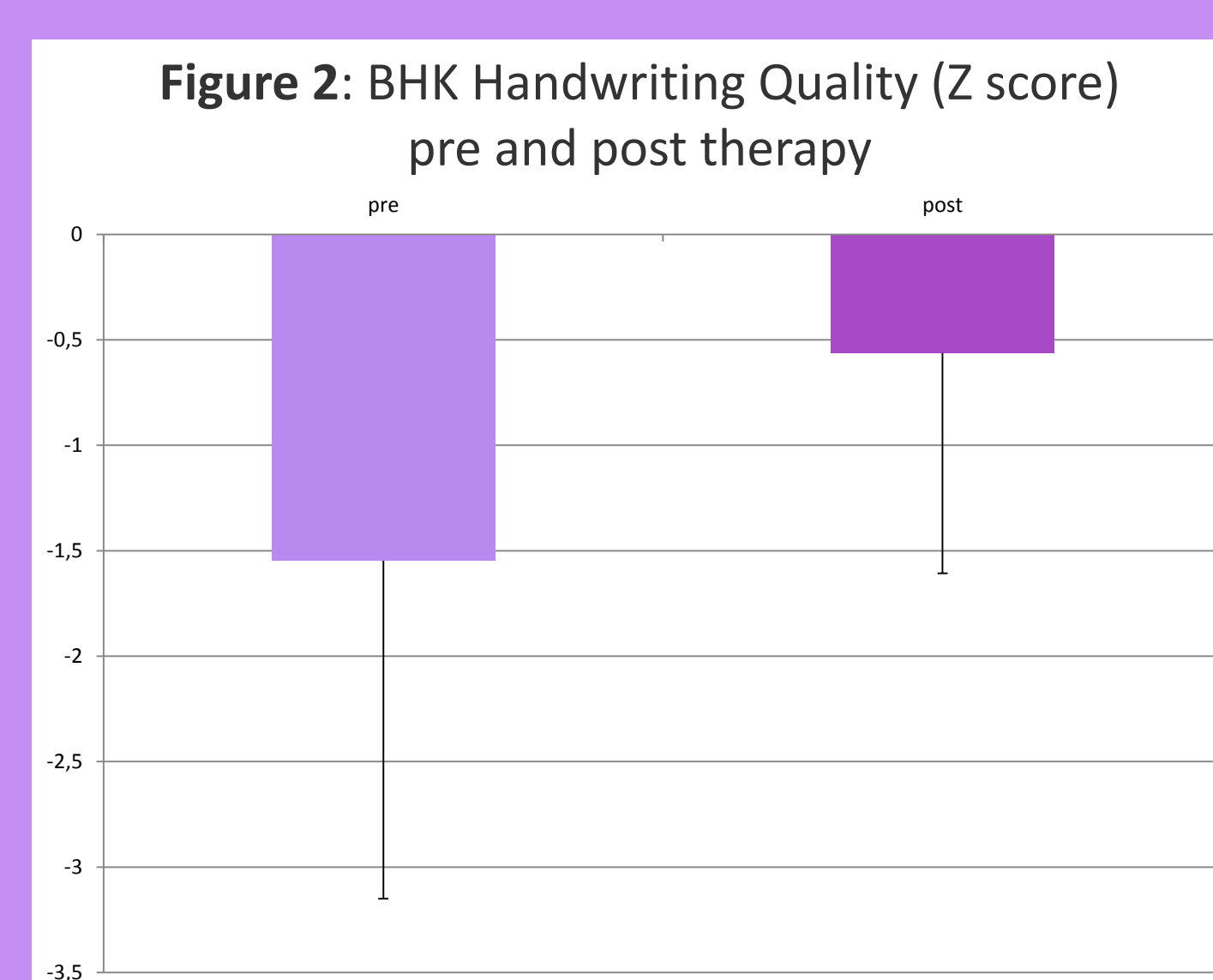
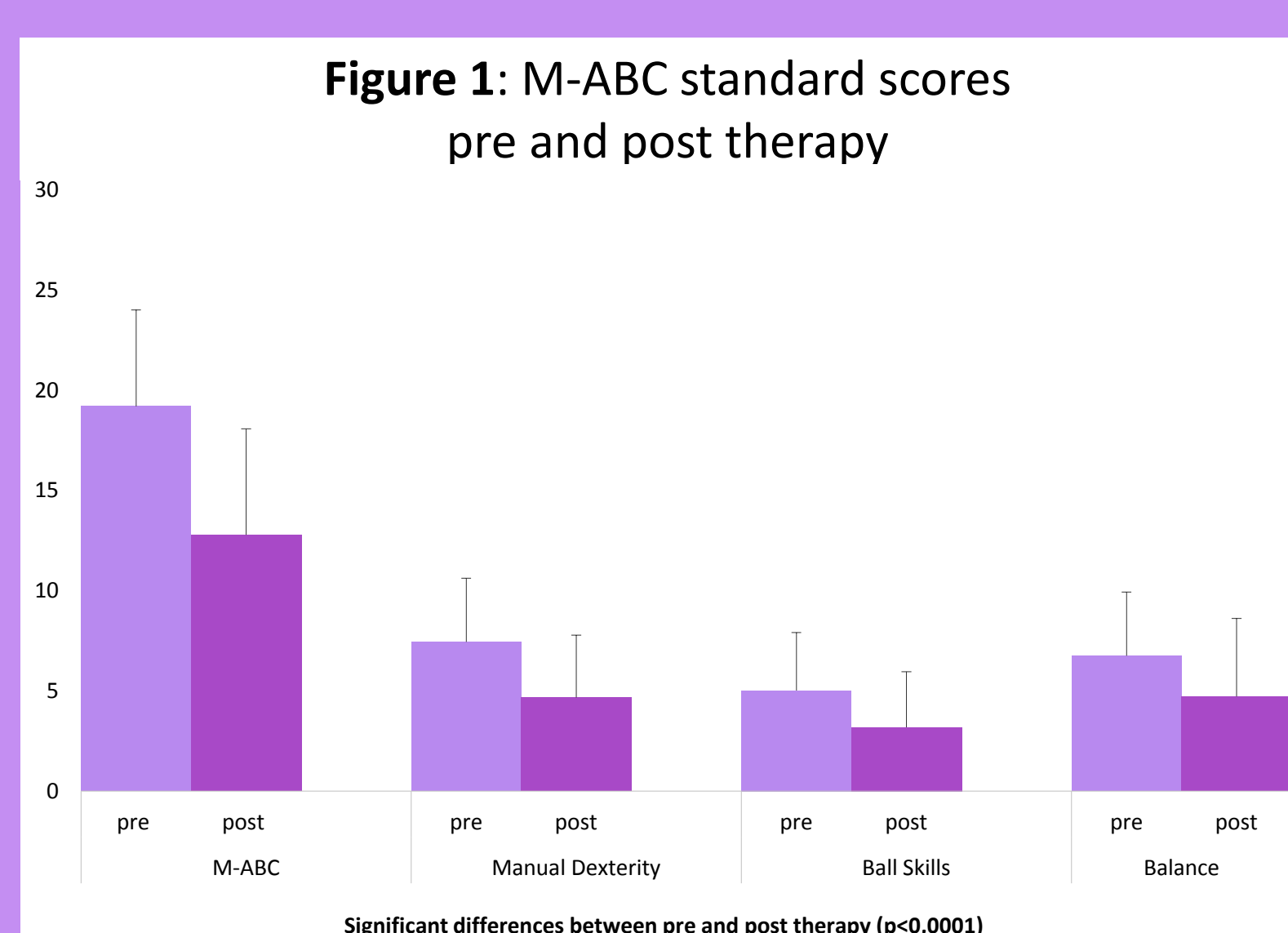


**AIM:** The aim of this study is to evaluate the effects of comorbidity (SLI, Developmental Dyslexia, ADHD) on the efficiency and choice of techniques within psychomotor training for children with DCD.

**INTRODUCTION:** Smits-Engelsman et al.'s (2013) meta-analysis of therapies for patients with DCD revealed that traditional therapy, including psychomotor training, have beneficial effects on patients. Their study however did not take into consideration the case of comorbidity. Their meta-analysis classed therapeutic approaches into task oriented interventions, process oriented interventions or traditional interventions. In this study we tried to determine whether the presence of comorbidity has an influence on the outcome or the modality of psychomotor therapy, notably on motor coordination (M-ABC) and writing (BHK) of children with DCD. We classified psychomotor therapy into task-oriented treatment, individual-oriented treatment (touching perceptive, motor, perceptual-motor, motivational and emotional aspects) or environment-oriented treatment.

**METHODS:** We compared the effects of psychomotor training, carried out between 2009 and 2015, in 2 groups of children from the Midi Pyrenees region: DCD children and children at risk of having DCD, with (n=21) and without comorbidities (n=9). All children were assessed with the M-ABC (manual dexterity, ball skills, balance and total impairment score) and the BHK writing test (handwriting quality, handwriting speed) before and after psychomotor therapy. The different scores were submitted to ANOVAs (2[Group] x 2[Pre-Post therapy]). Qualitative (parts of different therapeutic methods) aspects of the training were also studied. Full Scale Intelligence Quotient (FSIQ) of the Wechsler scales were also examined.

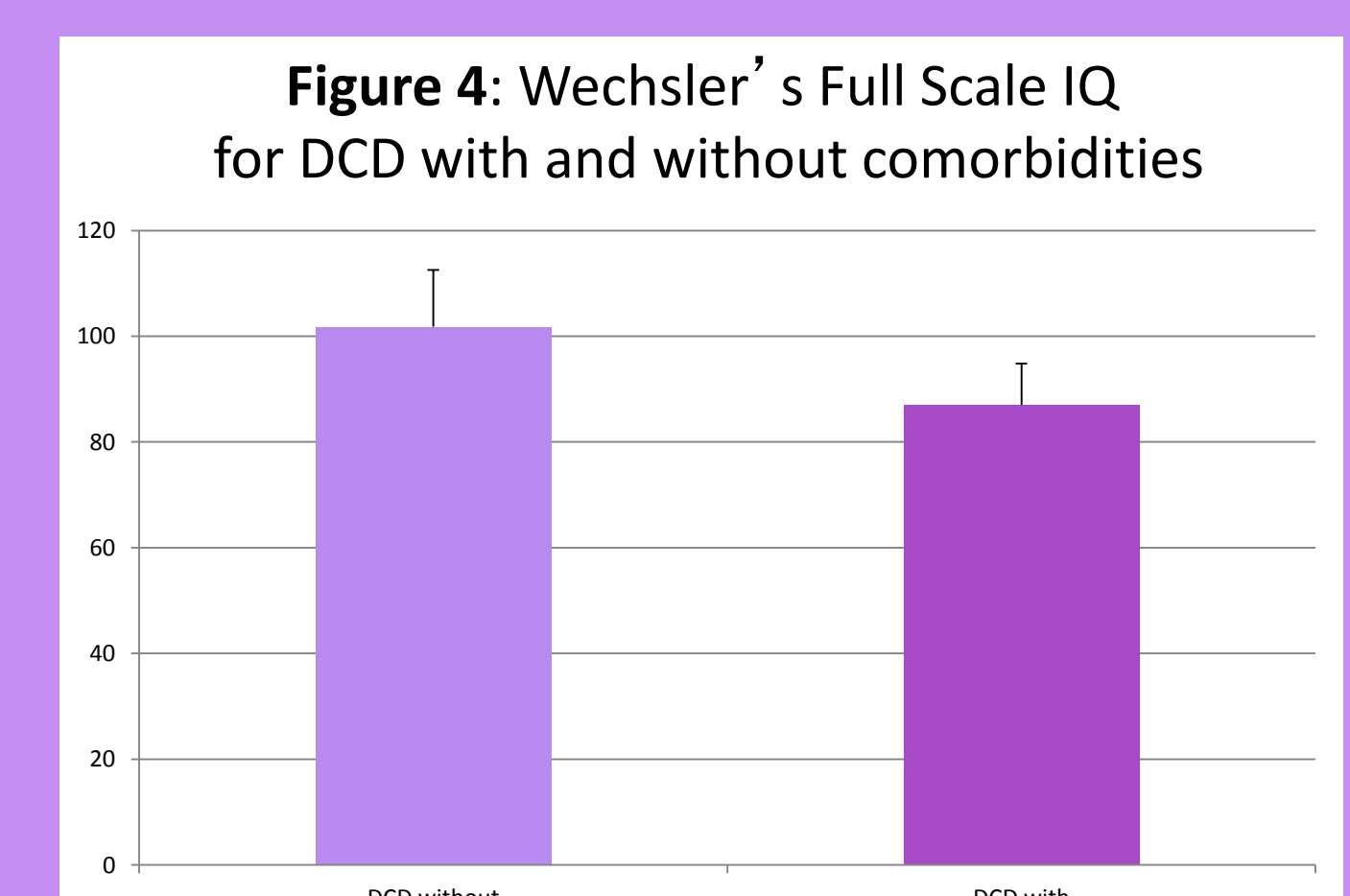
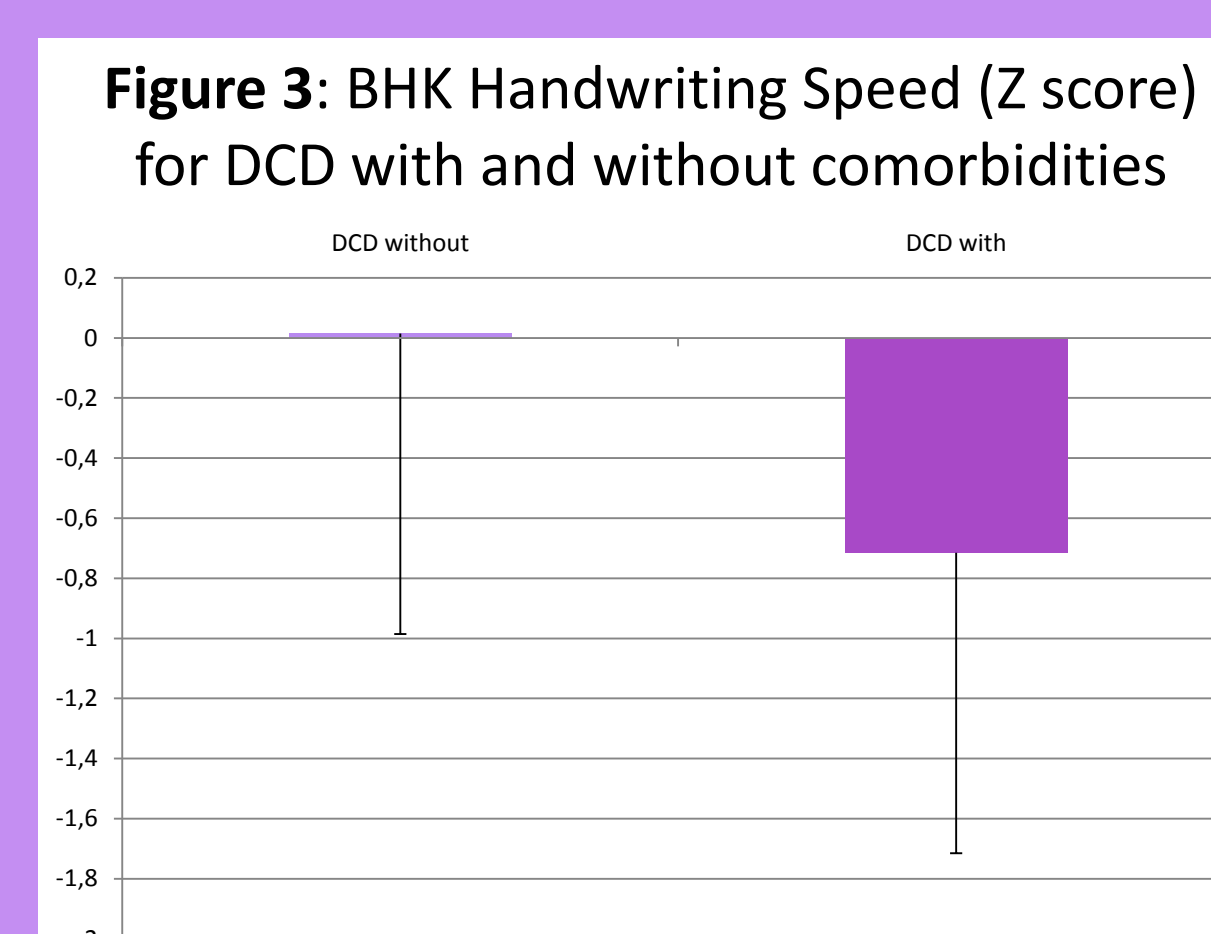
## RESULT 1: Within subject (pre/post therapy)



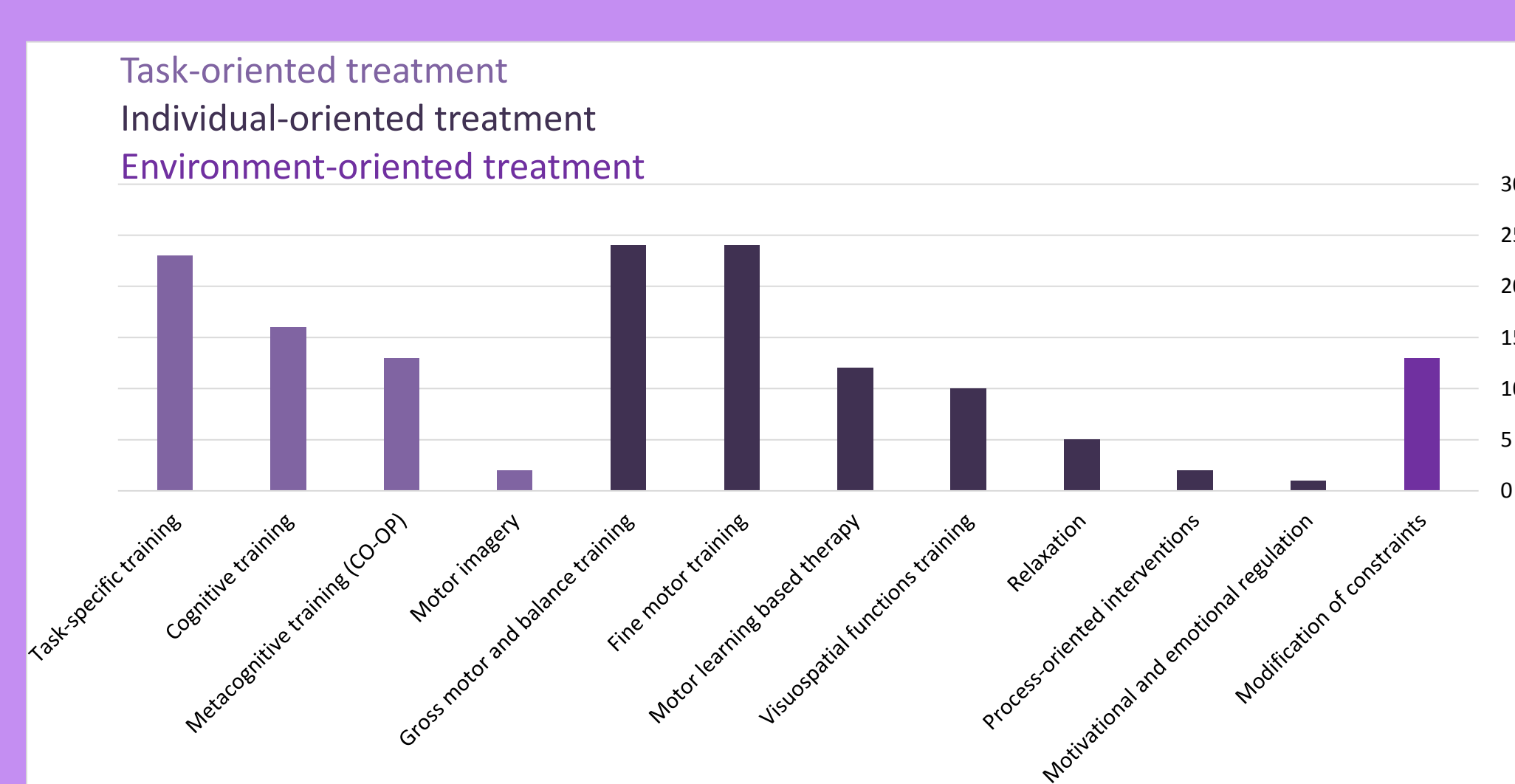
Significant differences between pre and post therapy were revealed for the M-ABC: Manual dexterity (p<0.001); Ball skills, Balance and Total impairment score (p<0.0001), and for the BHK quality score (p<0.0001) indicating that both groups improved with psychomotor therapy. No significant group effects nor interactions were found for these scores.

## RESULT 2: Between subjects (With/Without)

Results revealed that DCD children with comorbidity performed worse than those without comorbidity (p<0.0001) on the handwriting speed score (BHK). DCD with comorbidity had lower Wechsler's Full Scale IQ than DCD without (p<0.0001). When considering only DCD with (n=16) and without (n=8) comorbidities, the same results were found except for the handwriting speed with no significant effect.



## RESULT 3: Therapeutic methods used



The average duration of psychomotor therapy was the same for both groups (20 months). No differences were found for the therapeutic methods used between the two groups. To a large extent psychomotor therapists have diverse approaches, including task-oriented treatment, cognitive and metacognitive methods, individual-oriented treatments (gross motor training and balance, fine motor training) and techniques based motor learning theories.

## DISCUSSION – CONCLUSION

Contrary to our expectations, both groups showed significant improvement after psychomotor therapy, using perceptual-motor training and/or cognitive and metacognitive approaches. The only difference between the two groups is the FSIQ. At a cognitive level, comorbidity plays a role, but this does not have an adverse impact on the therapeutic process. More studies are needed to confirm these findings.

## REFERENCES

Smits-Engelsman, B. C. M., Blank, R., Van Der Kaay, A.-C., Mosterd-Van Der Meijs, R., Vlugt-Van Den Brand, E., Polatajko, H. J., & Wilson, P. H. (2013). Efficacy of interventions to improve motor performance in children with developmental coordination disorder: a combined systematic review and meta-analysis. *Developmental Medicine & Child Neurology*, 55(3), 229-237..