



Believing in Change Matters! The Role of Emotion Malleability Beliefs in Emotion Regulation and Paranoid Ideation

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Abstract

Purpose Beliefs that emotions can be changed (i.e., malleability beliefs) are relevant to emotion regulation. Emotion regulation plays a crucial role in severe mental health symptoms, such as paranoid delusions, but it remains unknown to which extent malleability beliefs contribute to a dysfunctional pattern of emotion regulation in individuals experiencing paranoid ideation. Therefore, we investigated whether malleability beliefs are associated with paranoid ideation and whether emotion regulation accounts for this association.

Methods We conducted a cross-sectional assessment in a sample of individuals with psychotic disorders ($n=50$) and a community sample ($n=218$) and collected self-report data on malleability beliefs, the use of emotion regulation strategies (reappraisal, acceptance, rumination, expressive suppression, experience suppression), and paranoid ideation.

Results Multivariate regressions showed that greater beliefs that emotions are malleable predicted more reappraisal and acceptance in both samples and less rumination in the community sample. Malleability beliefs did not predict the strategies of suppressing an emotion or its expression. In the community sample, but not in the clinical sample, greater beliefs that emotions are malleable were associated with less frequent paranoid ideation and emotion regulation accounted for significant variance in the relationship.

Conclusions The findings indicate that malleability beliefs do not contribute to paranoid delusions in individuals with psychotic disorders. However, in individuals with subclinical paranoid ideation, a failure to perceive emotions as malleable could hinder adaptive attempts to regulate emotions leading to increased negative affect and thereby pave the way for paranoid ideation. Malleability beliefs may thus represent a promising target for prevention.

Keywords Implicit theory · Self-efficacy · Controllability · Incremental beliefs · Psychosis · Schizophrenia

Introduction

Rapidly growing evidence demonstrates that the way individuals regulate their emotions plays an important role in various forms of psychopathology including symptoms of severe mental disorders, such as psychosis (Cavicholi et al., 2023; Lincoln et al., 2022). One of the most common and clinically relevant symptoms of psychosis are paranoid delusions, which are associated with a reduced quality of life and low psychological well-being and functioning

(Contreras et al., 2022; Hajdúk et al., 2019; Watson et al., 2018). Numerous studies have shown that negative affect precedes paranoid ideation, thus providing evidence for an affective pathway to paranoid delusions (e.g., Krkovic et al., 2020; Ludwig et al., 2019a, 2019b; Myin-Germeys & van Os, 2007). High negative affect in individuals with psychotic disorders may in part trace back to difficulties to effectively regulate emotions as individuals with psychotic disorders report to use less functional strategies, such as reappraisal, and more dysfunctional emotion regulation strategies, such as rumination and suppression, than healthy controls (Ludwig et al., 2019a, 2019b). Thus, individuals with psychosis seem to be inclined to choose emotion regulation strategies that are not sufficiently effective in reducing negative affect.

There is some indication that suboptimal selection of strategies could directly contribute to paranoid ideation. For one, the use of less acceptance and reappraisal and the use of

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more rumination and suppression of emotions was found to be associated with more paranoid ideation in numerous studies (e.g., Bahlinger et al., 2020; Grezellschak et al., 2017; Osborne et al., 2017; Simpson et al., 2012). In addition, increases in suppression and rumination were found to predict higher subsequent paranoid ideation whereas increases in acceptance were found to predict lower subsequent paranoid ideation in a subclinical sample (Bahlinger et al., 2022). Similarly, in a clinical sample, suppression was shown to predict higher subsequent paranoid ideation (Nittel et al., 2018). Moreover, the overall higher use of dysfunctional strategies was found to explain the increase of paranoid ideation in response to social exclusion in individuals at clinical high risk (Lincoln et al., 2018). To sum up, individuals with clinical and subclinical psychotic symptoms appear to employ more emotion regulation strategies that tend to increase paranoid ideation. To elucidate why individuals with psychotic disorders engage in dysfunctional strategies, it could be relevant to look at factors that influence the decision to use a certain strategy.

One factor that researchers are becoming increasingly interested in are peoples' beliefs about whether emotions are fixed or malleable (i.e., malleability beliefs, Tamir et al., 2007). It has been suggested that holding a more malleable view of emotions is related to the employment of more functional emotion regulation strategies (Ford & Gross, 2019; Kneeland et al., 2016a, 2016b, 2016c). More specifically, it has been theorized that when individuals perceive their resources to regulate emotions to be sufficient, they will employ more functional modificatory (i.e., reappraisal) and non-modificatory strategies (i.e., acceptance; Nowak et al., 2021). In contrast, when resources are evaluated as insufficient, this will motivate avoiding emotions by dysfunctional strategies, such as by suppressing emotions (Nowak et al., 2021). In support of these assumptions, both questionnaire and experimental research has shown that individuals who believe that emotions are malleable were found to engage in more adaptive patterns of emotion regulation (Bigman et al., 2016; De Castella et al., 2018; Kneeland et al., 2016a; Moumne et al., 2021).

More specifically, cross-sectional studies confirm an association of malleability beliefs with the use of more reappraisal (e.g., De Castella et al., 2013; Deplancke et al., 2022; Kneeland & Dovidio, 2020; Kneeland et al., 2020; McLachlan et al., 2021; Schroder et al., 2015; Tamir et al., 2007; Vuillier et al., 2021), which was also corroborated by longitudinal (Gutentag et al., 2022; Zimmermann et al., 2021) and experience sampling studies (De France & Hollenstein, 2021; Goodman & Kashdan, 2021; Ortner & Pennekamp, 2020). Similarly, Ortner and Pennekamp (2020) found a positive association between malleability beliefs and acceptance in daily life. Although the results for dysfunctional strategies are less conclusive compared to functional strategies (with

non-significant findings in studies by Gutentag et al., 2022; Schroder et al., 2015; Tamir et al., 2007), research indicates that greater beliefs that emotions are malleable are associated with less rumination (Kneeland & Dovidio, 2020; McLachlan et al., 2021) and suppression (Deplancke et al., 2022; Goodman & Kashdan, 2021; Vuillier et al., 2021). It is also important to note that these studies exclusively focused on the suppression of the expression of an emotion, without examining the suppression of the subjective experience, which has been reported to be empirically and conceptually distinct (Izadpanah et al., 2019; Webb et al., 2012). All in all, empirical studies support the relevance of malleability beliefs for the employment of emotion regulation strategies. However, most attention has been directed to the strategy of reappraisal underscoring the need for investigating a broader spectrum of strategies.

So far, it has not been examined whether malleability beliefs are also relevant to paranoid ideation. Nonetheless, there are reasons to expect this to be the case when considering beliefs about the uncontrollability of anomalous experiences and thoughts. Anomalous experiences encompass phenomena such as intrusions, hallucinations, and thought inferences, and it is theorized that they translate into clinically relevant paranoid symptoms when they are negatively appraised (e.g., Freeman, 2007; Morrison, 2001). Correspondingly, believing that anomalous experiences are uncontrollable was found to differentiate between individuals with persistent psychotic symptoms who required treatment and those who did not (Peters et al., 2017). Regarding beliefs about the uncontrollability of thoughts, clinical groups were shown to report greater beliefs that thoughts are uncontrollable and dangerous than healthy controls (Sun et al., 2017). These beliefs were associated with a higher frequency of delusions in individuals with psychotic disorders (Sellers et al., 2016) and with an elevated suspiciousness and increased persecutory ideas in non-clinical individuals (Larøi & Van der Linden, 2005). In conclusion, existing research has linked beliefs about the uncontrollability of anomalous experiences and thoughts with paranoid ideation, but it remains unknown whether emotion malleability beliefs predict paranoid ideation and whether the use of emotion regulation strategies can explain the association.

Thus, the aim of this study was to examine the relationship between malleability beliefs and paranoid ideation and the extent to which this relationship can be accounted for by emotion regulation. We expected that (I) greater beliefs that emotions are malleable are associated with more reappraisal and acceptance, and with less rumination, expressive suppression, and experience suppression. We further hypothesized that (II) malleability beliefs are negatively associated with paranoid ideation and that (III) emotion regulation accounts for significant variance in the association between malleability beliefs and paranoid ideation.

Empirical evidence has shown that paranoid ideation is distributed along a continuum and that the underlying risk factors for paranoid ideation in individuals with psychotic disorders are similar to those found in the general population (Linscott & Van Os, 2013). Thus, we expected to find the associations across the continuum ranging from mild and transitory paranoid ideation to clinically relevant symptoms (Van Os et al., 2009).

Methods

Participants and Recruitment

We analyzed self-report data from a clinical sample consisting of individuals with the diagnosis of a psychotic disorder ($n = 50$), which was collected as part of a larger research project *DFG CL-757/1-1*, and from a community sample ($n = 218$). In both samples, we used a cross-sectional design.

Clinical Sample

Participants were recruited via postings in internet forums, in outpatient and inpatient treatment settings in Hamburg, Germany. They were required to meet the criteria of a psychotic disorder and paranoid delusions (either current or lifetime) according to the Diagnostic and Statistical Manual of Mental Disorders (DSM; 5th version; American Psychiatric Association, 2013). Individuals with acute suicidality or the diagnosis of a substance dependence in the last 6 months were not included. In the sample, 44% reported as female and the mean age was $M_{\text{age}} = 37.88$, $SD_{\text{age}} = 12.80$. Twenty percent of the participants reported having a university degree, 42% a general qualification for entering university, and 26% a lower educational degree. Thirty participants were diagnosed with schizophrenia, 16 with a schizoaffective disorder, and four with other psychotic disorders. About half of the clinical sample ($n = 24$) had current paranoid delusions. For further information on the clinical sample, see (Bahlinger et al., 2022)

Community Sample

The community sample was recruited online via Facebook groups on mental health, philosophy, and spirituality and via postings in mental health supportive faculties and church community centers in Hamburg, Germany. This procedure was chosen to recruit participants with a high variability in paranoid ideation, since spirituality, religiosity, and paranormal beliefs were shown to be associated with psychotic experiences in community samples (Kovess-Masfety et al., 2018; Oh et al., 2018; Pechey & Halligan, 2011). In the community sample, 83% reported as female and the mean

age was $M_{\text{age}} = 35.82$, $SD_{\text{age}} = 12.52$. About a third of the participants reported having a university degree (29.8%), a third a general qualification for entering university (33.9%) and 36.2% a lower educational degree. More than half of the participants (60.1%) reported having received a diagnosis of a mental disorder throughout their life. The reported diagnoses were most commonly depression ($n = 104$), anxiety disorders ($n = 75$), posttraumatic stress disorder ($n = 45$), eating disorders ($n = 33$), and borderline personality disorder ($n = 24$). Ten participants reported having received the diagnosis of a psychotic disorder.

Procedure

Clinical Sample

The study was conducted in the laboratory. After providing informed consent, participants were diagnosed by a clinical psychologist with the Structured Clinical Interview for DSM-5 (Beesdo-Baum et al., 2019) and interviewed with the delusion scale of the Psychotic Rating Scales (PSYRATS; Haddock et al., 1999). Afterwards, participants completed questionnaires about social demographics, malleability beliefs, and emotion regulation. At the end of the study, participants received monetary compensation (10 € / h).

Community Sample

The study was conducted online via the platform Unipark/Questback. Participants provided informed consent and answered questions about social demographics. Then, they completed questionnaires assessing malleability beliefs, emotion regulation, and frequency of paranoid ideation. Additional questionnaires about emotional experiences were assessed but not analyzed here. After completing the study, participants had the opportunity to sign up for a raffle of vouchers (total value = 25 €).

Investigated Measures

Malleability Beliefs

We assessed malleability beliefs of emotions with the widely used Implicit Beliefs about Emotions Scale (i.e., IBES) by Tamir et al. (2007), which is the most commonly used questionnaire for research on emotion malleability beliefs (Hong & Kangas, 2022). The scale consists of four items with two of the items expressing fixed beliefs (e.g., “No matter how hard they try, people can’t really change the emotions that they have”). All items are rated on a five-point scale ranging from “strongly disagree” to “strongly agree”. For an overall score, the two items expressing fixed beliefs were reverse coded. By this, higher scores indicate stonger beliefs that

emotions are malleable. The scale was shown to be valid (Tamir et al., 2007) and internal consistency was good in our data ($\alpha=0.79$).

Emotion Regulation

To assess the employment of reappraisal, acceptance, rumination, expressive suppression, and experience suppression, we used the Heidelberg Form for Emotion Regulation Strategies (HFERST; Izadpanah et al., 2019), which includes the strategy of experience suppression (i.e., the suppression of the subjective experience of emotions) in addition to expressive suppression (i.e., the inhibition of emotion-expressive behavior). Each of the subscales of the HFERST consists of four items (except the subscale of acceptance, which is assessed by three items). Participants rate how much the items apply to them on a five-point scale ranging from “never” to “always” regarding the past four weeks. The questionnaire was shown to be valid and reliable (Izadpanah et al., 2019). In our study, the internal consistency of the subscales was acceptable to good (reappraisal: $\alpha=0.89$; acceptance: $\alpha=0.83$; rumination: $\alpha=0.82$; expressive suppression: $\alpha=0.76$; experience suppression: $\alpha=0.66$).

Paranoid Ideation

In the clinical sample, we applied the delusion subscale of the Psychotic Symptom Rating Scales (i.e., PSYRATS, Haddock et al., 1999), a semi-structured interview regarding the past week. The interview consists of six items focusing on multiple facets of delusions (preoccupation, duration, conviction, amount of distress, intensity of distress, disruption to life), which are rated on a 5-point Likert scale. The sum score can range between 0 and 24. The PSYRATS has been reported as valid and shows a high interrater reliability (Haddock et al., 1999).

To assess paranoid ideation in the community sample, we used the 18-item Paranoia Checklist (Freeman et al., 2005), which has been validated and frequently used in non-clinical samples (Freeman et al., 2005) and in research on emotion regulation (Lincoln et al., 2018; Nittel et al., 2018; Westermann et al., 2013). Participants rate how frequently they experience paranoid thoughts on five-point scales ranging from “at least once a day” to “rarely”. The validity of the German version of the PCL was confirmed by various studies (e.g., Lincoln et al., 2010; Westermann & Lincoln, 2011) and the internal consistency was excellent in our sample ($\alpha=0.94$).

Statistical Analyses

All analyses were conducted with IBM SPSS (version 25; IBM Corp., Armonk, NY). To analyze whether malleability beliefs predict emotion regulation and paranoid ideation, we conducted separate multivariate regressions in the community sample and the clinical sample. We then examined indirect effects of emotion regulation strategies with the PROCESS macro (version 3.4.1) provided by Hayes (2017) for significant associations between malleability beliefs and paranoid ideation. We included all emotion regulation strategies that were found to be significantly predicted by malleability beliefs as parallel mediators and chose a 95% confidence level. The number of bootstrap samples was 5000 for percentile bootstrap confidence intervals.

Results

Table 1 summarizes the means, standard deviations, and ranges of malleability beliefs, emotion regulation strategies, and paranoid ideation in the clinical sample and in the community sample. A correlation matrix of all variables can be found in the appendix (Table A1 and A2). In both samples, we tested for significant differences in malleability beliefs, emotion regulation, and paranoid ideation between female and male participants and for correlations with age but found no significant effects.

Malleability Beliefs as a Predictor of Emotion Regulation (I) and Paranoid Ideation (II)

Clinical Sample

Greater beliefs that emotions are malleable predicted more reappraisal and acceptance, but were not predictive of rumination, expressive suppression, and experience suppression (Table 2). Malleability beliefs did not significantly predict paranoid ideation.

Community Sample

Greater beliefs that emotions are malleable predicted more reappraisal, more acceptance, and less rumination, but malleability beliefs did not predict expressive suppression and experience suppression (see Table 3). Greater beliefs that emotions are malleable predicted less frequency of paranoid ideation.

Indirect Effects of Malleability Beliefs on Paranoid Ideation Via Emotion Regulation Strategies (III)

In the clinical sample, no indirect effects were examined as there was no significant association between

Table 1 Means, standard deviations, and ranges of malleability beliefs, emotion regulation strategies, and paranoid ideation

	Clinical sample (<i>n</i> = 50)		Community sample (<i>n</i> = 218)		Comparison between samples
	<i>M</i> (<i>SD</i>)	Range	<i>M</i> (<i>SD</i>)	Range	
Malleability beliefs	2.28 (0.87)	0.25–4.00	2.29 (0.96)	0.00–4.00	<i>t</i> (266) = -0.04, <i>p</i> > .999
Reappraisal	2.28 (0.98)	0.50–4.00	2.00 (1.04)	0.00–4.00	<i>t</i> (266) = 1.73, <i>p</i> = .425
Acceptance	2.34 (0.91)	0.33–4.00	2.18 (1.05)	0.00–4.00	<i>t</i> (266) = 1.02, <i>p</i> = .927
Rumination	2.54 (0.86)	0.25–4.00	2.77 (0.96)	0.00–4.00	<i>t</i> (266) = -1.50, <i>p</i> = .540
Expressive suppression	2.23 (0.81)	0.50–4.00	2.50 (0.96)	0.00–4.00	<i>t</i> (84.27) = -2.10, <i>p</i> = .234
Experience suppression	1.55 (0.77)	0.00–3.25	1.64 (0.84)	0.00–3.75	<i>t</i> (266) = -0.66, <i>p</i> > .999
Paranoia checklist (Frequency)			0.74 (0.80)	0.00–3.89	
PSYRATS sum score	8.52 (6.92)	0.00–21.00			

Values for malleability beliefs, emotion regulation strategies, and the Paranoia Checklist (Frequency) can range between 0 and 4. Higher scores indicate stronger malleability beliefs, a higher use of the strategy or more paranoid ideation. Emotion regulation strategies were measured with the Heidelberg Form for Emotion Regulation Strategies. PSYRATS The Psychotic Symptom Rating Scales, subscale delusion, values can range between 0 and 24. Tests for comparisons between the samples with Bonferroni-Holm correction

Table 2 Emotion regulation and paranoid ideation predicted by emotion malleability beliefs in the clinical sample (*n* = 50)

	Reappraisal	Acceptance	Rumination	Expressive suppression	Experience suppression	PSYRATS sum score
Malleability Beliefs						
<i>b</i>	0.35	0.31	-0.15	0.10	0.01	1.60
<i>SE</i>	0.15	0.14	0.14	0.13	0.13	1.12
<i>t</i>	2.26	2.15	-1.08	0.74	0.04	1.43
<i>p</i>	0.028	0.037	0.284	0.463	0.971	0.160
95% CI	[0.04, 0.66]	[0.02, 0.60]	[-0.44, 0.13]	[-0.17, 0.36]	[-0.25, 0.26]	[-0.65, 3.85]
η^2_p	0.10	0.09	0.02	0.01	0.00	0.04

PSYRATS = Psychotic Symptom Rating Scales, subscale delusion (sum score). Significant effects are in bold

Table 3 Emotion regulation and paranoid ideation predicted by emotion malleability beliefs in the community sample (*n* = 218)

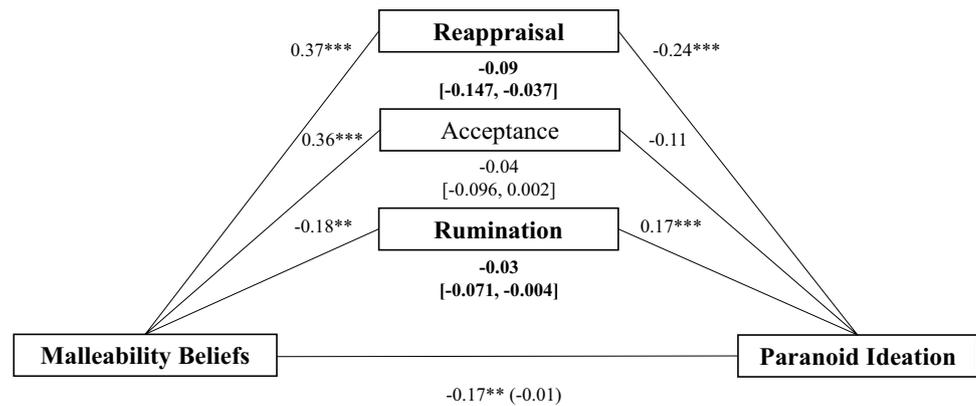
	Reappraisal	Acceptance	Rumination	Expressive suppression	Experience suppression	Frequency of paranoid ideation
Malleability beliefs						
<i>b</i>	0.37	0.36	-0.18	-0.01	0.05	-0.17
<i>SE</i>	0.07	0.07	0.07	0.07	0.06	0.06
<i>t</i>	5.24	5.17	-2.73	-0.08	0.79	-2.97
<i>p</i>	<0.001	<0.001	0.007	0.934	0.431	0.003
95% CI	[0.23, 0.51]	[0.23, 0.50]	[-0.32, -0.05]	[-0.14, 0.13]	[-0.07, 0.16]	[-0.28, -0.06]
η^2_p	0.11	0.11	0.03	0.00	0.00	0.04

Paranoid ideation was measured by the Paranoia Checklist (Frequency). Significant effects are in bold

malleability beliefs and paranoid ideation. Figure 1 illustrates the results for the community sample. As shown there, the direct effect of malleability beliefs on paranoid ideation was no longer significant when including the emotion regulation strategies of reappraisal, acceptance, and rumination as parallel mediators. Indirect effects

via reappraisal and via rumination were statistically significant. This was not the case for the mediation via acceptance.

Fig. 1 Effects of malleability beliefs on paranoid ideation via emotion regulation in the community sample ($n=218$) Note. Paranoid ideation was measured by the Paranoia Checklist (Frequency). ** $p \leq 0.01$, *** $p \leq 0.001$. Significant indirect effects are in bold



Exploratory Analyses

We found no significant differences in emotion malleability beliefs or emotion regulation strategies between the clinical and the community sample (see Table 1).

Since it has been argued that an independent variable can exert an indirect effect on a dependent variable in absence of a significant direct effect (Hayes, 2009), we tested whether there is an indirect effect of malleability beliefs on paranoid ideation via reappraisal and acceptance in the clinical sample. However, the indirect effects of malleability beliefs on paranoid ideation via reappraisal, $ab = -0.84$, 95% CI [-2.48, 0.04], and via acceptance, $ab = -0.17$, 95% CI [-1.12, 0.93], were not significant in the clinical sample (total indirect effect: $ab = -1.01$, 95% CI [-2.45, 0.15]).

To explore whether associations of malleability beliefs with emotion regulation strategies and paranoid ideation differed between individuals with current vs. past paranoid delusions, we conducted a moderation analysis with the PROCESS macro (version 3.4.1) provided by Hayes (2017). Current paranoid delusions did not significantly moderate the association of malleability beliefs with emotion regulation strategies or paranoid ideation (see Table A3 in the Appendix).

Since the distribution of paranoid ideation in the community sample was skewed to the right, we log-transformed the variable and repeated the analysis. After the log-transformation, we also found that greater beliefs that emotions are malleable significantly predicted less paranoid ideation, $b = -0.07$, $p = 0.039$.

Discussion

We investigated whether malleability beliefs are associated with paranoid ideation and the extent to which this association can be accounted for by the use of emotion regulation strategies. As expected, greater beliefs that emotions are malleable were related to the preference to regulate emotions

with more reappraisal and acceptance and less rumination. Furthermore, greater beliefs that emotions are malleable were associated with less frequent paranoid ideation. In the community sample, this association was accounted for by the type of frequently used emotion regulation strategies.

Unexpectedly, malleability beliefs were not associated with the severity of paranoid delusions in the clinical sample. Moreover, malleability beliefs in the clinical sample were comparable to those reported in the community sample and also to those reported by healthy participants in other studies (Gutentag et al., 2022; Tamir et al., 2007). Thus, our findings neither indicate that individuals with a psychotic disorder believe that emotions are less malleable than the general population nor demonstrate that malleability beliefs explain the severity of paranoid delusions within this group. This is in contrast to a very recent study that was published after completion of our study and found that individuals in the schizophrenia-spectrum believed emotions to be generally less malleable than healthy controls (Berglund et al., 2023). Instead of using the IBES, as we did in our study, Berglund et al. (2023) utilized the Emotion Beliefs Questionnaire, which includes not only beliefs about the malleability of negative but also of positive emotions. This broader assessment was found to explain more variance in psychopathology than the IBES (Becerra et al., 2020). However, the study by Berglund et al. (2023) included individuals at clinical high risk and individuals with schizophrenia and no significant differences in the beliefs about emotions emerged when only the individuals with schizophrenia were compared to healthy controls. Together with our results, this indicates that malleability beliefs do not appear to be relevant at clinical levels of psychotic symptoms. Other work on the relationship of malleability beliefs with psychopathology has focused on beliefs about people's own emotions (e.g., De France & Hollenstein, 2021; Deplancke et al., 2022; McLachlan et al., 2021), finding them to be a better predictor of psychological distress and well-being than beliefs about malleability of emotions in general (De Castella et al., 2013). Hence, to explain symptom severity in clinical groups, it

may be more relevant to look at beliefs about one's own emotions rather than about emotions in general.

Contrary to the findings in the clinical sample, the relevance of malleability beliefs to paranoid ideation was confirmed in the community sample. When interpreting the differences between the samples, it needs noting that the use of different measures complicates the direct comparison of the groups. In contrast to the community sample, we assessed not only the frequency of paranoid ideation but also the associated distress in the clinical sample. Furthermore, the smaller sample size in the clinical sample was not sufficient to detect small effect sizes. However, it seems unlikely that the absence of an association of malleability beliefs with paranoid delusions in the clinical sample is due to insufficient power, as there was not even a tendency in the expected direction. Thus, the findings indicate that believing that emotions are generally not malleable does not seem to contribute to the severity of symptoms in individuals with psychotic disorders. It does however seem to contribute to subclinical paranoid ideation. The results are encouraging for future research on the specific role malleability beliefs play in early symptom development before the onset of a diagnosable psychotic disorder.

Moreover, our findings indicate that believing that emotions are malleable is associated to the employment of potentially helpful strategies. We found individuals believing that emotions are malleable to employ more reappraisal and acceptance. This corroborates previous findings in non-clinical groups and in the context of other psychopathological symptoms (e.g., Deplancke et al., 2022; McLachlan et al., 2021; Ortner & Pennekamp, 2020; Vuillier et al., 2021). Furthermore, we found that greater beliefs that emotions are malleable were related to less rumination in the community sample. All in all, the findings confirm theoretical assumptions positing that individuals who believe emotions to be malleable are more likely to employ functional strategies (Ford & Gross, 2019; Kneeland et al., 2016a, 2016b, 2016c; Nowak et al., 2021).

In contrast, we found no evidence that malleability beliefs are relevant to the employment of suppression corroborating non-significant findings in some of the previous studies (Gutentag et al., 2022; Schroder et al., 2015; Tamir et al., 2007). One explanation for the lack of an association between malleability beliefs and suppression could be that their relationship is moderated by regulatory goals and context. Although suppression is often conceptualized as a dysfunctional strategy, it has been proposed that it can also be adaptive to employ suppression in order to achieve specific goals, depending on the context (Aldao et al., 2015). For instance, suppressing the expression of anger may be adaptive in situations where conflict avoidance is crucial (English et al., 2017). Similarly, suppressing the experience of an emotion might be a useful first step, when the emotional

intensity remains too high to effectively employ other strategies, such as reappraisal (Sheppes & Gross, 2011). Thus, individuals who believe that emotions are malleable may employ suppression in certain contexts to achieve positive long-term consequences (for a similar line of argument, see Ortner & Pennekamp, 2020). This explanation is supported by an experience sampling study, which revealed no direct association of malleability beliefs with expressive suppression but an interaction with the intensity and importance of emotional events (Ortner & Pennekamp, 2020). More specifically, individuals who more strongly believed that emotions are malleable employed more expressive suppression when the intensity of emotional events increased and less expressive suppression when the importance of the event increased. In contrast, individuals who believed that emotions are not malleable showed the reversed pattern (Ortner & Pennekamp, 2020). To better understand when malleability beliefs become relevant to the use of experience and expressive suppression, future studies should include an assessment of the contexts and goals.

Within the community sample, the way emotions are regulated accounted for the relationship between malleability beliefs and subclinical paranoid ideation. Specifically, by using more reappraisal and less rumination. The relationship was not accounted for by using more acceptance, which was due to the absence of an association between acceptance and paranoid ideation. The lack of an association between acceptance and paranoid ideation was unexpected since acceptance has been found to be associated with a lower intensity of paranoid ideation in cross-sectional designs (Bahlinger et al., 2020; Nittel et al., 2018) and to predict subsequent paranoid ideation in a subclinical sample (Bahlinger et al., 2022). However, other studies have found no association of acceptance with the frequency of paranoid ideation (Osborne et al., 2017; Wittkamp et al., 2021) but only with the distress from symptoms (Osborne et al., 2017). Thus, the absence of an indirect effect via acceptance in our study may be due to the fact that we focused solely on the frequency of paranoid ideation and did not assess distress and intensity of paranoid thoughts.

Nevertheless, our findings are in line with the assumption that malleability beliefs contribute to psychopathology via emotion regulation as has been suggested by various researchers (Ford & Gross, 2019; Kneeland et al., 2016a, 2016b, 2016c). This also expands the growing body of evidence in support of a mediating role of emotion regulation between malleability beliefs and symptoms of depression (De Castella et al., 2013; De France & Hollenstein, 2021; Ford et al., 2018; Kneeland & Dovidio, 2020; Skymba et al., 2022), anxiety (Deplancke et al., 2022), and eating disorder psychopathology (Vuillier et al., 2021). An interpretation of these findings is that believing that emotions are not malleable hinders adaptive attempts to regulate affect which

results in sustained or increased negative affect providing a fertile soil for paranoid symptoms. Likewise, the metacognitive model of paranoia (Morrison et al., 2011; Murphy et al., 2017) proposes that negative beliefs could lead to a preservative thinking style in form of rumination, a fixation of attention on threat, and counterproductive coping attempts, which could maintain paranoid ideation and intensify the accompanying distress and disability. Taken together, it seems that the putative pathway from malleability beliefs to psychopathology via difficulties in emotion regulation is not specific to certain disorders but rather of transdiagnostic relevance. Hence, future studies could benefit from applying approaches that account for the dimensionality of symptoms and shared processes across disorders, such as HiTOP (Kotov et al., 2017, 2022).

Our findings should be interpreted in the light of some limitations. Firstly, the results were obtained with a cross-sectional design and thus questions about causality cannot be answered. It is plausible that pathways between malleability beliefs, emotion regulation, and paranoid ideation are multidirectional. Attempts to regulate emotions with dysfunctional strategies could also be unsuccessful or even intensify negative affect leading to beliefs that emotions are not malleable. Studies that implement experimental designs with a manipulation of beliefs are indispensable to investigate the influence of malleability beliefs on emotion regulation and paranoid ideation. Secondly, we assumed at least medium effect sizes when planning the study and therefore may have missed smaller effects in the clinical sample due to insufficient power. This may explain why the association of malleability beliefs and rumination was only significant in the community sample, although the effect was of a similar size in both samples. Thirdly, we only looked at a selection of strategies frequently investigated in the research field of paranoid ideation, although there is also evidence for the relevance of malleability beliefs to other strategies, such as avoidance (e.g., De Castella et al., 2018; Zimmermann et al., 2021). Thus, future research could benefit from examining additional emotion regulation strategies. Fourthly, the community sample was predominantly female. It is therefore important to note that we did not find gender effects for the variables of interest. Fifthly, we did not assess levels of negative affect, which may be of different magnitude in both samples and explain differences in the association between malleability beliefs and paranoia.

In conclusion, our study speaks for a relevance of malleability beliefs in subclinical but not in clinical manifestations of paranoid ideation. Subclinical paranoid ideation has been found to be related to distress and impaired functioning (Contreras et al., 2022; Hajdúk et al., 2019). Based on our findings, it seems promising to investigate whether targeting malleability beliefs could improve emotion regulation and thereby prevent subclinical paranoid ideation. It has been

demonstrated that interventions changing fixed beliefs about personality have beneficial effects on mental health (Miu & Yeager, 2015; Schleider & Weisz, 2016; Schleider et al., 2022; Verberg et al., 2022) and that malleability beliefs about emotions can be successfully manipulated (Bigman et al., 2016; De Castella et al., 2018; Kneeland et al., 2016a, 2016b), also in groups with heightened levels of psychopathology (Kneeland & Simpson, 2022; McLachlan et al., 2021). Thus, strengthening malleability beliefs may be a promising avenue for the prevention of paranoid ideation.

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Data Availability The datasets generated and analyzed during the current study are not publicly available as participants did not provide consent for their data to be published. This is in line with the data protection regulations and the guidelines by the local ethic committee at the time when the local ethic board approved the procedure.

Declarations

Conflict of Interest The authors declare no conflicts of interest with respect to the authorship or the publication of this article.

Informed Consent Informed consent was obtained from all individual participants included in the study.

Research Involving Human Participants and/or Animals All procedures performed in the study were in accordance with the provisions of the World Medical Association Declaration of Helsinki (as revised in 2013). The study received approval by the local ethics committee.

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References

- A Aldao G Sheppes JJ Gross 2015 Emotion regulation flexibility *Cognitive Therapy and Research* 39 3 263 278 <https://doi.org/10.1007/s10608-014-9662-4>
- American Psychiatric Association. (2013). *Diagnostic and Statistical Manual of Mental Disorders* (5th ed.).
- K Bahlinger TM Lincoln A Clamor 2022 Are acute increases and variability in emotion regulation strategies related to negative affect and paranoid thoughts in daily life? *Cognitive Therapy and Research* 46 1 62 72 <https://doi.org/10.1007/s10608-021-10253-1>
- K Bahlinger TM Lincoln A Clamor 2022 <https://doi.org/10.1093/schbul/sbac097>
- K Bahlinger T Lincoln K Krkovic A Clamor 2020 Linking psychophysiological adaptation, emotion regulation, and subjective stress to the occurrence of paranoia in daily life *Journal of Psychiatric Research* 130 152 159 <https://doi.org/10.1016/j.jpsychires.2020.07.021>
- R Becerra DA Preece JJ Gross 2020 Assessing beliefs about emotions: Development and validation of the Emotion Beliefs Questionnaire *PLoS ONE* 15 4 e0231395 <https://doi.org/10.1371/journal.pone.0231395>
- K Beesdo-Baum M Zaudig H-U Wittchen 2019 SCID-5-CV: Strukturiertes klinisches Interview für DSM-5®-Störungen – Klinische Version Hogrefe
- AM Berglund SH James IM Raugh GP Strauss 2023 Beliefs about the uncontrollability and usefulness of emotion in the schizophrenia-spectrum: Links to emotion regulation and negative symptoms *Cognitive Therapy and Research* 47 2 282 294 <https://doi.org/10.1007/s10608-023-10357-w>
- YE Bigman IB Mauss JJ Gross M Tamir 2016 Yes I can: Expected success promotes actual success in emotion regulation *Cognition and Emotion* 30 7 1380 1387 <https://doi.org/10.1080/02699931.2015.1067188>
- M Cavicchioli V Tobia A Ogliaeri 2023 Emotion regulation strategies as risk factors for developmental psychopathology: A meta-analytic review of longitudinal studies based on cross-lagged correlations and panel models *Research on Child and Adolescent Psychopathology* 51 3 295 315 <https://doi.org/10.1007/s10802-022-00980-8>
- A Contreras C Valiente C Vázquez A Trucharte V Peinado F Varese RP Bental 2022 The network structure of paranoia dimensions and its mental health correlates in the general population: The core role of loneliness *Schizophrenia Research* 246 65 73 <https://doi.org/10.1016/j.schres.2022.06.005>
- K Castella De P Goldin H Jazaieri M Ziv CS Dweck JJ Gross 2013 Beliefs about emotion: Links to emotion regulation, well-being, and psychological distress *Basic and Applied Social Psychology* 35 6 497 505 <https://doi.org/10.1080/01973533.2013.840632>
- K Castella De MJ Platow M Tamir JJ Gross 2018 Beliefs about emotion: Implications for avoidance-based emotion regulation and psychological health *Cognition and Emotion* 32 4 773 795 <https://doi.org/10.1080/02699931.2017.1353485>
- K France De T Hollenstein 2021 Implicit theories of emotion and mental health during adolescence: The mediating role of emotion regulation *Cognition and Emotion* 35 2 367 374 <https://doi.org/10.1080/02699931.2020.1817727>
- C Deplancke MP Somerville A Harrison L Vuillier 2022 It's all about beliefs: Believing emotions are uncontrollable is linked to symptoms of anxiety and depression through cognitive reappraisal and expressive suppression *Current Psychology* <https://doi.org/10.1007/s12144-022-03252-2>
- T English IA Lee OP John JJ Gross 2017 Emotion regulation strategy selection in daily life: The role of social context and goals *Motivation and Emotion* 41 2 230 242 <https://doi.org/10.1007/s11031-016-9597-z>
- BQ Ford JJ Gross 2019 Why beliefs about emotion matter: An emotion-regulation perspective *Current Directions in Psychological Science* 28 1 74 81 <https://doi.org/10.1177/0963721418806697>
- BQ Ford SJ Lwi AL Gentzler B Hankin IB Mauss 2018 The cost of believing emotions are uncontrollable: Youths' beliefs about emotion predict emotion regulation and depressive symptoms *Journal of Experimental Psychology: General* 147 8 1170 1190 <https://doi.org/10.1037/xge0000396>
- D Freeman 2007 Suspicious minds: The psychology of persecutory delusions *Clinical Psychology Review* 27 4 425 457 <https://doi.org/10.1016/j.cpr.2006.10.004>
- D Freeman PA Garety PE Bebbington B Smith R Rollinson D Fowler E Kuipers K Ray G Dunn 2005 Psychological investigation of the structure of paranoia in a non-clinical population *British Journal of Psychiatry* 186 5 427 435 <https://doi.org/10.1192/bjp.186.5.427>
- FR Goodman TB Kashdan 2021 Valuing emotional control in social anxiety disorder: A multimethod study of emotion beliefs and emotion regulation *Emotion* 21 4 842 855 <https://doi.org/10.1037/emo0000750.supp>
- S Grezellschak A Jansen S Westermann 2017 Emotion regulation in patients with psychosis: A link between insomnia and paranoid ideation? *Journal of Behavior Therapy and Experimental Psychiatry* 56 27 32 <https://doi.org/10.1016/j.jbtep.2016.08.001>
- T Gutentag OP John JJ Gross M Tamir 2022 Incremental theories of emotion across time: Temporal dynamics and correlates of change *Emotion* 22 6 1137 1147 <https://doi.org/10.1037/emo0000945>
- G Haddock J McCarron N Tarrier EB Faragher 1999 Scales to measure dimensions of hallucinations and delusions: The Psychotic Symptom Rating Scales (PSYRATS) *Psychological Medicine* 29 4 879 889 <https://doi.org/10.1017/s0033291799008661>
- M Hajdúk HS Klein PD Harvey DL Penn AE Pinkham 2019 Paranoia and interpersonal functioning across the continuum from healthy to pathological—Network analysis *British Journal of Clinical Psychology* 58 1 19 34 <https://doi.org/10.1111/bjc.12199>
- Hayes, A. F. (2017). *Introduction to mediation, moderation, and conditional process analysis: A regression-based approach* (2nd ed.). Guilford Publications.
- AF Hayes 2009 Beyond Baron and Kenny: Statistical mediation analysis in the new millennium *Communication Monographs* 76 4 408 420 <https://doi.org/10.1080/03637750903310360>
- E-J Hong M Kangas 2022 The relationship between beliefs about emotions and emotion regulation: A systematic review *Behaviour Change* 39 4 205 234 <https://doi.org/10.1017/bec.2021.23>
- S Izadpanah S Barnow AB Neubauer J Holl 2019 Development and validation of the Heidelberg form for emotion regulation strategies (HFERST): Factor structure, reliability, and validity *Assessment* 26 5 880 906 <https://doi.org/10.1177/1073191117720283>
- ET Kneeland JF Dovidio 2020 Emotion malleability beliefs and coping with the college transition *Emotion* 20 3 452 461 <https://doi.org/10.1037/emo0000559>
- ET Kneeland JF Dovidio J Joormann MS Clark 2016a Emotion malleability beliefs, emotion regulation, and psychopathology: Integrating affective and clinical science *Clinical Psychology Review* 45 81 88 <https://doi.org/10.1016/j.cpr.2016.03.008>
- ET Kneeland FR Goodman JF Dovidio 2020 Emotion beliefs, emotion regulation, and emotional experiences in daily life *Behavior Therapy* 51 5 728 738 <https://doi.org/10.1016/j.beth.2019.10.007>
- ET Kneeland S Nolen-Hoeksema JF Dovidio J Gruber 2016b Beliefs about emotion's malleability influence state emotion regulation *Motivation and Emotion* 40 5 740 749 <https://doi.org/10.1007/s11031-016-9566-6>
- ET Kneeland S Nolen-Hoeksema JF Dovidio J Gruber 2016c Emotion malleability beliefs influence the spontaneous regulation of social anxiety *Cognitive Therapy and Research* 40 4 496 509 <https://doi.org/10.1007/s10608-016-9765-1>

- ET Kneeland LE Simpson 2022 Emotion malleability beliefs influence emotion regulation and emotion recovery among individuals with depressive symptoms *Cognition and Emotion* <https://doi.org/10.1080/02699931.2022.2143327>
- R Kotov DC Cicero CC Conway CG Deyoung A Dombrowski NR Eaton MB First MK Forbes SE Hyman KG Jonas RF Krueger RD Latzman JJ Li BD Nelson DA Regier C Rodriguez-Seijas CJ Ruggero LJ Simms AE Skodol AGC Wright 2022 The hierarchical taxonomy of psychopathology (HiTOP) in psychiatric practice and research *Psychological Medicine* 52 9 1666 1678 <https://doi.org/10.1017/S0033291722001301>
- R Kotov MA Waszczuk RF Krueger MK Forbes D Watson LA Clark TM Achenbach RR Althoff MY Ivanova R Michael Bagby TA Brown WT Carpenter A Caspi TE Moffitt NR Eaton KT Forbush D Goldberg D Hasin SE Hyman M Zimmerman 2017 The hierarchical taxonomy of psychopathology (HiTOP): A dimensional alternative to traditional nosologies *Journal of Abnormal Psychology* 126 4 454 477 <https://doi.org/10.1037/abn0000258>
- V Kovess-Masfety S Saha CCW Lim S Aguilar-Gaxiola A Al-Hamzawi J Alonso G Borges G Girolamo de P Jonge de K Demyttenaere S Florescu JM Haro C Hu EG Karam N Kawakami S Lee JP Lepine F Navarro-Mateu JC Stagnaro B Wojtyniak 2018 Psychotic experiences and religiosity: data from the WHO World Mental Health Surveys *Acta Psychiatrica Scandinavica* 137 4 306 315 <https://doi.org/10.1111/acps.12859>
- K Krkovic A Clamor B Schlier TM Lincoln 2020 Emotions and persecutory ideation in daily life: On the trail of the “chicken and egg” problem *Journal of Abnormal Psychology* 129 2 215 223 <https://doi.org/10.1037/abn0000495>
- F Lari M Linden Van der 2005 Metacognitions in proneness towards hallucinations and delusions *Behaviour Research and Therapy* 43 11 1425 1441 <https://doi.org/10.1016/j.brat.2004.10.008>
- TM Lincoln L Schulze B Renneberg 2022 The role of emotion regulation in the characterization, development and treatment of psychopathology *Nature Reviews Psychology* <https://doi.org/10.1038/s44159-022-00040-4>
- TM Lincoln J Sundag B Schlier A Karow 2018 The relevance of emotion regulation in explaining why social exclusion triggers paranoia in individuals at clinical high risk of psychosis *Schizophrenia Bulletin* 44 4 757 767 <https://doi.org/10.1093/schbul/sbx135>
- TM Lincoln M Ziegler E Lüllmann MJ Müller W Rief 2010 Can delusions be self-assessed? Concordance between self- and observer-rated delusions in schizophrenia *Psychiatry Research* 178 2 249 254 <https://doi.org/10.1016/j.psychres.2009.04.019>
- RJ Linscott J Os Van 2013 An updated and conservative systematic review and meta-analysis of epidemiological evidence on psychotic experiences in children and adults: On the pathway from proneness to persistence to dimensional expression across mental disorders *Psychological Medicine* 43 6 1133 1149 <https://doi.org/10.1017/S0033291712001626>
- L Ludwig S Mehl B Schlier K Krkovic TM Lincoln 2019a Awareness and rumination moderate the affective pathway to paranoia in daily life *Schizophrenia Research* 216 161 167 <https://doi.org/10.1016/j.schres.2019.12.007>
- L Ludwig D Werner TM Lincoln 2019b The relevance of cognitive emotion regulation to psychotic symptoms—A systematic review and meta-analysis *Clinical Psychology Review* <https://doi.org/10.1016/j.cpr.2019.101746>
- J McLachlan M Mehdikhani B Larham LCM Centifanti 2021 Borderline personality traits and emotion regulation strategies in adolescents: The role of implicit theories *Child Psychiatry and Human Development* 53 5 899 907 <https://doi.org/10.1007/s10578-021-01169-8>
- AS Miu DS Yeager 2015 Preventing symptoms of depression by teaching adolescents that people can change: Effects of a brief incremental theory of personality intervention at 9-month follow-up *Clinical Psychological Science* 3 5 726 743 <https://doi.org/10.1177/2167702614548317>
- AP Morrison 2001 The interpretation of intrusions in psychosis: An integrative cognitive approach to hallucinations and delusions *Behavioural and Cognitive Psychotherapy* 29 3 257 276 <https://doi.org/10.1017/S1352465801003010>
- AP Morrison AI Gumley K Ashcroft IR Manousos R White K Gillan A Wells D Kingdon 2011 Metacognition and persecutory delusions: Tests of a metacognitive model in a clinical population and comparisons with non-patients *British Journal of Clinical Psychology* 50 3 223 233 <https://doi.org/10.1348/014466510X511141>
- S Moumne N Hall BN Böke L Bastien N Heath 2021 Implicit theories of emotion, goals for emotion regulation, and cognitive responses to negative life events *Psychological Reports* 124 4 1588 1620 <https://doi.org/10.1177/0033294120942110>
- EK Murphy S Tully M Pyle AI Gumley D Kingdon M Schwannauer D Turkington AP Morrison 2017 The beliefs about paranoia scale: Confirmatory factor analysis and tests of a metacognitive model of paranoia in a clinical sample *Psychiatry Research* 248 87 94 <https://doi.org/10.1016/j.psychres.2016.11.012>
- I Myin-Germeys J Os van 2007 Stress-reactivity in psychosis: Evidence for an affective pathway to psychosis *Clinical Psychology Review* 27 4 409 424 <https://doi.org/10.1016/j.cpr.2006.09.005>
- CM Nittel TM Lincoln F Lamster D Leube W Rief T Kircher S Mehl 2018 Expressive suppression is associated with state paranoia in psychosis: An experience sampling study on the association between adaptive and maladaptive emotion regulation strategies and paranoia *British Journal of Clinical Psychology* 57 3 291 312 <https://doi.org/10.1111/bjc.12174>
- U Nowak MF Wittkamp A Clamor TM Lincoln 2021 Using the ball-in-bowl metaphor to outline an integrative framework for understanding dysregulated emotion *Frontiers in Psychiatry* <https://doi.org/10.3389/fpsy.2021.626698>
- H Oh K Waldman A Koyanagi 2018 Psychotic experiences and religiosity: Findings from the collaborative psychiatric epidemiological surveys *Schizophrenia Research* 201 435 436 <https://doi.org/10.1016/j.schres.2018.05.037>
- CNM Ortner P Pennekamp 2020 Emotion malleability beliefs and event intensity and importance predict emotion regulation in daily life *Personality and Individual Differences* 159 109887 <https://doi.org/10.1016/j.paid.2020.109887>
- KJ Osborne EC Willroth JE DeVlyder VA Mittal MR Hilimire 2017 Investigating the association between emotion regulation and distress in adults with psychotic-like experiences *Psychiatry Research* 256 66 70 <https://doi.org/10.1016/j.psychres.2017.06.011>
- R Pechey P Halligan 2011 The prevalence of delusion-like beliefs relative to sociocultural beliefs in the general population *Psychopathology* 44 2 106 115 <https://doi.org/10.1159/000319788>
- E Peters T Ward M Jackson P Woodruff C Morgan P McGuire PA Garety 2017 Clinical relevance of appraisals of persistent psychotic experiences in people with and without a need for care: An experimental study *The Lancet Psychiatry* 4 12 927 936 [https://doi.org/10.1016/S2215-0366\(17\)30409-1](https://doi.org/10.1016/S2215-0366(17)30409-1)
- JL Schleider MC Mullarkey KR Fox ML Dobias A Shroff EA Hart CA Roulston 2022 A randomized trial of online single-session interventions for adolescent depression during COVID-19 *Nature Human Behaviour* 6 2 258 268 <https://doi.org/10.1038/s41562-021-01235-0>
- JL Schleider JR Weisz 2016 Reducing risk for anxiety and depression in adolescents: Effects of a single-session intervention teaching that personality can change *Behaviour Research and Therapy* 87 170 181 <https://doi.org/10.1016/j.brat.2016.09.011>
- HS Schroder S Dawood MM Yalch MB Donnellan JS Moser 2015 The role of implicit theories in mental health symptoms, emotion regulation, and hypothetical treatment choices in college students

- Cognitive Therapy and Research 39 2 120 139 <https://doi.org/10.1007/s10608-014-9652-6>
- R Sellers L, Gawęda A, Wells AP, Morrison 2016 The role of unhelpful metacognitive beliefs in psychosis: Relationships with positive symptoms and negative affect *Psychiatry Research* 246 401 406 <https://doi.org/10.1016/j.psychres.2016.10.029>
- G Sheppes JJ, Gross 2011 Is timing everything? Temporal considerations in emotion regulation *Personality and Social Psychology Review* 15 4 319 331 <https://doi.org/10.1177/1088868310395778>
- J Simpson B, MacGregor K, Cavanagh R, Dudley 2012 Safety behaviours, rumination and trait paranoia in a non-clinical sample *Journal of Experimental Psychopathology* 3 4 612 623 <https://doi.org/10.5127/jep.027212>
- HV Skymba W, Troop-Gordon HH, Modi MM, Davis AL, Weldon Y, Xia W, Heller KD, Rudolph 2022 Emotion mindsets and depressive symptoms in adolescence: The role of emotion regulation competence *Emotion* 22 6 1255 1269 <https://doi.org/10.1037/emo0000902>
- X Sun C, Zhu SHW, So 2017 Dysfunctional metacognition across psychopathologies: A meta-analytic review *European Psychiatry* 45 139 153 <https://doi.org/10.1016/j.eurpsy.2017.05.029>
- M Tamir OP, John S, Srivastava JJ, Gross 2007 Implicit theories of emotion: Affective and social outcomes across a major life transition *Journal of Personality and Social Psychology* 92 4 731 744 <https://doi.org/10.1037/0022-3514.92.4.731>
- J Os Van RJ, Linscott I, Myin-Germeys P, Delespaul L, Krabbendam 2009 A systematic review and meta-analysis of the psychosis continuum: Evidence for a psychosis proneness-persistence-impairment model of psychotic disorder *Psychological Medicine* 39 2 179 195 <https://doi.org/10.1017/S0033291708003814>
- F Verberg P, Helmond R, Otten G, Overbeek 2022 Effectiveness of the online mindset intervention 'The Growth Factory' for adolescents with intellectual disabilities *Journal of Applied Research in Intellectual Disabilities* 35 1 217 230 <https://doi.org/10.1111/jar.12941>
- L Vuillier J, Joseph MP, Somerville A, Harrison 2021 Believing emotions are uncontrollable is linked to eating disorder psychopathology via suppression and reappraisal *Journal of Eating Disorders* 9 1 1 9 <https://doi.org/10.1186/s40337-021-00395-8>
- P Watson JP, Zhang A, Rizvi J, Tamaiev ML, Birnbaum J, Kane 2018 A meta-analysis of factors associated with quality of life in first episode psychosis *Schizophrenia Research* 202 26 36 <https://doi.org/10.1016/j.schres.2018.07.013>
- TL Webb E, Miles P, Sheeran 2012 Dealing with feeling: A meta-analysis of the effectiveness of strategies derived from the process model of emotion regulation *Psychological Bulletin* 138 4 775 808 <https://doi.org/10.1037/a0027600>
- S Westermann MT, Boden JJ, Gross TM, Lincoln 2013 Maladaptive cognitive emotion regulation prospectively predicts subclinical paranoia *Cognitive Therapy and Research* 37 4 881 885 <https://doi.org/10.1007/s10608-013-9523-6>
- S Westermann TM, Lincoln 2011 Emotion regulation difficulties are relevant to persecutory ideation *Psychology and Psychotherapy: Theory, Research and Practice* 84 3 273 287 <https://doi.org/10.1348/147608310X523019>
- MF Wittkamp K, Krkovic TM, Lincoln 2021 An analysis of the pattern of adaptive emotion regulation associated with low paranoid ideation in healthy and clinical samples *Cognitive Therapy and Research* 45 3 468 479 <https://doi.org/10.1007/s10608-020-10173-6>
- M Zimmermann C, Bledsoe A, Papa 2021 Longitudinal associations between emotion malleability beliefs and avoidance in college students *Cognition and Emotion* 35 6 1238 1247 <https://doi.org/10.1080/02699931.2021.1937578>

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