**ORIGINAL PAPER**

# Further examinations of attitudes toward discrete emotions, with a focus on attitudes toward anger

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**Abstract**

The present research aimed to better understand individual differences in attitudes towards emotions with a focus on anger. We report findings of four studies conducted with American and Polish individuals. Results showed that individuals who have more positive attitudes toward anger are higher in trait anger (Studies 1–4), are more likely to think about getting revenge (Study 1), and expect that getting revenge will make them feel good (Studies 1–2). In addition, these individuals are lower in agreeableness and lower in the tendency to engage in avoidance when angered (Studies 1–4). They score lower in humility (Studies 3–4), lower in secure romantic attachment but higher in anxious and avoidance attachment (Study 3). Finally, they are more likely to believe a wide range of conspiracies (Studies 2–4). Discussion focuses on the implications of these results.

**Keywords** Attitudes towards anger · Attitudes towards emotions · Trait anger · Conspiracy beliefs

## Introduction

Individuals differ in their views regarding emotions. For example, they differ in how desirable or likeable (Harmon-Jones et al., 2011), malleable (Kneeland et al., 2020), and tolerable (Kisley et al., 2019) they view emotions. Our research related to these individual views began with an attempt to capture what is meant when a layperson indicates they are feeling a positive versus negative emotion (Harmon-Jones et al., 2011). Psychological scientists have defined the valence of emotion (positive to negative) in a variety of ways (Lazarus, 1991). One common definition concerns the subjective feeling of the emotion; that is, does the organism enjoy or like the emotion or does the organism dislike the emotion (Ekman, 2003; Panksepp, 1988)? Our research aimed to simply measure the degree to which individuals liked versus disliked some specific discrete emotions, particularly those that had received the most research attention (i.e., joy, anger, disgust, fear, and sadness). At the time we started this research, it seemed to us that the field of emotion research assumed that all individuals liked each of these discrete emotions to the same degree. That is, everyone disliked anger and there was no meaningful variance in individual differences in attitudes toward anger, if such existed at all.

When we started this research on attitudes toward emotions, we considered the attitudes to be part of the very definition of the feeling aspect of emotions. However, it is true that self-reported attitudes toward emotions probably occur later than the emotion itself, but whether the subjective liking of the emotion itself occurs later than the emotion is unknown. When a rat is tickled and then emits positive vocalizations and moves toward the object that evoked the positive feeling (Panksepp & Burgdorf, 2003), we suspect that it experiences positive feelings and those positive feelings are part and parcel of the emotional experience (but we could probably never get a rat to complete a self-report questionnaire about how positively it regarded its positive subjective experience of joy).

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# Past research on attitudes toward discrete emotions

Our initial research revealed that individuals do differ in their disliking of (or attitudes toward) anger, and that these individual differences in attitudes are stable over time (Harmon-Jones, 2004; Harmon-Jones et al., 2011). Moreover, individuals differ in their attitudes toward joy, disgust, fear, and sadness, and these attitudes are stable over time (Harmon-Jones et al., 2011). Also, as expected and consistent with the common assumption, most individuals tend to like joy, but tend to dislike anger, disgust, fear, and sadness (Harmon-Jones et al., 2011).

Part of our interest in exploring attitudes toward discrete emotions emerged from our interest in motivational direction (approach versus avoidance), and how affective valence is separable from motivational direction (Harmon-Jones, 2004). That is, at the time of the original research, several theories confounded affective valence with motivational direction, and posited that positive valence was always associated with approach motivation and that negative valence was always associated with avoidance motivation (e.g., Cacioppo et al., 1999; Lang, 1995; Watson, et al., 1999). However, much research on anger has suggested that affective valence and motivational direction are separable concepts and that emotions negative in valence like anger can be associated with approach motivation (for review see, Harmon-Jones et al., 2013).

Based on this interest, we examined how attitudes toward discrete emotions that differed in approach versus avoidance motivation related to trait emotions. We speculated that approach-oriented emotions (joy, anger) would relate to attitudes toward their respective emotions in positive directions, whereas avoidance-oriented emotions (disgust, fear) would relate to attitudes toward their respective emotions in negative directions (Harmon-Jones et al., 2011). We were not exactly certain whether to consider sadness an approach or avoidance emotion, as some theorists have posited it to be approach (Carver, 2004) and others have posited it to be avoidance (Lewis, 2010). We based this prediction on the following idea: Approach-related behaviors are often associated with more positive attitudes (liking), whereas withdrawal-related behaviors are often associated with more negative attitudes (disliking; Cacioppo et al., 1993). The research that first demonstrated these effects of behavior on attitudes examined attitudes toward neutral external stimuli. This same type of process, however, may occur for internal processes such as emotions. That is, angry approach-oriented actions may cause more positive attitudes toward the internal experience of anger, whereas fearful avoidance-oriented actions may cause more negative attitudes toward the internal experience of fear. Thus, individuals who

experience anger more frequently may be more likely to "like" anger (even though most individuals dislike anger, there are individual differences in how much people dislike it; overall, anger is a negatively valenced emotion because it primarily occurs in unpleasant situations and is thus associated with other negative perceptions; [Harmon-Jones, 2004; Harmon-Jones et al., 2011]).

Consistent with this analysis, trait anger (as measured by the scale from Buss & Perry, 1992) related positively with attitudes toward anger; that is, individuals who scored high in trait anger were more likely to "like" the feeling of anger. Trait joy (as measured by PANAS-X; Watson & Clark 1994) also related positively with attitudes toward joy. Trait sadness (as measured by PANAS-X; Watson & Clark 1994) also related positively with attitudes toward sadness. Turning to the avoidance-related emotions, trait fear (as measured by PANAS-X; Watson & Clark 1994) related negatively with attitudes toward fear (Harmon-Jones et al., 2011, Study 3). In this study, we did not include a measure of trait disgust (the PANAS-X does not include disgust). Thus, consistent with expectations, trait approach emotions related positively with attitudes toward those emotions, even when those approach emotions were negative in valence (anger, sadness). Trait avoidance emotions (fear), however, related negatively with attitudes toward those emotions.

In another study, we tested this same conceptual hypothesis, but this time, we tested whether trait attitudes toward discrete emotions were related to state emotions, that is, reactions to emotionally evocative stimuli (Harmon-Jones et al., 2011, Study 4). To conduct this test, we measured self-reported emotional reactions to pictures that evoked discrete emotions. Conceptually replicating the previous study, more positive attitudes toward anger related to experiencing more anger in response to anger-evoking pictures, and more positive attitudes toward joy related to experiencing more joy in response to joy-evoking pictures. More positive attitudes toward sadness related to experiencing more sadness in response to sadness-evoking pictures; however, this correlation did not reach conventional levels of statistical significance. Regarding avoidance emotions, more positive attitudes toward disgust related to experiencing less disgust in response to disgust-evoking pictures, and more positive attitudes toward fear related to experiencing less fear in response to fear-evoking pictures. These results are generally consistent with the results from the trait emotions study: For approach emotions, more positive attitudes toward the emotion relate to experiencing more of that emotion; for avoidance emotions, more negative attitudes toward the emotion relate to experiencing more of that emotion.

In addition, our previous research found that individual differences in attitudes toward emotions predicted emotional situation selection (Harmon-Jones et al., 2011, Study

2). For example, individuals who liked fear more were more likely to choose to view fear-evoking photos. Moreover, individual differences in attitudes toward emotions predicted an emotion regulation strategy (Harmon-Jones et al., 2011, Study 5). That is, after fear was evoked, individuals who disliked fear more were much more likely to avoid viewing fear-evoking photos.

## Attitudes toward anger

Because of the importance of anger in separating emotional valence from motivational direction, our recent research has focused on attitudes toward anger and how these attitudes relate to other variables. We were particularly interested in variables that have been found to relate to trait anger. Trait anger refers to a personality dimension that relates to the frequency, intensity, and duration with which individuals experience angry feelings. Trait anger relates to several problematic outcomes, such as cardiovascular disease (e.g., Suls, & Bunde, 2005), aggressive driving (Deffenbacher et al., 2001), intimate partner violence (Shorey et al., 2011), and problems in the workplace (Restubog, 2010). Moreover, we planned to test whether attitudes toward anger still predicts these other variables when statistically controlling for trait anger. In what follows, we explain how attitudes toward anger might relate to these other variables. Our first three studies test these ideas. Then, we present a study that tests whether the relations of these variables with attitudes toward anger are unique to attitudes toward anger, by comparing how attitudes toward other discrete negative emotions relate to these variables.

### Attitudes toward anger and other anger-related variables

One set of tests involved exploring how attitudes toward anger related to other psychological constructs associated with anger. In particular, we explored whether attitudes toward anger related to trait agreeableness, thoughts of revenge, the experience of pleasure from taking revenge, and the tendency to respond to anger with avoidance motivation.

Agreeableness is one of the broad traits of the Big Five model of personality (McCrae & Costa, 2008). Individuals who score high in agreeableness are typically warm, friendly, and cooperative, whereas individuals who score low in agreeableness are more selfish, lack empathy, and are more competitive.

Revenge is an intentional act motivated by the goal to inflict harm on the offender to make them suffer (Stuckless & Goranson, 1992; Zaibert, 2006). Individuals seeking revenge believe that retribution will give them feelings of satisfaction, and, indeed, revenge improves mood after being insulted (Chester & DeWall, 2017). Anger enhances pleasure derived from revenge. Threadgill and Gable (2020) found that approach-oriented anger toward the insulter increases reward processing when participants are given the opportunity to seek revenge in response to an insult compared to the situation when no such option is available. Anger also relates to increased thoughts of revenge. Angry people tend to dwell on causes and consequences of anger episodes (Sukhodolsky et al., 2001), and dwelling on these episodes enhances fantasies about vengeful acts (Barber et al., 2005).

The tendency to respond to anger with avoidance motivation refers to avoiding the person or the situation that made someone angry (Szymaniak et al., 2022). Individuals who exhibit such tendencies score lower on extraversion, verbal and physical aggression, and have more negative attitudes towards anger (Szymaniak et al., 2022).

Individuals who score relatively higher on liking for anger may be less agreeable, have more thoughts of revenge, experience more pleasure from taking revenge, and have lower tendencies to respond to anger with avoidance. These predicted relationships may occur because individuals scoring relatively higher on liking for anger may be less motivated to down-regulate their anger and instead act in ways that are consistent with their anger. That is, they may act in disagreeable ways, ponder revenge, experience pleasure when they take revenge, and attack/confront when angry rather than avoid the source of anger.

### Attitudes toward anger and beliefs in conspiracy theories

Conspiracy theories are allegations of conspiracy (that may or may not be true), which explain stressful events (e.g., pandemics) as consequences of secret actions performed by malevolent and powerful groups (for review, see Douglas et al., 2019). Conspiracy beliefs may be related to attitudes toward anger for a few reasons. First of all, both conspiracy theories and experiencing anger satisfy similar psychological needs, such as feeling more in control (Park, & Lee, 2011; van Prooijen, & Acker, 2015) and feeling more powerful (Douglas et al., 2017; Niemann et al., 2014). Satisfying these needs might be also one of the reasons why some individuals have more positive attitudes toward anger. In addition, individuals who believe conspiracies often engage in outward anger expression, such as physical violence (Jolley & Paterson, 2020); the same is true of individuals who have more positive attitudes toward anger (Harmon-Jones, 2004). Taking this into account, we hypothesized that conspiracy beliefs would be positively related to attitudes toward anger. Moreover, the current research explored whether attitudes

toward anger would relate to believing in conspiracy theories while statistically controlling for trait anger.

## Attitudes toward anger and humility

Humility has been found to relate to decreased anger and aggression (Summerell et al., 2020). This effect occurred when humility was examined as a trait as well as a manipulated state variable. Moreover, trait humility predicted anger and aggression when statistically controlling for narcissism. This suggests that humility exerts an independent influence on anger and aggression. Humility is a broad psychological construct and it is often defined as containing several hallmarks, such as "a secure, accepting identity, freedom from distortion, openness to new information, other-focus, and egalitarian beliefs" (Chancellor & Lyubomirsky, 2013, p. 819). Humility likely reduces anger/aggression because many of these hallmarks are antithetical to anger and aggression. For instance, being secure, open to new information, focused on others, and egalitarian may make one less likely to become angry and aggressive.

Based on humility's association with anger, the current research explored whether humility relates to attitudes toward anger. In addition, we wanted to go further and test whether humility would relate to less positive attitudes toward anger even when statistically controlling for anger. We suspect that the association may remain significant because having a more positive attitude toward anger seems antithetical to some components of humility such as having an appreciative focus on others and being egalitarian.

## Attitudes toward anger and attachment styles

Attachment style refers to a pattern of emotions, expectations, and behaviors that occur in close relationships. This pattern is believed to be the result of past experiences with close others like parents and romantic partners, often referred to as "attachment figures" (Fraley & Shaver, 2000). Adult attachment is often broken into three dimensions: ambivalence/anxiety, avoidance, and security. Individuals who are high in attachment ambivalence/anxiety seek close proximity with and reassurance from their attachment figures. They often feel a desire to merge with their attachment figures, but fear that they will ultimately be abandoned (Mikulincer & Shaver, 2007). In contrast, individuals high in attachment avoidance avoid intimacy and distance themselves from their attachment figures, fearing dependency (Mikulincer & Shaver, 2007). Both attachment ambivalence/anxiety and avoidance are considered "insecure" types of attachment. Secure attachment is defined as the relative absence of ambivalence/anxiety and avoidance. These individuals are comfortable with intimacy and trust their attachment figures (Mikulincer & Shaver, 2007).

Research has demonstrated that individuals who are more insecurely attached are also more intolerant of affect (Kisley et al., 2019). In particular, these individuals report that negative emotions are more threatening compared to individuals relatively lower in attachment insecurity. That is, those who score higher on measures of insecure attachment report fears surrounding the experience of negative emotions such as: they will lose control of their negative emotions; their negative emotions will not desist; and they cannot cope with their negative emotions.

Indeed, evidence indicates that insecurely attached individuals experience higher levels of the negative emotion anger as well as associated aggression (Casselman & McKenzie, 2015; Meester & Muris, 2002; Rholes et al., 2016). In early work on infant attachment, Bowlby (1973) proposed that anger can be a functional response to separation from an attachment figure, because it may prompt attention and responses from the attachment figure. While highly damaging and problematic, domestic violence is often motivated by a desire to prevent one's partner from ending the relationship (Bartholomew & Allison, 2006). Some have suggested that this behavior is likely more common among individuals higher in attachment anxiety/ambivalence, as they are often preoccupied by fears of abandonment (Mikulincer & Shaver, 2011). Thus, the heightened levels of anger observed amongst insecurely attached individuals, particularly those who are ambivalently/anxiously attached, may be an attempt to solicit attention and care from an attachment figure.

Given that trait anger is associated with both positive attitudes toward anger as well as insecure attachment, we hypothesized that individuals who are more insecurely attached would view anger more positively. We also explored whether attitudes toward anger would continue to predict insecure attachment when controlling for trait anger.

## Study 1

Participants were 271 Polish residents (133 women, 136 men, 2 "other"). They were recruited via social networking websites (i.e., Facebook) or via snowball sampling. Their ages ranged from 18 to 43. After providing informed consent and demographic data, participants completed online questionnaires. This study was a part of the larger project which included two sessions. Measures related to this study were completed in the first session. Participants were paid 40 PLN (approx. 10$ USD) for completion of both sessions.

**Table 1** Correlations between all the measures included in Study 1 (N = 271)

|  | 1. | 2. | 3. | 4. | 5. | 6. | 7. | 8. | 9. |
|---|---|---|---|---|---|---|---|---|---|
| 1. Age | - | | | | | | | | |
| 2. Gender | 0.174** | - | | | | | | | |
| 3. ATA | 0.099 | 0.118+ | - | | | | | | |
| 4. AMRAS | − 0.011 | − 0.075 | − 0.261** | - | | | | | |
| 5. Anger AQ | 0.017 | − 0.181** | 0.178** | − 0.202** | - | | | | |
| 6. Agreeableness | − 0.254** | − 0.257** | − 0.260** | 0.062 | − 0.086 | - | | | |
| 7. Revenge Pleasure | 0.133* | 0.055 | 0.385** | − 0.241** | 0.314** | − 0.255** | - | | |
| 8. Revenge Thoughts | 0.082 | 0.065 | 0.261** | − 0.120* | 0.334** | − 0.175** | 0.652** | - | |
| 9. GCBS | 0.126* | − 0.047 | 0.118+ | − 0.055 | 0.102 | − 0.080 | 0.046 | 0.027 | - |
| M | 21.57 | - | 1.82 | 3.32 | 2.80 | 4.04 | 2.44 | 6.89 | 3.17 |
| SD | 3.48 | - | 0.60 | 0.96 | 0.91 | 0.71 | 1.40 | 2.49 | 1.12 |
| Alpha | - | - | 0.82 | 0.88 | 0.85 | 0.71 | 0.92 | 0.71 | 0.92 |

*Note*. Gender (1 = male, 2 = female); The correlations with gender include only participants who selected the option male or female. Participants who selected the option "other" are not included in these correlations. **$p < .01$, *$p < .05$, +$p < .10$.

## Measures

**Agreeableness** was assessed using the Agreeableness subscale from the Mini-IPIP (Donnellan, et al., 2006). The subscale consists of 10 items (e.g., "I am not interested in other people's problems"). Participants rated the extent to which they agree with each statement on a scale ranging from *1* (*Strongly Disagree*) to 5 (*Strongly Agree*). Cronbach's alphas for all measures are reported in the correlation tables.

**Attitudes towards anger (ATA)** were assessed using the Attitudes Toward Anger Scale (ATA; Harmon-Jones, 2004). The scale consists of 11 items (e.g., "I like how it feels when I am furious"). Participants rated the extent to which they agree with each statement on a scale ranging from *1* (*Strongly Disagree*) to *5* (*Strongly Agree*).

**Belief in general conspiracy theories** was assessed using the Generic Conspiracist Beliefs Scale (GCBS; Brotherton et al., 2013). The scale consists of 15 items (e.g., "The government uses people as patsies to hide its involvement in criminal activity"). Participants rated the extent to which they agree with each statement on a scale ranging from *1* (*Strongly Disagree*) to *5* (*Strongly Agree*).

**Pleasure from revenge** was assessed using the Hedonistic Belief About Revenge Scale (HBARS; Dyduch-Hazar et al., 2022 in preparation). The scale consists of 5 items (e.g., "It makes me happy to inflict pain on those who hurt me"). Participants rated the extent to which they agreed with each statement on a scale ranging from *1* (*Strongly Disagree*) to *7* (*Strongly Agree*).

**Tendency to react with avoidance to anger** was assessed using the Avoidance Motivated Response to Anger Scale (AMRAS; Szymaniak et al., 2022). The scale consists of 5 items (e.g., "When I get angry, I avoid the person or situation that made me angry"). Participants rated the extent to which each statement was characteristic of them on a scale ranging from *1* (*Extremely Uncharacteristic of Me*) to *5* (*Extremely Characteristic of Me*).

**Thoughts of revenge** were assessed using the thoughts of revenge subscale from the Anger Rumination Scale (ARS; Sukhodolsky et al., 2001). The subscale consists of 4 items (e.g., "I have long-living fantasies of revenge after the conflict is over"). Participants rated how often they experience thoughts of revenge on a scale ranging from *1* (*Almost Never*) to *5* (*Almost Always*).

**Trait anger** was assessed using the Trait Anger subscale from the Aggression Questionnaire (AQ, Buss & Perry, 1992). The AQ-Anger consists of 7 items (e.g., "I flare up quickly but get over it quickly"). Participants rated the extent to which each statement was characteristic of them on a scale ranging from *1* (*Extremely Uncharacteristic of Me*) to *5* (*Extremely Characteristic of Me*).

## Results

Bivariate Pearson correlations, means, standard deviations, and Cronbach's alphas are displayed in Table 1. ATA was unrelated to age and gender. However, the correlation between the ATA and gender was close to reaching the significance threshold ($p = .053$; women had more positive ATAs).

ATA was positively related to trait anger, experiencing pleasure from revenge, and frequency of having thoughts of revenge. ATA was negatively related to agreeableness and the tendency to react with avoidance to anger. ATA was not significantly related to belief in general conspiracy theories, however this correlation was close to reaching the significance threshold ($p = .053$).

Next, regression analyses were conducted to test whether ATA would continue to predict the other variables when statistically controlling for trait anger. ATA ($\beta = 0.339$, $p < .001$) and trait anger ($\beta = 0.254$, $p < .001$) significantly predicted

**pleasure from revenge**. The overall regression equation was significant $R^2 = 0.210$, $F(2, 268) = 35.65$, $p < .001$. ATA ($\beta = 0.208$, $p < .001$) and trait anger ($\beta = 0.296$, $p < .001$) significantly predicted **frequency of thoughts about revenge**. The overall regression equation was significant, $R^2 = 0.153$, $F(2, 268) = 128.32$, $p < .001$. ATA ($\beta = -0.253$, $p < .001$) but not trait anger ($\beta = -0.041$, $p = .494$) significantly predicted **agreeableness**. The overall regression equation was significant $R^2 = 0.069$, $F(2, 268) = 9.96$, $p < .001$. For **belief in generic conspiracy theories**, neither ATA ($\beta = 0.103$, $p = .096$) nor trait anger ($\beta = 0.084$, $p = .175$) significantly predicted these beliefs. The overall regression equation was not significant, $R^2 = 0.021$, $F(2, 268) = 2.82$, $p = .062$.

## Discussion

Study 1 suggests that individuals who have more positive attitudes toward anger tend to react with anger more often, which is in line with past research (Harmon-Jones, 2004; Harmon-Jones et al., 2011). Moreover, these individuals are also more likely to have thoughts of revenge and experience pleasure from revenge. More positive attitudes toward anger also related to lower agreeableness, perhaps because individuals who are lower in agreeableness are less motivated to down-regulate anger to "keep the peace" in social situations. Although the correlation between general conspiracy beliefs and the ATA was lower than the commonly accepted threshold of significance, its positive direction was in line with our predictions, suggesting that individuals with more positive attitudes toward anger are more likely to believe conspiracy theories.

## Study 2

Because many of the results obtained in Study 1 were novel, we thought it important to attempt to replicate them. Thus, Study 2 aimed to replicate some of the findings of Study 1. Specifically, we aimed to replicate the positive associations of ATA with the pleasure one gets from revenge and trait anger. We also aimed to replicate the negative associations of ATA with agreeableness and the tendency to react to anger with avoidance.

To further explore the relationship between ATA and conspiracy beliefs, in Study 2 we included specific conspiracy theories. Specific conspiracy theories, in comparison to general conspiracy theories (as measured in Study 1), relate to specific real-life events, rather than general conspiracy mindsets.

In addition to testing these correlates of ATA, we also tested whether ATA was related to individual differences in humility. Research has suggested that trait humility is related to less trait anger and aggression (Summerell et al., 2020). Based on humility's association with anger, Study 2 explored whether humility relates to attitudes toward anger. In addition, Study 2 tested whether humility would relate to less positive attitudes toward anger even when statistically controlling for anger. Attitudes toward anger may independently predict humility because having a more positive attitude toward anger seems antithetical to some components of humility such as having an appreciative focus on others and being egalitarian.

### Participants and procedure

Participants were 195 Polish residents (70 male, 122 women, 3 "other"). They were recruited via social networking websites (i.e., Facebook) or via snowball sampling. Their ages ranged from 18 to 59. This study was a part of an unrelated project which aimed to assess test-retest reliability of the AMRAS scale and consisted of two sessions completed within a two-week interval. Each session had exactly the same procedure and consisted of the same set of measures. After providing informed consent and demographic data, participants completed the questionnaires.

### Measures

ATA, agreeableness, pleasure from revenge, trait anger, and tendency to react to anger with avoidance were assessed with the measures used in Study 1.

**Belief in conspiracy theories related to the COVID-19 pandemic** (COVID-19 general conspiracy beliefs) was assessed using two items created for the purpose of the current study. Participants rated the probability (on a scale from 1 to 100) that the COVID-19 pandemic is a global conspiracy and that it is a fabrication of the media and government aimed to scare the public.

### Results

Bivariate Pearson correlations, means, standard deviations, and Cronbach's alphas are displayed in Table 2. ATA was unrelated to gender and sex. ATA was positively related to trait anger and negatively related to responding to anger with avoidance. ATA was negatively related to agreeableness. Finally, ATA was positively related to taking pleasure from revenge and COVID-19 general conspiracy beliefs. This pattern of results was observed in both sessions.

Subsequently, we ran regression analyses to test whether ATA predicted higher **COVID-19 general conspiracy beliefs** controlling for trait anger. The results from session 1 indicated that COVID-19 general conspiracy beliefs were significantly predicted by ATA ($\beta = 0.160$, $p = .026$) but not

**Table 2** Correlations between all the measures included in Study 2 (N = 195)

| | 1. | 2. | 3. | 4. | 5. | 6. | 7. | 8. | 9. | 10. | 11. | 12. | 13. | 14. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Session 1** | | | | | | | | | | | | | | |
| 1. Age | - | | | | | | | | | | | | | |
| 2. Gender | 0.056 | - | | | | | | | | | | | | |
| 3. ATA | -0.048 | 0.091 | - | | | | | | | | | | | |
| 4. AMRAS | 0.076 | -0.112 | -0.183* | - | | | | | | | | | | |
| 5. Anger AQ | 0.032 | -0.087 | 0.147* | -0.116 | - | | | | | | | | | |
| 6. Agreeableness | -0.115 | -0.191** | -0.320** | 0.000 | -0.079 | - | | | | | | | | |
| 7. Pleasure from revenge | -0.057 | 0.044 | 0.420** | -0.157* | 0.210** | -0.445** | - | | | | | | | |
| 8. COVID-19 pandemic conspiracies | -0.065 | -0.044 | 0.177* | -0.059 | 0.143* | -0.036 | 0.031 | - | | | | | | |
| **Session 2** | | | | | | | | | | | | | | |
| 9. ATA | -0.084 | 0.108 | 0.677** | -0.168* | 0.138+ | -0.303** | 0.447** | 0.213** | - | | | | | |
| 10. AMRAS | 0.027 | -0.131 | -0.245** | 0.679** | -0.109 | -0.037 | -0.095 | -0.095 | -0.281** | - | | | | |
| 11. Anger AQ | 0.004 | -0.212** | 0.215** | -0.089 | 0.762** | -0.164* | 0.301** | 0.126+ | 0.203** | -0.073 | - | | | |
| 12. Agreeableness | -0.094 | -0.234** | -0.259** | -0.021 | -0.121 | 0.805** | -0.446** | 0.013 | -0.277** | -0.036 | -0.225** | - | | |
| 13. Pleasure from revenge | -0.033 | 0.047 | 0.424** | -0.189** | 0.303** | -0.349** | 0.819** | 0.090 | 0.541** | -0.120 | 0.348** | -0.364** | - | |
| 14. COVID-19 pandemic conspiracies | -0.089 | -0.051 | 0.171* | -0.091 | 0.179* | 0.006 | 0.025 | 0.859** | 0.186** | -0.130+ | 0.109 | 0.001 | 0.084 | - |
| M | 23.91 | - | 1.80 | 3.44 | 2.93 | 3.98 | 2.30 | 19.89 | 1.80 | 3.43 | 2.93 | 4.04 | 2.11 | 17.11 |
| SD | 5.70 | - | 0.61 | 1.02 | 0.87 | 0.70 | 1.28 | 24.68 | 0.59 | 1.03 | 90 | 0.71 | 1.25 | 23.06 |
| Alpha | | | 0.82 | 0.89 | 0.80 | 0.70 | 0.90 | 0.87 | 0.85 | 0.90 | 0.83 | 0.72 | 0.92 | 0.94 |

*Note.* Gender (male = 1; female = 2); The correlations with gender include only participants who selected the option male or female. Participants who selected "non-binary" or "prefer not to say" options were not included in these correlations. **$p < .01$, *$p < .05$, +$p < .10$.

trait anger ($\beta = 0.119$, $p = .096$). The overall regression equation was significant $R^2 = 0.045$, $F(2, 192) = 4.57$, $p = .012$.

In addition, ATA ($\beta = 0.398$, $p < .001$) and trait anger ($\beta = 0.151$, $p = .021$) significantly predicted **pleasure from revenge**. The overall regression equation was significant $R^2 = 0.199$, $F(2, 192) = 23.87$, $p < .001$.

ATA ($\beta = -0.315$, $p < .001$) but not trait anger ($\beta = -0.032$, $p = .640$) significantly predicted **agreeableness**. The overall regression equation was significant $R^2 = 0.103$, $F(2, 192) = 11.06$, $p < .001$.

The results from session 2 also indicated that **COVID-19 general conspiracy beliefs** were significantly predicted by ATA ($\beta = 0.171$, $p = .019$) but not trait anger ($\beta = 0.074$, $p = .305$). The overall regression equation was significant $R^2 = 0.040$, $F(2, 192) = 4.01$, $p = .020$.

In addition, ATA ($\beta = 0.491$, $p < .001$) and trait anger ($\beta = 0.248$, $p < .001$) significantly predicted **pleasure from revenge**. The overall regression equation was significant $R^2 = 0.352$, $F(2, 192) = 52.15$, $p < .001$.

ATA ($\beta = -0.241$ $p < .001$) and trait anger ($\beta = -0.176$, $p = .012$) significantly predicted **agreeableness**. The overall regression equation was significant $R^2 = 0.106$, $F(2, 192) = 11.42$, $p < .001$.

## Discussion

Study 2 replicated findings of Study 1. Study 2 also found evidence in line with the prediction that a higher tendency to believe in conspiracy theories would occur among people with more positive attitudes towards anger. Additionally, we found that more positive attitudes towards anger predict conspiracy beliefs independently from trait anger. This suggests that the (relative) enjoyment of the angry experience uniquely predicts conspiracy beliefs. Conspiracy beliefs, indeed, possess high entertainment value, especially for those who seek intense experiences (van Prooijen, et al. 2022). Those who (relatively) enjoy feeling angry may do so because of a desire to seek out and experience intense emotional states.

## Study 3

In Study 3, we aimed to more deeply explore associations between the ATA and conspiracy beliefs, by including other types of specific conspiracy theories: conspiracy theories regarding vaccines and conspiracies that have turned out to be true. We also examined associations between the ATA and romantic attachment, hypothesizing that the ATA would be positively associated with attachment insecurity (i.e., ambivalence/anxiety and avoidance).

### Participants and procedure

Participants were 306 US residents (114 women, 189 men, 1 "other", 1 "prefer not to say") recruited using Amazon's Mechanical Turk. Their ages ranged from 20 to 71. After providing informed consent and demographic data, participants completed the online questionnaires. Each participant was paid $2 USD for their participation.

### Measures

**Attitudes Towards Anger** were measured using a short version of the ATA (Harmon-Jones, et al., 2011). The scale consists of 5 items (e.g., "I like the feeling of power I get from expressing my anger"). Participants rated the extent to which they agree with each statement on the 5-point scale, ranging from *1 (Strongly Disagree)* to *5 (Strongly Agree)*.

**Humility** was measured using the Honesty-Humility subscale from the HEXACO-60 (Ashton & Lee, 2009). The subscale consists of 10 items (e.g., "I want people to know that I am an important person of high status;" reverse scored). Participants were asked to rate each item on a 5-point scale, ranging from *1 (Strongly Disagree)* to *5 (Strongly Agree)*. **Political orientation** was measured with one item, i.e., "What is your political orientation?". Participants were asked to rate the extent to which they consider themselves as liberal/conservatives using an 11-point scale, ranging from *− 5 (Extremely Liberal)* to *5 (Extremely Conservative)*.

**Romantic attachment** was measured using the Measure of Attachment Qualities (MAQ; Carver, 1997). The scale consists of 14 items, which are divided into four subscales: Avoidance (e.g., "Others want me to be more intimate than I feel comfortable being"); Ambivalence-Worry (e.g., "I often worry that my partner doesn't really love me"); Ambivalence-Merger (e.g., "I find others are reluctant to get as close as I would like"); and Security (e.g., "Being close to someone gives me a source of strength for other activities"). Participants rated the extent to which each item describes them on the 4-point scale, ranging from *1 (Disagree a Lot)* to *4 (Agree a Lot)*.

**Specific conspiracy beliefs** measures in this study consisted of three categories: true conspiracy beliefs; vaccine-related conspiracy theories; and general conspiracy theories related to COVID-19 pandemic. **Beliefs in true conspiracies** were measured with 5 items (e.g., "The Tuskegee Study was organized by the U.S. Public Health Service to follow rural African American men with syphilis over the course of their lives without informing them about their diagnosis or providing treatment"). **Belief in vaccine-related conspiracy theories** were measured with 6 items (e.g., "Data published on vaccine effectiveness are fabricated by

governments and financial oligarchs"). In case of true conspiracies and vaccines-related conspiracy theories, participants were asked to rate the extent to which the statement is true or they agree with the statement on a 5-point scale, from *1 (Strongly Disagree/Very False)* to *5 (Strongly Agree/Very True)*.

**Belief in general conspiracy theories related to COVID-19 pandemic** were assessed with the same question as used in Study 2. Participants were asked to rate the extent to which the statement is true or they agree with the statement on a 5-point scale, from *− 5 (Strongly Disagree/Very False)* to *5 (Strongly Agree/Very True)*.

**Trait anger** and **tendency to react to anger with avoidance** were assessed using the same measures as in Study 1.

## Results

Bivariate Pearson correlations, means, standard deviations, and Cronbach's alphas are displayed in Table 3. Individuals with more positive attitudes toward anger (ATA) were more likely to be **younger, male, and conservative**.

Replicating previous studies, ATA was positively related to AQ-Anger and negatively to the AMRAS and the HEXACO-Humility subscale. ATA was positively related to all three types of conspiracy beliefs included: COVID-19 pandemic conspiracy theories; true conspiracies; and vaccine-related conspiracy theories. Moreover, ATA was negatively related to secure attachment style, and positively correlated with insecure attachment styles: attachment-avoidance; ambivalence-worry; and ambivalence-merger.

Subsequently, we ran a series of regression analyses to test whether ATA predicted higher endorsement of each type of the specific conspiracy beliefs separately, controlling for trait anger. **True conspiracies** were significantly predicted by ATA ($\beta = 0.234$, $p = .003$) but not trait anger ($\beta = 0.093$, $p < .242$). The overall regression equation was significant $R^2 = 0.096$, $F(2, 303) = 16.01$, $p < .001$.

**General conspiracy theories related to COVID-19 pandemic** were predicted by ATA ($\beta = 0.543$, $p < .001$) and trait anger ($\beta = 0.203$, $p < .001$). The overall regression equation was significant, $R^2 = 0.496$, $F(2, 304) = 138.97$, $p < .001$.

**Vaccine-related conspiracy theories** were predicted by ATA ($\beta = 0.619$, $p < .001$) and trait anger ($\beta = 0.171$, $p = .002$). The overall regression equation was significant, $R^2 = 0.566$, $F(2, 303) = 154.09$, $p < .001$.

Next, we tested whether ATA predicted **humility** while controlling for trait anger. We found that ATA was a significant negative predictor of humility ($\beta = − 0.401$, $p < .001$) as was trait anger ($\beta = − 0.195$, $p < .005$). The overall regression equation was significant, $R^2 = 0.313$, $F(2, 303) = 68.97$, $p < .001$.

Subsequently, we examined how ATA and trait anger predicted attachment styles. Neither ATA ($\beta = − 0.110$, $p = .180$) nor trait anger ($\beta = − 0.104$, $p = .206$) uniquely predicted **secure attachment**. The overall regression equation was significant, $R^2 = 0.040$, $F(2, 303) = 6.27$, $p = .002$. Trait anger ($\beta = 0.476$, $p < .001$), but not ATA ($\beta = − 0.013$, $p = .865$), uniquely predicted **avoidant attachment style**. The overall regression equation was significant, $R^2 = 0.218$, $F(2, 303) = 42.27$, $p < .001$. **Ambivalence-worry attachment style** was uniquely predicted by ATA ($\beta = 0.301$, $p < .001$) and trait anger ($\beta = 0.327$, $p < .001$). The overall regression equation was significant, $R^2 = 0.341$, $F(2, 303) = 78.26$, $p < .001$. **Ambivalence-merger attachment style** was predicted by ATA ($\beta = 0.360$, $p < .001$) and trait anger ($\beta = 0.474$, $p < .001$). The overall regression equation was significant, $R^2 = 0.603$, $F(2, 303) = 230.50$, $p < .001$.

## Discussion

Study 3 replicated the results of two previous studies, with American participants, suggesting these results generalize across American and Polish samples. Specifically, individuals with more positive attitudes toward anger reported being more inclined to get angry and less likely to react to anger with avoidance. Additionally, more positive attitudes toward anger predicted lower humility and higher endorsement of all specific conspiracy theories (related to COVID-19 pandemic, vaccines, and true conspiracies). This indicates that those who like feeling anger more than others might be characterized by a "conspiracy mentality", that is a "general worldview that the fate of the world is determined by plans hatched in secret" (Imhoff et al., 2022, pp. 7–8).

Individuals with more positive attitudes toward anger reported higher levels of attachment insecurity (i.e., worries about relationships and desires to merge with one's partner, both indicative of ambivalent/anxious attachment and attachment avoidance). These associations remained significant when controlling for trait anger for the two subscales measuring attachment ambivalence/anxiety, but not for the subscale measuring attachment avoidance. This could be the result of insecurely attached individuals viewing anger and aggression as ways to attract attention from romantic partners and discourage from them leaving the relationship (Mikulincer & Shaver, 2011), where avoidantly attached individuals prefer to not show emotional investment in their relationships (Cassidy & Kobak, 1988).

**Table 3** Correlations between all the measures included in Study 3 (N=306)

| | 1. | 2. | 3. | 4. | 5. | 6. | 7. | 8. | 9. | 10. | 11. | 12. | 13. | 14. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1. Age | - | | | | | | | | | | | | | |
| 2. Gender | 0.293** | - | | | | | | | | | | | | |
| 3. Political orientation | 0.092 | 0.057 | - | | | | | | | | | | | |
| 4. ATA | -0.249** | -0.153** | 0.396** | - | | | | | | | | | | |
| 5. AMRAS | 0.084 | 0.062 | -0.109+ | -0.257** | - | | | | | | | | | |
| 6. Anger AQ | -0.226** | -0.114* | 0.362** | 0.728** | -0.119* | - | | | | | | | | |
| 7. Attachment -security | 0.154** | 0.099 | -0.019 | -0.186*** | 0.139* | -0.184** | - | | | | | | | |
| 8. Attachment -avoidance | -0.190** | -0.074 | 0.173** | 0.334** | 0.023 | 0.467** | -546** | - | | | | | | |
| 9. Ambivalence -worry | -0.164** | -0.050 | 0.291** | 0.539**. | -0.035 | 0.546** | -0.145* | 0.403** | - | | | | | |
| 10. Ambivalence - merger | -0.235** | -0.138* | 0.319** | 0.705** | -0.120* | 0.736** | -0.143* | 0.487** | 0.646** | - | | | | |
| 11. Humility -HEXACO | 0.303** | 0.124* | -0.061 | -0.543** | 0.040 | -0.487** | 0.110+ | -0.280** | -0.380** | -0.513** | - | | | |
| 12. True Conspiracies | 0.051 | -0.088 | 0.031 | 0.302** | 0.060 | 0.264** | -0.024 | 0.229** | 0.284** | 0.256** | -0.222** | - | | |
| 13. COVID-19 pandemic conspiracies | -0.069 | -0.047 | 0.552** | 0.690** | -0.179** | 0.598** | -0.089 | 0.306** | 0.473** | 0.574** | -0.362** | 0.364** | - | |
| 14. Vaccine-related conspiracies | -0.116* | -0.039 | 0.557** | 0.743** | -0.217** | 0.621** | -0.102+ | 0.306** | 0.498** | 0.621** | -0.379** | 0.358** | 0.873** | - |
| M | 38.74 | - | -0.09 | 2.01 | 3.52 | 2.40 | 3.25 | 2.16 | 2.36 | 2.05 | 3.42 | 3.40 | -1.41 | 2.23 |
| SD | 10.52 | - | 3.55 | 1.07 | 0.78 | 1.01 | 0.61 | 0.76 | 0.67 | 0.92 | 0.79 | 0.94 | 3.67 | 1.34 |
| Alpha | - | - | - | 0.88 | 0.72 | 0.89 | 0.75 | 0.82 | 0.71 | 0.88 | 0.80 | 0.80 | 0.93 | 0.96 |

*Note.* Gender (1 = male, 2 = female); The correlations with gender include only participants who selected the option male or female. Participants who selected the option "other" were not included in these correlations. \*\*$p < .01$, \*$p < .05$, +$p < .10$.

## Study 4

Study 4 examined attitudes toward some other emotions, to test the extent to which attitudes toward anger predicted other variables that were examined in Studies 1–3, while statistically controlling for attitudes toward these other negative emotions (i.e., disgust, fear, sadness). The other variables examined in Study 4 were conspiracy beliefs (a specific one and general ones), trait anger, and the tendency to react to anger with avoidance.

### Participants and procedures

Participants were 246 US residents (113 women, 126 men, 3 "non-binary", 4 "prefer not to say")[1]. They were recruited using Prolific. Their ages ranged from 18 to 79 (one person did not report their age). After providing informed consent and demographic information, participants completed online questionnaires. Participants were paid $5 USD for their participation.

### Measures

**Attitudes towards emotions** were assessed using the Attitudes Towards Emotions Scale (Harmon-Jones et al., 2011). The scale consists of 28 items, which are split into 5 subscales: **attitudes towards anger** (ATA; 5 items, e.g., "I like the feeling of increased energy I get from expressing my anger"); **attitudes towards joy** (ATJ; 5 items; e.g., "I really like feeling happy"); **attitudes towards sadness** (ATS; 6 items; e.g., "I like it when movies make me feel sad, the sadder the better"); **attitudes towards fear** (ATF; 6 items; e.g., "I like to do things that scare me"); and **attitudes towards disgust** (ATD; 6 items; e.g., "I like doing things that I find disgusting").

**Beliefs in Denver conspiracy theories** were assessed using a story about Denver airport being either a secret military base (half of participants) or a cover for a secret food storage facility (other half of participants). The story participants read was meant to not be well-known, so we could examine how individuals respond to new conspiracies about which they had no pre-existing knowledge,

attitudes, or beliefs. Belief in these conspiracy theories was assessed using three items: (1) "Do you believe the information presented on the previous page is true or false?". Participants rated this item on a 5-point scale, ranging from *1 (Definitely False)* to *5 (Definitely True)*. (2) "Do you think the events in this story are accurate?". Participants rated this item on a 5-point scale, ranging from *1 (Definitely Not Accurate* to *5 (Definitely Accurate)*. (3) "To what extent do you believe in the story you just read?". Participants rated this item on a 5-point scale, ranging from *1 (Not at All)* to *5 (Very Much)*.

**Humility** was measured using two items: "I see myself as Humble, Modest" and "I see myself as Arrogant, Egotistical". This short scale was created following the form of the Ten Item Personality Measure (TIPI; Gosling et al., 2003) items. Participants were asked to rate each item on a 7-point scale, ranging from *1 (Disagree Strongly)* to *7 (Agree Strongly)*. Additionally, we used the Brief State Humility Scale (Kruse et al., 2017). The subscale consists of 6 items (e.g., "I feel that I have both many strengths and flaws").

**Trait anger, tendency to react to anger with avoidance, and general conspiracy beliefs** were assessed using the same measures as in Study 1.

### Results

Bivariate Pearson correlations, means, standard deviations, and Cronbach's alphas are displayed in Table 4. ATA was unrelated to age and gender. However, the correlation between ATA and age was close to reaching the significance threshold ($p = .070$).

ATA was positively correlated with ATF, ATS, and ATD, as in previous research (Harmon-Jones et al., 2011). In addition, ATA was positively related to the AQ-Anger and negatively to the AMRAS, as in previous research (Harmon-Jones, 2004; Szymaniak et al., 2022).

Additionally, we replicated the correlation between ATA and humility noted in Studies 2–3. That is, ATA was negatively related to the scores on our adapted TIPI-like Humility subscale and the Brief State Humility Scale. ATA was positively related to belief in Denver conspiracy theories and general conspiracy beliefs.

ATD was positively related to AQ-Anger and negatively to AMRAS. ATD was negatively related to humility measured with our adapted Humility subscale and unrelated to the Brief State Humility Scale. ATD was unrelated to belief of both types of conspiracy theories. ATD was negatively related to age and unrelated to gender.

ATF was positively related to AQ-Anger and unrelated to AMRAS. ATF was negatively correlated with our adapted Humility subscale and the Brief State Humility Scale. ATF was unrelated to endorsement of conspiracy theories (both

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[1] The final sample consisted of participants assigned to neutral conditions in two separate studies. Both experiments had similar procedures. These experiments also included anger conditions but these conditions were not used in the present study, because the anger conditions evoked anger and because many of the personality measures were completed after the anger induction. These other studies were designed to examine how state anger, compared to neutral emotion, influences conspiracy beliefs. In one neutral condition, participants watched a neutral video, while in the other, they recalled an event that made them feel neutral. These two neutral conditions did not differ in the scores on the measures.

**Table 4** Correlations between all the measures included in Study 4 (N = 246)

| | 1. | 2. | 3. | 4. | 5. | 6. | 7. | 8. | 9. | 10. | 11. | 12. | 13. | 14. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1. Age | - | | | | | | | | | | | | | |
| 2. Gender | -0.157* | - | | | | | | | | | | | | |
| 3. ATA | -0.116+ | -0.068 | - | | | | | | | | | | | |
| 4. ATF | -0.175** | -0.173** | 0.282** | - | | | | | | | | | | |
| 5. ATJ | -0.014 | 0.124 | -0.318** | -0.072 | - | | | | | | | | | |
| 6. ATS | -0.361** | 0.189** | 0.186** | 0.285** | -0.063 | - | | | | | | | | |
| 7. ATD | -0.164* | -0.106 | 0.439** | 0.460** | -0.199** | 0.354** | - | | | | | | | |
| 8. Anger AQ | -0.185** | 0.110 | 0.365** | 0.134* | -0.149* | 0.203** | 0.179** | - | | | | | | |
| 9. AMRAS | -0.075 | 0.168** | -0.228** | -0.103 | 0.069 | 0.137* | -0.132* | -0.052 | - | | | | | |
| 10. BHS | 0.031 | 0.156* | -0.347** | -0.201** | 0.169** | 0.029 | -0.111+ | -0.179** | 0.286** | - | | | | |
| 11. TIPI-Humility | 0.073 | 0.120 | -0.418** | -0.192** | 0.252** | -0.088 | -0.206** | -0.393** | 0.172** | 0.286** | - | | | |
| 12. TIPI-Agreeableness | 0.180** | 0.024 | -0.299** | -0.120+ | 0.218** | -0.082 | -0.163* | -0.493** | 0.113+ | 0.152* | 0.471** | - | | |
| 13. Denver Conspiracies | -0.068 | -0.052 | 0.162* | -0.065 | -0.120+ | 0.092 | 0.117+ | 0.177** | -0.067 | -0.116+ | -0.014 | -0.019 | - | |
| 14. GCBS | -0.160* | 0.078 | 0.192** | 0.085 | -0.104 | 0.094 | 0.106+ | 0.257** | 0.009 | -0.145* | -0.044 | -0.099 | 0.324** | - |
| M | 33.45 | - | 1.54 | 1.92 | 4.49 | 2.50 | 1.48 | 2.29 | 3.64 | 5.31 | 5.57 | 5.25 | 2.44 | 2.73 |
| SD | 12.38 | - | 0.62 | 0.86 | 0.58 | 0.86 | 0.61 | 0.81 | 0.83 | 0.96 | 1.31 | 1.15 | 0.90 | 0.90 |
| Alpha | - | - | 0.76 | 0.90 | 0.80 | 0.83 | 0.79 | 0.83 | 0.79 | 0.74 | 0.66 | 0.33 | 0.90 – 0.93[a] | 0.93 |

*Note.* Gender (1 = male, 2 = female). The correlations with gender include only participants who selected the option male or female. Participants who selected "non-binary" or "prefer not to say" options were not included in these correlations. [a] Cronbach's Alpha = 0.90 in the condition in which Denver airport was presented as food storage; Cronbach's Alpha = 0.93 in the condition in which Denver airport was presented as military base. The TIPI Agreeableness alpha was extremely low, which happens often for TIPI subscales due to low number of items per scale and the fact that these two items have to capture vary broad domains at both positive and negative poles (for details, see Gosling et al., 2003). $**p < .01$, $*p < .05$, $+p < .10$.

Denver conspiracy theories and general ones). ATF was negatively related to age and gender.

ATS was positively related to AQ-Anger and AMRAS. ATS was unrelated to our adapted Humility subscale and the Brief State Humility Scale. ATS was unrelated to endorsement of both types of conspiracy theories. ATS was negatively related to age and positively related to gender.

ATJ was negatively related to AQ-Anger and unrelated to AMRAS. ATJ was positively correlated with our adapted Humility subscale and the Brief State Humility Scale. ATJ was unrelated to endorsement of both types of conspiracy theories. ATJ was unrelated to age and gender.

Subsequently, we ran a series of regression analyses to test whether the ATA predicted other variables, controlling for other ATEs toward other negative emotions. We did this so we could test whether the attitude toward the discrete negative emotion of anger had a unique relationship with each of the other variables while statistically controlling for attitudes toward other negative emotions.

**Denver conspiracy beliefs** were significantly predicted by ATA ($\beta = 0.152$, $p = .031$) and ATF ($\beta = -0.178$, $p = .014$), but not ATS ($\beta = 0.078$, $p = .253$) and ATD ($\beta = 0.104$, $p = .183$). The overall regression equation was significant $R^2 = 0.056$, $F(4, 241) = 3.54$, $p = .008$.

**Humility**, as measured with Brief State Humility Scale, was significantly predicted by ATA ($\beta = -0.356$, $p < .001$) and ATF ($\beta = -0.172$, $p = .012$), but not ATS ($\beta = 0.115$, $p = .075$) and ATD ($\beta = 0.083$, $p = .259$). The overall regression equation was significant $R^2 = 0.152$, $F(4, 241) = 10.81$, $p < .001$. Humility, as measured by our adapted subscale, was significantly predicted by ATA ($\beta = -0.397$, $p < .001$), but not ATF ($\beta = -0.084$, $p = .207$), ATS ($\beta = 0.009$, $p = .890$), and ATD ($\beta = 0.004$, $p = .955$). The overall regression equation was significant $R^2 = 0.181$, $F(4, 241) = 13.28$, $p < .001$.

Next, we ran a series of regression analyses to test whether the ATA predicted **humility** and **belief in the Denver conspiracy theories**, controlling for trait anger. We did this so we could test whether ATA had a unique relationship with each of the other variables while statistically controlling for trait anger. This time, ATA was a non-significant predictor of Denver conspiracy beliefs ($\beta = 0.113$, $p = .095$), while trait anger ($\beta = 0.135$, $p = .046$) was a significant predictor of these beliefs. The overall regression equation was significant $R^2 = 0.042$, $F(2, 245) = 5.36$, $p = .005$. Next, we found that ATA ($\beta = -0.325$, $p < .001$) but not trait anger ($\beta = -0.060$, $p = .352$) significantly predicted trait humility measured with Brief State Humility Scale (Kruse et al., 2017). The overall regression equation was significant $R^2 = 0.123$, $F(2, 245) = 17.10$, $p < .001$. In addition, ATA ($\beta = -0.316$, $p < .001$) and trait anger ($\beta = -0.278$, $p < .001$) significantly predicted trait humility measured with our adapted Humility

subscale. The overall regression equation was significant $R^2 = 0.241$, $F(2, 245) = 38.64$, $p < .001$.

## Discussion

Study 4 replicated past research that has revealed that attitudes toward anger are positively correlated with attitudes toward other negative emotions (Harmon-Jones et al., 2011). However, attitudes toward anger positively predicted belief in specific conspiracy theories, controlling for attitudes toward other negative emotions, i.e., disgust, fear, sadness. In addition, attitude towards anger negatively predicted trait humility while controlling for attitudes toward other negative emotions. These results highlight the unique association of attitudes toward anger in predicting the endorsement of specific conspiracy theories and trait humility.

## Mini meta analyses

When researchers conduct several similar studies in one paper, they have been encouraged to perform a mini meta-analysis (Goh et al., 2016). This internal meta-analysis synthesizes the results across the studies, and provides more statistical power than individual studies. Consequently, a more precise estimate of effect size can be obtained. The below mini meta-analyses focused on two effects that were novel and reported in all studies: the correlation of ATA with conspiracy beliefs and the regression analysis in which ATA and trait anger are used to predict conspiracy beliefs.

To conduct the first mini-meta-analysis, we used the method described by Goh et al. (2016 and https://osf.io/6tfh5/). For the correlation of ATA with conspiracy beliefs, we used only one correlation from each study, to avoid introducing dependencies (some studies had multiple measures of conspiracy beliefs). We selected the smallest correlation from each study. Results revealed that the overall $r$ was .195 ($SE = .032$), $Z = 6.277$, $p < .001$, *95% CI for $r = .135 - .254$*.

The second "mini-meta-analysis" was designed to test whether ATA predicted conspiracy beliefs while statistically controlling for trait anger. Because the Goh et al. (2016) mini-meta-analysis procedure does not include methods for meta-analyzing multiple regressions, we combined ATA, trait anger, and conspiracy beliefs data for these four studies to increase the statistical power, and provide a better estimate of these effects. Because Study 3 had three measures of conspiracy beliefs, we used the one that generated the smallest beta in the regression analysis (i.e., true conspiracies), to provide a conservative test. The use of only one of the three conspiracy beliefs also avoided introducing dependencies in the data that would have occurred if we included

all three. Prior to merging the data sets, we standardized ATA, trait anger, and conspiracy beliefs within study to control for cohort/experiment effects. It is important to note that all studies were methodologically similar, and the sample sizes across studies were similar, suggesting that it was appropriate to combine the studies in this way. Results from this regression analysis revealed that ATA ($\beta = 0.150$, $p < .001$) and trait anger ($\beta = 0.119$, $p < .001$) independently predicted conspiracy beliefs. The overall regression equation was significant $R^2 = 0.050$, $F(2, 1015) = 26.90$, $p < .001$.

## General discussion

The current research aimed to better understand individual differences in attitudes toward discrete emotions, particularly the attitude toward anger. Replicating past research, individuals generally disliked emotions typically considered negative in valence (anger, disgust, fear, sadness), and they generally liked emotions typically considered positive in valence (joy). This is important to keep in mind when interpreting the results. For example, when we write that individuals who had more positive attitudes toward anger scored higher/lower on some other construct, this probably means that the individuals had less negative attitudes toward anger. However, we found this latter wording a bit awkward, and thus worded our phrases to indicate "more positive attitudes toward anger."

### Attitudes toward anger and anger-related traits

Replicating past research, Studies 1–4 found that attitudes toward anger correlated positively with trait anger. That is, individuals who have more positive attitudes toward anger are also more likely to be angry. These correlations were observed in both American and Polish samples, and the latter is a novel extension of past research.

It is important to note that not all attitudes toward discrete emotions correlate positively with their corresponding trait (or state) emotion. As revealed previously (Harmon-Jones et al., 2011), attitudes toward fear and disgust correlate negatively with trait fear and disgust, respectively. These correlations of opposite directions correspond to the motivational direction associated with the emotion: Approach-oriented trait emotions (e.g., anger, joy) are positively correlated with their corresponding attitudes, whereas avoidance-oriented trait emotions (e.g., fear, disgust) are negatively correlated with their corresponding attitudes.

In addition, attitudes toward anger correlated positively with being more likely to engage in revenge due to pleasure and have increased thoughts of revenge (Studies 1–2). That is, individuals who have more positive attitudes toward anger are also more likely to seek revenge because of anticipated pleasure and they have more thoughts of engaging in retaliation.

Attitudes toward anger also correlated negatively with the tendency to react with avoidance when experiencing anger (as assessed with the Avoidance Motivated Response to Anger Scale; Szymaniak et al., 2022). That is, individuals who have more positive attitudes toward anger are less likely to avoid confrontations with others when they themselves are angry.

Moreover, individuals who have more positive attitudes toward anger score lower in agreeableness (Studies 1–2). This could be due to their reduced motivation to down-regulate anger in social situations in order to "keep the peace". Future studies are required to test this hypothesis.

Taken together, these results suggest that individuals who have more positive attitudes toward anger are more likely to experience approach-related anger, think more about revenge, and anticipate experiencing pleasure from revenge. In addition, they are less agreeable and less likely to avoid confrontations with others when they themselves are angry. Based on this cross-sectional correlational evidence, it is impossible to know whether the attitudes were the cause or consequence of these other processes, or whether a third variable may explain these relationships. We suspect that all of these possible explanations are plausible. Attitudes can be created by behaviors (Harmon-Jones et al., 2019), and angry behaviors may have thus created more positive attitudes toward anger. On the other hand, more positive attitudes toward objects cause more engagement with the objects, and thus more positive attitudes toward anger may cause individuals to be more likely to experience approach-related anger and thoughts of revenge. Finally, a motivational tendency to approach may cause seeking of various experiences and the enjoyment of those experiences. As such, an approach temperament may have contributed to more angry experiences as well as more positive attitudes toward anger. Future longitudinal research should attempt to address these issues.

### Attitudes toward anger and belief in conspiracy theories

Attitudes toward anger also related positively with belief in conspiracy theories. More specifically, individuals who had more positive attitudes toward anger were more likely to have a general conspiracist mindset and they were also more likely to believe in conspiracy theories about COVID-19, vaccines, and newly created conspiracies. Moreover, they were more likely to believe previous, true events that were conducted in secret by powerful groups who may have had evil intentions.

Statistically controlling for both trait anger and other attitudes toward negative emotions suggested that attitudes toward anger had an independent influence on conspiracy beliefs. These results suggest that trait anger or attitudes toward negative emotions in general do not explain the correlation between attitudes toward anger and belief in conspiracy theories.

Although the evidence supports an independent influence of attitudes toward anger on conspiracy beliefs, it is unknown why these attitudes are related to conspiracy beliefs. Because of the cross-sectional correlational design of the present studies, we are unable to provide evidence of which variable is cause and which is consequence, or whether a third variable explains the correlation. Sensation seeking (or approach motivation) is one potential third variable that could explain the correlation. One contributor to belief in conspiracy theories is their entertainment value (van Prooijen et al., 2022), which is related to sensation seeking. Attitudes toward anger may also be contributed to by an approach motivational temperament (Harmon-Jones et al., 2013), and thus sensation seeking or approach motivation may explain the correlation of attitudes toward anger and conspiracy beliefs. Future research should address these issues.

## Attitudes toward anger and humility

Attitudes toward anger were negatively related to trait humility (Studies 3 and 4). That is, individuals who have more positive attitudes toward anger are less likely to be humble. Regression analyses revealed that attitudes toward anger continued to predict humility when statistically controlling for trait anger as well as attitudes toward other negative emotions. These results suggest that attitudes toward anger have an independent influence on trait humility over and above these other related constructs.

For the reasons mentioned above, the current research was unable to directly address why attitudes toward anger were negatively correlated with humility. We suspect that this correlation may have occurred because having a more positive attitude toward anger is antithetical to some components of humility such as being appreciatively focused on others and being egalitarian.

## Attitudes toward anger and attachment styles

In Study 3, we found that insecure attachment (attachment ambivalence/anxiety and attachment avoidance) was positively correlated with attitudes toward anger. Individuals who scored relatively higher on attachment insecurity also reported higher levels of trait anger, replicating past work (Meesters & Muris, 2002; Rholes et al., 2016). When

controlling for trait anger, positive attitudes toward anger uniquely predicted two subscales measuring attachment ambivalence (one assessing worries about the relationship and the other measuring a desire to merge with one's partner), but the association with attachment avoidance became non-significant. As mentioned previously, anger can be viewed as a functional response to separation, as it can result in attention from the attachment figure (Bowlby, 1973), and even domestic violence, a highly damaging form of anger/aggression, can be motivated by a desire to prevent one's partner from leaving the relationship (Bartholomew & Allen, 2006). Mikulincer & Shaver (2011) previously suggested that this sort of behavior may be more common amongst individuals who are ambivalently/anxiously attached due to their fears of abandonment. Thus, for individuals who score higher on ambivalent/anxious attachment, anger may be viewed relatively positively as it could be seen as a useful strategy to gain attention from their partner or intimidate their partner into remaining in the relationship. However, future studies are needed to test these ideas.

## Attitudes toward emotions, age, gender, and political orientation

In our previous research on attitudes toward emotions (Harmon-Jones et al., 2011), participants were university students in the 18–22 age range. In contrast, the current studies included participants from a much wider age range (18–79). Consequently, we were in a better position to test the relationship between age and attitudes toward emotions. As revealed in Study 4, age did not relate significantly with attitudes toward joy (when we describe an effect as significant, we mean that it is statistically significant, $p < .05$). However, age did relate significantly and negatively with attitudes toward fear, disgust, and sadness. The relationship of age and attitudes toward anger was generally negative but not always statistically significant across the four studies. Overall, these results suggest that older individuals have less positive attitudes toward negative emotions (at least the ones we measured). Whether this is a cohort effect or one that is genuinely due to the aging process cannot be answered with the current evidence. Future studies are required.

Gender showed complex relationships with attitudes toward emotions. For attitudes toward anger, no consistent pattern of results emerged over the four studies. In Study 4, which was the only study to include measures of attitudes toward several emotions, gender was significantly related to attitudes toward sadness and fear (no other significant relationships emerged). Men liked fear more and sadness less than women did. These results fit with other evidence showing that men are more likely than women to engage in risky

or dangerous activities (Byrnes et al., 1999; Cobey et al., 2013; attitudes toward fear correlated negatively with trait fear), and that women are more likely than men to experience depression (attitudes toward sadness correlate positively with depression; Harmon-Jones et al., 2011).

Political orientation was only measured in Study 3, which included a measure of attitudes toward anger but no other attitudes. Attitudes toward anger were correlated with political orientation, such that participants who identified as more conservative had more positive attitudes toward anger. Future research could further explore this relationship.

## On consistency, variation, and generalizability

Across studies, the correlations between variables were consistent in terms of direction and statistical significance. That is, ATA was consistently positively related to anger-related variables and conspiracy beliefs, and negatively related to humility. This consistency was observed even when the samples were from different countries (Poland and the USA) and they were recruited from different sources (recruited via social networking websites such as Facebook, via snowball sampling, or via online crowdsourcing platforms of Mturk and Prolific). These consistent findings across diverse samples is a strength of this series of studies, and suggests that these findings may be more generalizable. At the same time, there was large variability in the size of the correlations between ATA and conspiracy beliefs. We suspect that this variability may have been due in part to this diverse sampling. It may also be due to the nature of conspiracy beliefs, some of which may be particularly variable during the midst of a pandemic (this research was conducted during COVID-19 pandemic).

## Summary and conclusion

The present research shed light on correlates of attitudes toward anger. Simply stated, individuals who have more positive attitudes toward anger are higher in trait anger, and they are more likely to think about getting revenge and they expect that getting revenge will make them feel good. In addition, these individuals are lower in agreeableness and lower in the tendency to engage in avoidance when angered. They also score lower in humility and secure romantic attachment but higher in anxious and avoidance attachment. Finally, they are more likely to believe a wide range of conspiracy theories. Whether these attitudes toward anger are the cause or consequence of these other psychological variables is an open question, and we suspect that the answer is likely to be both (as well as possibly due to third variables, such as emotion regulation).

Because positive attitudes toward anger are associated with some characteristics that may be undesired by individuals or societies, future research should investigate whether a change in these attitudes could assist in reducing these other characteristics. In other words, would using attitude change techniques to increase the negativity of the attitude toward anger also assist in reducing trait anger or beliefs in false conspiracy theories? Future research should address these issues.

In addition, the present research illustrates the importance of considering attitudes toward *discrete* emotions. Several perspectives concerned with laypersons' beliefs and attitudes toward emotions consider emotions as a lumped sum (see review by Edwards & Wupperman, 2019) and seem to ignore the importance of separating beliefs/attitudes toward discrete emotions like anger and fear. We hope that the current research inspires other researchers to consider discrete emotions when examining other beliefs and schemas laypersons have about emotions.

## Declarations

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