The intergenerational transmission of child maltreatment:

An examination of underlying mechanisms using a multidisciplinary approach

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Outline

- Aim and design of the study

- Observations:
  - Handgrip paradigm
  - Parent-child interaction task
  - Family interaction task

- Questions for discussion
3-generation family study

Aim
Unravel the process of intergenerational transmission of child maltreatment using a multidisciplinary approach

- Intergenerational transmission occurs in approximately 30% of the cases (but large range)
- Mechanisms are largely unknown
Design family study

F1

F2

F3
Design family study

Visits to the lab:

with the **parents**, and siblings

with the **children**, partner, and siblings
Measures

- Maltreatment experiences
- Behavioral reactivity
- Physiological reactivity
- Interactions between family members
- Psychopathology
- Personality
- DNA
- Brain morphology and activity
Maltreatment

- Conflict Tactics Scales & Childhood Trauma Questionnaire
  - Experienced and perpetrated maltreatment
  - Multiple informants
    - participants (experienced and perpetrated)
    - their parents (perpetrated)
    - their children (experienced)
- Physical & Emotional Abuse
- Physical & Emotional Neglect
Sample

- 396 participants from 63 families
- 227 women, 169 men
- M age = 39 years, range = 7 - 88 years
- 6.23 family members per family, range = up to 23
- 92% Caucasian
Research questions

1. Is experienced maltreatment a risk factor for perpetrated maltreatment?

2. What are the roles of:
   a) physiological and behavioral reactivity to infant signals;
   b) the quality of parent-child interactions;
   c) family functioning

in the intergenerational transmission of child maltreatment?
Three attachment-relevant tasks

1) Handgrip paradigm: handgrip force and physiological stress reactivity in reaction to infant signals

2) Parent-child interaction task: warmth, negativity, emotional support, physiological reactivity

3) Family interaction task (Jenga): whole family interactions
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Handgrip paradigm: background

- Infant *laughter* and *crying* elicit parental proximity and care (Bowlby, 1969/1982)
  - *Laughter*: reinforces parental playful interactions
  - *Crying*: proximity, but also irritation & abusive responses

- Behavioral & physiological reactivity to infant signals associated with child abuse and harsh parenting (e.g., Bakermans-Kranenburg et al., 2011, Compier-Block et al., 2015; Crouch et al., 2008; Reijman et al., 2014)
  - excessive force as indicator of behavioral reactivity (e.g., Bakermans-Kranenburg et al., 2011, Compier-Block et al., 2015; Crouch et al., 2008)
Handgrip paradigm: Model

History of maltreatment

Maltreating behavior

\[ a_1 \rightarrow c' \rightarrow b_1 \]
\[ a_2 \rightarrow c' \rightarrow b_2 \]
Handgrip paradigm: behavioral reactivity

- Squeezing at maximum and half strength
- Test retest reliability (Reddon, Stefanyk, Gill, & Renney, 1985)
- Practice until correct force modulation
Handgrip paradigm: behavioral reactivity

- Handgrip force during:
  - Baseline (no sound)
  - 2-min infant laughter
  - 2-min infant crying

Handgrip force = \frac{\text{Half strength squeeze}}{\text{Full strength squeeze}}
Handgrip paradigm: physiological reactivity

"Rest & Digest"

Respiratory Sinus Arrhythmia (RSA):
Naturally occurring variation in heart rate during respiration

Assessed with Electro Cardiography (ECG):

"Fight or Flight"

Cardiac Pre-Ejection Period (PEP):
Shortened PEP is reflective of greater sympathetic nervous system (SNS) influence.

Assessed with Impedance Cardiography (ICG)
Handgrip paradigm: Data-analysis

1. Association with maltreatment (experienced, perpetrated)
   - RM ANCOVA on handgrip force during condition (baseline, laughter, crying)
     - Experienced and perpetrated maltreatment as covariate
     - Order of presentation as between-subjects factor

2. Behavioral reactivity as mediator in maltreatment history → maltreating behavior
   - Mediation analysis (Preacher & Hayes, SPSS macro)
     - IV = Experienced maltreatment
     - DV = Perpetrated maltreatment
     - M = Handgrip force during crying
Handgrip paradigm: preliminary results

- Significant condition effect \( (F(2,155) = 6.14, p < .01, \text{ partial } \eta^2 = .04) \)
  - more force during laughter than during crying \( (p < .01) \)

- Significant interaction condition x experienced neglect \( (F(2,155) = 3.51, p < .05, \text{ partial } \eta^2 = .02) \)
  - More experienced neglect \( \rightarrow \) more force during crying vs. laughter \( (p < .05) \)
Handgrip paradigm: Preliminary results

\[ \beta_{\text{abuse}} = 0.39, p < 0.001 \]
\[ \beta_{\text{neglect}} = 0.11, p = 0.02 \]

1 Controlling for SES, age and gender
2 \( N = 145 \)
Handgrip paradigm: Conclusions

- History of maltreatment → maltreating behavior
- History of neglect (but not abuse) → behavioral reactivity to infant crying
  - Neglect more profound impact than abuse (Cicchetti & Toth, 1995, Crouch & Milner, 1993; Gaudin, 1999)?
  - Antecedents and consequences might differ depending on type of maltreatment
- Handgrip force not related to maltreating behavior
  - Physiological reactivity to detect differences in distress elicited by infant signals?
Handgrip paradigm: Next steps

- Take the nested structure of the data into account → multilevel modeling
- Examine physiological reactivity to infant sounds (ECG)
- Examine participants’ perceptions of infants sounds
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Parent-child interaction task: Background

Attachment theory (Ainsworth et al. 1978; Bowlby 1988)

Early relationships with attachment figures leads to formation of internal working model (IWM)

- IWM guides behavior in future relationships
- IWM related to warmth & emotional support parents show toward their children (Bowlby, 1988; Main, Kaplan, & Cassidy, 1985)
Parent-child interaction task:
Method

- Revealed difference task (Strodtbeck, 1951)
  - 10 minute video-taped parent-child interactions
  - Reach consensus

- Supportive Behavior Task Coding manual (Allen et al., 2003)
  - Warmth
  - Negativity
  - Emotional Support

- Four independent coders (ICC range: .65 - .84)

- Physiological reactivity (ECG)
Parent-child interaction task: Examples

2 video examples (very high versus very low on warmth, negativity and emotional support) to be inserted here
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Family interaction task: Background

- Family Systems Theory (Bowen, 2000):
  - Family as emotional unit
  - Actions of family member cannot be understood in isolation, but must be examined within the context of the family

- Family conflict and lack of family cohesion
  coercive interactions that increase likelihood of child maltreatment
Family interaction task: Method

- Playful task: Jenga
  - Nuclear family
  - “work together to build a tower as high as possible”
  - 10 minute video-taped interaction

- System for coding interactions and family functioning (SCIFF) (Lindahl & Malik, 2000)
  - Cohesiveness (family rating)
  - Positive affect (individual rating)
  - Negative affect (individual rating)
Family interaction task: Examples

2 video examples (high versus low on family cohesion) to be inserted here
Questions for discussion: Data Analysis

1. How to best take the nested structure of the data into account?
2. How to deal with missing data?
   - Analyze complete cases?
   - Impute (outcome) variables?
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