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PRODO

The association between interpretation biases and stress responses in children of parents with depression

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LMU University Hospital

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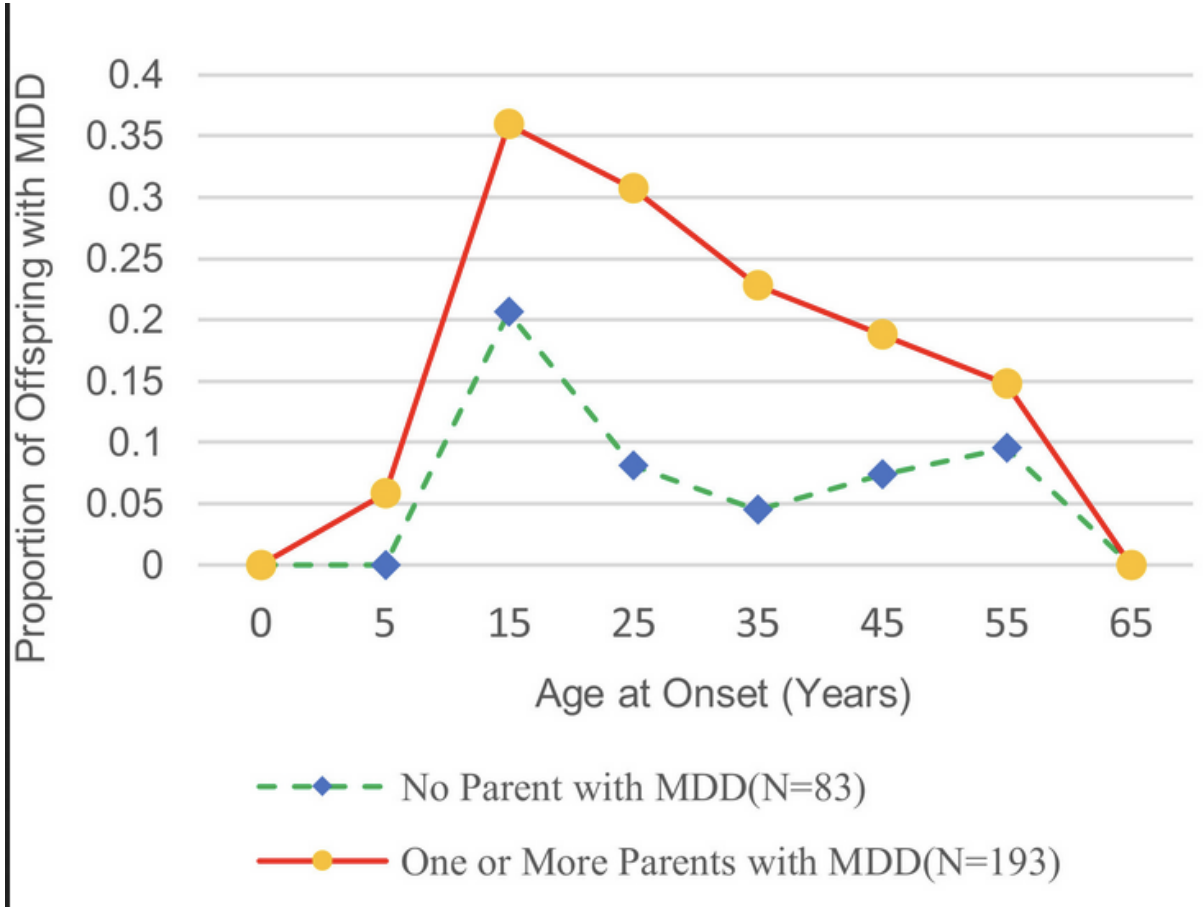
← Slides here

Children of parents with depression

Mental health risk



- **Large meta-analysis** (Uher et al., 2023)
  - **RR = 2.3** for depression
  - **50% lifetime** prevalence for any illness
- **WHO** calls for improved preventive interventions
- Existing interventions for this population effective (RR=0.56) (Löchner et al., 2018) but modest

Fig. 1 from: Weissman et al. (2021) EClinicalMedicine

Children of parents with depression
Mechanisms of risk transmission

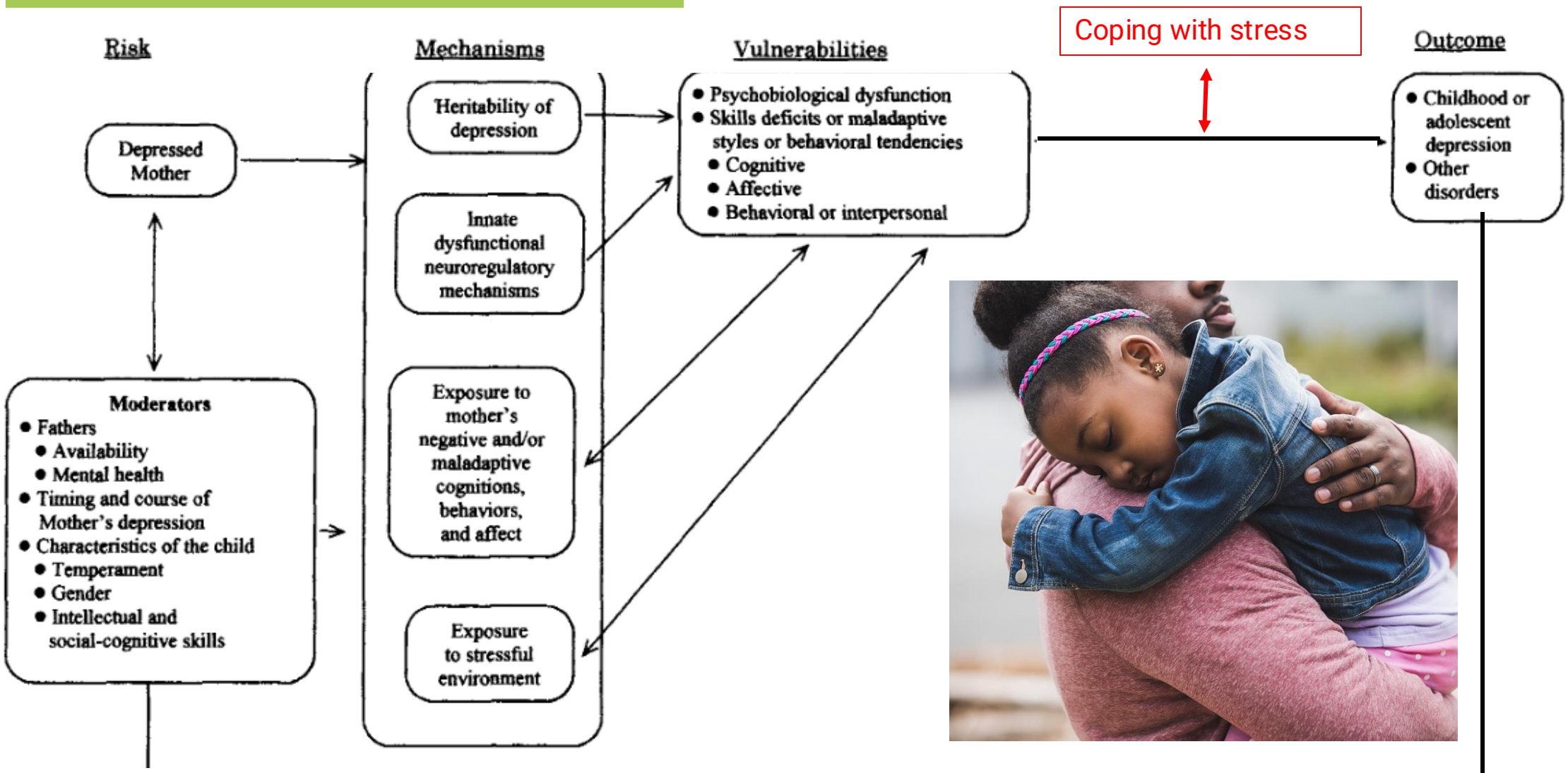


Figure 1: Goodman and Gotlib (1999), p.461

Children of parents with depression
The role of cognitions

total i winner a loser ar

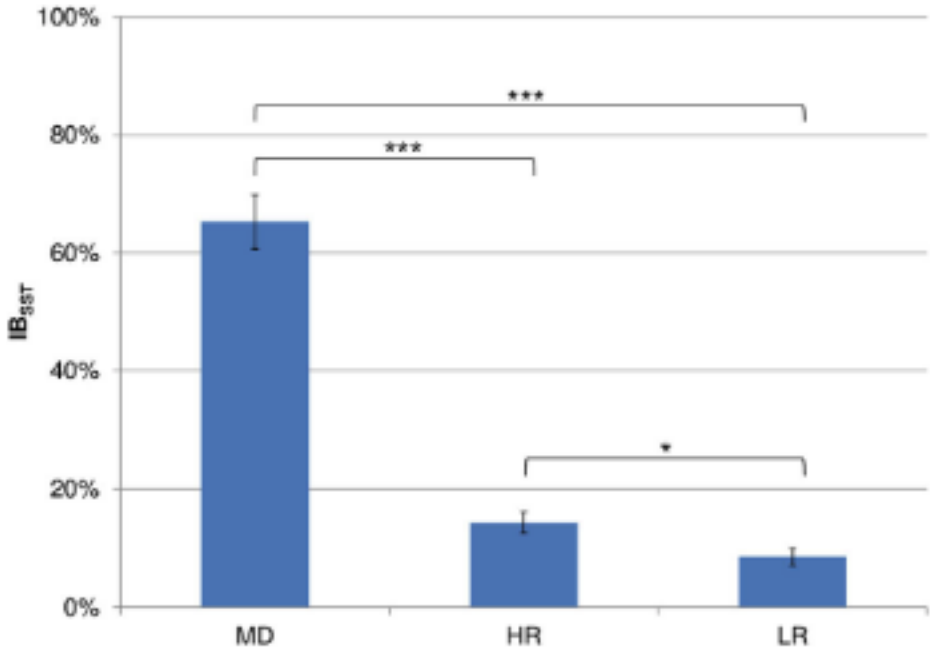
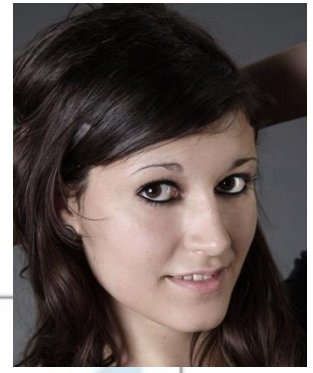


Fig. 4 IB_{SST} scores for the three groups. Error bars represent standard errors. Significant group differences are indicated: *** $p < .001$, * $p < .05$

Figure 4: Sfärlea et al. (2020), J Abnorm Child Psychol p. 1344.



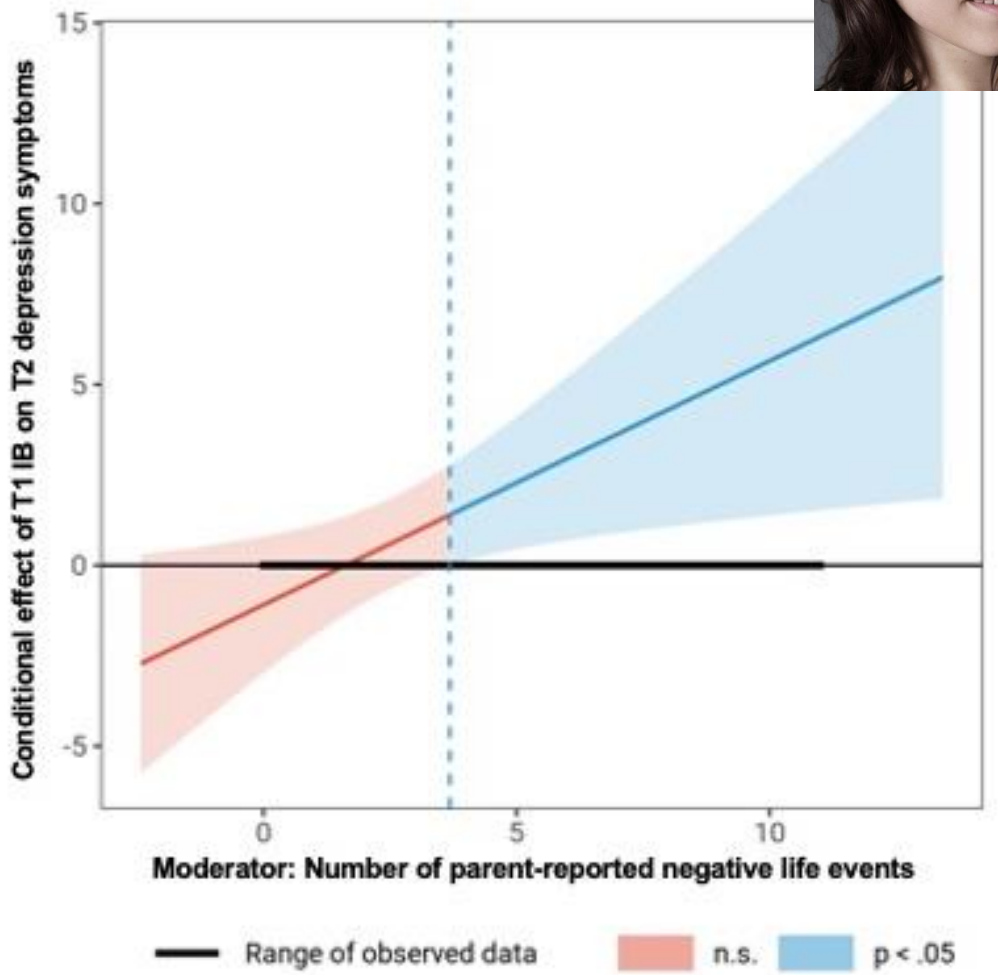


Figure 3: Platt, Sfärlea et al., (2023) Journal of Experimental Psychopathology

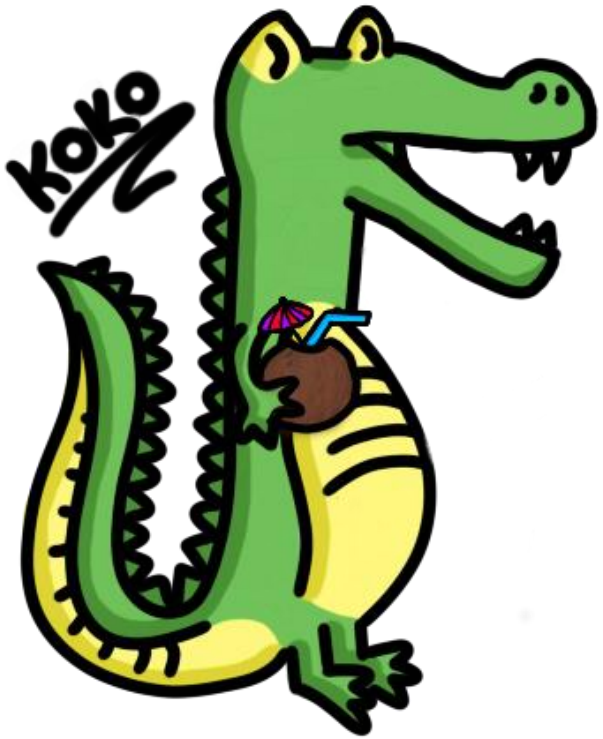
Children of parents with depression
The role of stress reactivity and recovery

- Physiological stress responses implicated in the aetiology of mood disorders (Carroll et al., 2017; Colich et al., 2015; Rao et al., 2009)
- Alterations in stress response characterise children of parents with depression
  - Even when symptoms of depression are controlled for (Barry et al., 2015)
  - With a dose-dependant effect (Dougherty et al., 2013)
  - Possibly moderated by temperament (Mackrell et al. 2014)
  - But not always replicated (Gotlib et al., 2015; Waugh et al., 2012)

Children of parents with depression
Do cognitions influence stress response?

- Evidence of a cross-sectional association between cognitive vulnerability and stress response
  - in adults (e.g. Zoccola and Dickerson, 2012)
  - in youth (Klimes-Dougan et al., 2022; Bäumler et al., in prep.)
  - Specifically regarding IB in youth (Hollocks et al., 2016; Rozenman et al., 2017)
- But does chronic negative thinking influence stress response? (Brosschot et al., 2006)
  - Supported by a longitudinal study of IB in youth (Chen and Mathews, 2001)
  - Supported by a CBM-I study of IB in youth (Telman et al., 2013)
  - No studies in children of parents with depression

The CoCo study
Research questions



Do **children of parents with depression** show...

1. More **negative interpretations** of ambiguous sentences?
2. Heightened stress **reactivity**?
3. Delayed stress **recovery**?

...compared to children of parents with no mental illness

4. Are **IB** and stress reactivity/recovery (**SR**) **associated**?
5. Is **CBM-I** associated with changes in **stress response**?

Important: none of the children had current mental illness!

Frommelt et al. (2023) BMC Psychiatry and Frommelt et al. (in prep.)

The CoCo study

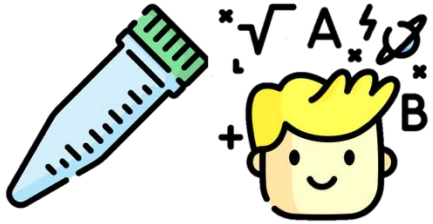
Study procedure

Online Diagnostics

204 children and their parents
(X HR,Y LR)

(1 week later)

Session 1



Measure IB and stress reactivity
(80 HR, 77 LR)

IB training (45 HR)
1 session in the lab

20 training sessions online

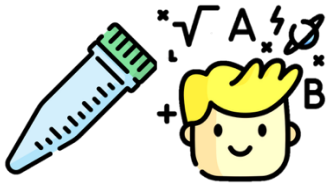
Placebo Training (45 HR)
1 session in the lab

20 training sessions online

(4 weeks later)

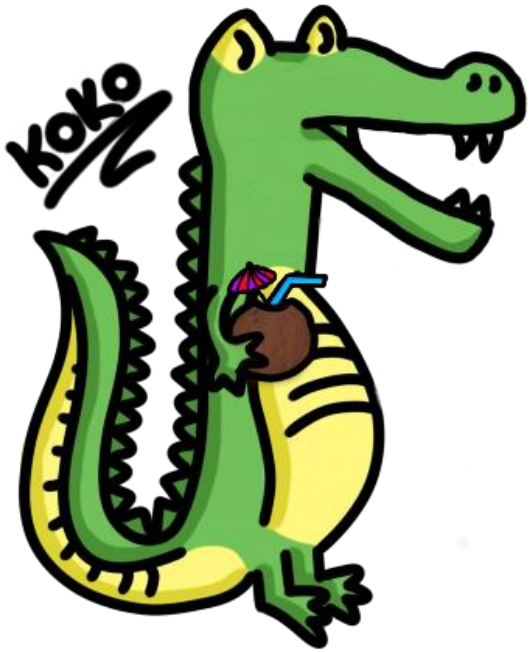
Session 2

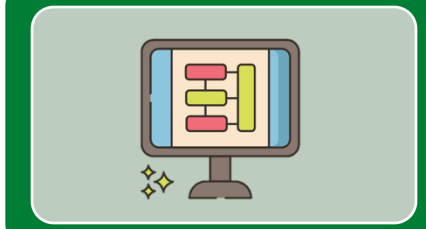
Measure IB and stress reactivity



Measure IB and stress reactivity

The CoCo study
Study measures

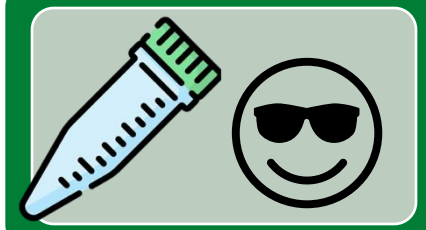




Interpretation bias: Scrambled Sentences Task (SST) for children. Percentage negative sentences.

Stress reactivity (Delta: max. increase → 30 mins)

- Trier Stress Task for Children (TSST-C)
- Mood (SAM) and salivary cortisol



Stress recovery (Baseline-adjusted value at 45 mins)

- Trier Stress Task for Children (TSST-C)
- Mood (SAM) and salivary cortisol

Frommelt et al. (2023) BMC Psychiatry
Frommelt et al. (in prep.)

The CoCo study

Study sample

Characteristics	HR (n = 80)	LR (n = 77)
Gender (female)	57.5 %	55.8 %
Age M (SD) *	12.0	12.5
Puberty stage	2.69 (1.06)	2.91 (1.00)
Symptoms of **depression** M (SD) - RCADS	50.2 (9.47)	47.3 (8.61)
Symptoms of **anxiety** M (SD) - RCADS	44.7 (9.88)	44.0 (8.36)
Childhood **trauma** M (SD) - CTQ	31.8 (4.81)	31.5 (4.89)

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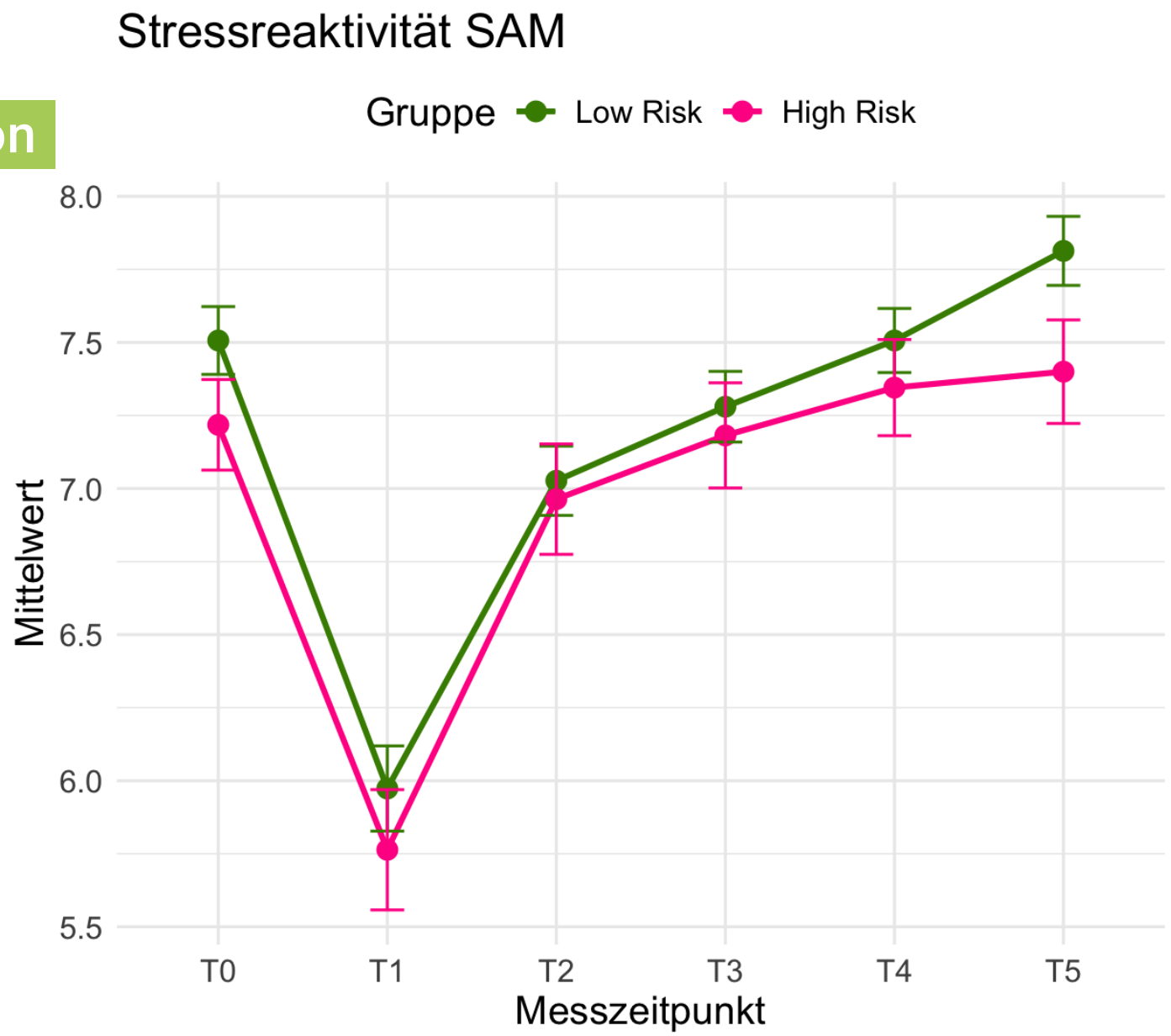
Validation of the stress induction

Children showed a **significant** reaction to the TSST-C:

Self-reported **change in mood**:
t(156) = 15.95, *p* < .001,
d = 1.27, 95% CI [1.06, 1.48]

Cortisol reactivity:
t(155) = 14.24, *p* < .001 ,
d = 1.14, 95% CI [0.94, 1.34]

Typical response *g* = .57, *g* = .47
(Seddon et al., 2020)



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Group-based differences in IB and stress response

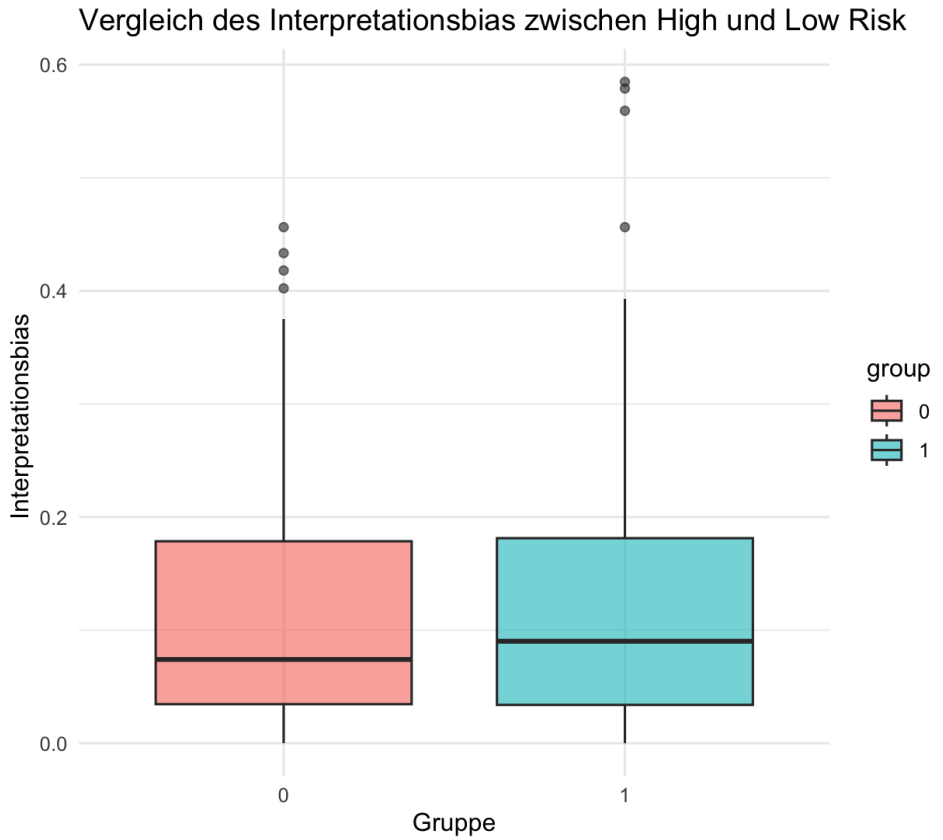
RQ1: Do the groups differ in IB?
→No: 12.0% negative sentences in both groups
→IB correlates with depressive symptoms (0.55*)

RQ2: Do the groups differ in stress reactivity?
→ No: neither subjective nor cortisol
→ Subjective stress reactivity correlates with depressive symptoms (0.17*)

RQ3: Do the groups differ in stress recovery?
→ No: neither subjective nor cortisol.
→ No correlations with depression

→ What about when we control for baseline stress level?

Results


Vergleich des Interpretationsbias zwischen High und Low Risk
Interpretationsbias
0.6
0.4
0.2
0.0
0
1
Gruppe
group
0
1


Vergleich der Stressreaktivität zwischen High und Low Risk
Stressreaktivität
600
500
400
300
0
1
Gruppe
group
0
1

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Association between IB and stress response

RQ4: How strongly are IB and stress response associated?

→ No correlation between IB x subjective or cortisol reactivity: 0.08 and -0.11

→ No correlation between IB x subjective or cortisol recovery: -0.06 and -0.12

→ Stress response moderates the association between IB and symptoms of depression STATISTICS moderation

Can we include baseline stress response in these models??

RQ5: Is CBM-I associated with changes in stress response?

→ No evidence that CBM-I training changed IB (analyses ongoing)

The CoCo study
Interpretation of findings

Parental mental health **did not** predict children's IB or stress response
→ **Contradicts** previous studies (e.g., Dougherty et al., 2013; Dearing and Gotlib, 2009; Sfärlea et al., 2020) including when **depressive symptoms** controlled for (Barry et al. 2015) but **not all** find a main effect of group (Gotlib et al., 2015; Waugh et al., 2012)
→ Calls into question the appropriateness of CBM-I training for this group

Children's own symptoms of **depression** were predictors of IB and stress reactivity
→ Supports previous studies of youth (Platt et al., 2017) and adults (ref)

No association between IB and stress responses
→ Contradicts previous studies in youth (e.g., Hollocks et al., 2016; Rozenman et al., 2017)
→ Appear to load together onto depression risk

No effect of **CBM-I** training on IB in our HR group
→ Unsurprising given lack of initial bias

The CoCo study
Strengths and Weaknesses

Strengths

- Focus on age 10-14 years before prevalence in HR group increases
- Use of valid diagnostic instruments for parents and children
- Gold-standard stress task which elicited strong stress response

Weaknesses

- Homogeneous group in terms of SES → resilience?

The CoCo study
Summary

- Improved models of transgenerational transmission could help inform more effective preventive interventions for depression
- Current study questions the robustness of previous findings regarding
  - Presence of IB in children of parents with depression
  - Association between IB and stress response
- No evidence for assosciations between IB and SR.
- However, findings could reflect homogeneity of two groups.

Thank you!

Belinda.platt@med.uni-muenchen.de

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