P.303 Adjusting ruminative thinking? Effects of positive fantasizing vs. stress induction on perseverative cognition in individuals with varying vulnerability for depression

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gender and education level) underwent 3T fMRI scanning during an Emotion Regulation Task. During this task, participants were instructed to passively attend to neutral, negative or positive images, or to downregulate negative, and upregulate positive images, using cognitive reappraisal techniques. Furthermore, they underwent assessment of attentional biases (using a modified attentional dot-probe task with both disengagement and engagement bias indices for negative and positive stimuli [4]) and of rumination on both negative (Rumination on Sadness Scale) and positive (Responses to Positive Affect Scale) content. Following standard preprocessing and event-related modeling of fMRI-data (using SPM12, implemented in MATLAB(R2015a)), contrast images reflecting brain activation during attend (>fixation) and regulate (>attend) conditions were entered in nonparametric permutation-based group comparisons and multiple regression analyses with attentional bias and rumination scores as predictors (using FSL Randomise). Effects were considered significant at $p<0.05$, TFCE-corrected.

RMDD patients showed no attentional biases, but reported higher rumination on sadness and dampening of positive affect, and lower self-related savoring of positive affect than HC. During implicit processing emotional information, rMDD patients showed decreased activation in the occipital cortex, precuneus, posterior cingulate cortex (PCC), inferior frontal gyrus and dorsolateral prefrontal cortex (DLPFC) than HC. During explicit emotion regulation (vs attending), rrMDD patients showed increased precuneus, PCC, frontal pole, and amygdala activity for negative emotions, and decreased right insula activity for positive emotions, though below corrected threshold (uncorrected $p<0.001$). Within rMDD patients, during downregulating negative emotions, higher rumination was related to lower PCC activation, and lower savoring of positive affect was related to higher amygdala, hippocampus, anterior cingulate cortex, DLPFC, precentral gyrus and occipital lobe activation. During upregulating positive emotions, higher dampening of positive affect was related to higher right ventral anterior insula activation.

Our results suggest that rMDD patients tend to engage more in negative rumination styles and less in positive rumination styles, and show abnormal frontolimbic activation during processing and regulating emotional information. Inadequate rumination and regulation styles in rMDD patients might relate to aberrant self-related processing and regulatory control over emotional processing during negative emotion regulation, and interoceptive awareness during positive emotion regulation. Understanding these neurocognitive abnormalities in rMDD may add to the clinical improvement of preventive treatment.

No conflict of interest

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P.303
Adjusting ruminative thinking? Effects of positive fantasizing vs. stress induction on perseverative cognition in individuals with varying vulnerability for depression

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Background: Key characteristics of Major Depressive Disorder are repetitive negative thinking and rumination (i.e. perseverative cognition [PC]). This maladaptive type of thinking has been associated with a high risk to develop and maintain Major Depressive Disorder [1,2]. Because of the relation between PC and depressive relapse, targeting PC could be a powerful way of preventing recurrence of depression. A therapy successful in preventing depressive relapse and reducing depressive symptoms is the Preventive Cognitive Therapy [3]. One of the core techniques in the Preventive Cognitive Therapy is positive fantasising, a positive-mood inducing technique aimed at enhancing positive attitudes and/or beliefs by positive future-related thinking. Whereas positive fantasizsng may reduce PC, stress may increase PC. In our study, we contrasted the effects of a single session of positive fantasizing and stress induction on PC, quantified in a novel task-based assay, to investigate whether positive fantasising is potent in affecting PC in contrast to PC following stress-induction in individuals varying in their vulnerability for depression.
Methods: Groups high (n=40) and low (n=40) on neuroticism and worrying, measured using the Neuroticism scale of the NEO-Five-Factor Inventory and the Penn State Worry Questionnaire indicating vulnerability for negative affect and depression, performed a Sustained Attention to Response Task after a single session of positive fantasising and a single session of stress induction in a cross-over design. The Sustained Attention to Response Task is a boring go-/no-go task with interspersed self-report questions about the content of thoughts, frequently used in mind-wandering studies. Affective states were measured before and after the interventions using the Positive and Negative Affect Schedule.
Findings: A paired t-test showed increased negative affect after stress and increased positive and reduced negative affect after fantasising compared to baseline. Additionally,

thoughts were more on-task and future-related, easier to disengage from and less negative after fantasising compared to after stress. However, these effects decreased over time and were only found when fantasising was the first intervention. No significant interaction was found in PC between intervention (after stress vs .after fantasising) and group (high vs. low vulnerability for depression).
Discussion: Results indicate that PC can be adjusted in individuals both characterised by a high and low vulnerability for depression, and that these effects on PC can be measured behaviorally. Interestingly, changes in PC were only found when fantasising was the first intervention, suggesting that fantasising makes thought content more reactive to subsequent negative affect. Fantasising furthermore had beneficial effects on both positive and negative self-reported affect. These results suggests changing PC by interventions such as positive fantasising may be potent in reducing the vulnerability for depression. Future research should investigate whether positive fantasising could serve as an intervention to treat or prevent recurrence of depression through manipulation of PC.

No conflict of interest

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P.304
Aberrant psychophysiological and cognitive responses to infant signals of emotion in mothers with affective disorders and implications for the infant

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Background: Affective disorders are highly heritable, but it is unclear how subtle mother-infant interaction adversity contributes to the transmission of risk. Healthy mothers show adaptive neurocognitive changes indicating that they "tune in" to infants [1,2]. However, core features of affective disorders are aberrant neurocognitive and psychophysiological responses to emotional stimuli. Whereas unipolar disorder (UD) is associated with negative cognitive bias, which applies to processing of infant stimuli among mothers in a depressive state [3], emerging evidence indicate positively biased emotion processing in bipolar disorder (BD) [4]. Biased emotion processing may influence mother-infant interactions and have adverse effects on infant development [3,5].
Aim: This study aimed to investigate psychophysiological and cognitive responses to emotional infant stimuli and their relation to mother-infant interaction and infant development for mothers with BD or UD in full or partial remission compared with healthy control mothers (HC).
Methods: Mothers and their infants were assessed during home visits around four months after birth. First, mothers were interviewed with clinical rating scales to ensure that mothers with BD or UD were in full or partial remission at the time of testing. Then, mothers' psychophysiological and cognitive responses to emotional infant stimuli were assessed on computerised tasks during which their facial expression, galvanic skin responses (GSR) and eye-gazes and fixations were recorded. Lastly, we assessed infant development and mother-infant-interaction. Group and interaction effects were analysed using one-way and repeated measures ANOVA, and associations were investigated with correlation analyses.

We included 85 mothers: 27 with BD, 13 with UD and 36 who were healthy, and their infants.
Results: Mothers with affective disorders had fewer GSR peaks in response to infant videos ($F(1,70)=4.86$, $p=0.03$, $\eta p2=0.07$) and spent less time gazing and fixating at infant videos and faces (videos: gaze: $F(1,58)=20.44$, $p < 0.001$, $\eta p2=0.26$, fixation: $F(1,58)=4.53$, $p=0.04$, $\eta p2=0.07$; images: gaze: $F(1.72)=17.73$, $p < 0.001$, $\eta p2=0.20$). Mothers with BD showed more incongruent positive facial expressions to infant distress vs. laughter videos ($F(1,58)=4.47$, $p=0.04$, $\eta p2=0.07$) and rated infant cry less negatively than HC mothers ($F(2.0,120.5)=3.37$, $p=0.04$, $\eta p2=0.07$; $t=2.37$, $df=60$, $p=0.02$). Mothers with UD displayed more negative facial expression when listening to infant