

Examining the effects of perspective taking, taking revenge, and distraction on state anger using the autobiographical essay memory task

Thomas DiBlasi¹

Abstract

Anger is a fundamental emotion that relates to many negative outcomes, including revenge. As such, it is important to examine effective approaches to increase state anger, such as the autobiographical essay memory task (AEMT), in order to identify effective approaches to decrease state anger in vengeful episodes. Using a mixed design, 107 undergraduate participants ($M_{\text{age}} = 19.13$, $SD = 1.04$) who predominately identified as females ($N = 64$) and Caucasian (70%) were randomly assigned to one of three conditions: perspective taking, taking revenge via a voodoo doll (catharsis hypothesis), and control (i.e., distraction). Participants were asked to complete the AEMT, which required participants to write about a time they were angry and wanted revenge. A repeated measures ANOVA showed a significant main effect of time on state anger. Participants reported increased state anger post-AEMT (manipulation check) compared to baseline, and reported decreased state anger in the taking revenge and control (distraction) conditions post-intervention, but not in the perspective-taking condition. Implications are discussed, including how the AEMT can be effective in increasing state anger, how distraction can be an effective intervention, adding to the research on the catharsis hypothesis, and how to improve research on perspective-taking.

Keywords: state anger; revenge; AEMT; perspective taking; catharsis.

¹ Long Island University, Brookville, NY, USA. Email: thomas.diblas@liu.edu. ORCID: <https://orcid.org/0000-0003-0456-1000>.

Analisando os efeitos da tomada de perspectiva, vingança e distração no estado da raiva usando a tarefa de memória de ensaio autobiográfico

Resumo

A raiva é uma emoção fundamental que se relaciona com muitos resultados negativos, incluindo a vingança. Sendo assim, é importante examinar abordagens eficazes para aumentar o estado de raiva, como a tarefa de memória de ensaio autobiográfico (TMEA), a fim de identificar abordagens eficazes para diminuir o estado de raiva em episódios de vingança. Utilizando um desenho misto, 107 participantes de graduação (Média de idades = 19,13, $DP = 1,04$), predominantemente mulheres ($N = 64$) e caucasianos (70%), foram aleatoriamente alocados a uma de três condições: tomada de perspectiva, vingança através de um boneco vudu (hipótese da catarse) e controle (i.e., distração). Os participantes foram convidados a preencher a TMEA, que exigia que escrevessem sobre um momento em que sentiram raiva e desejaram vingança. Uma ANOVA de medidas repetidas mostrou um efeito principal significativo do tempo no estado de raiva. Os participantes relataram um aumento da raiva situacional após a AEMT (verificação da manipulação) em comparação com o valor inicial, e relataram uma diminuição da raiva situacional nas condições de vingança e controle (distração) após a intervenção, mas não na condição de tomada de perspectiva. São discutidas as implicações, incluindo como a AEMT pode ser eficaz no aumento da raiva situacional, como a distração pode ser uma intervenção eficaz, contribuindo para a investigação sobre a hipótese da catarse, e como melhorar a investigação sobre a tomada de perspectiva.

Palavras-chave: Raiva situacional; vingança; AEMT; tomada de perspectiva; catarse.

INTRODUCTION

Anger is a universal emotion that involves increased autonomic arousal; thoughts of revenge, blaming, and demandingness; and an increased likelihood of verbal and physical aggression (Kassinove & DiBlasi, 2017; Kassinove & Tafrate, 2019). In a survey of nearly 34,000 community participants, 7.8% of adults reported “dysfunctional anger” (Okuda et al., 2015), and in semi-structured interviews of 1,300 psychiatric patients, approximately half of the sample reported moderate to severe subjective anger. This makes anger a more common issue than initially conceived (Posternak & Zimmerman, 2002). Additionally, anger is most likely to be triggered by people an individual likes or loves (e.g., romantic partner, family; Kassinove et al., 1997). All of this to say that dysfunctional anger is a common issue in society and is associated with many negative outcomes.

Anger has many negative effects on physical and behavioral health. It can lead to increased risk of coronary heart disease (Williams et al., 2000) and impaired sleep (Krizan & Hisler, 2019). Additionally, trait anger is associated with increased impulsiveness (DiBlasi & Kassinove, 2018), road rage (Deffenbacher et al., 2003), resentment (DiBlasi & Kassinove, 2025), and substance use (Tafrate et al., 2002). Additionally, dysfunctional anger is related to greater psychological disorder severity and comorbidity (Cassello-Robbins & Barlow, 2016).

In terms of physical aggression, anger leads to physical aggression 10% of the time (Averill, 1983; Kassinove et al., 1997). Cornell et al. (1999) found that trait anger is a predictive factor of physical aggression ($r = 0.28$) and verbal aggression ($r = 0.35$) for incarcerated male adolescents. In the landmark MacArthur study, Monahan et al. (2001) found that patients who reported high trait anger were more than twice as likely to engage in community violence post-discharge than patients who reported low trait anger at 20 weeks and one year post-discharge. Additionally, in a meta-analysis of 61 studies, anger has a moderate relationship to domestic violence (Birkley & Eckhardt, 2015). Clearly, anger can lead to many negative outcomes and has even been identified as a risk factor for criminal recidivism (Bonta & Andrews, 2023; Tafrate et al., 2018).

Importantly, anger management therapy tends to be effective. Lee and DiGiuseppe (2018) conducted a review of 21 meta-analyses and found effect sizes for anger management range between moderate ($d = 0.54$) and large ($d = 1.52$), with a mean of approximately 0.71 (Lee & DiGiuseppe, 2018). However, anger management treatment is not as effective as treatments for anxiety and depression, which have an effect size over 1.0 and in some cases, greater than 2.0 (Chambless & Gillis, 1993; Cuijpers et al., 2020; Gaffan et al., 1995). Moreover, anger management therapy has also been shown to be ineffective at times, demonstrating a need to improve it

(Sharry & Owens, 2000; Watt & Howells, 1999). One reason for this discrepancy is that anger is under-researched. For every one article published on anger between 1980 and 1995, there were seven on anxiety and ten on depression (Kassinove & Sukhodolsky, 1995). More than 25 years later, this ratio has not improved. For every one article published on anger between 1996 and 2021, there were nearly eight on anxiety and ten on depression (DiBlasi & Sinn, 2024). The dearth of research makes it difficult to develop more effective interventions, such as perspective taking. This is especially concerning given that psychologists and psychiatrists are just as likely to see angry clients as anxious clients in their practice (Lachmund et al., 2005). One way to improve anger management could be to research anger and vengeful episodes.

Revenge is a retaliatory behavior following a perceived harm to one's well-being (Elshout et al., 2015). The connection between anger and revenge is well established. Trait anger is associated with revenge (DiBlasi & Kassinove, 2018) and is a commonly experienced emotion in vengeful episodes. In a survey of 458 MTurk participants, 81% reported feeling angry, and 83% reported feeling annoyed prior to taking revenge (DiBlasi & Kassinove, 2021). In a similar study, DiBlasi et al. (2024b) found that 69% of 184 male prisoners reported feeling angry and 33% reported feeling annoyed, again, before taking revenge. Additionally, in a study of 300 adult participants, DiBlasi et al. (2024a) found that thoughts of revenge were more likely to be endorsed by participants who were angry and engaged in physical aggression than by participants who were angry and did not engage in physical aggression. Clearly, revenge episodes tend to involve anger and could be a factor in anger leading to physical aggression. Thus, focusing on decreasing anger in vengeful episodes might improve anger management outcomes.

One way to do this is to experimentally evoke state anger in a lab setting. There are only a few effective approaches to doing this, but one way is to use the Autobiographical Essay Memory Task (AEMT). Participants are directed to write about a specific memory that triggers a specific emotion (e.g., anger, anxiety). The goal is for the participant to describe the event with as much detail as possible and re-experience the emotions associated with the event (Mills & D'Mello, 2014). Measures are administered before and after recalling the memory.

Several studies have shown promising results regarding using the AEMT to evoke state anger (see Siedlecka and Denson (2018) for a review). Mills and D'Mello (2014) successfully evoked five emotions over two studies using the AEMT. One of the emotions was state anger, and in fact, the AEMT had a large effect size for eliciting state anger, $d = 1.08$. Additionally, DiBlasi and Sinn (2024) successfully evoked state anger ($N = 157$ MTurk participants) and also found the AEMT had a large effect size, $\eta^2 = 0.30$.

These studies suggest that the AEMT is an effective tool for evoking state anger; however, no study has examined the effect of the AEMT on state anger when prompting participants to recall a vengeful episode. This is especially important as anger and revenge are associated with one another (DiBlasi & Kassino, 2018), and thoughts of revenge in anger episodes are more present in anger episodes that lead to physical aggression than without physical aggression (DiBlasi et al., 2024a). These studies highlight the need to identify effective interventions in vengeful episodes. Also novel to this study, to the authors' knowledge, only DiBlasi and Sinn (2024) have used the AEMT to evoke state anger to examine interventions. As such, this study examined the effects of perspective taking, fulfilling revenge, and the control (distraction task) on state anger. Perspective taking has been identified as an effective approach to decrease state anger (Hotzoglou, 2018; Nakajima, 2014), as has enacting revenge (Chester & DeWall, 2017).

A recommended intervention for decreasing state anger is perspective taking (Kassino & Tafrate, 2019). Perspective taking has been shown to be effective for decreasing adolescents' state anger (Tejada, 2021), as well as adults' state anger while driving (Nemerovski, 2010), imagining a romantic partner engaging in infidelity (Hotzoglou, 2018; Nakajima, 2014), and related to imagining an individual robbing you (Goldman, 2020). Despite this, there are only a handful of studies that have examined the effect of perspective taking on state anger, and there has been a call to focus on perspective taking in anger management (Day et al., 2008). This is especially important as recent research on perspective taking has found it to be an essential process in general therapeutic success (Hayes et al., 2022). In a review of nearly 55,000 studies on psychological interventions, Hayes suggests that the most effective approaches in psychotherapy involve an element of perspective taking (e.g., psychological flexibility). As such, more research is needed to examine the effect of perspective-taking on state anger.

As stated above, there is a strong relationship between anger and revenge. Interestingly, previous research has found that fulfilling revenge against an individual's transgressor may lead to decreased negative mood (Gollwitzer & Bushman, 2012; Jackson et al., 2019). Across six studies, Chester and DeWall (2017) found that participants who took revenge against their transgressors were more likely to experience positive affect. Chester and DeWall (2017) examined this by having participants imagine a voodoo doll was their transgressor and counting the number of times they pierced it with pins. This approach was adapted from DeWall et al. (2013) and has shown excellent reliability over time, as well as being consonant with other measures of aggression (Bushman et al., 2014; DeWall et al., 2013). Also stated above, DiBlasi and Kassino (2021) and DiBlasi et al. (2024b) found that MTurk participants and male prisoners were both more likely to report increased

positive mood and decreased state anger after enacting revenge, further supporting Chester and DeWall's (2017) studies. Chester and DeWall (2017, p. 413) labeled this phenomenon as "the desire to return to affective homeostasis." These surprising results contradict the idea that negative affect would follow aggression (Bushman, 2002). In fact, there are several studies that suggest engaging in aggression can provide a cathartic relief, which may be helpful in decreasing anger (Goldner et al., 2019; Haen & Weber, 2009). Contrary to this, there are several other studies that found engaging in catharsis and acting aggressively may lead to increased anger (Bushman, 2002; Bushman et al., 2001; Twardawski et al., 2024). As such, it is important to replicate these findings and examine whether taking revenge via a voodoo doll decreases or increases state anger.

Given previous research, the three primary research inquiries are: Can the AEMT be replicated as an effective tool to evoke state anger? Is perspective-taking effective for decreasing state anger? Is taking revenge effective for decreasing state anger? A three (condition) by three (time) mixed design was used. It was predicted that participants would report increased state anger post-AEMT compared to baseline, regardless of condition. It was expected that participants in the perspective-taking, fulfilling revenge, and control (i.e., a distraction task) conditions would report decreased state anger post-intervention (i.e., after participants received one of the three conditions). It was hypothesized that participants in the perspective-taking group would report significantly less state anger post-intervention than participants in the control group and the fulfilling-revenge group. Additionally, participants in the fulfilling revenge group were expected to report significantly less state anger post-intervention than participants in the control group.

METHOD

Participants

Using G*Power analysis and anticipating an effect size of 0.25, 102 participants were needed. The sample consisted of 107 undergraduate psychology students from a liberal arts university in the Northeast of the United States. The average age of participants was 19.13 years ($SD = 1.04$) and ranged between the ages of 18 and 22 years old. Participants consisted of 60% female ($N = 64$) and 40% male. Seventy percent of participants identified as Caucasian, 2% Asian, 8% Black, and 20% Latinx. Undergraduate students received class credit for participating in the experiment, but did not receive financial compensation. There were no specific exclusionary criteria, including psychopathology. The author wanted to maintain a representative

sample of the population and did not want to exclude participants who may have had elevated levels of trait anger. No participants were excluded from the study.

Design

A mixed-model three (condition) x three (time) design was used. Participants were randomly assigned to one of three conditions and had an equal chance of being in the three conditions: the perspective-taking exercise, the fulfilling-revenge condition, and the control group. Participants in the perspective-taking exercise were asked to reflect on their transgressors' point of view. Participants in the fulfilling revenge condition were given an online virtual voodoo doll and told to imagine the voodoo doll as their transgressor and to take revenge on their transgressor by sticking the voodoo doll with pins. Lastly, participants in the control group wrote about the weather patterns during the past week. State anger was measured using the State Anger Scale (SAS) from the State-Trait Anger Expression-2 (Spielberger, 1999) via Qualtrics. The SAS was administered three times: prior to writing out the event in which they wanted revenge (as a baseline), directly after writing out the event in which they wanted revenge (as a manipulation check), and after completing their assigned condition (as a measure of the dependent variable).

Measure

State-Trait Anger Expression- 2

The State-Trait Anger Expression-2 (Spielberger, 1999) was used to measure the participants' anger. The survey is coded on a four-point Likert scale, ranging from one (not at all) to four (very much so). This questionnaire comprises five subscales: State Anger, Trait Anger, Anger-in, Anger-out, and Anger Control. For the purpose of this study, only the State Anger and Trait Anger Scales were used. The State Anger Scale (SAS) consists of 15 items that measure one's current anger. The Trait Anger Scale (TAS) is a compilation of 10 items that measure an individual's proclivity to become angry. Spielberger (1999) found the internal consistency to range from acceptable to good ($\alpha = .75$ to $\alpha = .82$). In this study, the internal consistency for trait anger, SAS at time one, SAS at time two, and SAS at time three were all good to excellent, $\alpha = .84$, $\alpha = .90$, $\alpha = .94$, and $\alpha = .98$, respectively.

Procedure

Participants completed an informed consent, a demographics questionnaire, the TAS, and the SAS. Following the autobiographical essay memory task (AEMT)

design, participants received instructions (adapted from DiBlasi & Sinn, 2024; Fredrickson et al., 2000; Magai et al., 2006) to write about an event in which they sought revenge.

For the next 10 minutes, please write about a time when you felt so angry that you wanted to take revenge on someone. Write about the situation, put yourself back into it as though you are just now experiencing it. Where did this incident take place? Who was you with? Consider how you felt wanting to take revenge against this person. It is very important to write down the event with as much detail as possible, exactly as you remember it.

Participants were given the SAS again as a manipulation check. Upon completing the SAS, participants in the control group were asked to write about the weather:

For the next 10 minutes, please write down your recollection of weather patterns that you have experienced in the past week. Describe the weather conditions of each day. Was there an influx of rainfall or sunshine? Did the temperature remain consistent or change frequently? How did the weather differ from last month's patterns of weather? Describe as many details of this past week's weather as possible.

Participants in the perspective-taking condition were asked to write about the transgressors' point of view and received the following prompt:

For the next 10 minutes, please refer to the incident which you have previously described. Reflect on the person you wanted to take revenge on by taking their perspective. Please describe this event using their point of view on what happened and how they must have felt. Try to consider the other person's thoughts and actions in this particular situation. Think about why they engaged in that behavior and why it made sense for them in that moment. Write the incident in the first-person of the person who offended you. Using keywords such as, "I, we, and my." For example, "I was upset and took my anger out on my brother, which caused him to snap back at me."

Participants in the fulfilling revenge condition were asked to engage in the following activity, modified from previous research (Chester & DeWall, 2017; DeWall et al., 2013). Participants received a website link [<https://www.ufreegames.com/play/virtual-voodoo-doll.html>] which contained a virtual voodoo doll. Participants were given the following instructions:

For the next 10 minutes, refer to the voodoo doll web link. Imagine the voodoo doll represents your transgressor mentioned in the incident previously. This platform allows you to take revenge on your transgressor by sticking pins into the doll, you may stick as many pins into the doll as needed. Record the number of pins you stuck into the doll after you have taken revenge.

Upon the completion of each given exercise, participants once again completed the SAS to measure the efficacy of each condition. Finally, participants were debriefed about the study.

Validity Checks

This study included several validity checks. The first one was the comparison of state anger at time two compared to time one. This examines whether the AEMT was successful in increasing state anger. Additionally, open-ended responses from the perspective-taking and the control groups were scanned to ensure they participated in the study. Unfortunately, participants in the fulfilling revenge condition could not be monitored. There was concern that being physically present in the room with the participant while they enacted revenge against the voodoo doll would affect the results.

RESULTS

Participants were randomly assigned to one of three conditions: perspective-taking, fulfilling revenge, or a control group. Participants did not differ on trait anger ($F(2, 104) = 1.04, p = .36$), indicating participants were just as likely to become angry across conditions. See Table 1 for means and standard deviations for state anger by condition. Additionally, conditions did not differ by age ($F(2, 104) = 0.89, p = .41$), sex ($F(2, 104) = 0.90, p = .41$), or race ($F(2, 104) = 0.38, p = .68$).

Table 1
Descriptive Statistics for State Anger by Condition

Time by Condition	<i>M</i>	<i>SD</i>	<i>N</i>
State Anger at Baseline (time one)			
Perspective Taking	15.85	2.04	31
Taking Revenge	17.79	5.68	44
Control	16.21	1.92	44
Total	16.62	3.81	107

Note: State anger broken down by condition and time.

Table 1 (Continuation)*Descriptive Statistics for State Anger by Condition*

Time by Condition	<i>M</i>	<i>SD</i>	<i>N</i>
State Anger Post-AEMT (time two)			
Perspective Taking	19.73	7.81	31
Taking Revenge	21.90	9.50	44
Control	19.45	4.48	44
Total	20.36	7.78	107
State Anger Post-Intervention (time three)			
Perspective Taking	20.88	10.70	31
Taking Revenge	19.40	8.99	44
Control	16.07	1.85	44
Total	18.78	8.66	107

Note: State anger broken down by condition and time.

A mixed-model for repeated measures ANOVA was conducted to examine the main effects of time and intervention on state anger, as well as the interaction effect between time and intervention. Mauchly's Test of Sphericity was violated ($W = .89$, $\chi^2(2, N = 104) = 12.23$, $p = .002$), thus, the Greenhouse-Geisser correction was applied.

Main Effect of Time

As hypothesized, there was a significant difference across the three time points, $F(1.80, 187.06) = 14.23$, $p < .001$, $\eta^2 = .12$. Post-hoc analyses were conducted using the Least Significant Difference (LSD). Participants reported higher levels of state anger after completing the AEMT (time two) compared to baseline (time one), $p < .001$. Once the AEMT was completed, participants received an intervention. Participants indicated lower levels of state anger post-intervention (time three) compared to post-AEMT (time two), $p = .01$; however, participants post-intervention (time three) still reported higher levels of state anger compared to baseline (time one), $p < .01$ (see Table 1).

Main Effect of Intervention

As hypothesized, there was not a significant difference between interventions on the average of state anger across all three time points, $F(2, 104) = 1.57$, $p = .21$.

Interaction between Time and Intervention

Consonant with the hypothesis, there was a significant interaction between time and intervention ($F(3.60, 187.06) = 2.95, p = .03, \eta^2 = 0.05$); as such, post-hoc analyses were conducted.

State Anger at Baseline

As expected, there was no interaction between time and intervention on state anger measured at baseline, but it did approach significance, $F(2, 104) = 2.88, p = .06, \eta^2 = 0.05$. Additionally, there was not a significant difference between participants' state anger at baseline in the perspective-taking and the revenge conditions, but it also approached significance ($p = .07$).

State Anger Post-AEMT

Consistent with the hypothesis, no interaction effect was observed between time and intervention on state anger measured post-AEMT, $F(2, 104) = 1.07, p = .35, \eta^2 = 0.02$.

State Anger Post-Intervention

Interestingly, there was no significant interaction effect between time and intervention on state anger post-intervention, $F(2, 104) = 2.73, p = .07, \eta^2 = 0.05$. However, the difference between participants' state anger post-intervention for the control and the perspective-taking conditions did approach significance ($p = .07$).

Perspective-Taking

As expected, participants in the perspective-taking condition reported a significant increase in state anger from baseline (time one) to post-AEMT (time two), $p = .002$. Contrary to the hypothesis, participants did not report a significant decrease in state anger post-AEMT (time two) and post-intervention (time three), $p = .74$. Moreover, participants reported significantly higher levels of state anger between baseline (time one) and post-intervention (time three), $p < .001$. This implies that participants' state anger increased post-AEMT, was sustained post-intervention, and was greater than that of baseline.

Revenge

Congruent with the hypothesis, participants in the revenge condition reported a significant increase in state anger from baseline (time one) to post-AEMT (time

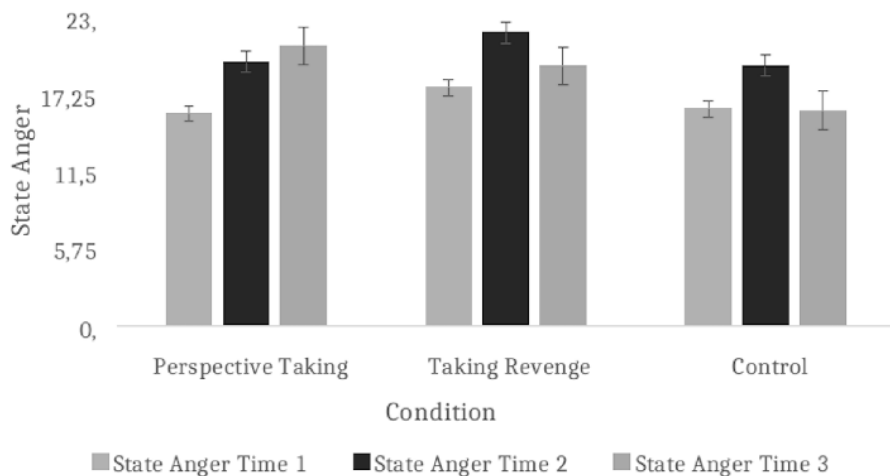
two), $p = .001$. Additionally, participants reported a significant decrease in state anger post-AEMT (time two) and post-intervention (time three), $p = .045$. Similar to the control group, participants did not report a significant difference between baseline (time one) and post-intervention (time three), demonstrating that participants' state anger post-intervention was similar to that of baseline, $p = .71$.

Control

Participants in the control condition reported a significant increase in state anger from baseline (time one) to post-AEMT (time two), $p = .04$. Additionally, they reported a significant decrease in state anger post-AEMT (time two) and post-intervention (time three), $p = .01$. Importantly, participants did not report a significant difference between baseline (time one) and post-intervention (time three), indicating that participants' state anger post-intervention was similar to that of baseline, $p > .99$ (see Figure 1).

Figure 1

State Anger by Condition over Time



Note: This figure represents state anger by condition measured over time.

DISCUSSION

The current study replicated the effect of the AEMT on evoking state anger. Participants in the perspective-taking condition did not report decreased state anger post-intervention compared to post-AEMT. However, participants in the fulfilling

revenge and the control (i.e., distraction) conditions reported decreased state anger post-intervention (time three) compared to post-AEMT (time two). Additionally, participants in the fulfilling revenge and the control (i.e., distraction) conditions did not report significantly more state anger post-intervention (time three) compared to baseline (time one). This means that the intervention was successful in decreasing state anger back to baseline levels.

AEMT

Consonant with the hypothesis and previous findings, the AEMT was effective in evoking state anger (DiBlasi & Sinn, 2024; Hung & Bryant, 2016; Yang et al., 2017; Zhang et al., 2021). This is especially important as participants were recalling a memory in which participants wanted revenge, which is novel to this study. Given that thoughts of revenge were more common in anger episodes with physical aggression than without physical aggression (DiBlasi et al., 2024a), it is especially important to decrease state anger in these episodes. Future research could expand on this study by using the AEMT to specifically examine effective approaches to decrease revenge, not just anger, in vengeful episodes. As of right now, there are few interventions that focus on decreasing revenge (Goldman, 2020; Hotzoglou, 2018; Nakajima, 2014), and thus, no comprehensive treatment approach to target it. Future research could examine the effect of the AEMT on state revenge to then test effective interventions.

Perspective-Taking

Inconsistent with the hypothesis, perspective-taking was not effective in decreasing state anger. This is inconsistent with several studies that have found perspective taking does lead to decreased state anger (Hotzoglou, 2018; Nakajima, 2014). One potential reason for this is that participants continued to ruminate instead of engaging in perspective-taking. A cursory review of the participants' responses supported this claim; although, their responses were not coded. Other studies have found that anger negatively impacts an individual's ability to engage in perspective-taking (Lee, 2022; Yip & Schweitzer, 2019), which is consistent with Lerner and Tiedens' (2006) work. They found that when an individual is angry, they are more likely to engage in tunnel vision and focus on the perceived threat, and less likely to focus on other stimuli or alternative explanations. It could be that participants struggled to think from the transgressors' perspectives and instead continued to view it from their own perspectives, leading to continued rumination. Moreover, previous research has found that rumination leads to sustained or increased state anger (Anderson & Bushman, 2002; Denson et al., 2011; DiBlasi &

Sinn, 2024), which would explain why participants reported sustained state anger post-intervention. Future research would benefit from examining the moderating variables between state anger and perspective taking, and ensuring that participants do in fact engage in perspective-taking.

The finding that perspective-taking was not effective in decreasing state anger is important given that Day et al. (2008) called for more anger management programs to include perspective-taking as part of treatment. More generally in the clinical field, perspective-taking has been identified as an essential process in psychotherapy (Hayes et al., 2022). As mentioned above, several studies (Hotzoglou, 2018; Nakajima, 2014) have found perspective-taking to be effective for decreasing state anger. As such, there are likely moderating variables associated with the efficacy of perspective-taking on decreasing state anger. These moderating variables may account for why anger management outcomes are lower compared to anxiety and depression (Chambless & Gillis, 1993; Cuijpers et al., 2020; Gaffan et al., 1995). Since perspective taking is a central component of psychotherapy treatment and does not appear to universally be effective for anger management, future research would benefit from identifying the moderating variables associated with perspective taking and anger, which would improve anger management outcomes.

Revenge

As expected, participants who took revenge reported decreased state anger post-intervention compared to post-AEMT, and returned to baseline levels of state anger. This is consonant with previous research showing that taking revenge can decrease negative affect (Chester & DeWall, 2017; Gollwitzer & Bushman, 2012; Jackson et al., 2019), and is inconsistent with the idea that negative affect follows aggression (Bushman, 2002; Bushman et al., 2001; Twardawski et al., 2024). This research does not necessarily support the catharsis hypothesis, which can be iatrogenic (Bushman, 2002). Instead, it could be that while taking revenge may immediately decrease state anger, it could lead to increased classical conditioning to be aggressive when angry, increased anger episodes, and/or higher levels of state anger in future anger episodes. Future research would benefit from examining the long-term effects of taking revenge. Given these possibilities, taking revenge, even if via a voodoo doll, is not recommended as a treatment option at this time.

Control

Interestingly, the control group also reported decreased state anger post-intervention, and it was just as effective as taking revenge. It is possible that the control group was unintentionally therapeutic by offering a distraction (i.e., writing about

the weather). Previous research has shown that distraction tasks can decrease state anger (Bushman et al., 2005; Denson et al., 2009; DiBlasi & Sinn, 2024). In fact, one study found that distraction was more effective in decreasing state anger than cognitive reappraisal (Offredi et al., 2016), and another found it was just as effective as Rational Emotive Behavior Therapy (REBT; DiBlasi & Sinn, 2024). Despite this, distraction is not often recommended in anger management manuals, or only briefly so (Kassinove & Tafrate, 2019). Thus, clinicians may in fact be missing an important intervention, especially when compared to other approaches such as REBT - which may require more cognitive load and be more for clients to do when angry. Thus, taking this study and other studies into account, distraction may be a recommended short-term intervention for anger management, even if only because distraction prevents and decreases state anger. A caveat, distraction may be helpful in decreasing state anger, but it may not be helpful in decreasing trait anger. Future research should examine this further.

Although distraction may be an effective tool to decrease state anger in vengeful episodes, it makes it difficult to compare the efficacy of the experimental conditions. As such, it is a limitation of this study. It is difficult to imagine a control group that does not utilize distraction in some form, but future research would benefit from designing a new control task.

Limitations and Future Directions

Demand characteristics may have impacted the results. Since state anger was measured via self-report, participants may have reported increased state anger simply based on expectancy effects. Future studies may include procedures to evaluate potential effects of demand characteristics as recommended by Orne (1969). Additionally, most of the participants were white women, limiting external validity. Future studies could diversify the sample.

Related to the AEMT, the specific memories recalled were not analyzed. It could be that some participants were better able to recall the memories, due to how recent the event was or the level of emotion aroused, and thus, more likely to relive the experience. Although the accuracy was not assessed, participants across all three conditions did not differ on state anger post-AEMT. Meaning, the effect was the same across conditions.

A limitation specific to this study is that one condition had 31 participants (i.e., perspective-taking) and the other two had 44. This is because the random number generator that was used to randomly assign participants to conditions was incorrectly programmed. Although importantly, all three conditions were appropriately

powered to detect results. Future research should replicate these findings with conditions having the same number of participants per group.

Moreover, each condition was presented with a single, ten-minute-long intervention. It is possible that the length of the intervention may have impacted the results, especially for participants in the taking revenge condition. Since revenge can lead to a bittersweet feeling (Eadeh et al., 2017), where participants feel positive in the short-term and then return to negative affect in the long-term, participants may have returned to similar levels of state anger as baseline if the intervention was longer. Future research would benefit from using longer interventions.

Lastly, this study did not include follow-up measures. It is possible that these effects are short-lasting, and as stated above, participants in the fulfilling revenge condition could report more aggression in the future, more anger episodes, or higher levels of state anger than participants in the perspective-taking or control conditions.

CONCLUSION

As a whole, this study shows that the AEMT is an effective approach to evoke state anger while re-imagining a memory in which participants wanted revenge. Future research would benefit from continuing to use the AEMT to evoke state anger, expanding it to state revenge, and examining effective interventions. Moreover, while perspective taking was not an effective intervention to decrease state anger, taking revenge by use of a voodoo doll and a distraction task were effective approaches to decrease state anger. Clinicians would benefit from using distraction tasks with their clients struggling with anger management. However, it is unclear if taking revenge via a voodoo doll may lead to worse long-term outcomes.

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