

# Experimental Design Journal Presentation



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# Quality of movement as predictor of ADHD: results from a prospective population study in 5- and 6-year-old children

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# Theory

- Motor characteristics of young children can predict ADHD at a later age



# Hypothesis

- Motor problems are unique to children with ADHD as opposed to children with other disorders (ODD/CD), or none at all.



# The Constructs!

## Theoretical Construct I

Development of ADHD

Quantitative

## Operational Construct I

Motor functioning  
abilities measured by  
the Amsterdam  
Diagnostic Interview  
for Children and  
Adolescents



# More Constructs!

Theoretical Construct II

Corresponding  
Operational definition

Quality of Movement

Maastricht Motor test

Qualitative

(MMT)



# Whoa.. What's the MMT all about?

- Evaluates motor performance qualitatively and quantitatively in four domains.
- Scores on a scale from 0-2
- **Static Balance**  
(standing on one leg)
- **Dynamic Balance**  
(hop on one leg)
- **Ball Skills**  
(catch a ball)
- **Diadochokinesia & manual dexterity**  
(tap hand)



# Design

## Study

Quasi-experimental

Subjects are NOT  
assigned to groups

## Subjects

401 children (232 boys  
and 169 girls) with an  
average age of 6 years  
and four months old  
which have been  
randomly sampled from a  
larger sample of 2,290  
children





# Independent Variables

- Motor performance in the four different domains

Scale of measurement:

Ratio (0-2 scale)

- Age (beginning of experiment-18 months later)

Scale of measurement:

interval



# Dependent Variables

- The presence or absence of ADHD

Scale of Measurement:  
ordinal

- Amsterdam Diagnostic Interview for Children and Adolescents



# Results

- Main effect of Motor performance tested with the MMT

The better the performance, the lower the chance of developing ADHD, with the exception of the ball skills test.

- Main Effect of Age

The older the child is with low skills, the higher the chance he/she has ADHD



# More Results!

- Odd ratios calculated.....

DB, MD, and the total qualitative scores showed significant odds ratios for ADHD

- Odds ratio for static balance showed significant association with ADHD ( $p=.08$ )
- **Quantitative** domains did not show any significant data



# Discussion

The experiment was thought out very well. All different aspects were looked out including different confounds such as age and sex of the children. They tested both males and females and found that there was not a difference within those confounds that would play a role in the original data.

The study showed that movements of young children are predictive of the onset of ADHD, qualitatively, not quantitatively. The significance of the data does show a correlation with movements and ADHD.

The experiment is both valid and reliable!



Did the operational definitions correspond to the theoretical constructs?

- Yes! The development of ADHD corresponds to the motor skill ability because it not only shows how movement correlates with ADHD, but it also demonstrates which movement represent ADHD.



If the results were significant, did they have a big effect?

- There was a large effect qualitatively (except for ball skills domain).





## What are the potential confounds?

The experimenters were very aware of potential confounds in the study. Since ADHD and ODD/CD can go hand in hand, this was looked at in order to obtain accurate results.

The cognitive functioning of the children should also be looked at. Some children may be functioning mentally at a lower level than others, or may even just be tired and not want to stand on one leg for extended periods of time.





Do you agree?

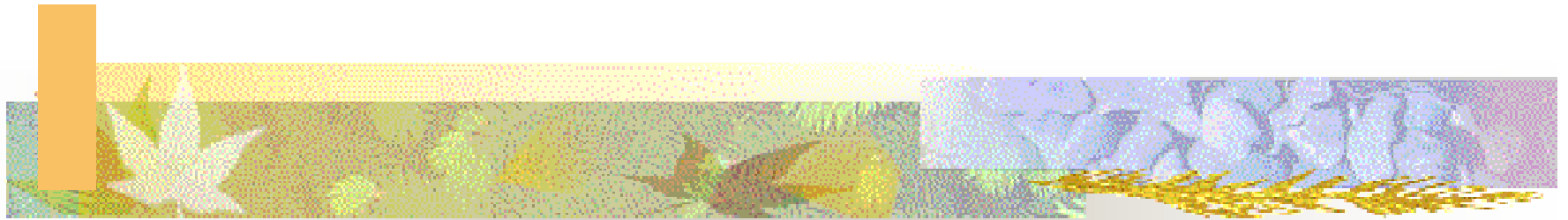
**YES!**



# What would you do next?

I would test different types of ADHD to find out if there are any differences within the subtypes because we found out there are differences between OCC/CD, now we can determine within the group.

# THE END!



Cheers!