The Influence of Passive and Active Imagery Rescripting on Mastery and Distress

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Abstract

Imagery Rescripting (ImRs) is an effective technique in reducing symptoms in various psychological disorders ranging from PTSD to personality disorders. However, research on the underlying mechanisms is scarce. Therefore, the present study investigated the effect of ImRs on aversive memories and its effect on mastery and distress. A sample of 44 participants were allocated to one of four ImRs conditions and ratings on mastery and distress were taken. A time effect was found for ImRs on mastery and distress. Mastery increased from T1 to T2, and the increase remained significant at T3. Similar patterns were found for distress, decreasing from T1 to T2 and remaining significant at T3, supporting the efficacy of ImRs on mastery and distress. Change in mastery did not mediate the relationship between ImRs and change in distress differently for the passive and active condition, suggesting that patients can flexibly choose either passive or active ImRs without impacting the effect of ImRs. Clinical implications, strengths and limitations are further discussed.

Keywords: Imagery Rescripting, mastery, distress

The influence of Passive and Active Imagery Rescripting on Mastery and Distress

In recent years, Imagery Rescripting (ImRs) has gained growing interest as a transdiagnostic treatment for aversive memories in psychological disorders (Kip et al., 2023). It has been found to effectively reduce symptoms in various mental disorders ranging from post-traumatic stress disorder (PTSD) to personality disorders (Arntz, 2012). However, the underlying mechanisms of ImRs are yet to be determined (Mancini & Mancini, 2018). ImRs enhances positive emotions (Siegesleitner et al., 2020), however, it is interesting to investigate whether ImRs also decreases negative emotions such as distress.

The aim of ImRs is to change the meaning of a memory of an aversive event (Edwards, 2007). During ImRs, individuals are instructed to imagine an aversive memory as vividly as possible and afterwards imagine changing the script of the event in a desirable way according to their needs (Arntz, 2012). This can be achieved in several ways, such as imagining a different ending to an aversive event (Brockman & Calvert, 2017), disempowering a possible predator, or receiving help (Siegesleitner et al., 2020). ImRs can be delivered in an active manner, where participants imagine themselves acting in a favorable way, and in a passive manner, where they imagine a helper intervening in a favorable way (Siegesleitner et al., 2020).

Learning theories have been used to explain the effectiveness of ImRs for psychological disorders (Strachan et al., 2020). Memories of aversive events are categorized as unconditioned stimuli (US), people, places, objects, and events as conditioned stimuli (CS), and symptoms of psychopathology as conditioned responses (CR) to memories (Craske et al., 2014). Various learning theories have been proposed, and the inhibitory learning theory can offer one possible explanation: During ImRs, CSs are presented through imagination without the US (traumatic event), which leads to new associative learning that inhibits the existing CR (fear). Thus, new learning is driven by changes in the occurrence between the CS and US, whilst the valence of the stimuli is not directly changed (Craske et al., 2014). A study using Imagery Rehearsal

therapy (IRT) for nightmares supports the claim that treatment involving ImRs is most effective for treating nightmares, as it allows direct access to the distressing content and emotions of the nightmares (Albanese et al., 2022). IRT and ImRs share the same theoretical principles aiming to change the emotional impact of aversive events by altering their meaning and increasing control over distressing images. Rescripting-based therapies function by progressively inhibiting the original aversive memory, which is replaced with a positively valanced memory (Albanese et al., 2022).

Although numerous studies have shown the effectiveness of ImRs in treating various mental disorders, more research is needed to understand how ImRs should be carried out (Bosch & Arntz, 2023). It remains unclear whether patients need to actively engage in rescripting the new memory or whether a passive role is equally effective, especially if they do not feel powerful enough to play an active role (Siegesleitner et al., 2020). Siegesleitner et al. (2020) conducted the first study that compared passive ImRs (ImRs-P) versus active ImRs (ImRs-A). Participants watched an aversive film and were randomly assigned to one of four conditions: ImRs-P, ImRs-A, Imagery Rehearsal, or no intervention. Increased mastery and decreased distress regarding the aversive memory were found in both ImRs conditions, whereas positive affect was only increased in ImRs-A (Siegesleitner et al., 2020). The study by Siegesleitner et al. (2020) has several limitations which the present study addresses. Firstly, the lack of difference found between ImRs-P and ImRs-A might be due to the procedural limitations of the Trauma Film Paradigm (TFP), namely a floor effect of intrusive memories (Siegesleitner et al., 2020). The TFP employed was a 14-min film clip that depicted sexual and physical violence and was used to induce posttraumatic reactions, such as distress. Secondly, the intervention took place on the same day as the presentation of the aversive film (Siegesleitner et al., 2020).

Although ImRs has attracted increasing attention, knowledge regarding the mechanisms behind its effectiveness is lacking (Siegesleitner et al., 2020). A possible underlying mechanism

of ImRs is mastery, which refers to perceived skills in a situation (Kunze et al., 2019). According to the social cognition theory of PTSD, people with high levels of mastery experience less distress because they engage in coping strategies and actions to change aversive situations (Benight & Bandura, 2004). Another explanation of the effect of ImRs is that expressing inhibited responses in the new script (e.g., attacking the perpetrator) reestablishes a feeling of mastery over the aversive situation (Kunze et al., 2016). Therefore, it has been proposed that restoring mastery is an important mediator in recovering from aversive experiences (Benight & Bandura, 2004). Besides, participants who experienced distressing life events perceived their originally distressing memory as more controllable after ImRs, indicating that ImRs leads to a revaluation of aversive memory contents (Strohm et al., 2019). Changing the script of the aversive event according to their unmet needs and expressing action tendencies that were inhibited in the original memory may be why ImRs increases perceived mastery (Arntz, 2012). In patients with nightmare disorder, perceived mastery (of the nightmare content) mediated the beneficial effects of ImRs (Kunze et al., 2019). Importantly, this mediation only emerged in the ImRs condition and was not observed in individuals receiving imaginal exposure treatment (Kunze et al., 2019). This indicates that enhancing mastery might be an underlying working mechanism crucial in and specific to ImRs.

Several studies showed that ImRs makes the memory of aversive life events less distressing (Çili et al., 2017; Morina et al., 2017; Strohm et al., 2019; Strohm et al., 2021). Subjective distress is defined as negative reactions to recent life difficulties or stressful situations (Zhou & Guo, 2021). The present study refers to subjective distress as simply "distress". Strohm et al. (2021) investigated whether ImRs decreases distress by allocating participants to one of three conditions, either ImRs, positive imagery (PI), or no-intervention control (NIC). They found that ImRs led to significantly stronger reductions of distress during

the 1-week follow-up period compared to the other two conditions, showing that ImRs has an impact on distress (Strohm et al., 2021).

All in all, ImRs has gained growing interest and several studies have shown its effectiveness in treating multiple disorders related to aversive memories (Kip et al., 2023; Siegesleitner et al., 2020; Strohm et al., 2023). Additionally, ImRs enhances feelings of mastery and reduces distress (Kip et al., 2023; Siegesleitner et al., 2020; Strohm et al., 2023). However, little is known about the underlying mechanisms and clear guidelines, such as how ImRs should be carried out, are lacking (Stopa, 2011).

Studying variables that mediate treatment outcome helps gather information on important working mechanisms (Kunze et al., 2016). Understanding the processes that account for therapeutic change allows for optimizing therapeutic outcomes, facilitating more direct and efficient use of strategies that initiate critical change processes (Kazdin, 2007). Therefore, the current study investigates whether mastery is a potential mediator of reduced distress in ImRs for aversive autobiographical memories.

The present study evades two limitations of previous research by using an autobiographical memory instead of the TFP and therefore conducting ImRs on consolidated memories, and by only implementing ImRs a few days after memory activation, leaving time in-between the activation and the rescripting. Therefore, the present study seeks to determine whether a distinction between ImRs-P and ImRs-A can be identified using a different paradigm. By exploring these differences, the study aims to gain new insight into the optimal implementation of ImRs. It is of clinical importance to understand the mechanisms behind ImRs, as this will help clinicians develop clear guidelines.

The present study aims to replicate previous findings that ImRs increases perceived mastery and reduces distress related to the aversive memory. Additionally, the question of whether mastery mediates distress is addressed. It is hypothesized that mastery will be highest,

and distress will be lowest directly after ImRs (hypothesis 1). Second, it is expected that the active condition is more effective than the passive condition in reducing levels of distress (hypothesis 2). Third, it is hypothesized that increased mastery reduces levels of distress (hypothesis 3). Lastly, it is expected that the active condition increases mastery more than the passive condition, thereby reducing distress more than the passive condition (hypothesis 4).

Methods

Participants

A total of 47 participants were recruited via flyers, social media, through the research group's social network, and Utrecht University's SONA system. An online screening questionnaire assessed the following event-related inclusion criteria: (1) experience of a distressing but non-traumatic event within the past 24 months (with exclusion of the death of a close person), and (2) recurrent distressing memories of the event. Additionally, the following exclusion criteria were assessed: (1) current diagnosis of a mental disorder, (2) lifetime diagnosis of PTSD/psychotic disorder/bipolar disorder, (3) psychological treatment at the time of study participation, (4) severe physical illness, (5) pregnancy, and (6) age below 18. The study's sample size was not calculated through a power analysis, as it was a pilot study. Due to drop-out, three participants were excluded resulting in a final sample of 44 participants with an average age of 24.59 years. Participants were randomly assigned to either passive ImRs or active ImRs. Demographics concerning gender and occupation can be found in Table 1.

Table 1

Demographics

		n	*%*
Passive ImRs			
	male	5	25
	female	15	75
	prefer not to say	0	0
	student	17	85
	full-time job	2	10
	other	1	5
Active ImRs			
	male	4	16.7
	female	19	79.2
	prefer not to say	1	4.2
	student	16	66.7
	full-time job	4	16.7
	other	4	16.7

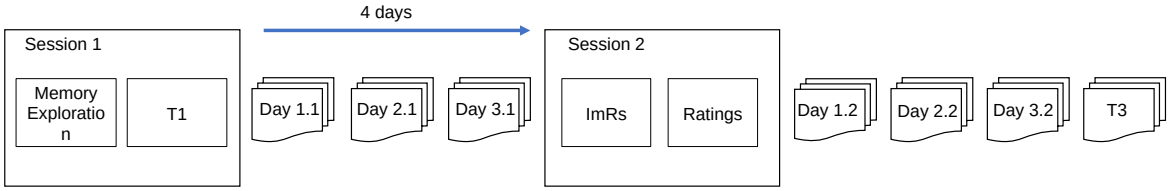
Note. Passive *N*= 20, Active *N*=24

Procedure

First, interested participants completed a screening procedure to assess eligibility, inform them of the study procedure, and obtain informed consent. Eligible participants received an identification number (ID) to anonymize their data. Additionally, they were redirected to an external questionnaire requesting their e-mail address to schedule their first appointment. The experiment consisted of two lab sessions, which were at least four days apart and conducted by the same experimenter (see Figure 1). Data collection took place through Qualtrics questionnaires, in the laboratory at Utrecht University and in some cases (n = 19) online.

Figure 1

Study procedure



Note. Figure 1 demonstrates a schematic overview of the study procedure. Session 1: exploration of the memory and T1 (mastery and distress), followed by Day 1.1, 2.1, and 3.1 survey (mastery and distress). Session 2: ImRs intervention and ratings of mastery and distress, followed by Day 1.2, 2.2, 3.2, and T3 (mastery and distress).

The first lab session (T1) took approximately 30 minutes. First, participants described their aversive autobiographical memory by briefly mentioning what happened during the event. The specific memory was noted down in Session 1 to ensure that the same memory was reactivated in Session 2. Moreover, participants completed a 15-minute survey focusing on stress symptoms related to the memory and imagery in general. After session 1, participants completed a short survey for three consecutive days. Randomization was performed by a researcher who was blind to participants and memory characteristics.

The second lab session took approximately 45 minutes. First, participants were told what to expect and to which condition they had been allocated. Next, participants were asked to review their memory briefly, after which they rated their mastery and distress. Then, the rescripting phase stared. First, participants relived their memory in more detail and after reaching the memory's hotspot they rated their distress. After reaching the hotspot, participants rescripted the event according to the condition they were assigned to. Once ImRs finished (T2),

participants rated their mastery and distress. Lastly, debriefing was offered, and participants were asked which of the four conditions they would have preferred if given the choice. Four days after ImRs took place (T3), participants rated their distress and mastery. The present study used data from T1, T2 and T3 measurements.

Experimental Conditions: ImRs

This first phase of the ImRs procedure was used to reactivate emotions related to the memory and included the individual hotspot. Individuals were instructed to vividly imagine and describe the chosen autobiographical event in the first person and present tense, including all sensory feelings, emotions, and cognitions associated with the memory. Questions such as “What happens?” and “What do you see?” were asked to support the participants. The second phase of ImRs started immediately after the hotspot and was initiated by instructing participants to change the "script of the scene" in any desired way to make it less distressing by asking the participant "what needs to happen next?". The changes could be realistic (e.g., standing up for oneself) or unrealistic (e.g., growing wings and flying away). However, participants were not allowed to undo what had happened before and during the hotspot of the memory. Participants were asked to imagine the new script as vividly as possible and to describe it in detail to the experimenter. The following questions were asked to support the rescripting: "What is happening? How is xy reacting? What do you hear/smell/taste?".

The participants were allowed to go through this process several times to meet their needs and successfully reduce their distress related to the memory. Once the patients' needs were met, they were invited to stay with the positive memory before opening their eyes (Wheatley & Hackmann, 2011). ImRs was delivered as either passive or active and as client-guided or therapist-guided, however, the current study only focused on the difference between the passive and the active conditions. During *ImRs-P*, the participants imagine a helper intervening favorably in the imagined situation, such as imagining someone else

disempowering the predator (Strohm et al., 2019). During *ImRs-A*, participants imagine themselves acting in a favorable way during the imagined situation, such as intervening and disempowering the predator (Strohm et al., 2019).

Measures

Distress

Subjectively experienced levels of event-related distress were assessed by asking participants, "How distressed did you feel about the memory today?". They were instructed to rate their distress on a range from 0 (not at all distressed) to 100 (extremely distressed).

Mastery

Feelings of mastery were assessed by asking participants "How controllable do you experience the situation that you just described to me, on a scale ranging from 0 (not at all controllable) to 100 (very controllable)?".

Analysis Plan

All analyses were conducted in IBM SPSS statistics version 29.0 (IBM SPSS Statistics, 2022). P-values below $\alpha = .05$ were interpreted as significant. Moreover, missing data on the questionnaires was deleted using a list-wise deletion. For both ANOVA's four participants were excluded, whilst none were excluded for the mediation analysis.

Hypothesis one

Hypothesis one was tested through two repeated-measures ANOVAs with the independent variable time (T1, T2, T3). Distress served as the dependent variable (DV) in ANOVA 1, and mastery was the DV in ANOVA 2. To investigate the difference between the three timepoints in both ANOVA's, contrasts were inspected with independent sample t-tests. Despite the identification of four outliers, their removal was not supported, as no bias in the data was detected.

Preceding the repeated-measures ANOVAs, model assumptions were tested. Despite a violation of the normality assumption based on the Shapiro-Wilk test for T2 and T3 for distress and T1 and T2 for mastery, skewedness and kurtosis indicated a normal distribution. Given the relative robustness of repeated measures ANOVA, the analysis was continued. Furthermore, the violation of the sphericity assumption as indicated by Mauchly's test of sphericity was corrected using Greenhouse-Geisser corrections.

Hypotheses two to four

Hypotheses two to four were tested through a mediation analysis, which was performed using the PROCESS v4.2 macro by Hayes (Hayes, 2022), Model 4 in SPSS. The IV was condition (ImRs-P vs. ImRs-A), the DV was change in distress, and the mediator was change in mastery. The connection from condition to mastery constituted pathway a, the connection between change in mastery and change in distress constituted pathway b, and the connection between condition and change in distress constituted pathway c'. The data for the independent variable took on the value 0 for ImRs-P and the value 1 for ImRs-A. Change in distress and change in mastery were computed by subtracting the ratings of T1 from T2.

Despite the identification of one outlier, its removal was not supported, as no bias in the data was detected. A bootstrapped 95% confidence interval will be given for the indirect effect of the mediation analysis, namely the influence of condition on change in distress through change in mastery.

Before performing a mediation analysis, several assumptions were tested. Normality was ensured by employing the bootstrapping method with 5000 samples. The multicollinearity assumption was met (VIF < 10). Robust standard errors with the HC4 option in PROCESS were used to address homoscedasticity violations. Visual inspection of the linearity assumption indicated possible violations. However, this was attributed to the categorical nature of the IV (condition) rather than reflecting a true violation.

Results

The study assessed whether the experimenters adhered to the protocol of the condition their participants were allocated to. In 41 out of 44 ImRs sessions, the experimenters adhered to the protocol. However, one example of deviations from the script occurred when a participant in the passive-participant guided condition stated that they themselves needed to intervene, although the protocol required them to remain passive. However, as these were only slight deviations, they were retained within the dataset.

Both repeated measures ANOVA's included $N = 40$ participants for all three time points (T1, T2, T3). The mediation analysis included a sample of $N = 44$ participants. The descriptive statistics of distress for T1, T2 and T3 are displayed in Table 2.

Table 2

Descriptive statistics of measures of distress

	Mean	Standard Deviation	Minimum	Maximum
T1 distress	58.37	18.96	20	95
T2 distress	23.00	17.53	0	70
T3 distress	20.85	23.23	0	92

Note. $N = 40$ for T1, T2 and T3

The repeated measures ANOVA revealed a significant main effect of time on distress, $F(2, 78) = 49.211$, $p = <.001$. The effect size calculated as eta squared (η2) was .558, indicating a large effect. Post-hoc pairwise comparisons using Bonferroni adjustment revealed that distress was significantly lower at T2 compared to T1($p < .001$). Additionally, distress was significantly lower at T3 than at T1 ($p < .001$). However, no significant difference between

distress at T2 and distress at T3 (p = 1) was found, meaning that distress did not significantly decrease from T2 to T3. A second repeated measures ANOVA was performed to evaluate the effect of time on mastery. The descriptive statistics of mastery for T1, T2 and T3 are displayed in Table 3.

Table 3

Descriptive statistics of measures of mastery

	Mean	Standard Deviation	Minimum	Maximum
T1 mastery	36.62	29.36	0	90
T2 mastery	70.80	21.38	20	100
T3 mastery	63.40	24.37	9	100

Note. N = 40 for T1, T2 and T3

Mauchly's test indicated that the assumption of sphericity has been violated and therefore degrees of freedom were corrected using Greenhouse-Geiser estimates of sphericity (ε = .830, $\chi 2$ (2) = 8.717, p = .013). The effect of time on mastery was significant (F (1.660, 64.731) = 39.800, p <.001). The effect size calculated as eta squared ($\eta 2$) was .505, indicating a large effect.

Post-hoc pairwise comparisons using Bonferroni adjustment revealed that mastery was significantly higher at T2 compared to T1 (p < .001). Additionally, mastery was significantly lower at T3 than at T1 (p < .001). However, no significant difference between mastery at T2 and mastery at T3 (p = .053) was found, meaning that mastery did not significantly further increase from T2 to T3.

Contrary to hypothesis two, the total effect model was not significant (F (1,42) = 1.199, p = .280, R^2 = 0.029), suggesting that condition and change in distress were not significantly associated with each other (b = 7.917, 95% CI [-6.076, 22.509], t (42) = 1.095, p = 0.280). Pathway c was not significant, suggesting that being in ImRs-P or ImRs-A did not have a statistically significant impact on reducing distress (see Figure 1). Moreover, the model including the relationship between change in mastery and change in distress was not significant (F (2-41) = 3.035, p = 0.059, R^2 = 0.200).

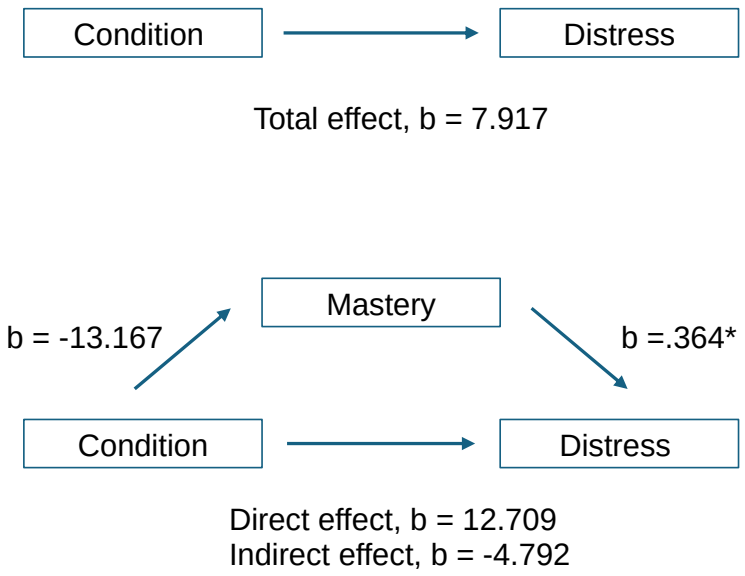
Supporting hypothesis three, change in mastery positively predicted change in distress while controlling for condition (b = .364, t (41) = 2.374, p = 0.022). Pathway b was significant, suggesting that increased mastery led to a reduction of distress.

The direct effect between condition and change in distress showed that the condition was not significantly associated with change in distress (b = 12.709, 95% CI [-2.463, 27.881], t (41) = 1.872, p = 0.098). Pathway c' was not significant. There was no evidence of a direct relationship between condition and change in distress after accounting for change in mastery as a mediator, meaning that mastery did not play a significant role in explaining the relationship between condition and change in distress.

Contrary to hypothesis four, the indirect effect between condition and change in distress through change in mastery did not yield a significant result (b = -4.792, 95% CI [-11.854,1.334]). Pathway a*b was not significant, suggesting that the prediction that change in mastery mediates the relationship between condition and change in distress is not supported. Figure 2 offers a visual overview of the described pathways and their significance.

Figure 2

Pathways



Note. beta coefficients and significance of the pathways; *p <.05.

Discussion

The present study examined whether mastery is a potential mechanism underlying ImRs. Additionally, the study compared the effectiveness of ImRs-P and ImRs-A on change in distress and whether change in mastery mediated this relationship. Results indicated a significant improvement in distress and mastery over time, thereby partially supporting hypothesis one. Both distress and mastery significantly improved from T1 to T2, but not from T2 to T3. ImRs-P and ImRs-A did not significantly differ in reducing change in distress, implying that both are equally effective and therefore not supporting hypothesis two. Hypothesis three was supported, as change in mastery was associated with change in distress.

Lastly, hypothesis four was not supported, as change in mastery did not mediate the effect of condition and on change in distress.

Distress and mastery

Consistent with findings by Strohm et al. (2019), the present study showed significant improvements in distress and mastery over time, suggesting a time effect of ImRs (hypothesis one). These findings indicate that ImRs might work by creating a positive representation of the memory that competes with the original aversive memory (Brewin, 2006), which could be consistent with the inhibitory learning model (Strachan et al., 2020). Additionally, these findings show lasting effects of ImRs for up to four days. The long-term effect of therapeutic interventions is of particular importance, as mental disorders are highly prevalent and costly (Leichsenring et al., 2019). Previous studies included a one-week follow-up, revealing that distress reduction and mastery increases remained (Çili et al., 2017; Strohm et al., al 2019). Studies involving clinical sample, which included longer follow-up periods ranging from 3 months to 12 months, showed that symptom reduction maintained (Morina et al., 2017). Additionally, the present study found an association between change in mastery and reduced change in distress (hypothesis three). A possible explanation for this finding is that mastery experiences could be linked to adaptive functions such as increased coping capability and thereby reducing distress (Raeder et al., 2019).

ImRs-P and ImRs-A

Clinicians and researchers apply ImRs using different procedures, and it is crucial to explore different variations of ImRs to understand which processes underlie effective treatment (Bosch & Arntz, 2023). Contrary to Siegesleitner et al (2020), the present study did not find that ImRs-P led to significantly lower change in distress than ImRs-A (hypothesis two), however differences in results might arise from the present study's focus on autobiographical memories instead of using the TFP (Siegesleitner et al., 2020). A possible explanation for the

lack of significant difference in conditions on change in distress in the present study is that symptom reduction may be achieved through factors that are common in both conditions. For instance, a positive therapeutic relationship, encouragement, and support from the therapist are essential factors for change in therapy (Bosch & Arntz, 2023). It is possible to foster these factors during both ImRs-P and ImRs-A (Bosch & Arntz, 2023), which might explain why the present study did not find a significant difference. An alternative explanation could be that although it was expected that ImRs-A is more effective than ImRs-P in reducing change in distress, the active participation required in ImRs-A might have resulted in higher distress levels contrary to ImRs-P. If this was the case, it could explain why no significant difference was found between conditions. In accordance with this explanation, Siegesleitner et al. (2020) found that participants reported ImRs-P being less distressing than ImRs-A and attributed this difference to the active participation in ImRs-A (Siegesleitner et al., 2020).

Contrary to expectations, no mediating effect of change in mastery nor a difference between ImRs-P and ImRs-A was found (hypothesis four). One possible explanation is that both conditions increased change in mastery equally, suggesting that differentiating between conditions is not needed. The absence of significant differences between the two conditions on change in mastery aligns with the findings of Siegesleitner et al. (2020). A possible explanation for ImRs-P enhancing mastery similarly to ImRs-A is that social modelling, which may promote observational learning (Bandura, 1999), is sufficient to enhance mastery. Suggesting that watching someone intervene is sufficient to enhance mastery.

Limitations

Some limitations need to be considered. The sample consisted of healthy, predominantly female, students aged 18-38. Therefore, the results cannot be generalized to clinical or more heterogeneous samples. The chosen autobiographical memory was non-traumatic, and no distress threshold was used when recruiting people; thus, associated distress might have been

too low, leading to a floor effect. The memory's hotspot was included to make sure that the memory elicited enough distress since the study only included a non-clinical sample. However, whether the hotspot should be included remains unclear. In a clinical sample, focusing on the memories leading up to the hotspot, might activate enough emotional arousal (Arntz & Weertman, 1999). Moreover, the study only included life events within the past 24 months, limiting the generalizability of the results to older memories which are less prone to change than more recent memories (Alberini, 2011). The study's design did not include a control condition. Therefore, it is possible that factors other than ImRs were responsible for the observed changes.

Strengths and clinical implications

Despite these limitations, several strengths of the current study need to be highlighted. The study expands previous research on underlying mechanisms of ImRs by investigating the effect of different ImRs conditions on change in mastery and change in distress. Moreover, the use of aversive autobiographical memories, instead of the TFP is a considerable strength. Additionally, the study is the first to investigate whether change in mastery serves as a mediator in the relationship between ImRs and change in distress and whether there is a difference between ImRs-P and ImRs-A.

The present study's results offer potential implications. Given that change in mastery did not mediate the relationship between ImRs conditions and change in distress differently, and since no significant difference was found between the conditions on change in distress, the results suggest that patients can flexibly choose their role during rescripting. Involving clients in the decision-making during therapy leads to better treatment outcomes (Gerger et al., 2020). Besides the crucial aspect may not be the specific role the client takes on, but rather whether they experience a positive therapeutic relationship, feel supported, and whether their needs are met (Bosch & Arntz, 2023). Therapists should prioritize fostering these aspects instead of

focusing on which role the patients should take on. Additionally, Siegesleitner et al. (2020) found that participants perceived the active contribution as more stressful than the passive participation in ImRs (Siegesleitner et al.,2020). Hence, for patients with high distress levels and who feel uncomfortable taking on an active role, choosing a passive role may be a more suitable option.

Based on the findings that change in mastery is associated to change in distress, there should be a focus on increasing the client's mastery during ImRs. Conversely, when a patient does not report a reduction of distress after the ImRs session, the therapist should inquire whether the client perceived a sense of mastery over the rescripted situation. If a lack of mastery is identified, the therapeutic focus should be on enhancing mastery.

Future research

Firstly, more research is needed to investigate the difference between ImRs-P and ImRs-A using autobiographical memories and whether the results of the present study are replicable. Secondly, future studies should include a memory above a certain distress threshold, to overcome a floor effect. Thirdly, comparisons between ImRs and other interventions, such as EMDR and control conditions, need to be included (e.g., to control for interaction with the experimenter and the duration of exposure to the memory content). Moreover, more extended follow-up periods should be included to determine the duration of the effect on mastery and distress. Lastly, future studies should examine under which conditions ImRs creates alternative positive representations best (e.g., Does the hotspot need to be included? How long should the reactivation be?) (Dibbets & Arntz, 2016).

Conclusion

In conclusion, the present study supports the claim that ImRs reduces distress and enhances mastery, showing a positive effect on aversive autobiographical memories. The study underscores the importance of further research to compare ImRs-P versus ImRs-A and further

investigate underlying mechanisms and conditions that contribute to its therapeutic effect. By gaining a deeper understanding of these mechanisms, treatment protocols can be optimized, leading to better treatment outcomes.

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Appendix

Data collection

To help recruit participants, I distributed flyers at the university, shared our flyer via online platforms (Instagram and WhatsApp groups) and texted friends and family and asked them to share it. Additionally, I recruited people directly in person between lectures, during working groups, and in various study areas at the university.

I uploaded multiple questionnaires onto Qualtrics. As a group, we applied for two labs and created a shared email account and Google calendar, where everyone uploaded their availabilities for lab sessions. I uploaded our study to the Sona system and synchronized everyone's availabilities from our google calendar onto Sona. I reached out to participants via the shared email account to schedule lab sessions, answer any questions they had and sent out all required questionnaires (between lab sessions). I was in contact with the ethics committee regarding the possibility to also offer our lab sessions online. I tested 10 participants in total. Sarah and I transferred all the data from lab visit 1 and 2 (which was on paper) into SPSS. Lastly, I helped set up the final dataset.