

Motor development in children born preterm

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Long-term outcome of preterm birth



Personality at young adulthood → less negative emotions, more dutiful and cautious & display more warmth in social relationships (Pesonen et al., 2008)

Short-term outcome of preterm birth

... nevertheless, many preterm born children experience *movement difficulties* at a young age



Personal lessons learned

- Gap between detecting severe motor disability infancy and mild motor disability at school age →

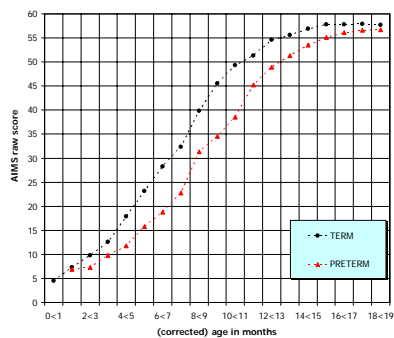
what happens with developmental trajectories between infancy and school entry in non-severely disabled preterm children? → longitudinal studies needed

- High comorbidity motor and cognitive disabilities →

early motor development as a (risk) predictor of what? → broaden scope to include measures of cognitive functions

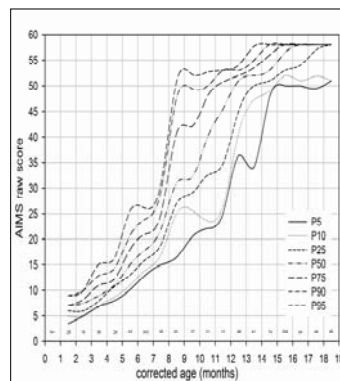
- Understanding Deviant/delayed Child Development ☺

Developmental motor pathways: AIMS



Van Haastert et al. (2007)

Developmental motor pathways: AIMS



Van Haastert et al. (2007)

Developmental motor pathways: AIMS

Example: ♂ GA 28 5/7 wk, BW 1250 gr

6,5 months corrected age

Raw AIMS score = 14

- Norm FT: < P5 Zs -2.6
- Norm PT: P10-25 Zs -1.15

15,6 months corrected age

Raw score AIMS = 53

- Norm FT: < P5 Zs -10.67
- Norm PT: P25 Zs -0.60

Walking at 18,6 / 16 mo CA

Association global motor & cognitive development

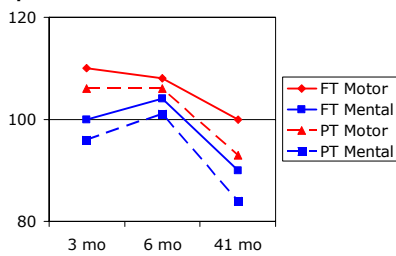
- Preterm ($n = 35$) and full term children ($n = 43$)
- Measured at 3, 6 and 41 months:
 - Global motor performance (BSID)
 - Global cognitive performance (BSID)

Hypotheses:

- Preterm children increasingly delayed in both domains, stability expected for full term children
- Quality of care and stimulation provided to child at home relate to both cognitive and motor performance
- Motor performance more strongly related to biological risk than cognitive performance

Msc Thesis Hanna Mulder (2006)

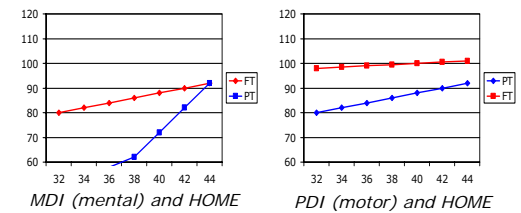
Association global motor & cognitive development



- Rate of development of cognitive and motor scores over time the *same* for preterm and full term group (motor scores > mental scores !)

Msc Thesis Hanna Mulder (2006)

Association global motor & cognitive development



- Higher HOME scores *buffer* negative effect of biological risk (i.e. preterm birth) on mental (but not motor) scores at preschool age
- Biological risk (i.e. preterm birth) related to motor score (not shown)

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Association development exploratory motor behaviour and (executive) attention

- Preterm infants *only* ($n = 72$)
- Measured at 7, 10 and 14 months:
 - Exploratory motor behaviour
 - Attention: A-not-B task performance

Hypotheses:

- Biological risk factors predict development of exploratory motor behaviours
- Development of exploratory motor behaviour related to development of performance on A-not-B task

Msc Thesis Renske Schappin (2008)

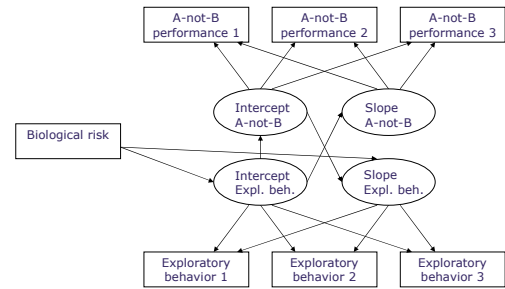
(executive) attention: A-not-B task



One small step for students,
one giant statistical leap for me



Parallel latent growth curve model



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Association development exploratory motor behaviour and (executive) attention

- Biological risk predicts initial level mouthing behaviour
 $Risk \rightarrow IC_{mouth}, b = .10, p < .05, \beta = .58$
- Holding a toy in each hand predicts initial level and slope of A-not-B performance, but **not** vice versa
 $IC_{each} \rightarrow IC_{AB}, b = .20, p < .01, \beta = .74$
 $IC_{each} \rightarrow SL_{AB}, b = -.70, p < .01$
- Biological risk predicts certain exploratory motor behaviours
- Certain exploratory motor behaviours predict executive attention

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Some thoughts on motor development in children born preterm ...

- Pathways of (non-severely disabled) preterms similar shape as full terms (AIMS and BSID) but lower initial states possible \rightarrow use tailored norms! (compare: norms children with Down's syndrome)
- Associations between motor and cognitive development \rightarrow motor development as rate-limiting factor for certain cognitive functions
- Role of environment in motor development \rightarrow present but limited: biological risk more important (compare: need stimulating environment for cognitive development)