



# Neurocognitive Development in 22q11.2DS

## *A Syndrome-specific Normative Chart*

A.M. Fiksinski

*a.m.fiksinski@umcutrecht.nl*

Psychologist, PhD candidate

Department of Psychiatry, Rudolf Magnus Institute of Neuroscience, University Medical Center Utrecht, Utrecht, The Netherlands.

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Dalglish Family 22q Clinic for Adults with 22q11.2 Deletion Syndrome, Toronto General Hospital, University Health Network, and Clinical Genetics Research Program, Centre for Addiction and Mental Health, Toronto, Ontario, Canada.

## Cognition/IQ:

- Ability to reason and think
- Both verbal and perceptual
- Strongly related to daily life functioning



1. Why is cognition so relevant in 22q11DS?
2. Cognition / IQ in 22q11DS
3. The development of a normative chart for IQ in 22q11DS

## 1. Relevance of cognition/IQ in 22q11DS

What **all** people need:



Learn & develop  
safe environment

*Stimulating growth  
& development of new  
skills*

What **all** people hate:



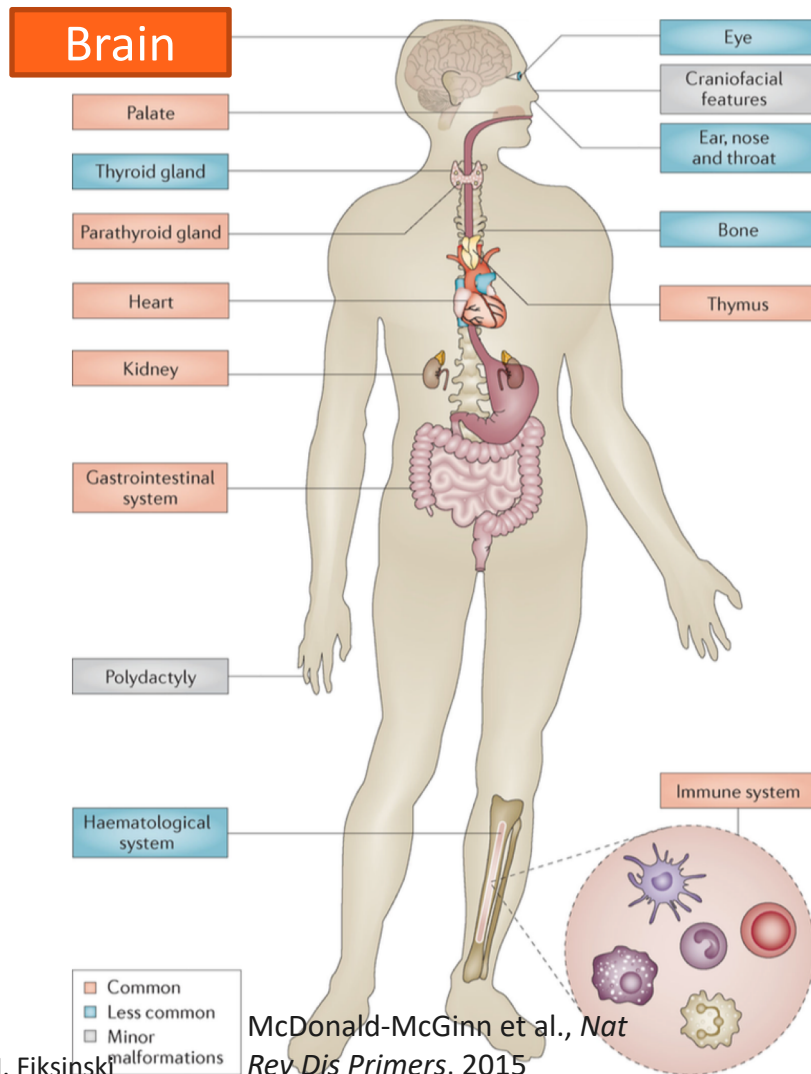
Needs exceeding  
resources

*Avoiding a too  
demanding situation*



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## 1. Relevance of cognition/IQ in 22q11DS

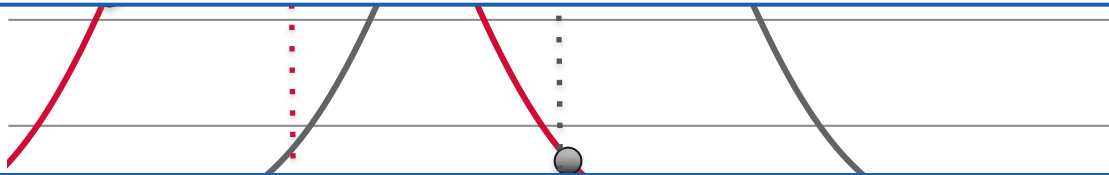


Balance in 22q =

Challenging  
&  
Important!

## 2. Cognition / IQ in 22q11DS

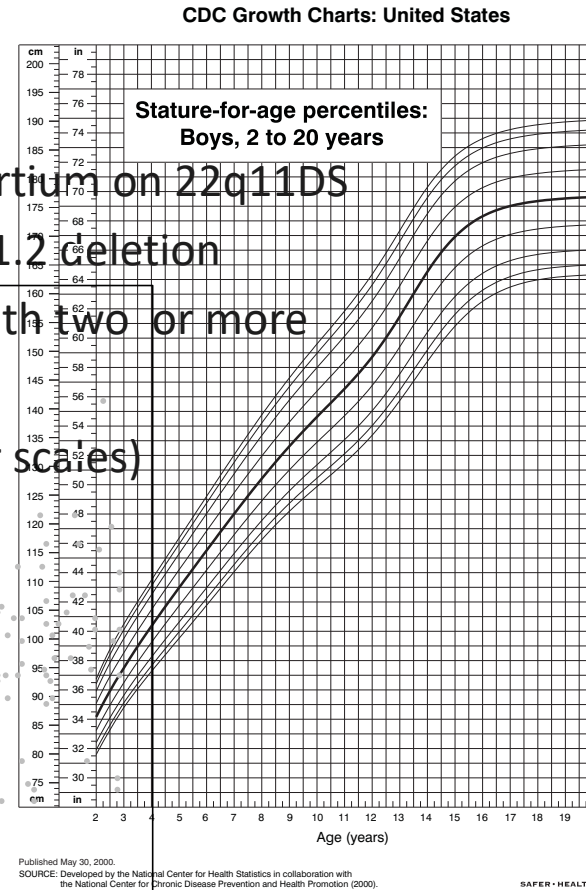
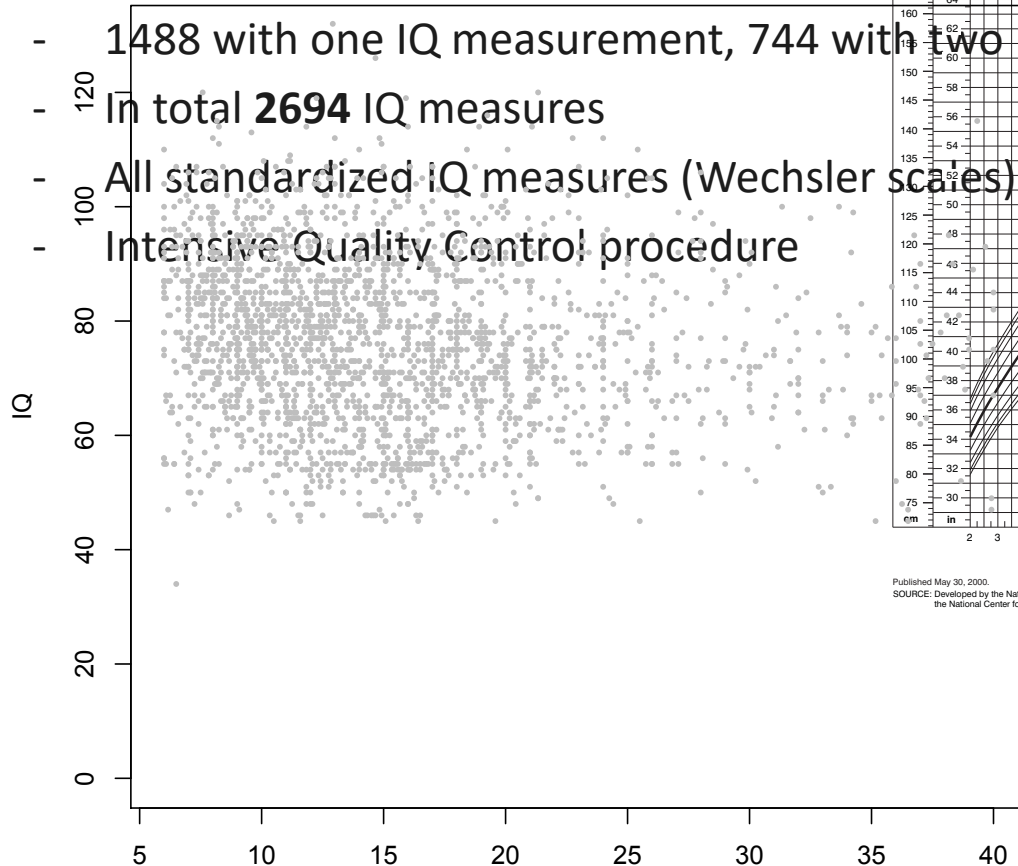
- IQ levels vary between individuals with 22q (average = 70-75)
- In some individuals with 22q, IQ levels are not stable across the lifespan
- As a group: people with 22q show a gradual decline in IQ between age 8 and 25



What constitutes “normal” average development of IQ over the lifespan in people with 22q11DS?

## 3. Normative chart for IQ in 22q11DS

- International Brain and Behavior Consortium on 22q11DS
- 1821 participants with confirmed 22q11.2 deletion
- 1488 with one IQ measurement, 744 with two or more
- In total **2694** IQ measures
- All standardized IQ measures (Wechsler scales)
- Intensive Quality Control procedure



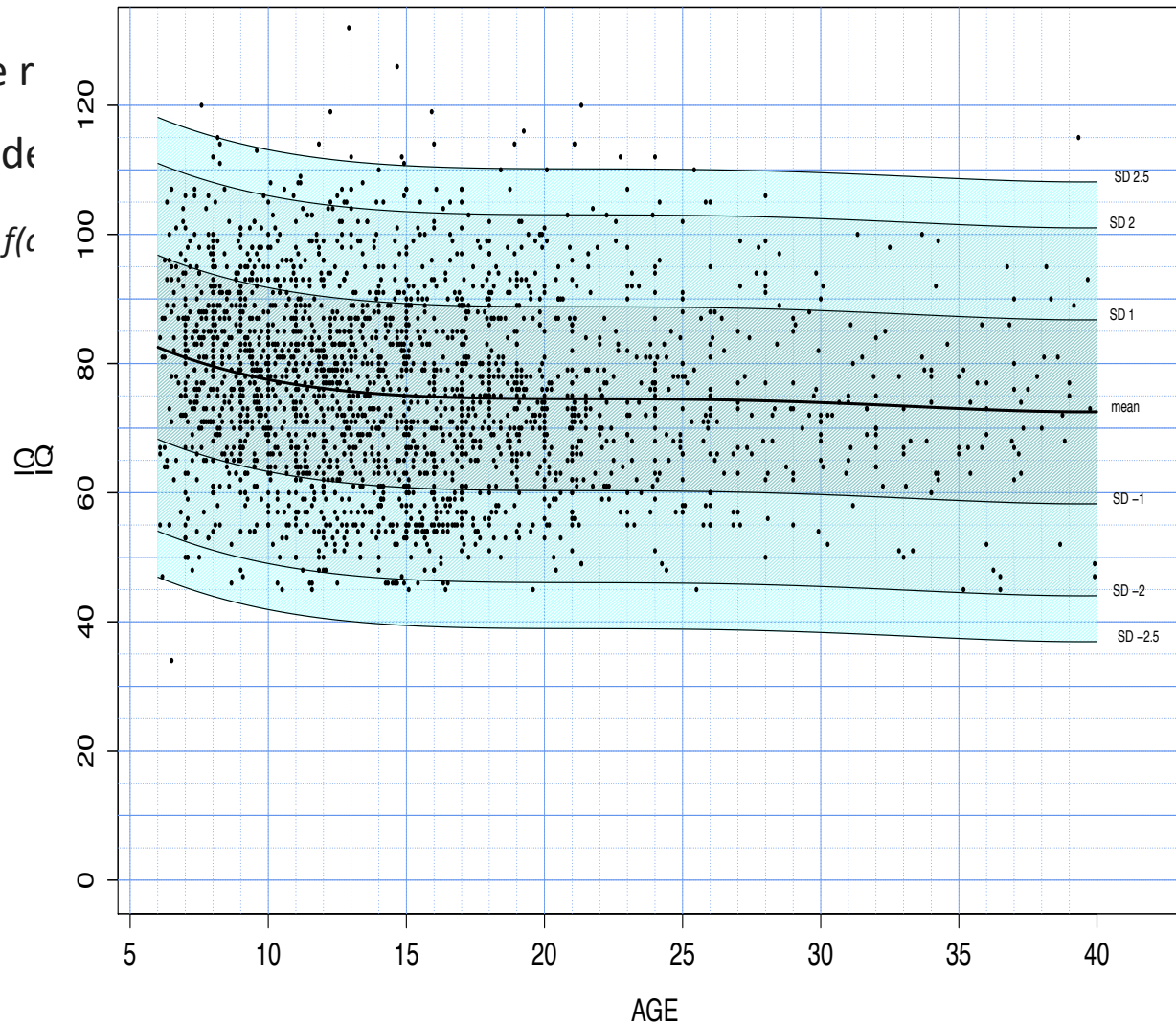
## 3. Normative chart for IQ in 22q11DS

VIQ normchart

- Age r

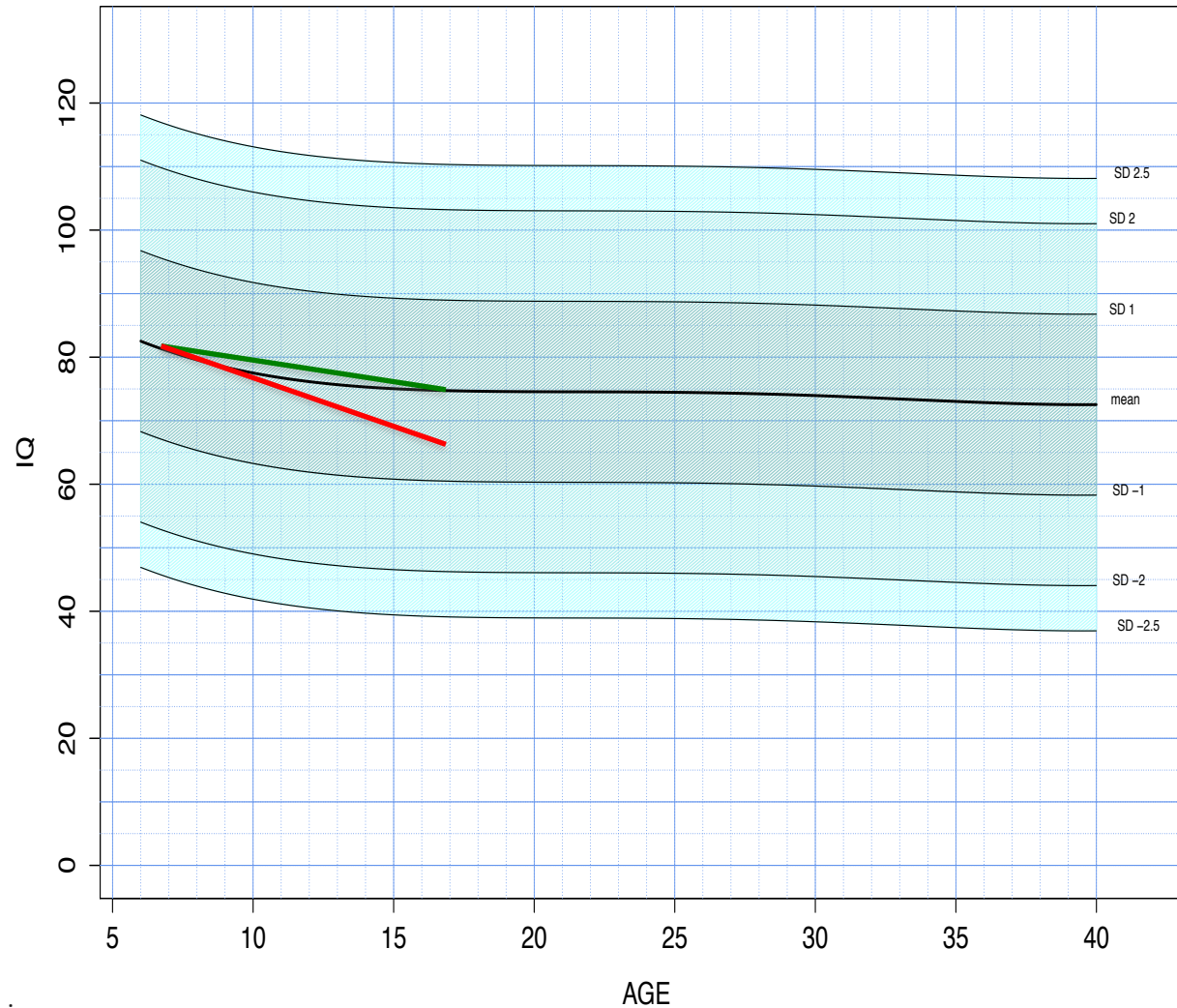
- Mode

$IQ \sim f(\text{age})$





VIQ normchart





## Conclusions

- Genetic disorder – specific IQ norm charts can be can reliably constructed: 22q IQ norm chart **example** for other genetic variants
- Normative IQ chart for 22q **informs**:
  - How compared to expectations in 22q?
  - How compared to self?
- Importance of monitoring of IQ
  - **over time**
  - In light of what we know in 22q specifically
- Helps in maintaining **BALANCE**
  - Environmental demands < > individual strengths & challenges
  - Stimulates healthy development
  - Decreases risk stress & psychiatric disorders



**Utrecht / Toronto**  
**22q11DS lab**

Jacob Vorstman  
Elemi Breetvelt  
Anne Bassett  
Tracy Hueng  
Ania Fiksinski  
Sasja Duijff  
Fleur Velders  
Michiel Houben  
Hans Thomeer  
Jasper Nuninga  
Marc Bohlken  
Tabitha Koops  
Lotte van der  
Knaap  
Eda Cevik  
Shila Najibi



22q  IBBC

**IBBC – funded by  
NIMH**

**camh**  
Centre for Addiction and Mental Health

**22q**   
The Dalglish Family  
22q Clinic

