

The interplay between emotion regulation and cognitive biases in youth (at risk for) depression

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Overview

Consequence or risk factor? The role of cognitive biases in youth depression

→ Comparison of youth with major depression (MD), youth at high risk for MD and youth at low risk for MD



Emotion Regulation as a mediator in the relationship between cognitive biases and depressive symptoms

Background

Youth depression

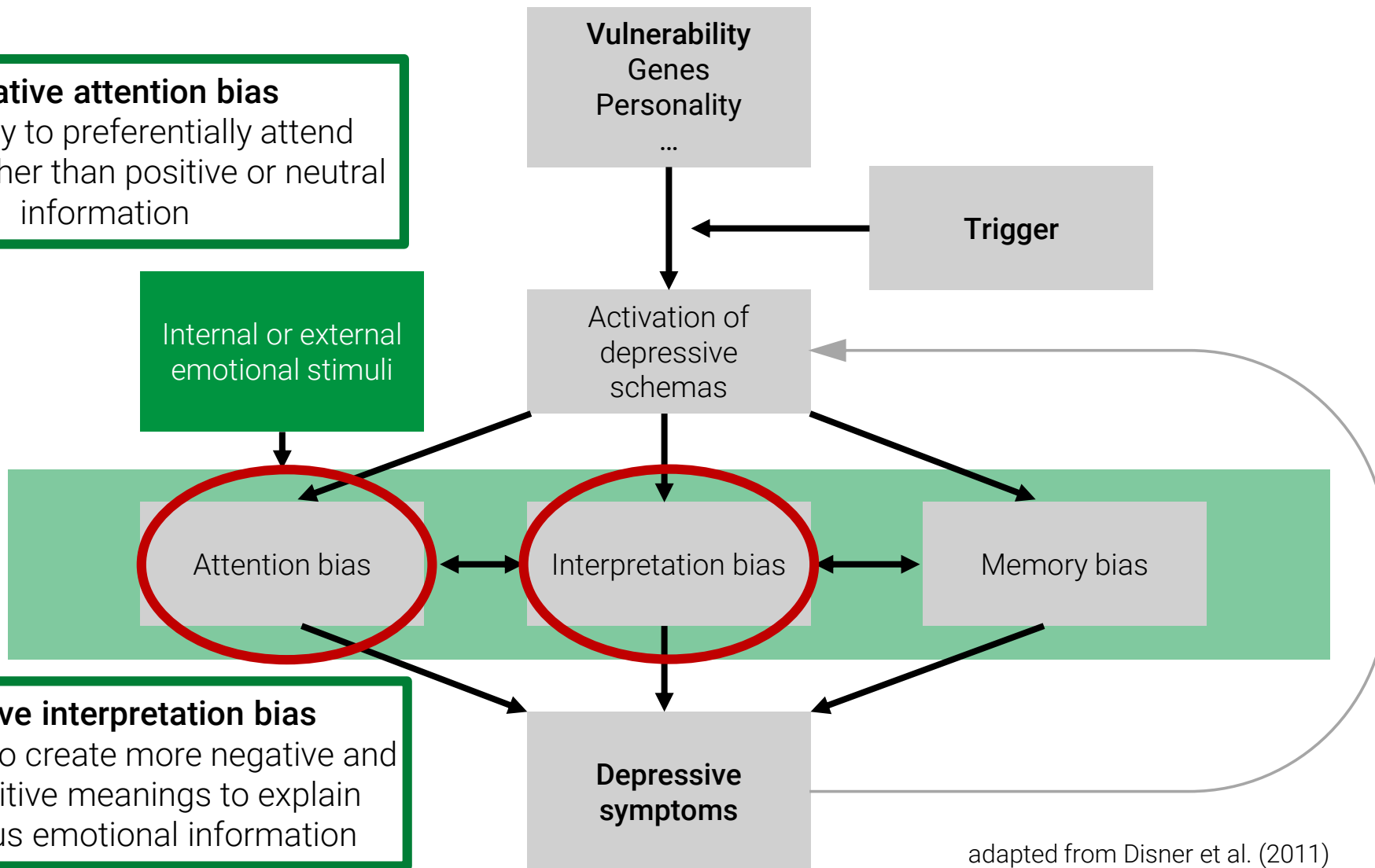
- **Major Depression** (MD) is one of the most common mental disorders in childhood and adolescence (e.g., . Costello et al., 2003; Lewinsohn et al., 1993)
- Early-onset MD is associated with **negative psychosocial consequences** (e.g., Fergusson & Woodward, 2002) and a **high risk** for **recurrence** (Hammen et al., 2008; Weissman et al., 1999; Wilson et al., 2015)
- Understanding the **mechanisms** involved in the **development** and **maintenance** of MD at this age is crucial in order to enable prevention and early intervention and reduce the negative impact of the disorder
- **Cognitive** (e.g., cognitive biases) and **affective** (e.g., emotion regulation) **factors** are suggested to play important roles in the development and maintenance of depression
- Cognitive and affective **development** is ongoing in childhood and adolescence (e.g., Blakemore & Choudhury, 2006)
 ➔ result from adults may not be transferred on youth

Background

Beck's cognitive model of depression

Negative attention bias
 = tendency to preferentially attend negative rather than positive or neutral information

Internal or external emotional stimuli



Negative interpretation bias
 = tendency to create more negative and fewer positive meanings to explain ambiguous emotional information

Background

Cognitive biases in youth depression

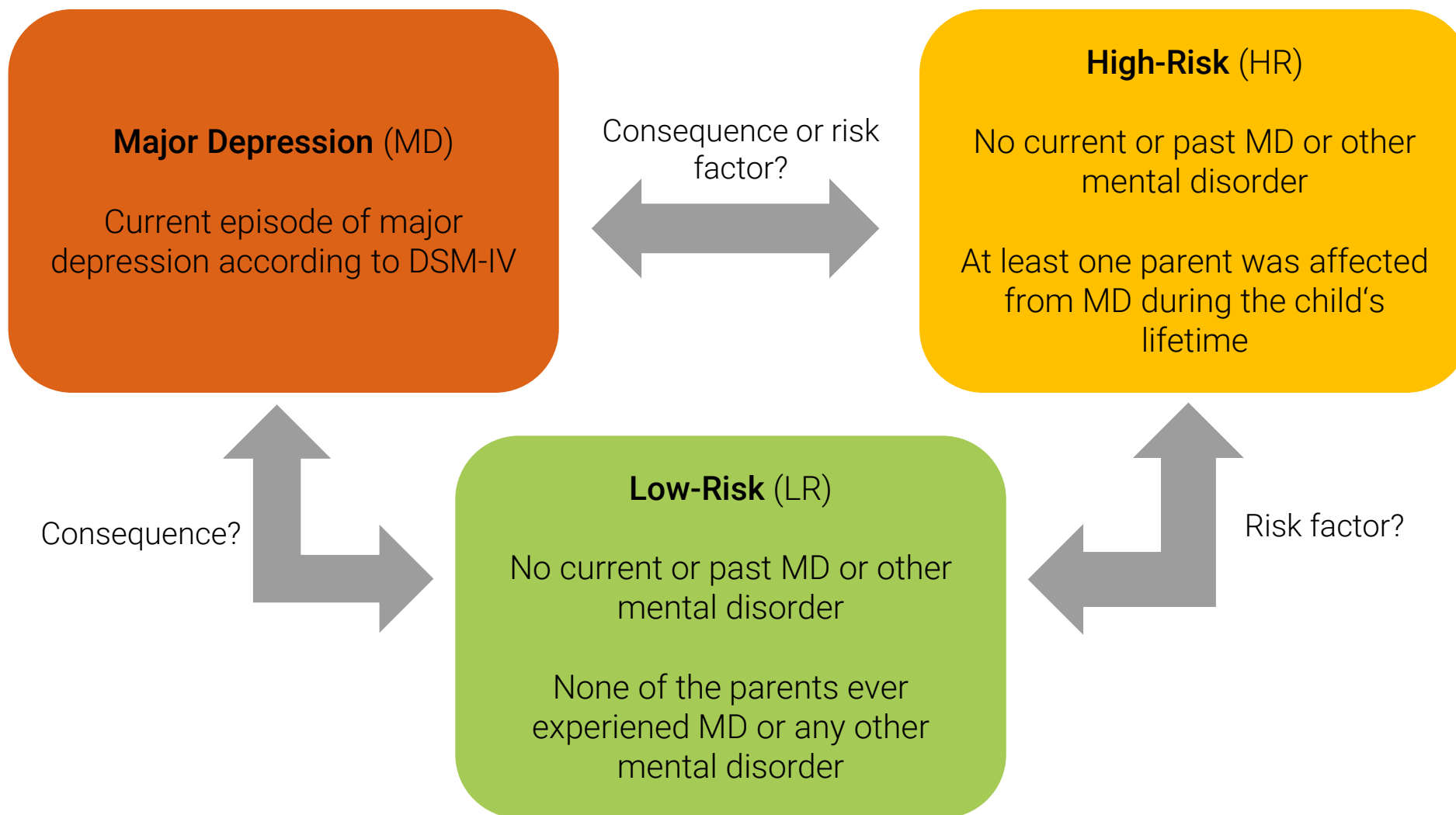
- Substantial evidence for negative attention and interpretation biases in **adults** with **MD** (meta-analyses: Armstrong & Olatunji, 2012; Everaert et al., 2017; Peckham et al., 2010)
- **Attention biases** in **youth** with MD (review: Platt et al., 2017)
 - association between negative attention biases and depressive symptoms (Platt et al., 2015) vs. no such association (Neshat-Doost et al., 2000)
 - Increased attention towards negative information (Hankin et al., 2000) vs. avoidance of negative information (Sylvester et al., 2016)
 - **heterogeneous**
- **Interpretation biases** in **youth** with MD (review: Platt et al., 2017)
 - **Associations** between negative interpretation biases and **depressive symptoms** in unselected samples (e.g., Klein et al., 2017; Orchard et al., 2016a; Smith et al., 2018) as well as in adolescents with elevated symptoms of depression (de Voogd et al., 2017)
 - More negative interpretation biases in **adolescents with MD** (Micco et al., 2014, Orchard et al., 2016b)
 - More negative interpretation biases in children with at **high risk** for depression (daughters of mothers with MD) (Dearing & Gotlib, 2009)

Study aims

1. Do **children and adolescents with MD** show **negative attention** and **interpretation biases**?
 - Comparison of children and adolescents with MD with children and adolescents without mental disorders
2. Are negative attention and interpretation biases correlates/**consequences** of depressive symptomatology or precursors/**risk factors** for MD?
 - Assessment of cognitive biases in children and adolescents at **high risk** for MD: children of depressed parents

Methods

Participants



Methods

Participants

	MD	HR	LR	
<i>n</i>	32	48	42	
Gender f/m	26/6	29/19	25/17	
Age	13.4 (1.4)	11.8 (1.7)	12.2 (1.7)	MD > LR = HR
IQ	106.2 (12.8)	109.5 (11.2)	111.7 (10.4)	
Depressive symptoms	31.5 (5.8)	7.8 (5.8)	6.6 (5.3)	MD > HR = LR
Anxiety	44.9 (8.8)	30.1 (6.4)	28.0 (6.2)	MD > HR = LR

Methods

Attention bias assessment: Passive Viewing Task

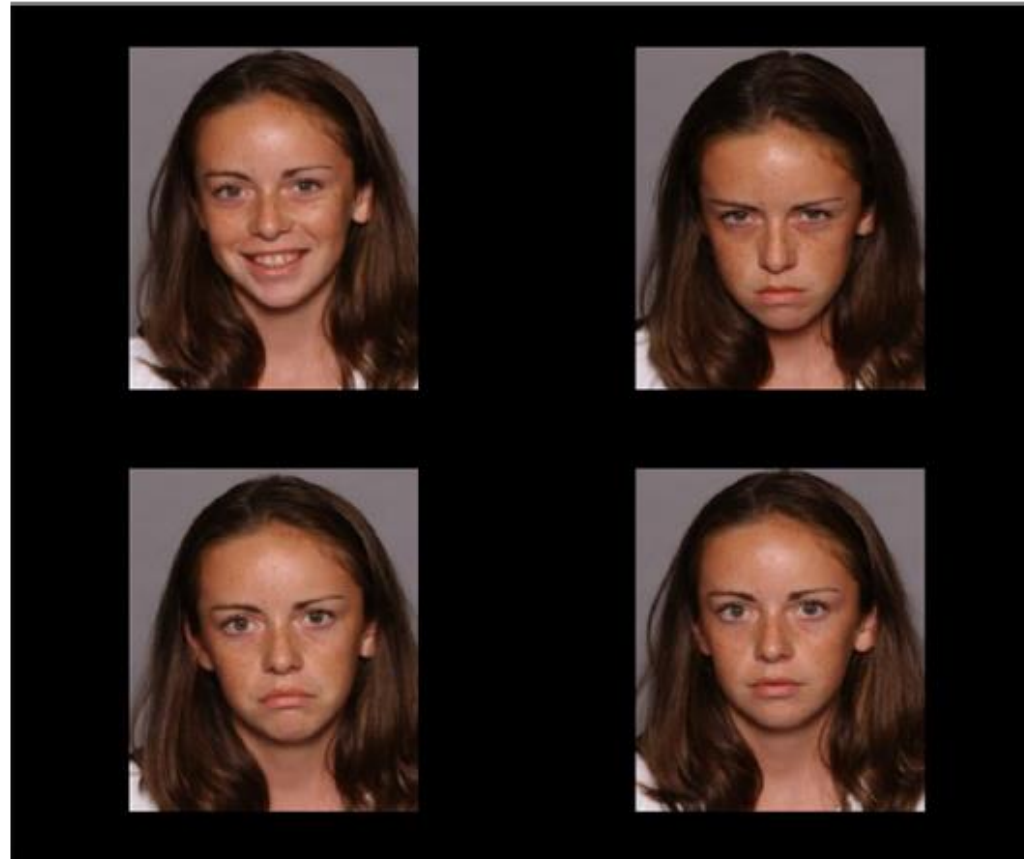
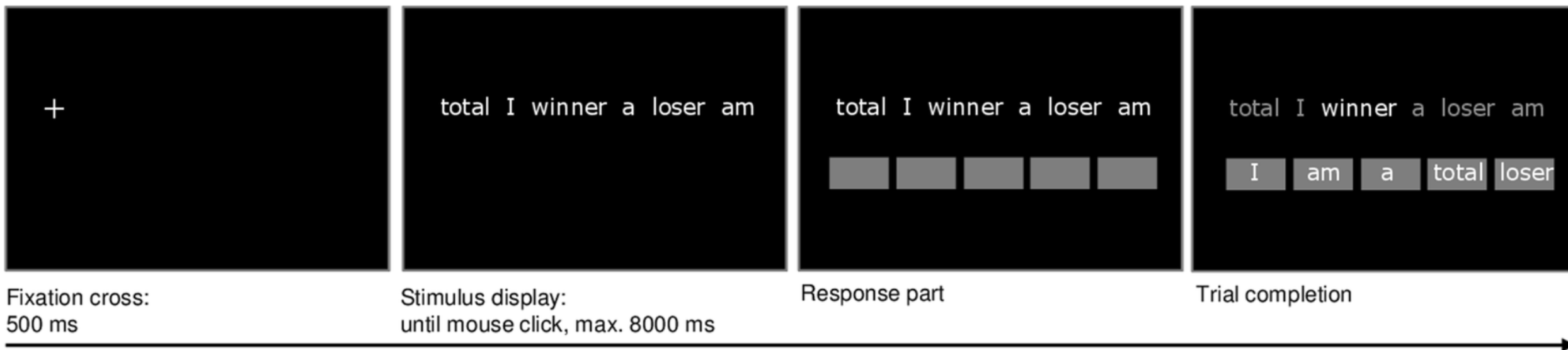


Fig. 2 Example stimulus display from the Passive Viewing Task (PVT; [20])

Methods

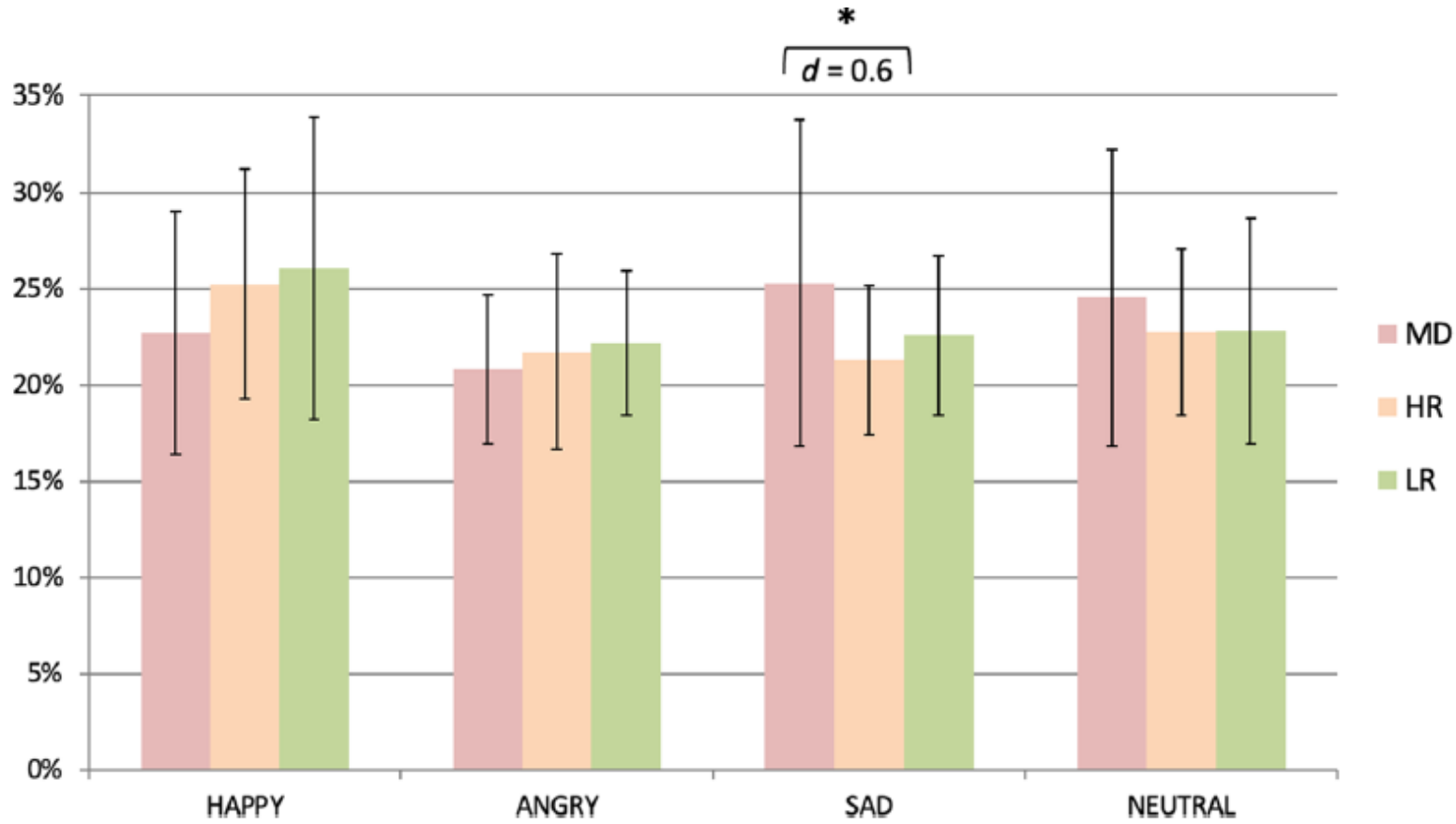
Interpretation bias assessment: Scrambled Sentences Task



Example of an emotional trial of the Scrambled Sentences Task (SST; Everaert et al. [2014](#); Wenzlaff and Bates [1998](#))

Results

Attention bias



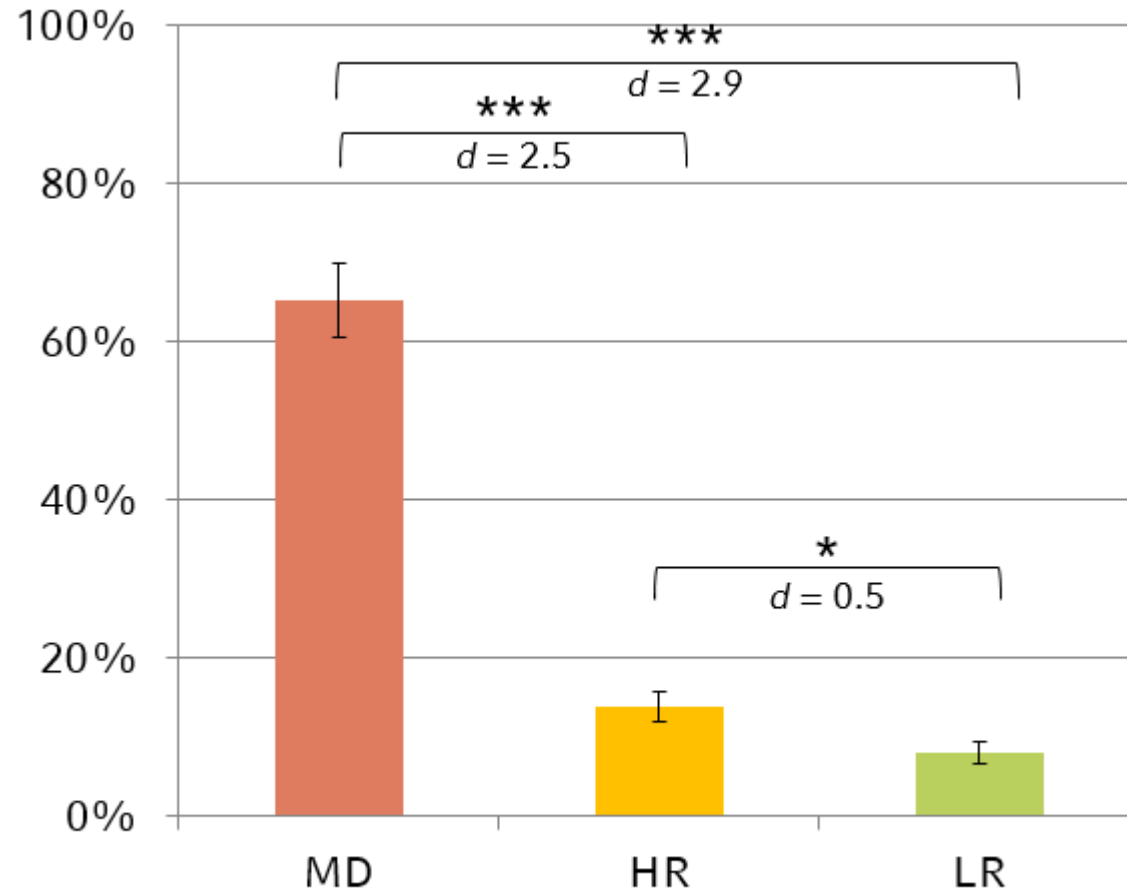
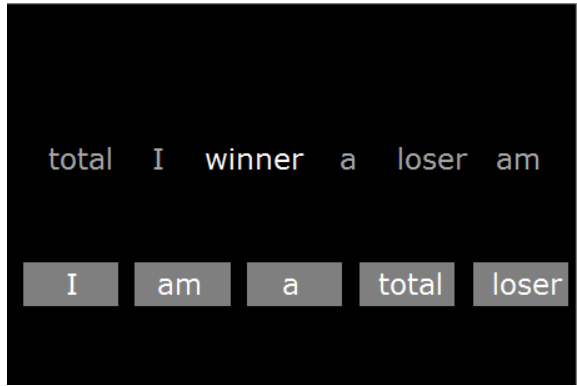
Buhl et al. (2023)



Percentage of dwell time on emotional faces

Results

Interpretation bias



*** $p < .001$ * $p < .05$

Percentage of negative sentences from all correctly built sentences

Discussion

1. Do **children and adolescents with MD** show **negative attention** and **interpretation biases**?
 - ✓ Youth with MD looked more at sad faces than youth without mental disorders
➔ showed **attention biases** toward **depression-specific negative stimuli**
 - ✓ Youth with MD built more negative sentences than youth without mental disorders
➔ showed **negative interpretation biases** for ambiguous emotional information
2. Are negative attention and interpretation biases correlates/**consequences** of depressive symptomatology or precursors/**risk factors** for MD?
 - Youth at high risk for MD did not differ from youth at low risk for MD when viewing emotional faces
➔ **attention biases** seem to be **consequences** rather than risk factors for depression
 - Youth at high risk for MD built more negative sentences than youth at low risk for MD, i.e., showed more negative interpretation biases
➔ **interpretation biases** may be **risk factors** for depression

Background

Emotion regulation

Emotion regulation:

„The processes by which individuals influence which emotions they have, when they have them, and how they experience and express these emotions”

(Gross 1998)

- **Adaptive** emotion regulation strategies: e.g., reappraisal
- **Maladaptive** emotion regulation strategies: e.g., rumination
- Adaptive emotion regulation strategies are negatively related to depression symptoms and maladaptive emotion regulation strategies are positively related to depression symptoms in adults (Visted et al. 2018) and youth (Schäfer et al. 2018)
- Emotion regulation **prospectively** predicts depression symptoms (Berking et al. 2019, Ochsner et al. 2004)

Background

Interplay between cognitive biases and emotion regulation

- Cognitive biases might influence emotion regulation
- **Joormann & Siemer (2011):**

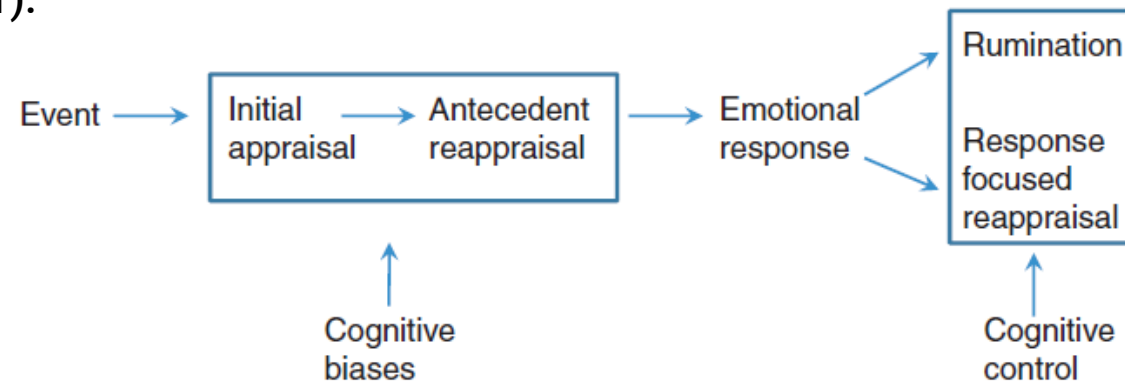


Figure 1 The relation among cognitive biases, cognitive control, and emotion regulation in depression and dysphoria. We propose that cognitive biases and deficits in depression interfere with antecedent-focused and response-focused emotion regulation. An event leads to an initial appraisal that may be modified by antecedent reappraisal. Depression-associated cognitive biases in attention, memory, and interpretation may interfere with this early reappraisal. In addition, cognitive control deficits impair depressed people's ability to use response-focused reappraisal and increase the risk of rumination after the onset of an emotional response.

- Evidence for **association** between **cognitive biases** and **emotion regulation** in adults (e.g., Duque & Vázquez 2015; Everaert et al. 2020; Joormann et al. 2006; Manera et al. 2014; Owens et al. 2016)
- Attention bias training led to more frequent cognitive reappraisal (Sanchez et al. 2016)

Background

Interplay between cognitive biases and emotion regulation

Everaert, Grahek et al. (2017):

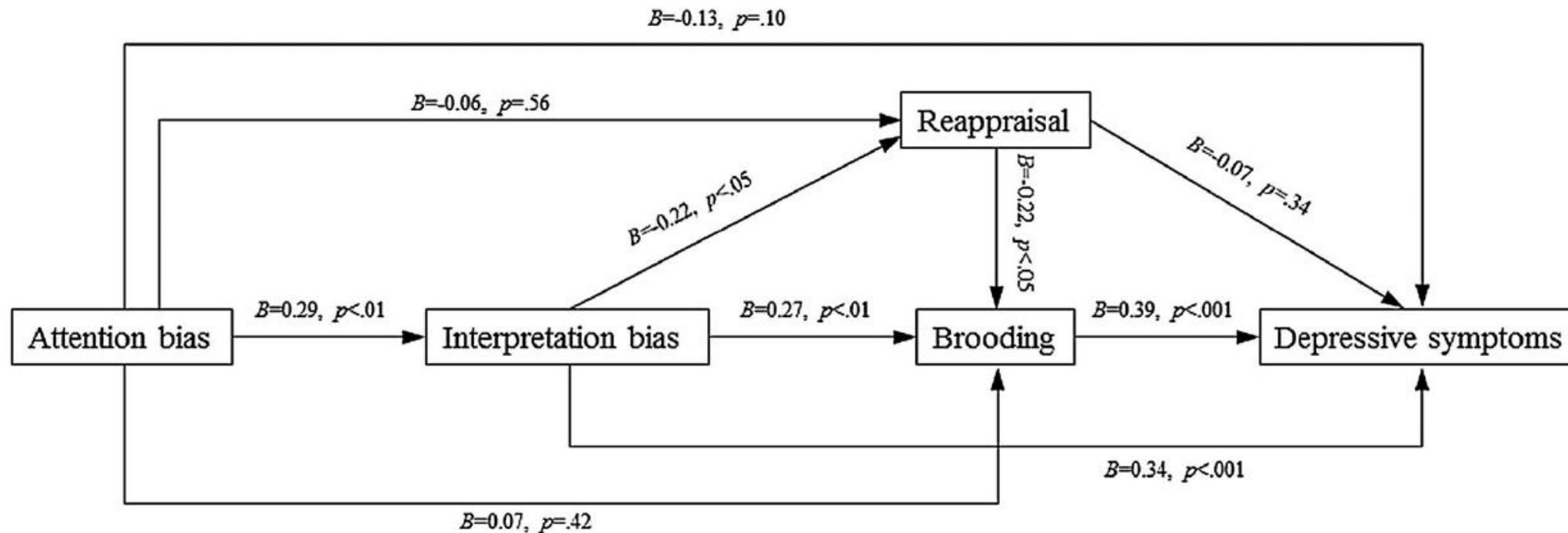
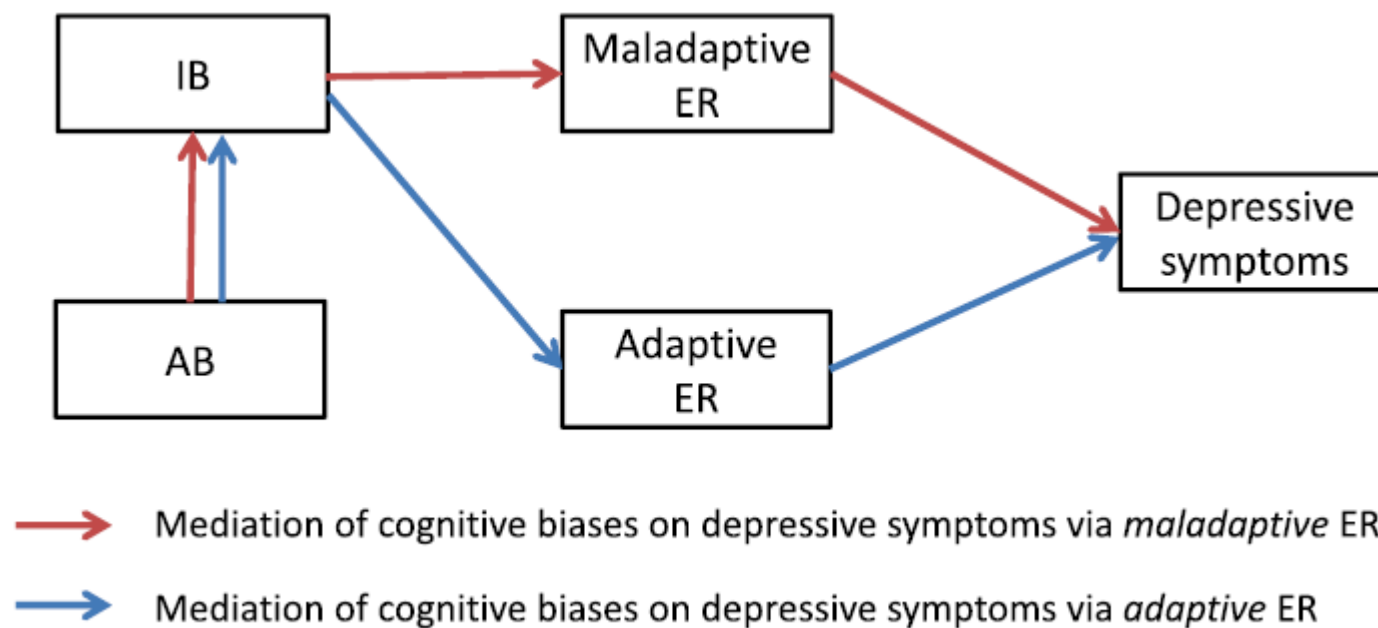


Figure 2. Schematic depiction of the tested models.

Study aims

1. Extend the finding that cognitive biases have their effect on depressive symptoms via emotion regulation to a sample of youth



Results

Associations between study variables

Variable	<i>M</i>	<i>SD</i>	<i>Min</i>	<i>Max</i>	Correlations			
					1	2	3	4
1. IB	0.25	0.29	0.00	1.00	-			
2. AB	0.23	0.06	0.04	0.59	0.26**	-		
3. Adaptive ER	125.92	34.62	44.00	205.00	-0.50***	-0.25**	-	
4. Maladaptive ER	74.22	20.05	32.00	125.00	0.68***	0.34***	-0.45***	-
5. Depressive symptoms	13.31	12.53	0.00	50.00	0.88***	0.30**	-0.60***	0.77***

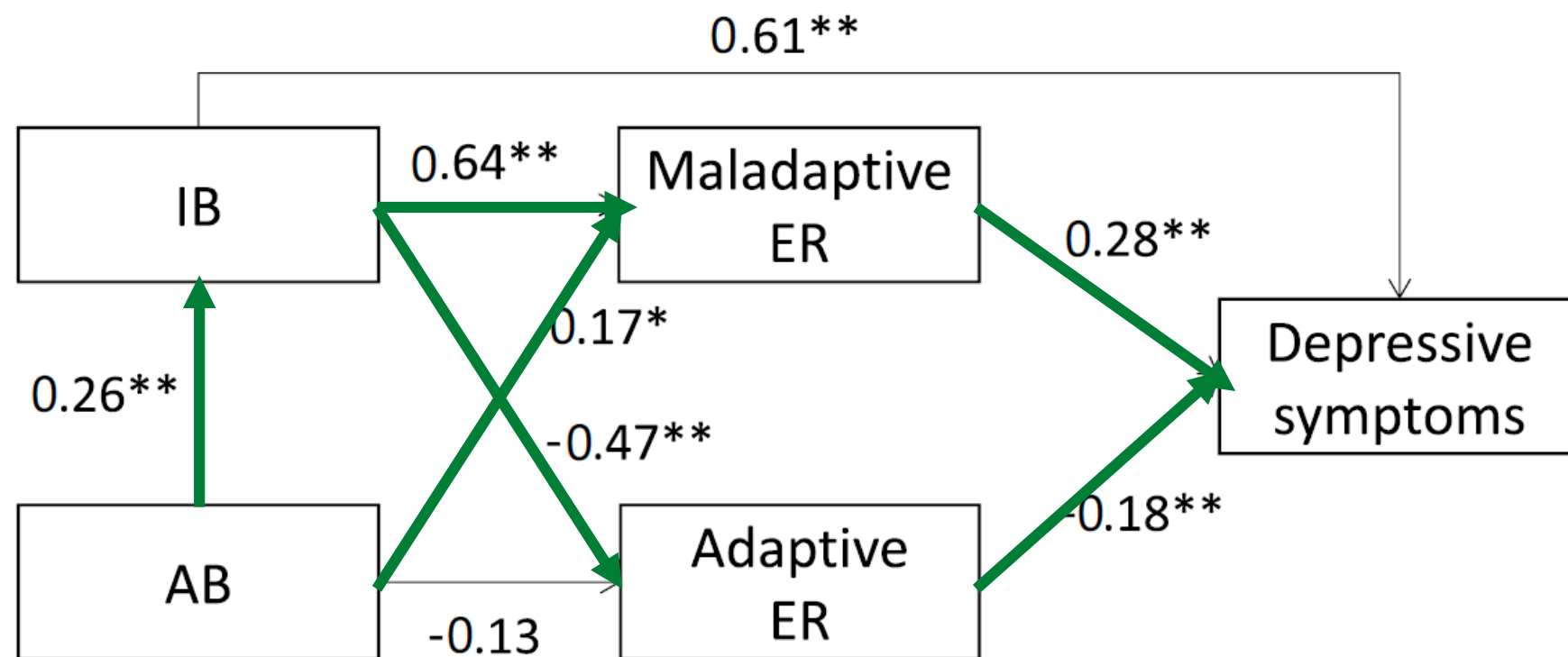
AB attention bias, *ER* emotion regulation, *IB* interpretation bias, *M* mean; *SD* standard deviation. Correlations remain significant after Bonferroni-Holm (Holm, 1979) correction for multiple testing

* $p < 0.05$; ** $p < 0.01$; *** $p < 0.001$

Results

Path analysis

Fig. 4 Path model with standardized coefficients. *Notes.* AB = Attention Bias; IB = Interpretation Bias; ER = Emotion regulation. * $p < 0.05$, ** $p < 0.01$



Discussion

1. Extend the finding that cognitive biases have their effect on depressive symptoms via emotion regulation to a sample of youth
 - ✓ The model also applied to youth: significant indirect effects of negative cognitive biases on depression symptoms through emotion regulation
 - Subtle difference between youth and adult samples: **indirect effects** through both **increased maladaptive** and **reduced adaptive emotion regulation**

BUT:

- Cross-sectional study → no knowledge about causal or temporal relations

The Role of Cognitive Biases and Cortisol Reactivity in the Familial Transmission of Depression (The CoCo Study)

Presenter: Frommelt, T., University Hospital LMU Munich, Germany

Thank you

For your attention!

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Thank you

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