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The Bayley-III accommodated for motor and/or visual impairment

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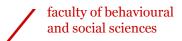
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The Bayley-III accommodated for motor and/or visual impairment: "Low motor/vision version"

Linda Visser MSc

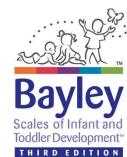
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IACEP Conference, June 24-27, 2013, Leiden









Introduction (1) - Method - Results - Discussion

> (Developmental) assessment as part of early intervention

- > Limitations of standard instruments: (Visser et al., 2012)
 - Development based on tests with children without impairment;
 application with children with impairment
 - Dependence of test results on specific skills
- > International trend: accommodating instruments
 - Accommodations for impairment in each sensory area possible

Introduction (2) - Method - Results - Discussion

- > Bayley Scales of Infant (and Toddler) development
 - Bayley-III (Bayley, 2006) Bayley-III-NL (Research currently running)
 - Individually administered
- > Bayley-III
 - Cognition
 - Receptive Communication
 - Expressive Communication
 - Fine Motor development
 - Gross Motor development

Introduction (3) - Method - Results - Discussion

- > Current study: Low Motor/Vision version of Bayley-III
- > Accommodations
 - Materials
 - Procedures (e.g. Time limits removed)
 - Instructions (e.g. Adjust distance of materials from child)
- > Pilot research: practical

(Visser, Ruiter, Van der Meulen, Ruijssenaars, & Timmerman, 2013)



66

Blue Board Series: Completes



Position	Materials	Trials	Time limit
Sitting independently	Blue board, Blue block set (4 round, 5 square), Stopwatch Low motor / Low vision: Accommodated blue block set.	1	75 seconds LM/LVi: No time limit
Series items	51 (1 piece), 58 (4 pieces), 66 (complete)	8 8	T. S.

Put all pieces on the table ...

... Stop the time when all nine pieces have been places correctly or when 75 seconds have passed.

1 point: Child places all nine pieces correctly within 75 seconds. To be placed correctly, a

piece has to lie on the intended place completely.

0 points: Child places less than nine pieces correctly within 75 seconds.

Low vision: Make sure to place the board within the visual field of the child.

Low motor: You are allowed to support the elbows of the child.

Introduction (4) - Method - Results - Discussion

- > Hypotheses:
 - Test results of children without impairment show invariant test content and difficulty.
 - Test results of children with impairment are higher on the accommodated version and are a better reflection of their abilities.

${\tt Introduction-Method (1)-Results-Discussion}$

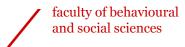
- > Participants:
 - Control group; n = 41
 - 25 girls, 16 boys
 - Calendar age: M = 2;0 years (range 0;1 3;8)
 - Special needs group; n = 63
 - Motor and / or visual impairment
 - 32 girls, 31 boys
 - Calendar age: M = 5;0 years (range 1;1 10;6)
 - Referred by 22 different branches of organisations

$${\tt Introduction-Method~(2)_{-\,Results\,-\,Discussion}}$$

		Impairment			
Diagnosis	Motor	Visual	Motor & Visual	Total	
Total	29	8	26	63	

Diverse population

Down syndrome / CP / PDD / Angelman / Other genetic disorders / No official diagnosis



${\tt Introduction-Method} \ (3)_{\tt -Results-Discussion}$

Test order A

- Control group
- Special needs group

Standard version

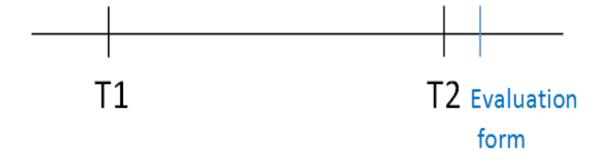
Accommodated version

Test order B

- Control group
- Special needs group

Accommodated version

Standard version



Introduction - Method (4) - Results - Discussion

> Analysis

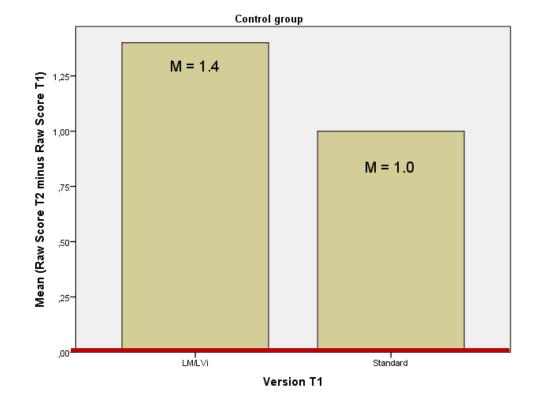
- T-test
 - Compare test order A and B, regarding:
 - Difference in Raw score (T2 T1)
- ANCOVA
 - Compare test order A and B, regarding:
 - Difference in Accommodated score (T2 T1)
 - Covariate: difference in Non-accommodated score (T2 T1)

Both separately for control group and special needs group

Examination of results Evaluation form

${\tt Introduction-Method-Results (1)-Discussion}$

> Control group, T-test on difference scores

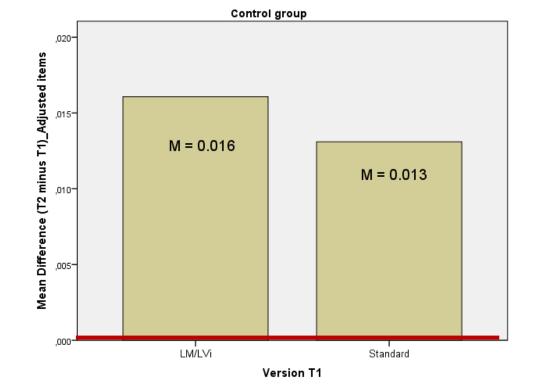


Test results of children without impairment show invariant test content and difficulty

95% CI of difference [-1.6, 2.4], t = 0.41, p = 0.69

${\tt Introduction-Method-Results (2)-Discussion}$

> Control group, ANCOVA on difference score (adj.)



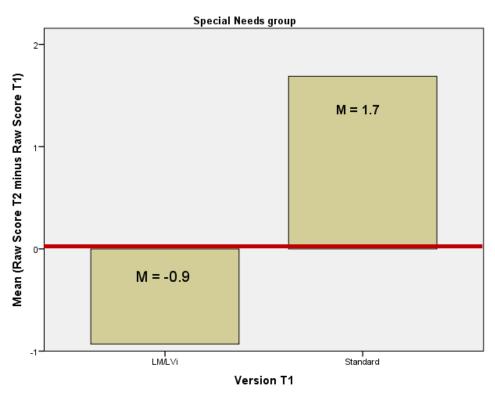
Test results of children without impairment show invariant test content and difficulty

95% CI of difference [-0.023, 0.025], F = 0.01, p = 0.92

Introduction - Method - Results (3) - Discussion

> Special needs gr., T-test on difference scores:

Test results of children with impairment are higher on the accommodated version



95% CI of difference [-4.6, -0.6], t = -2.59, p = 0.01

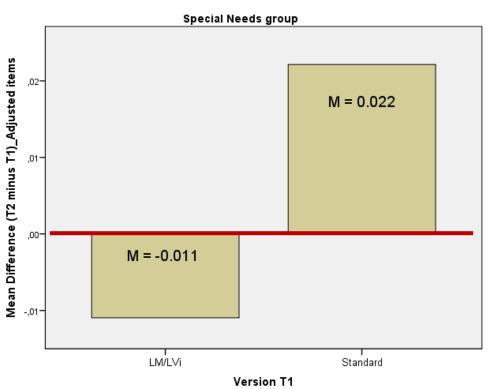
Introduction - Method - Results (4) - Discussion

> Special needs group:

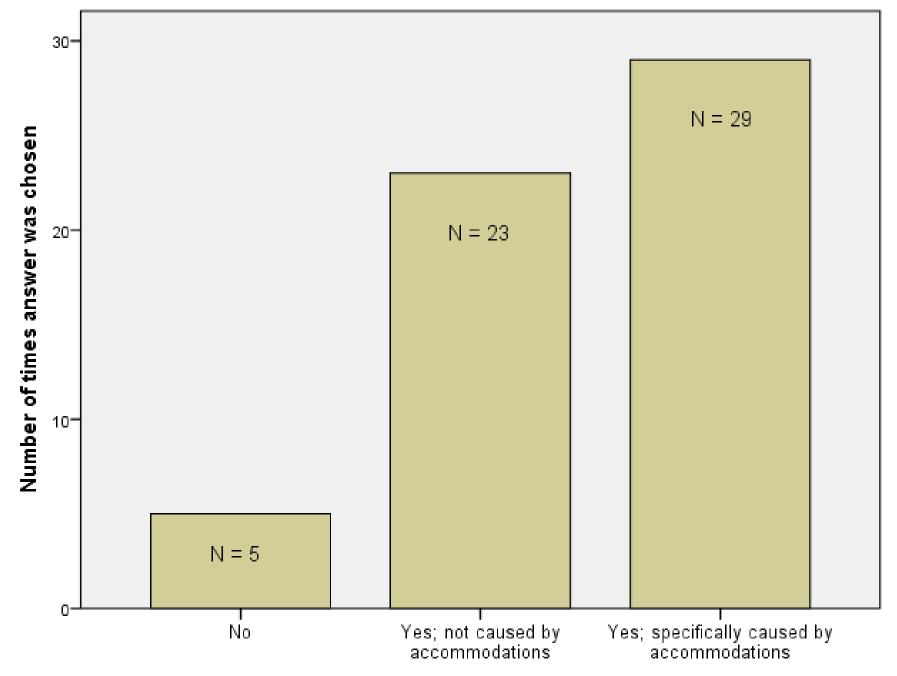
ANCOVA on

difference scores (adj.)

Test results of children with impairment are higher on the accommodated version



95% CI of difference [-0.057, -0.008], F = 7.07, p = 0.01



Has the child been able to show his/her abilities?

Introduction - Method - Results - Discussion (1)

> Limitations:

- Relatively small n for Motor scales
- Large within-child variability (sd of difference scores 3.1 4)
- Relatively small n for only visual impairment.

Introduction - Method - Results - Discussion (2)

> Conclusion:

Accommodations improve the validity of the Bayley-III when used with special needs children, especially with regard to their Cognition and in case of mild to moderate impairment.

> Implication:

Increased validity of the assessment of the level of cognitive development of children with motor / visual impairment in the Netherlands.

Introduction - Method - Results - Discussion (3)

> Future research:

- Application of Low Motor/Vision in other countries?
- Develop appropriate standardized instrument for developmental assessment of children with profound and multiple learning disabilities.
- Can we test children > 42 months of calendar age with the Bayley-III?

Thank you for your attention!

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References

- Bayley, N. (2006). Bayley Scales of Infant and Toddler Development Third edition. San Antonio, TX: Harcourt Assessment.
- Visser, L., Ruiter, S. A. J., Van der Meulen, B. F., Ruijssenaars, A. J. J. M., & Timmerman, M. E. (2012). A review of standardized developmental assessment instruments for young children and their applicability for children with special needs. *Journal of Cognitive Education and Psychology*, 11(2), 102-127.
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