

Kindermishandeling

determinanten en effecten vanuit
gehechtheidstheoretisch en neurobiologisch perspectief

Marian Bakermans-Kranenburg



Marinus H. van IJzendoorn

Erasmus University Rotterdam

University of Cambridge



14e Wetenschappelijke conferentie

Vereniging voor Kinder- en
Jeugdpsychotherapie

Soesterberg, 11-12 januari 2019



UNIVERSITY OF
CAMBRIDGE



Parenting in the era of the brain ?

- Dick Swaab: “Ik denk niet dat je kunt opvoeden”
(interview in De Volkskrant, okt 2016)
- “Wat je moet doen, is kinderen een warme, veilige, stimulerende omgeving geven waardoor ze de capaciteiten waarmee ze geboren zijn kunnen ontwikkelen”.

Parenting in the era of the brain and the genome?

“Parents matter but they don’t make a difference”
(Plomin 2018)

Robert Plomin
Blueprint

How DNA makes
us who we are

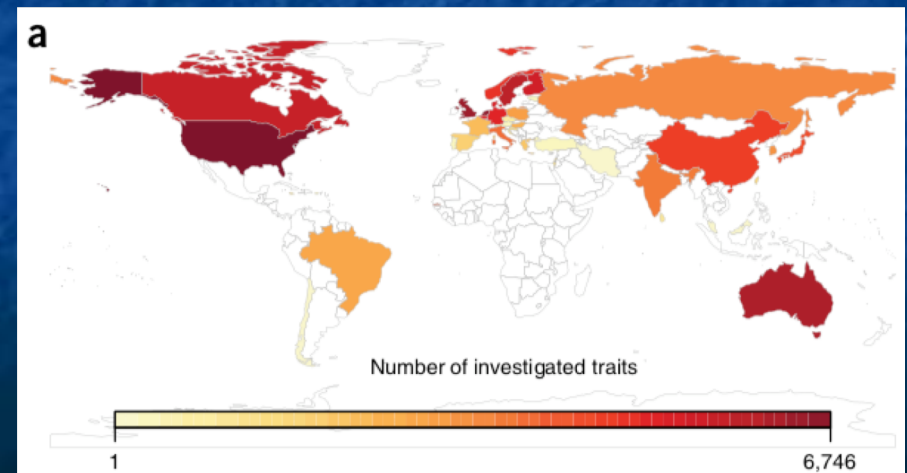
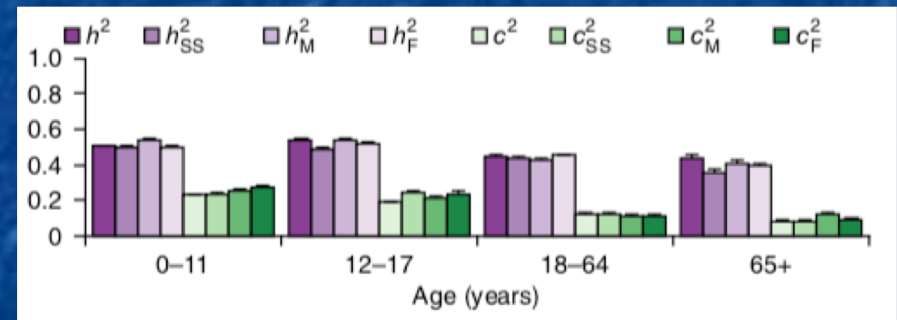
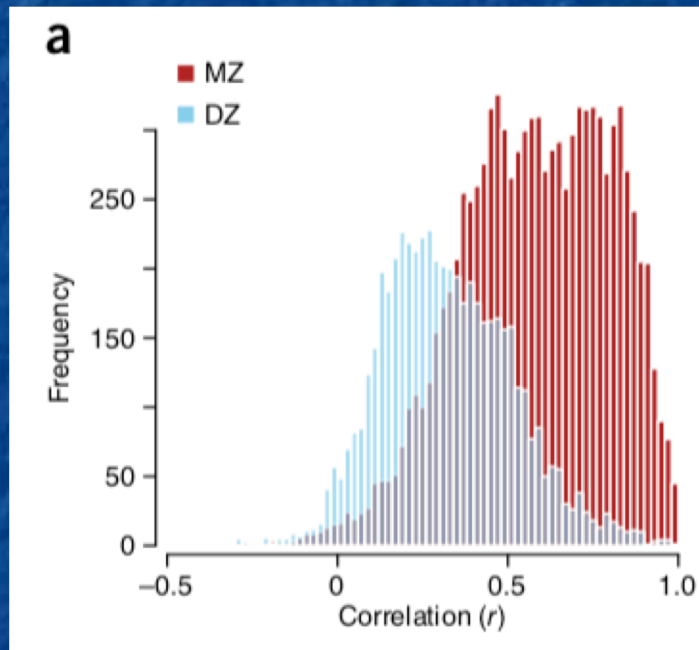


allen lane

In summary, parents matter, schools matter and life experiences matter, but they don’t make a difference in shaping who we are. DNA is the only thing that makes a substantial systematic difference, accounting for 50 per cent of the variance in psychological traits. The rest comes down to chance environmental experiences that do not have long-term effects.

Meta-analysis of the heritability of human traits based on fifty years of twin studies

Polderman et al., Nature 2015

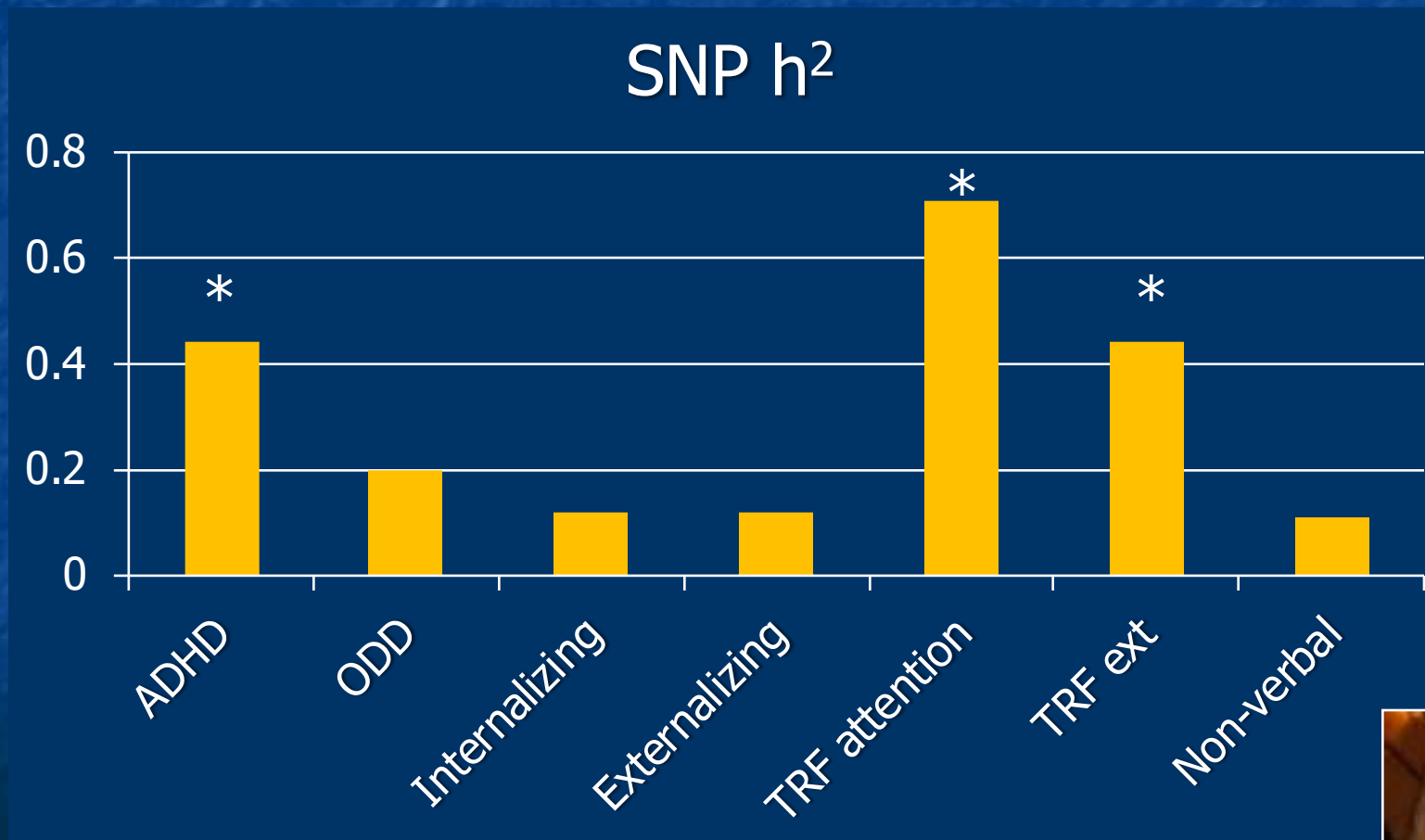


WEIRD countries only?

ACE: A larger when C smaller

SNP Heritability estimates based on DNA (Genome-wide Complex Trait Analysis)

Generation R + NTR (N = 3,000 children)



Wat is gehechtheid?

- Is niet monotropie
- Is niet beperkt tot mensenkinderen
- Is geen uitvinding van de modern tijd
- Is geen westers fenomeen
- Gehechtheid is aangeboren
- Individuele verschillen zijn niet aangeboren



Attachment, foundation of child development

(social competence, behavior problems)

“ To say of a child that he
....has an attachment to
someone means that he is
strongly disposed to seek
proximity to and contact
with **a specific figure** and to
do so in certain situations,
notably when he is
frightened, tired or ill.”

(John Bowlby, *Attachment*, p.371)

Not
monotropy

Not
feeding

Not
biological



Monotropy would not work

Humans are cooperative breeders

- 13,000,000 calories used from birth to nutritional independence
- 'Alloparents' needed to share maternal burden
- Infants evolutionarily built to be part of attachment networks
- 'It takes a village to raise a child'

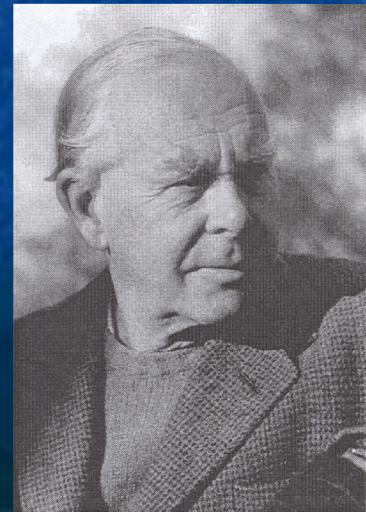
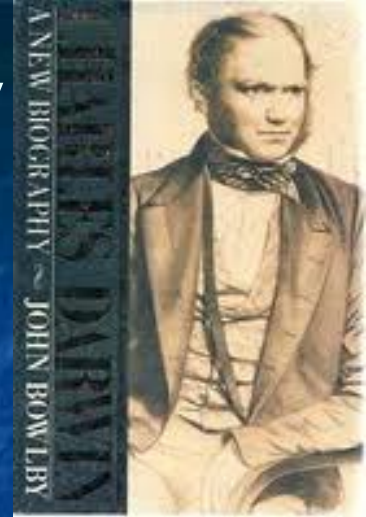


Necessary conditions for healthy development

“(...) the more the social environment in which a human child is reared deviates from the environment of evolutionary adaptedness (which is probably father, mother, and siblings in a social environment comprising grandparents and a limited number of other known families) the greater will be the risk of his developing maladaptive patterns of social behavior.”

Bowlby (1982, p. 166).

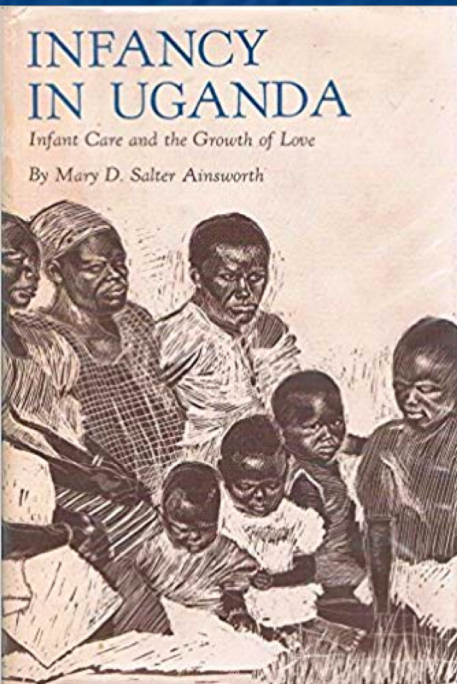
Attachment is observed across species, history and cultures



Attachment is of all times

- Homer wrote the Iliad 3000 yrs ago
- Hector + Andromache + son (Astyanax) + nurse
- attachment
 - son-mother
 - son-father
 - son-nurse
- Killed by Achilles

Attachment is of all cultures



Origin of
the Strange
Situation
Procedure,
Mary
Ainsworth

Mary True et al: Parenting and
attachment in the Dogon, Mali

J Child Fam Stud
DOI 10.1007/s10826-014-0069-3

ORIGINAL PAPER

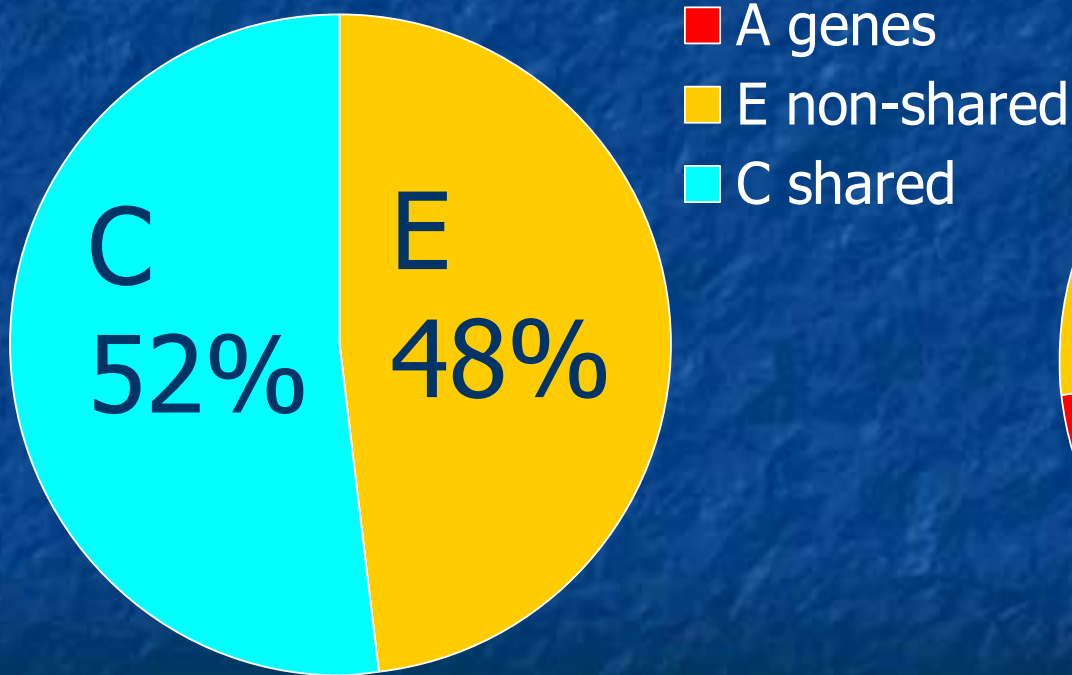
**Childcare in Mapuche and Non-Mapuche Families in Chile: The
Importance of Socio-economic Inequality**

Rodrigo A. Cárcamo · Harriet J. Vermeer ·
René van der Veer · Marinus H. van IJzendoorn

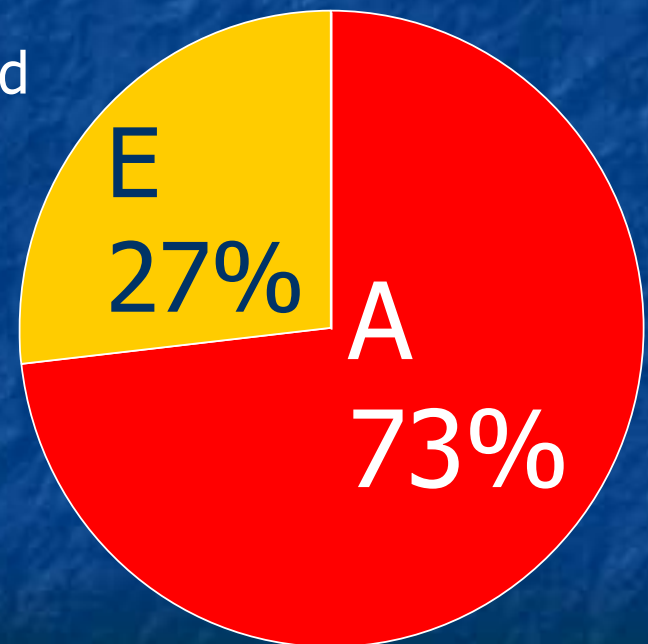
Attachment is like language: **inborn but environmental**

- Inborn: 99% of our genome is the same for every human being, only 1% different
- Born with capacity to learn a language, but **which** language is dependent on environment
- Attachment is observed across species, history and cultures
- Every infant becomes attached, but quality of attachment depends on environment
- **Attachment differences are non-genetic**

Attachment *vs* Temperament: environment *vs* genes



Attachment security



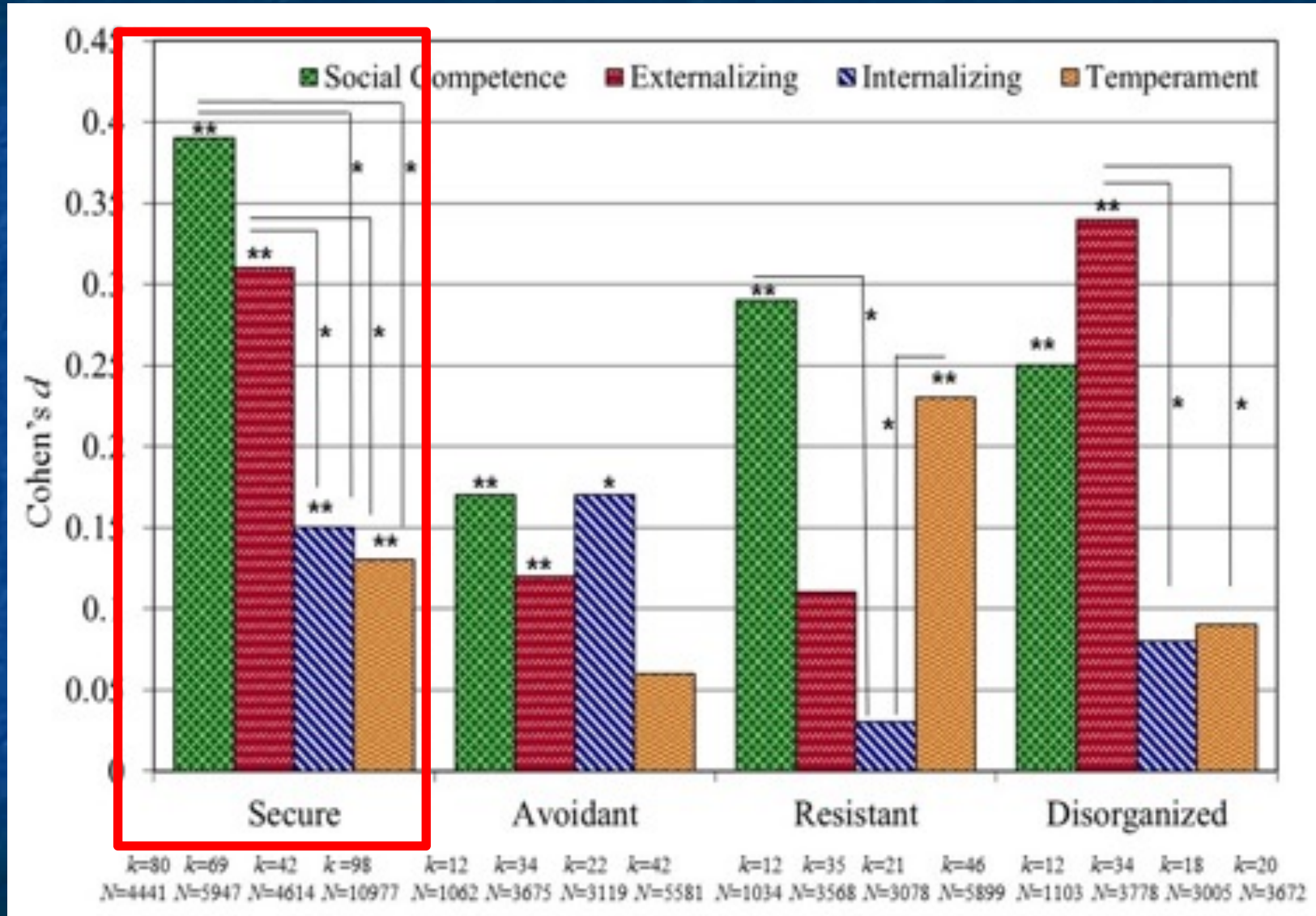
Temperament

Wat is gehechtheid?

- Is niet monotropie
- Is niet beperkt tot mensenkinderen
- Is geen uitvinding van de modern tijd
- Is geen westers fenomeen
- Gehechtheid is aangeboren
- Individuele verschillen zijn niet aangeboren
- Is een pijler onder ontwikkeling maar niet het hele fundament
- Wordt van ouder op kind overgedragen
- Sensitief opvoeden is een mechanisme van overdracht
- Gehechtheid van ouders is zichtbaar in het brein
- Mishandelende ouders hebben vaak te kampen met onverwerkt trauma

Caveat!

Attachment is only part of child development



Attachment is transmitted across generations



The Adult Attachment Interview

George, Kaplan & Main

- Semistructured
- General descriptors of childhood relationships (mother and father)
- Concrete evidence from attachment-related experience
- Evaluation of effects on current personality
- Traumatic events: loss and maltreatment
- Current relationship with parents

Coherence

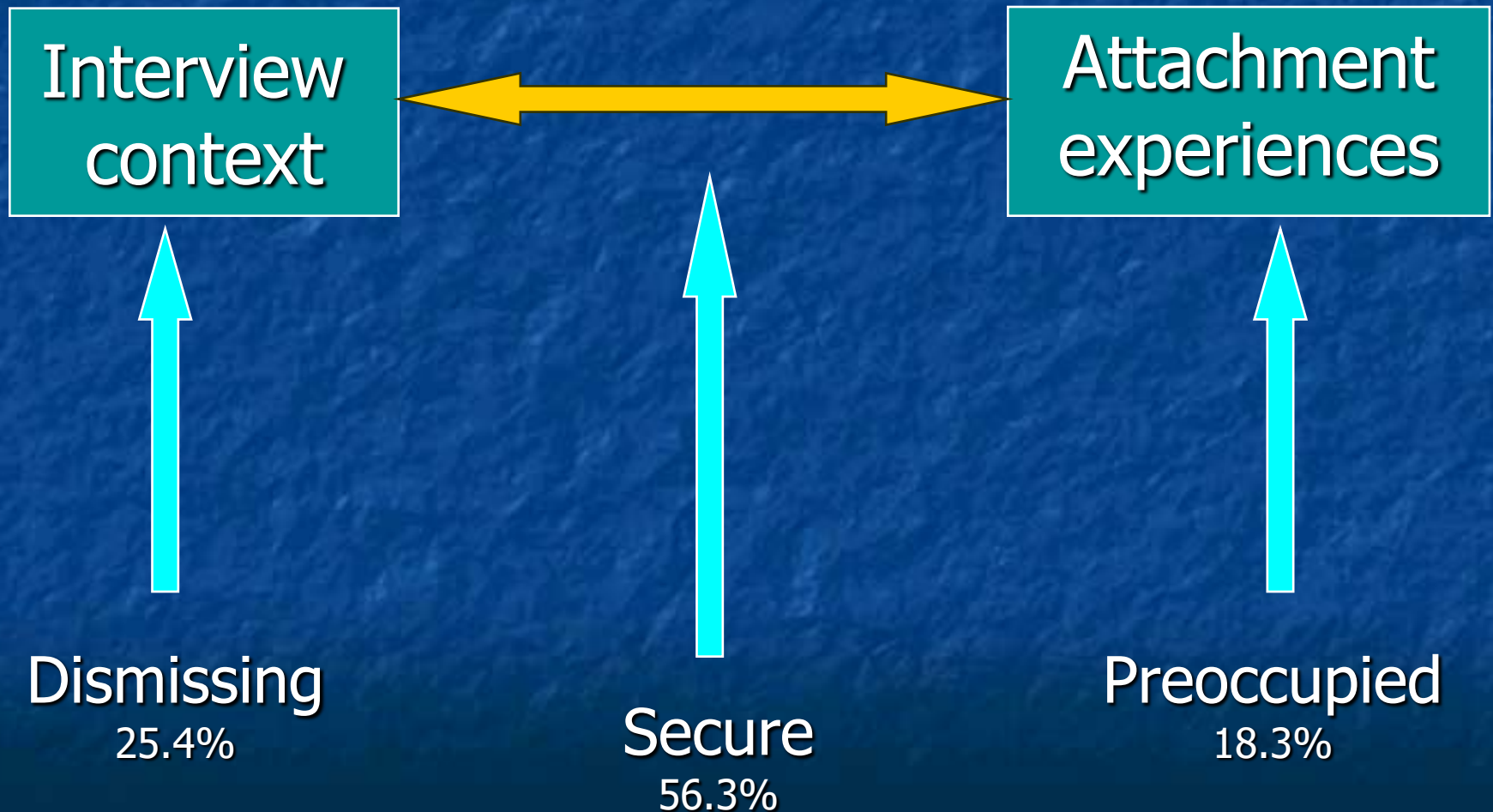
Mary Main, Erik Hesse



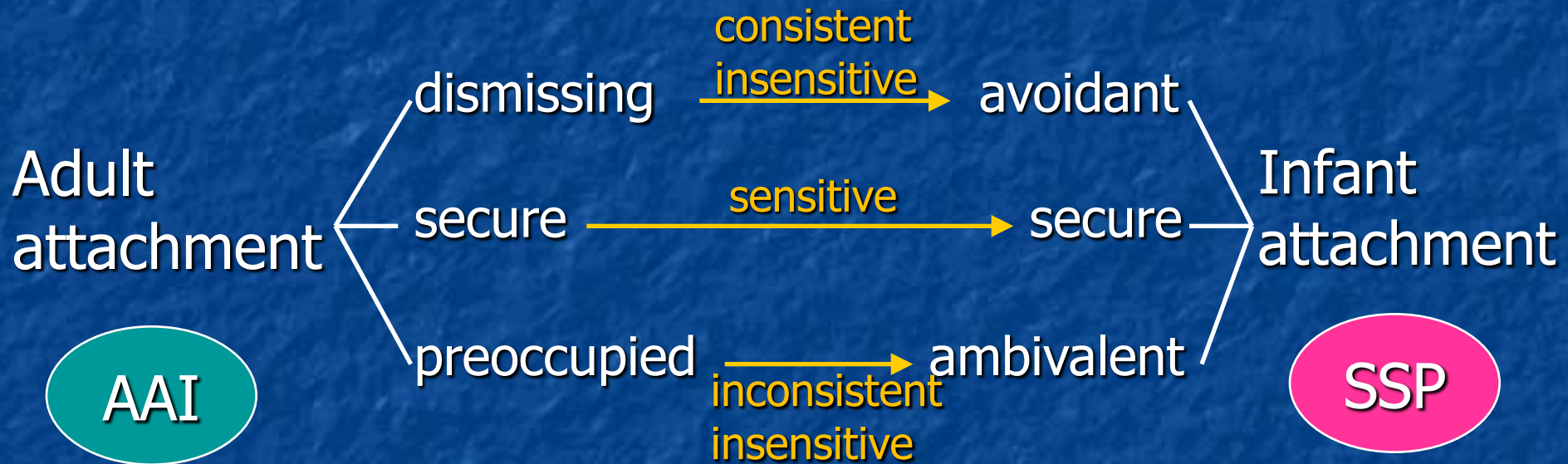
Adult attachment representations

- Secure-autonomous (F)
 - Value attachment relationships
- Insecure-dismissing (Ds)
 - Idealize or minimize importance of attachment
- Insecure-preoccupied (E)
 - Anger and maximize impact of attachment
- Unresolved loss/ trauma (U)

Adult Attachment Interview



Intergenerational transmission of attachment



N = 854

Parental sensitivity associated with cortical thickness in specific brain areas

Left Hemisphere

Right Hemisphere

Cluster: precentral, postcentral, and caudal middle frontal gyrus (adjusted $\beta=.28$, $p < .001$)

Cluster: precentral, caudal middle frontal, and rostral middle frontal gyrus (adjusted $\beta=.26$, $p < .001$)

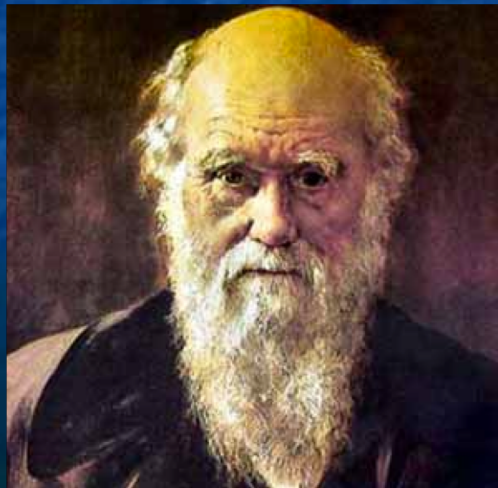
Thicker pre/postcentral – more donating

Kok et al., JAACAP, 2015 ²¹

Crying, smiling and babbling are behaviors mediating attachment

- Social signals with the predictable outcome of increased proximity of mother to the child (Bowlby, 1969, p244)

Charles Darwin



AAI and Neural response to crying

- Women without children
- AAI: attachment representation
- Cry sounds
 - 500, 700, 900 Hz
- Control sounds
 - 500, 700, 900 Hz
 - Matched on acoustic characteristics



Attachment & Human Development
Vol. 14, No. 6, November 2012, 533–551

 Routledge
Taylor & Francis Group

Attachment in the brain: adult attachment representations predict amygdala and behavioral responses to infant crying

Madelon M.E. Riem^{ab*}, Marian J. Bakermans-Kranenburg^{ab*},
Marinus H. van IJzendoorn^{ab}, Dorothee Out^a and Serge A.R.B. Rombouts^{bcd}

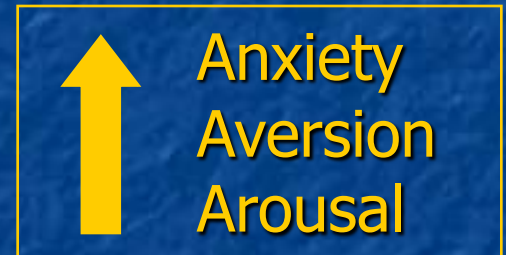
Behavioral responses to infant crying

- Insecure attachment representation:
 - More irritation
 - More excessive handgrip force

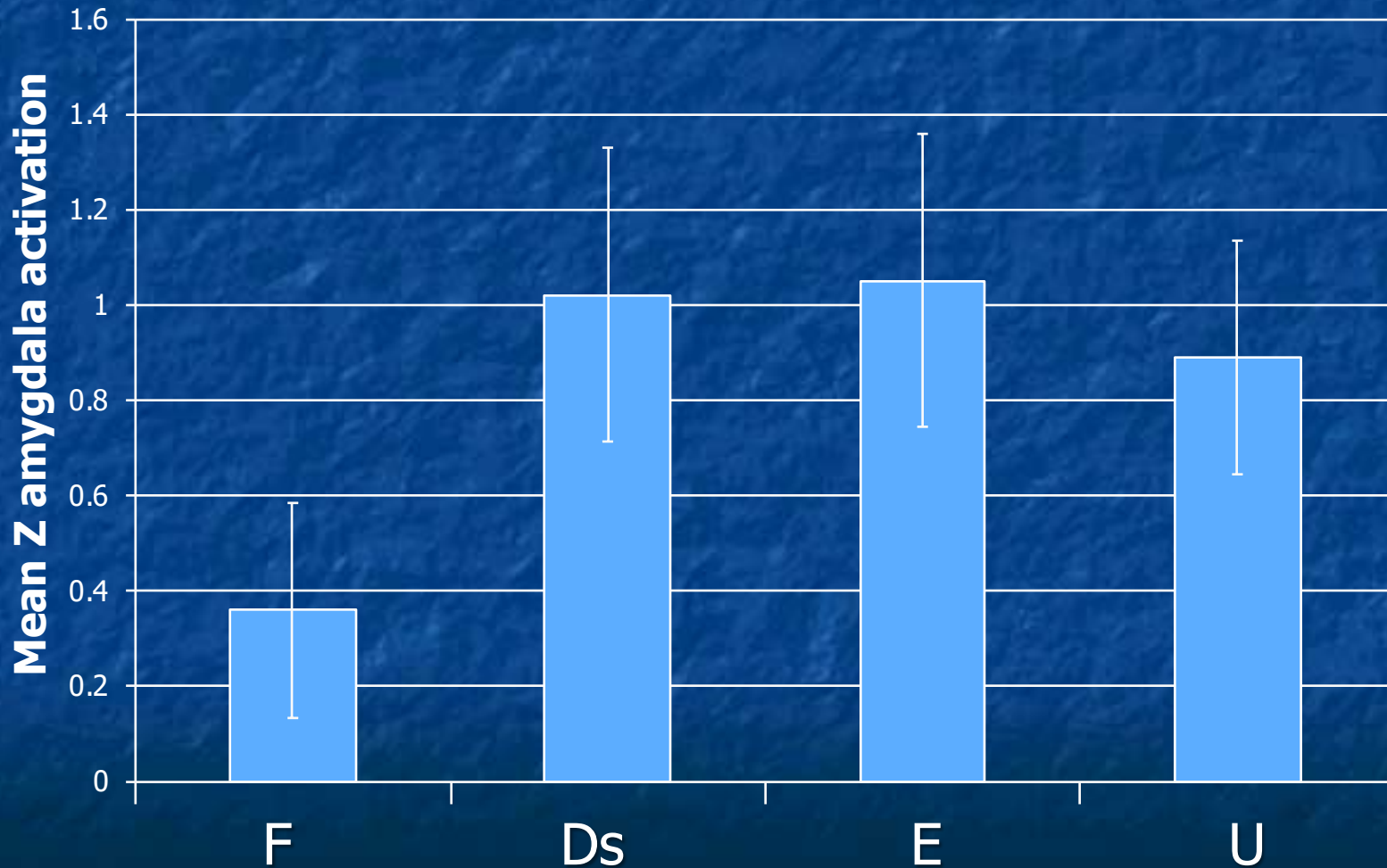


Functional brain responses to infant crying

- Insecure attachment representation → more amygdala activation



Stronger amygdala responses in Dismissing (Ds), Preoccupied (E), and Unresolved (U) compared to secure (F) individuals



Wat is gehechtheid?

- Is niet monotropie
- Is niet beperkt tot mensenkinderen
- Is geen uitvinding van de modern tijd
- Is geen westers fenomeen
- Gehechtheid is aangeboren
- Individuele verschillen zijn niet aangeboren
- Is een pijler onder ontwikkeling maar niet het hele fundament
- Wordt van ouder op kind overgedragen
- Sensitief opvoeden is een mechanisme van overdracht
- Gehechtheid van ouders is zichtbaar in het brein
- **Mishandelende ouders hebben vaak te kampen met onverwerkt trauma**

Unresolved Loss / Trauma (U)

Similarities with PTSS

- Questions about loss and maltreatment
- Disturbance in monitoring speech non-licensed:
 - lapses in monitoring of reasoning
 - dead/not-dead
 - feeling causal without rational reason
 - lapses in monitoring discourse
 - intrusion of sensations or images

MODE OF SPEECH, NOT CONTENT IS DECISIVE

Behavioral, physiological, and neurological reactions to infant crying

Maltreating mothers (neglect + abuse) ($N = 44$)

- *More childhood abuse

- *More depression, anxiety

In family-therapy

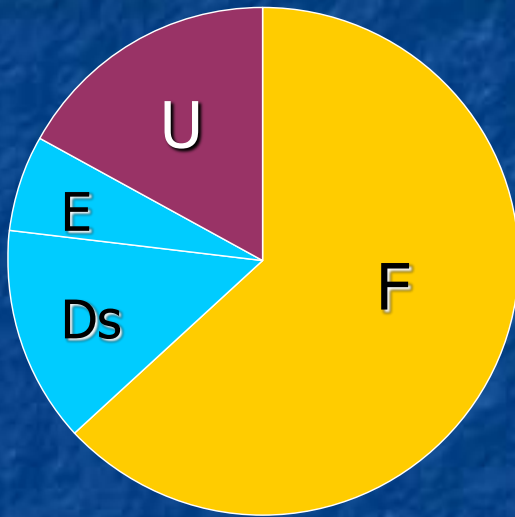
Non-maltreating mothers
(learning, attention problems)
($N = 42$)

Children in therapy

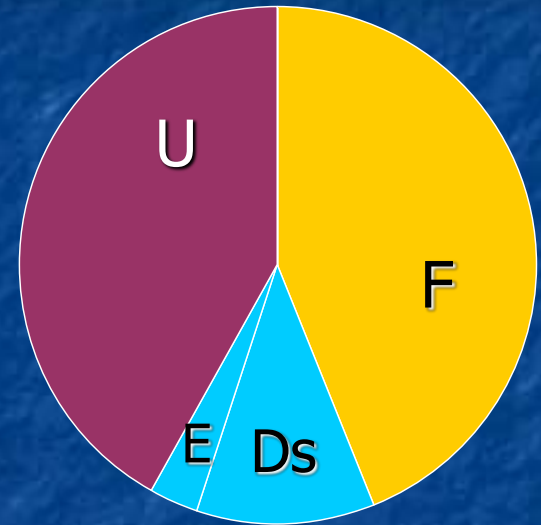


Sophie Reijman

Adult Attachment Representations (AAI) in maltreating and non-maltreating mothers



non-abuse



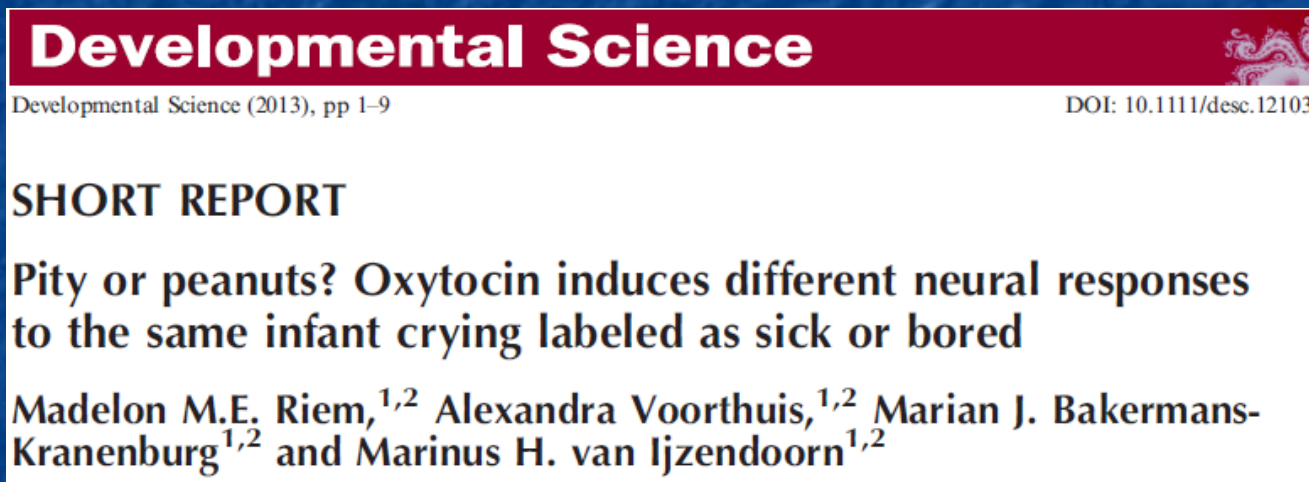
abuse

Childhood maltreatment associated with structural changes in the brain



- AAI with 44 women, MRI hippocampus
- Meta-analysis with 49 studies 2,270 participants
- In adults or with multiple abuse → smaller hippocampus

Insecure attachment representations may lead to **misreading and mislabeling** of child signals



Mind over Matter!

Humans are meaning makers, not passive processors of stimuli;
interventions focus on changing meaning, not genes or the brain

Identical cry labeled as sick or bored
triggers **divergent** neural activity
Differential sensitive responsiveness

Inferior frontal gyrus

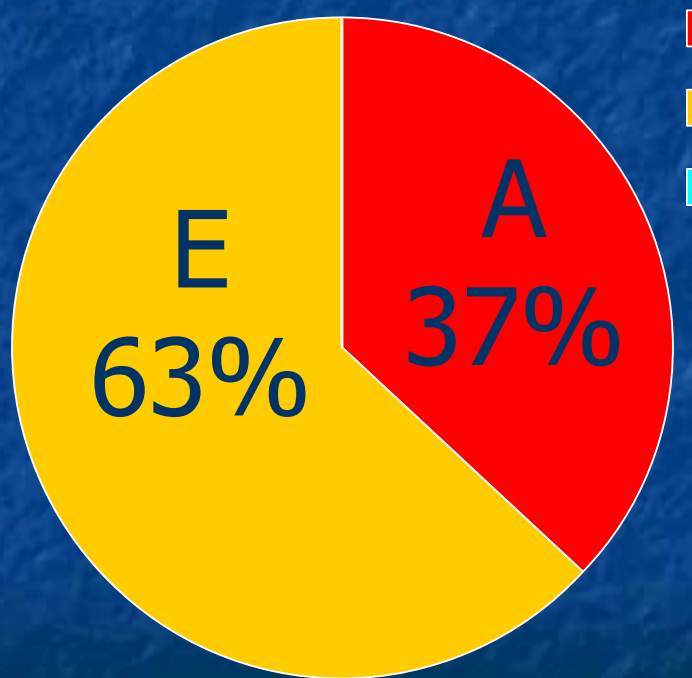
Left insula

"I hope it is widely read and its implications heeded- thoughts can create brain states and are not epiphenomena." Jerome Kagan

Is (abusive) parenting heritable?

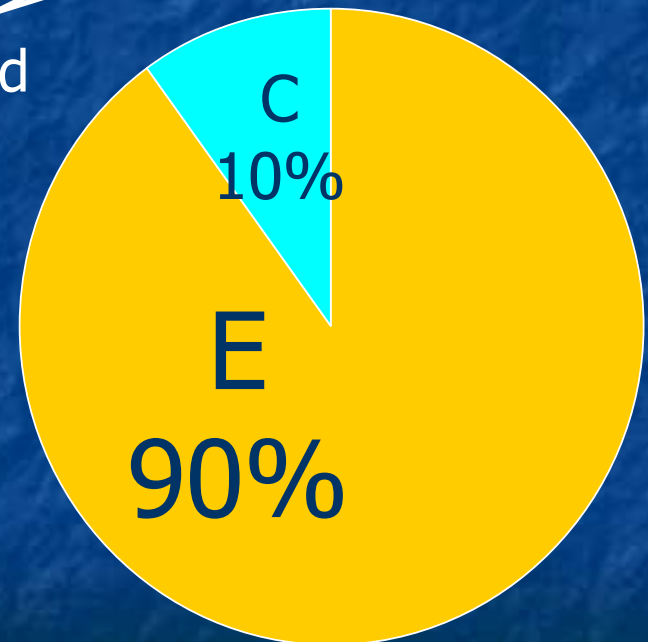
- Behavioral genetics of parenting
- Heritability of experienced maltreatment
- Shared-environmental risk factors of maltreatment

Heritability of parenting



Warmth

- A genes
- E non-shared
- C shared



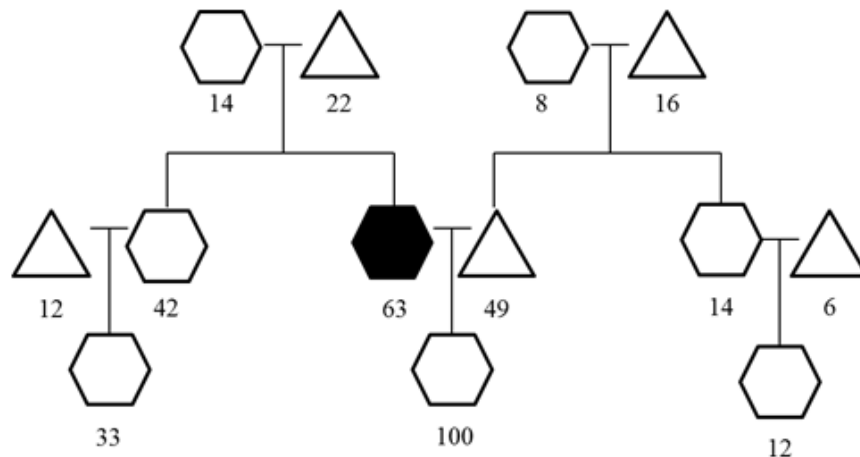
Control

but:
questionnaires

Extended family design: variation in genetic relatedness

Figure 1. Overview of Extended Pedigrees from 63 Families.

A. Pedigree

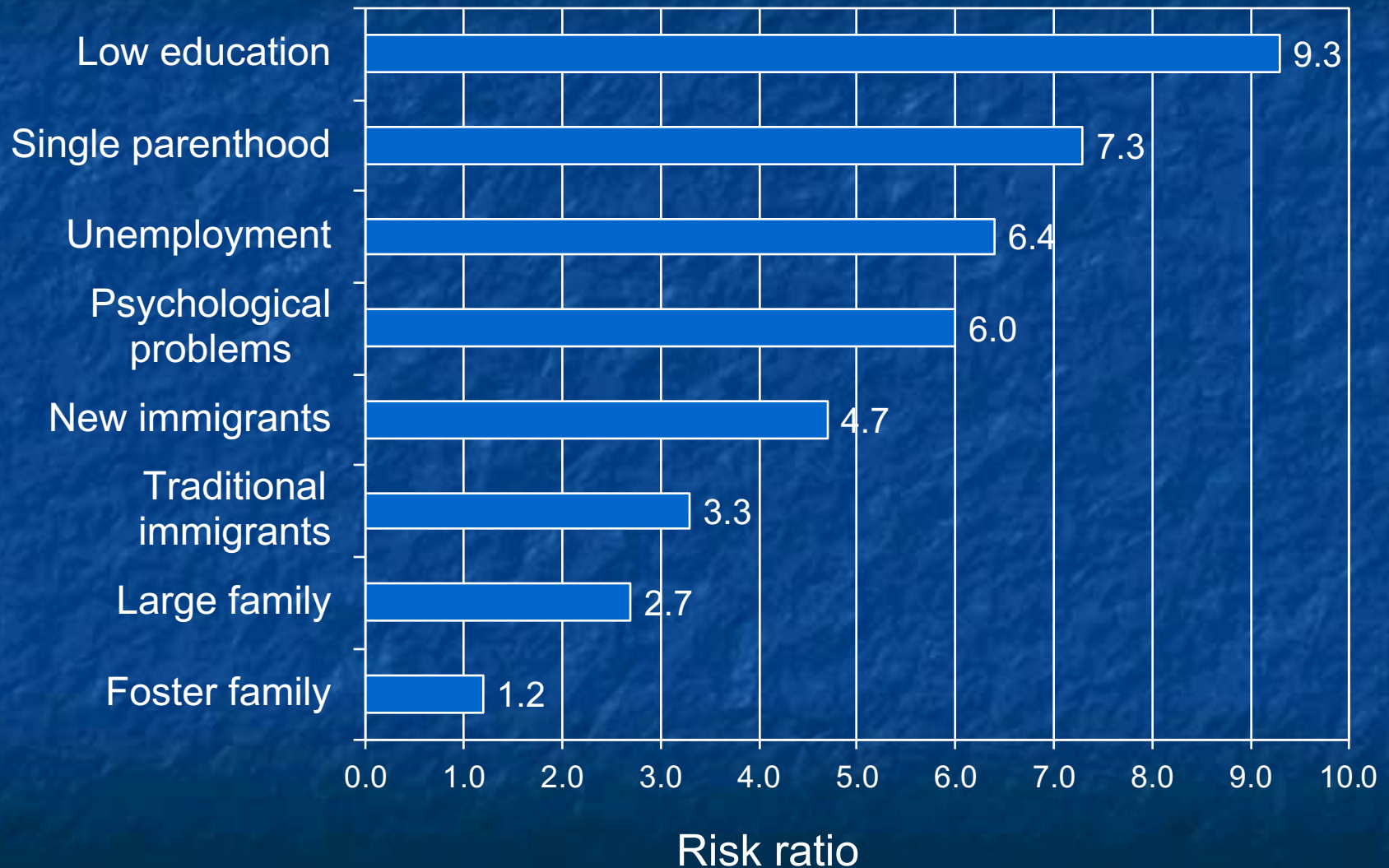


B. Genetic relationships

Relationship	Number of pairs
Parent-offspring	357
Siblings	143
Grandparent-grandchild	126
Avuncular	204
Half siblings	5
1st cousins	103
Grand avuncular	1
Half avuncular	7
First cousin once removed	2



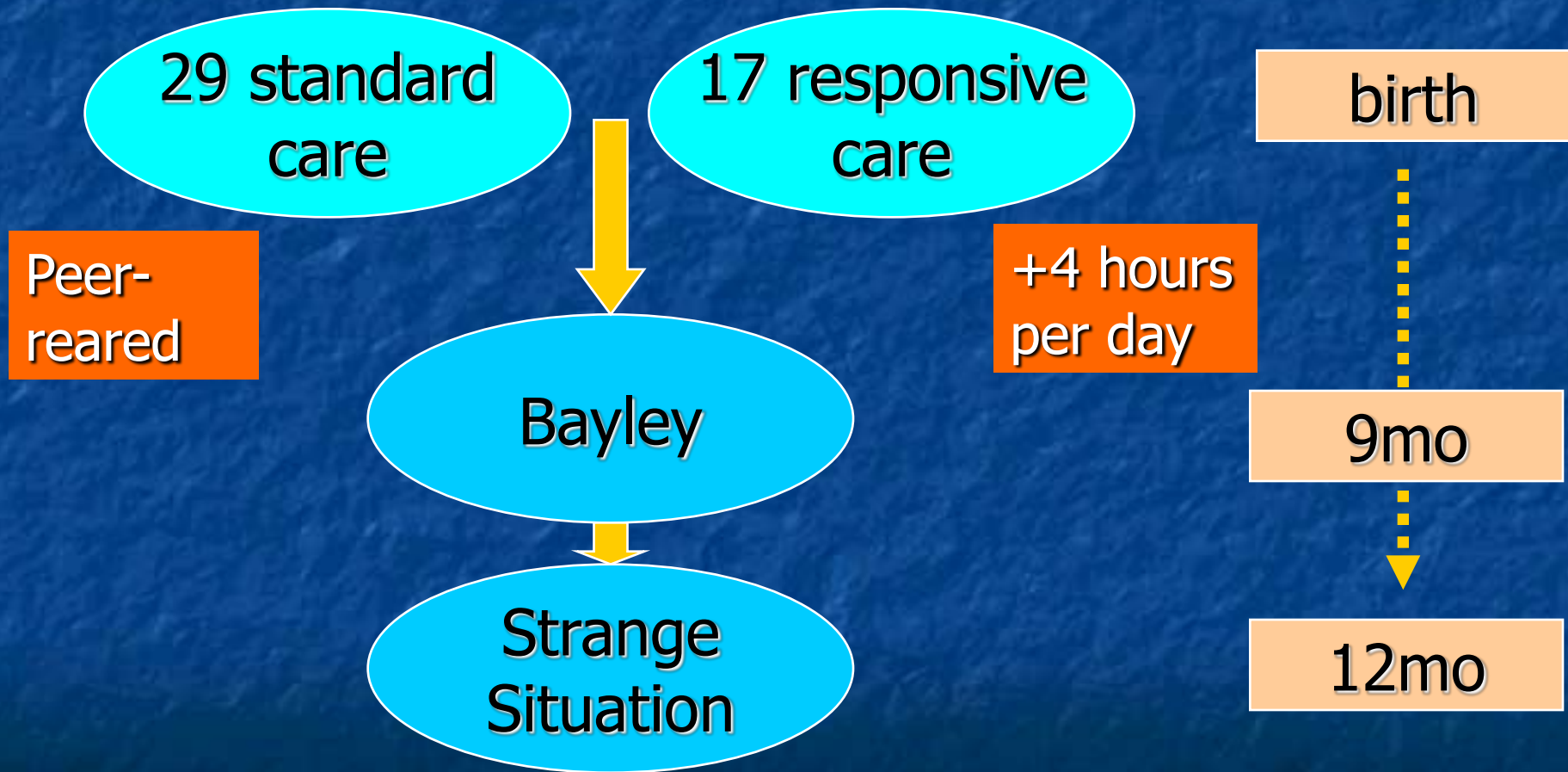
Shared-environmental risk factors



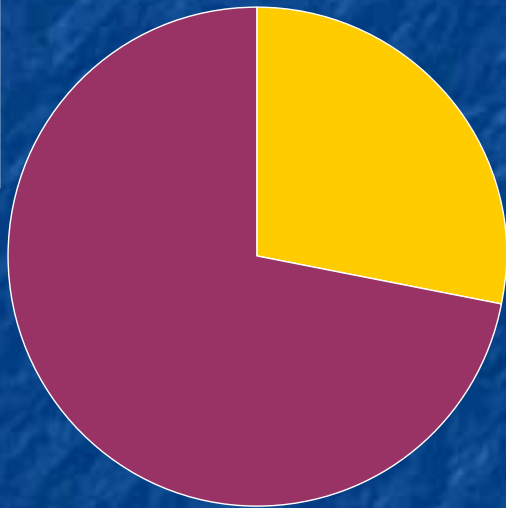
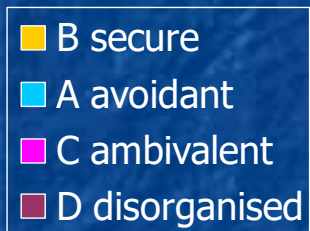
“Parents matter but they don’t make a difference” (Plomin 2018)

- But what if we can dramatically change child development by experimentally changing the rearing environment?
- And are able to control for genetic transmission of parenting: no genetic relatedness?
- **Adoption: most effective intervention**
 - Chimpanzee infants without parent
 - Human infants without parents

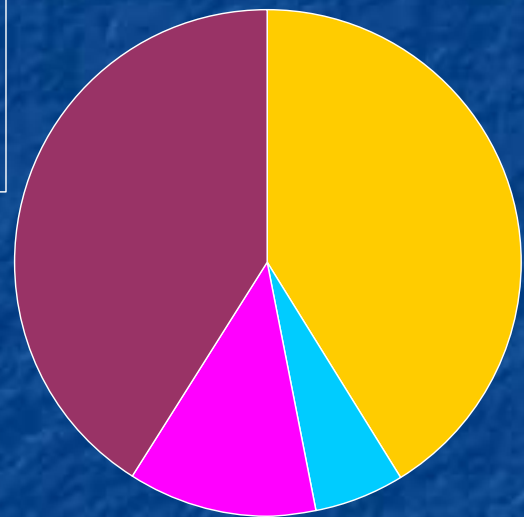
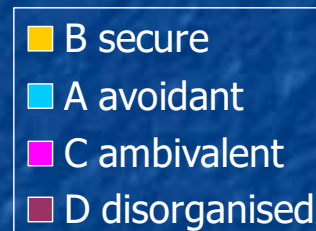
Intervention Experiment at Great Ape Nursery Yerkes



Attachment in chimpanzee infants (Yerkes)



Standard care: 72% Disorganized



Responsive care: 41% Disorganized

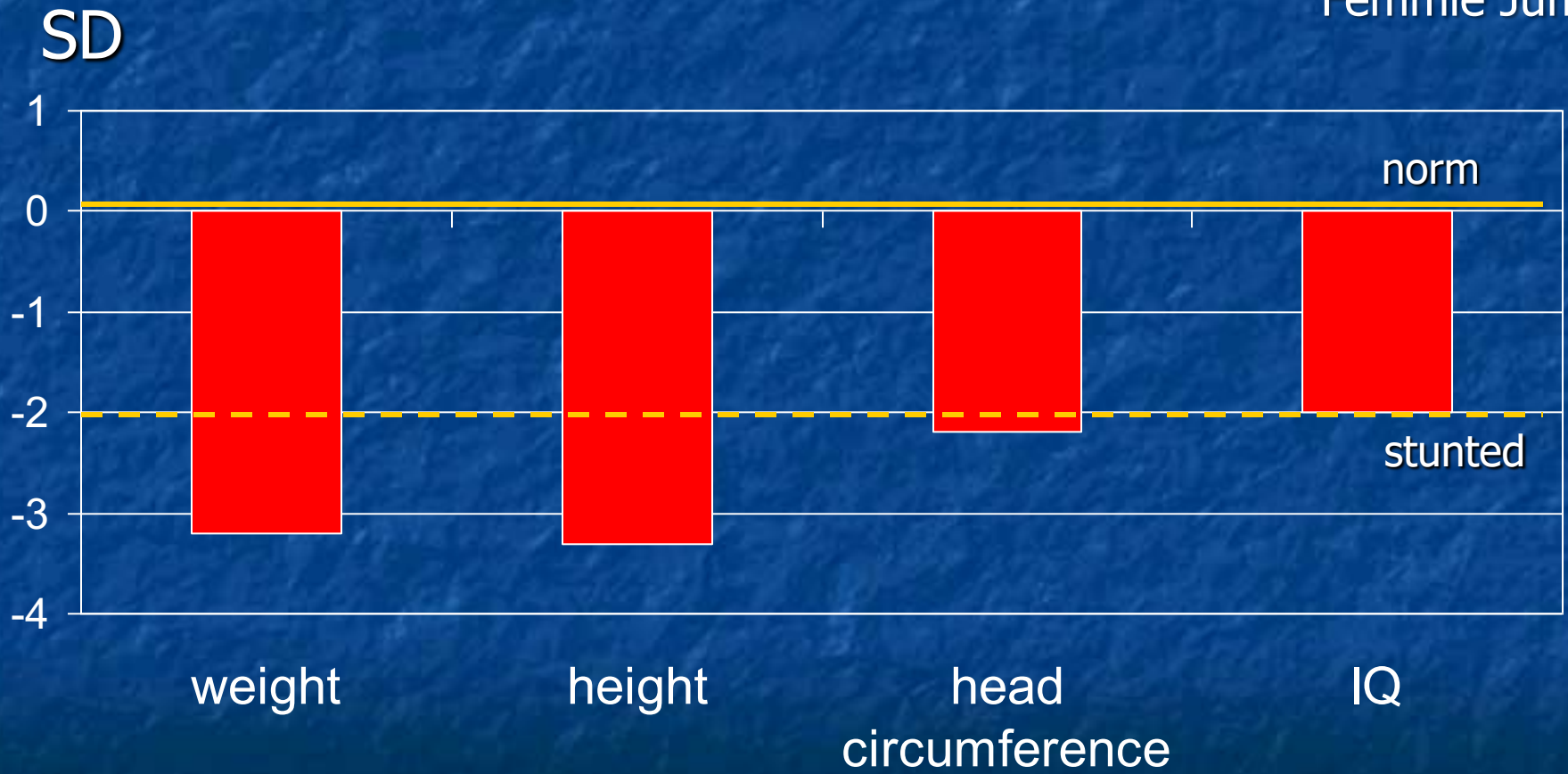
“Parents matter
but they don’t make a difference”
(Plomin 2018)

- But what if we can dramatically change child development by experimentally changing the rearing environment?
- And are able to control for genetic transmission of parenting?
- **Adoption: most effective intervention**
 - Chimpanzee infants without parent
 - **Human infants without parents**

Developmental delays in Mumbai orphanage

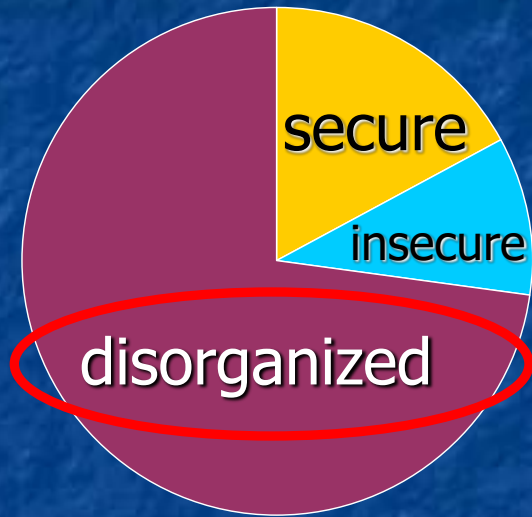


Femmie Juffer

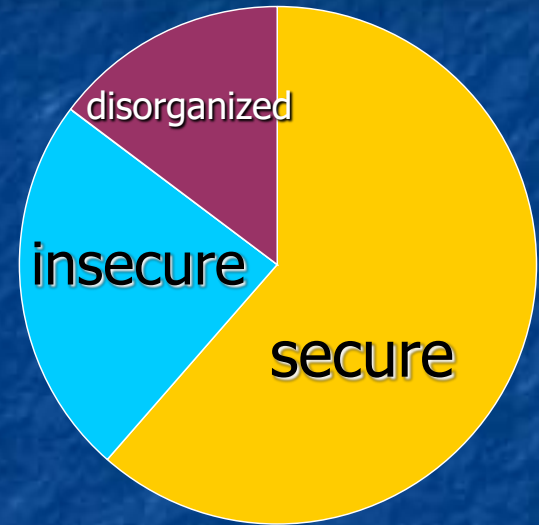


Bowlby was right:

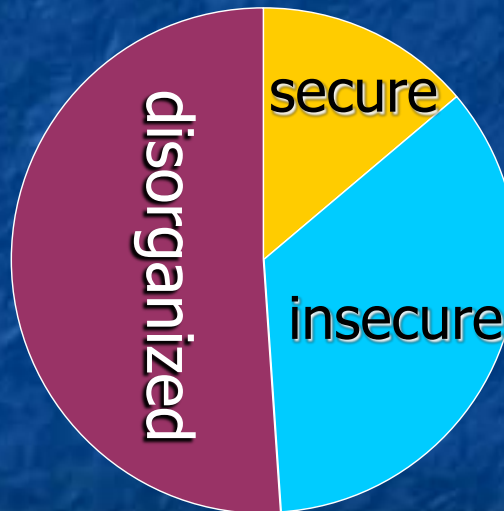
Attachment quality is poorer in institutions than in bad families



institutions



normative

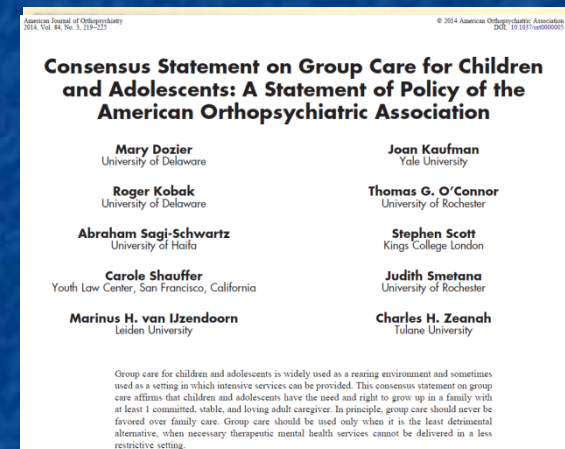


maltreatment

Institutions from Greece, Romania, Russia, Ukraine, Chile, China

Institution = Structural Neglect

- Institutional rearing falls outside the range of the **environments of evolutionary adaptedness** due to institutions' organization:
 - regimented nature,
 - high child-to-caregiver ratio
 - multiple shifts
 - frequent change of caregivers
- Children become stunted, mentally retarded, and emotionally disturbed



“Parents matter but they don’t make a difference” really??

Robert Plomin
Blueprint

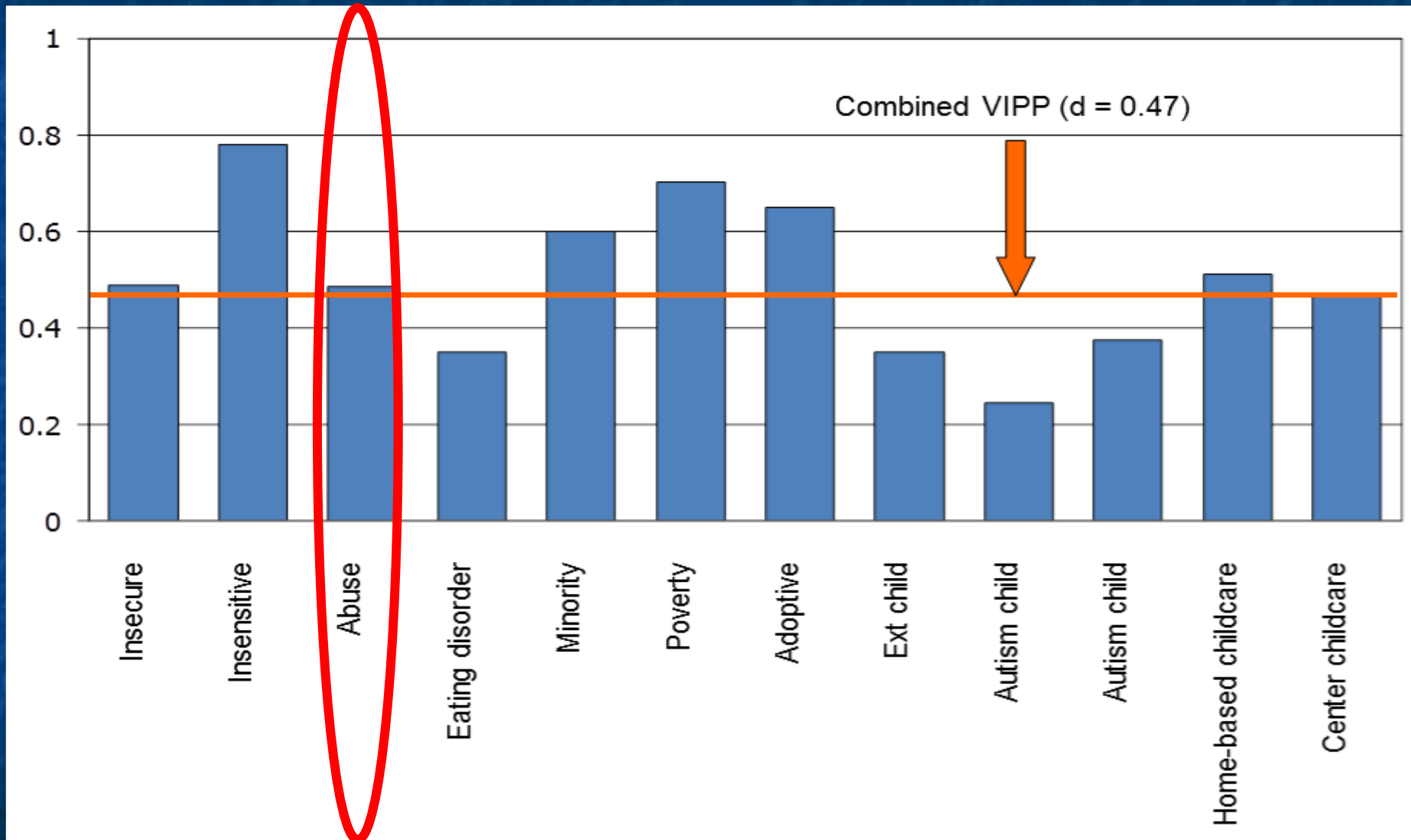
How DNA makes
us who we are



allen lane

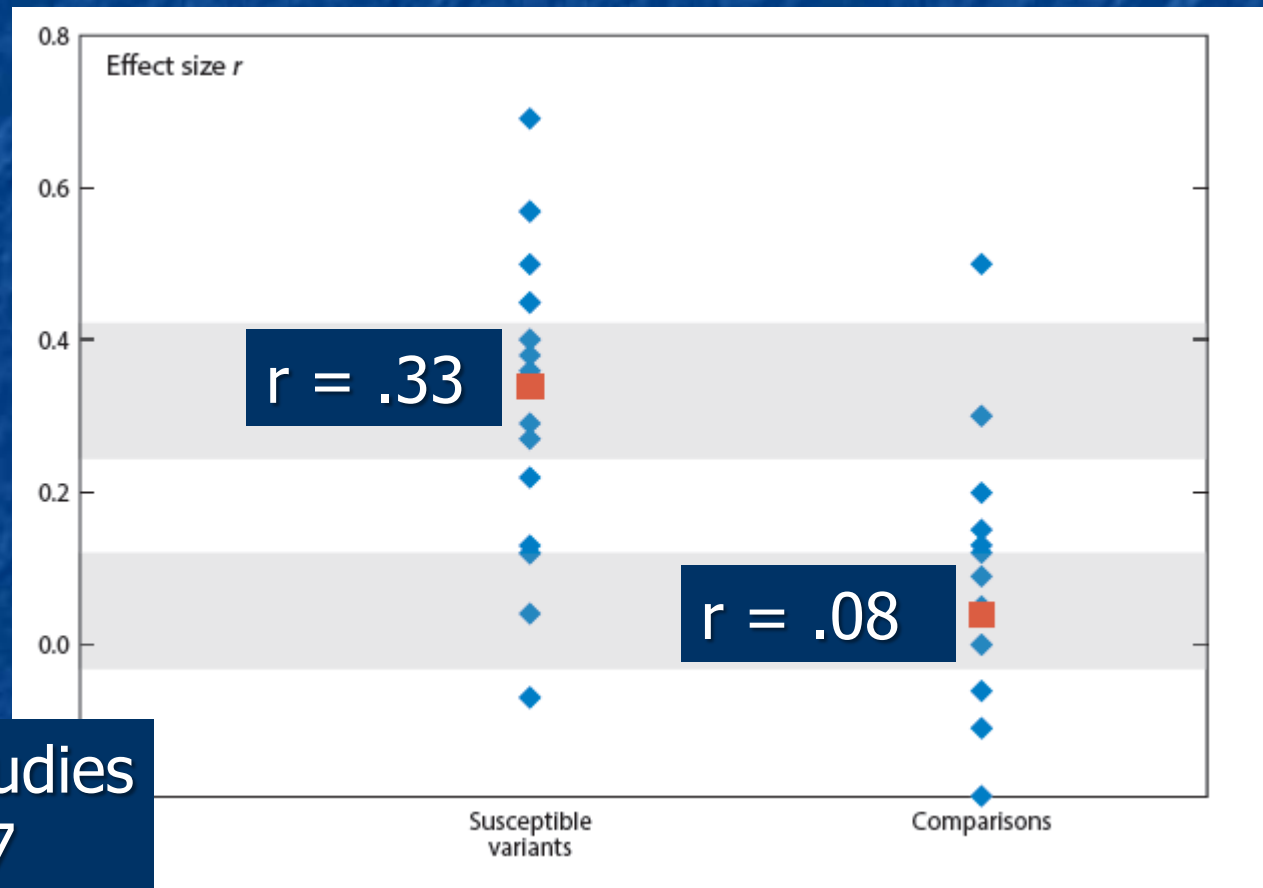
- Large changes in development through change of the rearing environment
 - Chimpanzee experiment with more human interaction
 - Adoption of institutionalized children
- Parenting makes a big difference!

Intervention video-feedback on parenting: Meta-analysis VIPP-SD (N = 1,116)



Juffer, Bakermans-Kranenburg, & Van IJzendoorn, 2017

Meta-analysis of Randomized Controlled Trials on Genetic Differential Susceptibility



$k = 22$ studies
 $N = 3,257$

Video-feedback research and implementation in more than 20 countries added to therapeutic interventions



Femmie Juffer



Marian Bakermans-Kranenburg

thanks!

Supported by the Netherlands Organization for Scientific Research (NWO), ZON, ERC, Jacobs foundation, the Dutch Ministry of Education, Culture, and Science

