UNDERSTANDING THE MISUNDERSTOOD EMOTION:

A MIXED-METHODS INVESTIGATION OF

VARIANTS OF ANGER

by

POOYA RAZAVI

A DISSERTATION

Presented to the Department of Psychology
and the Division of Graduate Studies of the University of Oregon
in partial fulfillment of the requirements
for the degree of
Doctor of Philosophy

March 2023

DISSERTATION APPROVAL PAGE

Student: Pooya Razavi

Title: Understanding the Misunderstood Emotion: A Mixed-Methods Investigation of Variants of Anger

This dissertation has been accepted and approved in partial fulfillment of the requirements for the Doctor of Philosophy degree in the Department of Psychology by:

Sanjay Srivastava   Chairperson
Sara Hodges   Core Member
David Condon   Core Member
David Wagner   Institutional Representative

and

Krista Chronister   Vice Provost for Graduate Studies

Original approval signatures are on file with the University of Oregon Division of Graduate Studies.

Degree awarded March 2023.

DISSERTATION ABSTRACT

Pooya Razavi

Doctor of Philosophy

Department of Psychology

March 2023

Title: Understanding the Misunderstood Emotion: A Mixed-Methods Investigation of Variants of
Anger

In cultural accounts and scholarly writings about anger, we see conceptualizations that reflect the existence of two variants: an anger perceived as moral, appropriate, and justified; and an anger considered wrong and unjustified. The present dissertation is focused on finding the boundaries between the two. From a functionalist perspective, it has been proposed that anger in response to harm to others is a justified prosocial reaction. Consistent with this notion, in Studies 1 and 2, I demonstrate that the expressivity norms and social consequences of anger depend on whether it is a response to harm to self or a reaction to harm to others. In the subsequent studies, I take a bottom-up approach to provide an in-depth understanding of the characteristics of the anger variants. Namely, in Study 3, I analyze participants' narratives about their past experiences of justified and unjustified anger using qualitative thematic analysis, closed-vocabulary, and open-vocabulary text processing methods. In Study 4, I use a prototype approach to differentiate justified and unjustified anger experiences across ten dimensions. I demonstrate that these variants of anger have crucial differences in appraisals, perceptions of the targets, and the intra- and interpersonal consequences of anger. The insights from this research program have implications for constructing theories capable of explaining diverse anger experiences and can inform future interventions to address the maladaptive behaviors associated with anger.

NAME OF AUTHOR: Pooya Razavi

GRADUATE AND UNDERGRADUATE SCHOOLS ATTENDED:

   University of Oregon, Eugene
   San Francisco State University, San Francisco, CA
   HELP University, Kuala Lumpur, Malaysia
   Tehran University of Art, Tehran, Iran

DEGREES AWARDED:

   Doctor of Philosophy, Psychology, 2023, University of Oregon
   Master of Arts, Social Psychology, 2016, San Francisco State University
   Bachelor of Psychology, 2014, HELP University
   Bachelor of International Music Performance, 2009, Tehran University of Art

AREAS OF SPECIAL INTEREST:

   Research Methodology
   Psychometrics
   Data Science
   Emotions and Social Relations

PUBLICATIONS:

Razavi, P., Shaban-Azad, H., & Srivastava, S. (2023). Gheirat as a complex
   emotional reaction to relational boundary violations: A mixed-methods investigation.
   Journal of Personality and Social Psychology, 124(1), 179-214.

Garinther, A., Arrow, H., & Razavi., P. (2022). Victim number effects in charitable giving: Joint
   evaluations promote egalitarian decisions. *Personality and Social Psychology Bulletin,
   48*(1), 34-46.

Zhang, J. W., Howell, R. T., Razavi, P., Shaban-Azad, H., Chai, W. J., Ramis, T., Mello, Z.,
   Anderson, C. L., & Keltner, D. (2021). Awe is associated with creative personality,
   convergent creativity, and everyday creativity. *Psychology of Aesthetics, Creativity, and
   the Arts.* Advance online publication. https://doi.org/10.1037/aca0000442

Hughes, B. T., Costello, C. K., Pearman, J., Razavi, P., Bedford-Pearson, C., Ludwig, R. M., &
   Srivastava, S. (2021). The Big Five across socioeconomic status: Measurement

invariance, relationships, and age trends. *Collabra: Psychology, 7*(1): 24431.

Young, I. F., Razavi, P., Cohen, T. R., Yang, Q., Alabèrnia-Segura, M., & Sullivan, D. (2021). A Multidimensional approach to the relationship between individualism-collectivism and guilt and shame. *Emotion*, *21*(1), 108-122.

Razavi, P., Shaban-Azad, H., Chai, W. J., Zhang, J. W., Nguyen. N., Howell, R. T. (2020). Benefits Associated with experiential and material purchases may depend on culture. *Social Psychological and Personality Science, 11*(5), 626-637.

Zhang, J. W., Chen, S., Tomova, T. K., Bilgin, B., Chai, W. J., Ramis, T., Shaban-Azad, H., Razavi, P., Nutankumar, T., & Manukyan, A. (2019). A compassionate self is a true self? Self-compassion promotes subjective authenticity. *Personality and Social Psychology Bulletin*, *45*(9), 1323-1337.

Razavi, P., Zhang, J. W., Hekiert, D., Yoo, S. H., Howell, R. (2016). Cross-cultural similarities and differences in the experience of awe. *Emotion, 16*(8), 1097-1101.

ACKNOWLEDGMENTS

I want to express my heartfelt gratitude to the following individuals who have supported and inspired me throughout my Ph.D. journey:

- My advisor, Dr. Sanjay Srivastava, for his unwavering guidance, invaluable feedback, and mentorship throughout my doctoral journey. Through your mentorship and your actions, you have taught me the value of an open and curious mind, the willingness to question all assumptions, and the importance of holding on to my principles. I can write pages about the various aspects of my professional and personal life that have improved due to your mentorship, and it wouldn't cover everything you have done for me. I am honored to have had the opportunity to work under your guidance and will never forget your positive impact on my life and career. Thank you for everything.

- Dr. Sara Hodges, for six years of support, encouragement, and dedication that have been critical in keeping me motivated and helping me grow. I have always been inspired by your expertise, compassion, and ability to attend to details while seeing the bigger picture. Your insightful feedback on my proposal helped me sharpen my arguments and analysis. Thank you for all you've done for me and the field of social psychology.

- Dr. David Condon, for his insightful comments on this and other projects and his great readiness to offer meaningful and compassionate support at multiple points of my Ph.D. journey. You brought a fresh methodological perspective to this department, which I sincerely appreciate. The students in your lab are lucky to have you as their mentor.

- Dr. David Wagner, for diligently serving on this committee and contributing to this project's formation and implementation. Your thoughtful and encouraging feedback during our conversations was critical in shaping this research, and motivated me to

evaluate various theoretical aspects of this work deeply. Thank you for your time and dedication to my work.

o Dr. Gerard Saucier, for his generous support as my supporting area research advisor and a member of my preliminary research committee. Your wealth of knowledge and experience in personality, moral, and cultural psychology has been invaluable to me. Your willingness to share your insights and expertise during the lab meetings has greatly improved my understanding of the field and helped me grow as a researcher. Thank you.

o Lori Olsen, for her support and assistance throughout my graduate studies. Your expertise and guidance helped me navigate the sometimes complex and challenging process of completing a graduate program. Thank you for making my graduate experience as smooth as possible.

o My friends in our department, Dr. Cory Costello, Sara Lieber, Tamara Niella, Dr. Karlena Ochoa, Dr. Katheryn Denning, Dr. Monika Lind, and at other universities, Dr. Sanaz Talaifar, Dr. Jonathan Gordils, Dr. Mohammad Atari, Dr. Cristina Salvador, Dr. Morteza Dehghani, and others I have inadvertently omitted, for their emotional support and encouragement throughout the ups and downs of this process.

o My research assistants, Andrew Castillo, Emily Lashchuk, Evan Doloszycki, and Karabeth Schini, for their contributions to the qualitative analysis of the narratives. And to Nate Gonzales-Hess, for his help and patience throughout the data collection process.

به ریس، لینزی و پیوند

برای زن، زندگی، آزادی

TABLE OF CONTENTS

LIST OF FIGURES

14

LIST OF TABLES

CHAPTER I: INTRODUCTION

> Anyone can get angry—that is easy […] but to do this to the right person, to the right extent, at the right time, with the right motive, and in the right way, that is not for everyone, nor is it easy (Aristotle, Nicomachean Ethics, ca. 350 B.C.E./1925)

Tavris (1989) referred to anger as the "misunderstood emotion." Haidt (2003) posited that anger is "the most underappreciated moral emotion" (p. 851). These observations refer to views of anger, especially among some philosophers, psychological researchers, and practitioners, that are primarily focused on anger's dark side. Anger has been characterized as the "greatest poison to the happiness of a good mind" (Smith, 1759, p. 58) and often viewed as destructive and antagonistic (Lemay Jr. et al., 2012), leading to interpersonal and intergroup aggression (Berkowitz, 1989; Skitka et al., 2006). Understandably, these uniformly negative perceptions promote a view of anger as a harmful experience that should be reduced, controlled, and treated (Beck & Fernandez, 1998; Ellis & Tafrate, 1997; Romero-Martínez et al., 2020). However, this broad and relatively dominant narrative does not provide a complete picture of anger and its consequences.

Other accounts, primarily based on research from a functionalist perspective, have pointed out the potential benefits of *some* anger experiences for the person and the collective. Based on this point of view, anger can act as a deterrent against future violations against the self and others, moral transgressions, and the unjust treatment of the vulnerable (A. H. Fischer & Roseman, 2007; Hutcherson & Gross, 2011; I. J. Roseman, 2018). A natural extension of this perspective is that these types of anger do not need to be suppressed or avoided; they might, in fact, be viewed as a form of prosocial responsibility (van Doorn et al., 2014). Note that this view of anger does not offer a uniformly positive view of the consequences of this emotional experience. Instead, this perspective is grounded in the idea that anger experiences have diverse

appraisals and lead to heterogeneous reactions (Ben-Zur & Breznitz, 1991; Haidt, 2003; Kuppens et al., 2007). Many of these anger experiences are harmful to the experiencer and possibly destructive for others; however, some are adaptive and necessary, and may even be beneficial to the self and others. In short, when reviewing the more nuanced scholarly writings on anger, we see conceptualizations that reflect the existence of two "types" or "variants" of anger with distinct social consequences: an anger that is perceived as moral, appropriate, and justified; and an anger that is considered wrong, inappropriate, and unjustified. The challenge is to find the boundary between the two.

Overview of Present Research

The overarching goal of this program of research is to investigate the distinction between these two variants of anger, their antecedents, and social consequences. Due to the limited literature investigating this distinction, I have adopted two complementary approaches to address this goal. First, following a top-down approach, I have reviewed the existing theoretical literature on different variants of anger to identify the most common theme distinguishing between "justified" and "unjustified" anger. Across this literature, one dimension emerged consistently: whether anger is a response to harm and threat to the *self* or to *others* has been theorized as a key factor in determining its justifiability. Anger elicited as a reaction to harm to others has been theorized as moral, appropriate, and justifiable (Geddes & Callister, 2007; Lindebaum & Geddes, 2016). Building on these theories, in Study 1, I analyzed secondary data ($N = 2,353$) to examine whether this distinction is reflected in participants' patterns of expressivity. Furthermore, to expand our understanding of the social consequences of these two types of anger, in Study 2 ($N = 853$), I examined the social perceptions of those who express (or do not express) each type of anger across a constellation of theoretically informed character judgments. By adopting a top-

down approach, these two studies shed light on a single dimension of anger appraisal (i.e., harm to self vs. harm to others), which has been deemed relevant to the justifiability and acceptability of anger.

However, the emergence and experience of emotions are often multicausal complex processes (Cai et al., 2012) involving multiple appraisals (So et al., 2015), which cannot be fully captured by testing a single dimension. To address this limitation, I complemented the top-down approach in Studies 1 and 2 with a bottom-up approach in Studies 3 and 4, where participants' descriptions of their experiences and lay theories are systematically elicited, documented, and analyzed to determine the relevant causes and processes associated with different anger variants. Specifically, in Study 3 ($N = 1,179$), participants' open-ended narratives about their experiences of justified and unjustified anger are analyzed using three diverse text analysis methods: qualitative thematic analysis (Braun & Clarke, 2006), closed-vocabulary text analysis using Linguistic Inquiry and Word Count's (LIWC; Tausczik & Pennebaker, 2010) internal and external dictionaries, and open-vocabulary text analysis using the Structural Topic Modeling (STM; Roberts et al., 2014). Consistent with Nelson's (2020) computational grounded theory framework, this study aims to generate insights about the similarities and differences between participants' justified and unjustified anger narratives in terms of the antecedents and appraisals of their anger experience (via the qualitative analyses), the psychological and linguistic characteristics that are quantitatively detectible in their narratives (via LIWC), and the semantically coherent topics (via topic modeling). Finally, in Study 4 (which has the same sample as Study 3), I adopted a prototype approach (Shaver et al., 1987) to investigate the differences between justified and unjustified anger in terms of theoretically relevant dimensions of moral, emotional, and relational experiences. Specifically, I examined the differences between

the two anger variants across ten dimensions pertaining to the perceptions of the behavior that led to the anger, the person or entity who caused the anger, and the experiencer's emotional and relational processes.

The following sections discuss the literature and theoretical background informing the research questions and methodology for the four studies in this program of research.

Anger in Response to Harm to Self versus Others

In cultural and scholarly writings, there are indications that these two types of anger have different meanings and social interpretations. Anger that is primarily rooted in self-interest is often perceived negatively. For example, religious sources generally consider anger embedded in self-centered goals or desires to be a sin and advise followers to suppress such anger ("10 Key Bible Verses", 2021; Boll, 2019). Furthermore, theoretical writings in the context of organizational behavior (Geddes & Callister, 2007) suggest that anger with an egocentric focus (i.e., anger related to experiences such as personal inconvenience or goal obstruction) is perceived more negatively compared to "alter-centric anger" (i.e., anger with a focus on the violations or failures that could harm the other members or the customers).

In contrast, anger elicited as a result of harm to others is often interpreted in a positive light. The experience of such anger is associated with prosocial tendencies, such as supporting the disadvantaged, advocating compensation for those who are harmed, and a tendency to correct wrongdoings (van Doorn et al., 2014). The expressions of such anger (sometimes referred to as moral anger; Lindebaum & Geddes, 2016) can be seen as a form of personal sacrifice in favor of the greater good or a reflection of moral integrity, and therefore perceived as more acceptable (Callister et al., 2007) and judged favorably (Warren et al., 2022). These differences in the

meanings and social interpretations of anger in response to harm to self versus others should be reflected in two essential domains: expressivity norms and social consequences of anger.

Expressivity Norms

Considering the previously discussed theories about the two anger variants, it is plausible that the extent to which people's expression of anger reflects their feelings depends on whether the felt anger is a response to harm to self or harm to others. Since the tendency to express emotions are embedded in socially accepted norms (Keltner & Haidt, 1999; Trierweiler et al., 2002) and anticipated social consequences of expressivity (King & Emmons, 1990), if the expression of anger is perceived as more acceptable (or judged more favorably by others) when it is a response to harm to others (vs. the self), individuals tend to learn such social dynamics over time and modify their expressivity accordingly (Anderson & Guerrero, 1998). As such, there should be a stronger relation between the experience and expression of anger when anger is a response to harm to others (vs. the self). In Study 1, I use secondary data previously collected for a study on the association between the experience and expression of various emotions to test this hypothesis.

Social Consequences of Anger Expression

"When anger rises, think of the consequences." (Confucius)

There is a robust relation between the tendency to be emotionally expressive and the anticipated impressions that such expressivity can leave on others (Joseph et al., 1994; King & Emmons, 1990). In the case of anger, people may generally be concerned about the potential negative consequences of their expressivity, which is why they tend to attenuate their expression. However, these concerns may be weaker if the anger is perceived as "selfless." Due to its prosocial nature (van Doorn et al., 2014), anger expressed in response to violations that primarily

harm others may generate positive (or less negative) impressions. To further investigate this mechanism, in Study 2, I examine the social judgments of people who express (vs. do not express) their anger as a function of the elicitor of anger (harm to self vs. harm to other).

Theoretical accounts suggest that the social consequences of these two types of anger might be different. For example, Lindebaum and Geddes (2016) posit that the primary component of several theoretical definitions of "moral anger" is the idea that such anger (as opposed to destructive anger) is concerned with the welfare and interests of others and therefore serves the "greater good." Furthermore, the perceived prosocial nature of such anger and its behavioral correlates (as theorized by van Doorn et al., 2014) can be a potential buffer against the generally negative perceptions of anger expressers as selfish individuals with low affiliative tendencies (Knutson, 1996; Tiedens, 2001). Overall, the theoretical work on the discrepancies between anger in response to concerns for the self (vs. others) raises the possibility that the expressions of these two variants have distinct social meanings and can generate unique social consequences. This notion is empirically tested in Study 2:

Research question 1: What are the differences in character judgments and social impressions formed based on anger expression (or lack thereof) in response to harm to others versus harm to self?

In addition to the appraisal of the anger-eliciting event, a sizeable body of research suggests that the social norms about emotional expressivity, especially when it comes to the expression of negative emotions such as anger, differ for men and women (Ekman, 1984; Hareli & Rafaeli, 2008; Plant et al., 2000). According to the literature on gender and expressivity, men and women provoke distinct social judgments and impressions after expressing the same emotion (K. M. Lewis, 2000; Marshburn et al., 2020). For example, Brescoll and Uhlmann (2008) found

that even though expressing anger led to impressions of competence and higher status for male expressers, women who expressed anger were perceived as less competent and were conferred lower status. This effect was present for both male and female participants, and did not disappear even after manipulating the occupational rank of the target (i.e., trainee vs. CEO), suggesting that the gender differences in the stereotype-based backlash (Rudman & Fairchild, 2004) resulting from women's expression of anger are persistent and strong.

While a number of studies have demonstrated this stereotype-based backlash elicited by expression of anger (compared to other emotions or non-expressivity), the extent to which such effect generalizes to different variants of anger is an open question. On the one hand, as demonstrated by Brescoll and Uhlmann (2008), it is possible that the gender stereotypes about anger expression are so persistent that they are triggered regardless of whether the expression is a response to harm to self or harm to others. On the other hand, there are indications that some of these stereotypes may be contingent on the characteristics of the anger-eliciting event. It is plausible that anger expressed in response to harm to others (vs. the self) is perceived as a sign that the expresser is caring and attentive to the needs of others, an impression that does not contradict gender stereotypes about women (Ellemers, 2018) and, therefore, might not elicit a backlash. Consequently, to the extent that anger concerned with other's welfare is perceived as "prosocial" (van Doorn et al., 2014), the stereotype-based judgments against women's expression of anger might be absent (or weaker) if their anger is expressed in reaction to harm to others. These two alternatives are investigated in Study 2:

> *Research question 2:* To what extent are the character judgments and social impressions formed based on anger expressed in response to harm to others (vs. harm to self) dependent on the expresser's gender?

23

Anger Variants, Lay Theories, and Written Narratives

> But in the end, stories are about one person saying to another: This is the way it feels to me. Can you understand what I'm saying? Does it feel this way to you? (Kazuo Ishiguro)

Studies 1 and 2 examine a single dimension of appraisal (i.e., harm to self vs. harm to others) which my literature review indicated was relevant to the justifiability and acceptability of anger. Isolating a single appraisal and studying its social aspects provides important insights into this specific dimension. However, since the emergence and experience of emotions is a complex multicausal process (Cai et al., 2012) comprised of multiple appraisals (So et al., 2015), testing a single dimension does not provide a complete picture of the complexities of the emotional processes and other possible appraisals involved in such processes (C. A. Smith & Ellsworth, 1985). One way to capture these complexities is to complement the top-down approach (where researchers determine what dimensions or causes are relevant to a phenomenon) with a bottom-up approach, where participants' description of their experiences and lay theories are systematically elicited, documented, and analyzed to determine the relevant causes and processes associated with a phenomenon.

In Study 3, I adopt this approach and use multi-method text analyses to develop a thorough understanding of the different variants of anger, their elicitors and associated lay theories. Participants were asked to write about an anger episode where either they believe their anger was justified (i.e., they felt they were right to get angry), or they think their anger was unjustified (i.e., they felt they were wrong to get angry). To understand the similarities and differences between the two variants of anger, I apply an integrative multi-method approach inspired by Nelson's (2020) computational grounded theory framework to analyze the narratives. Three complementary methods to are used: (a) qualitative thematic analysis (Braun & Clarke, 2006; Robinson, 2021), (b) closed-vocabulary text analysis using LIWC's internal dictionaries

(Tausczik & Pennebaker, 2010), and an array of external dictionaries primarily related to morality and emotions, and (c) open-vocabulary text analysis using STM (Roberts et al., 2014).

Each methodology has unique strengths when extracting theoretically relevant insights from text data. In qualitative thematic analysis, trained coders follow highly structured procedures (Braun & Clarke, 2006; Robinson, 2021) to extract semantic and latent themes about the causes of anger, how people appraise and justify their anger experiences, and the similarities and differences between justified and unjustified anger in terms of elicitors and rationalizations provided by the participants. In comparison to automated natural language processing (NLP) methods (discussed later), qualitative thematic analysis is considerably more labor-intensive and time-consuming (Guetterman et al., 2018). However, this approach is uniquely effective in finding contextual nuances, latent themes, and other complexities that might be missed by automated NLP methods but will be captured through human coders' socially-embedded reasoning (Guetterman et al., 2018; Li et al., 2019; Walsh et al., 2021). Considering these strengths, I apply thematic analyses to participants' anger narratives with the overarching goal of exploring and extracting themes that describe (a) the similarities and differences in the antecedents and elicitors of justified and unjustified anger, and (b) participants' theories and reasoning behind the categorization of their anger as justified or unjustified. The thematic analyses followed established guidelines (Braun & Clarke, 2006; Robinson, 2021) and involved a four-step process, which is extensively discussed in Chapter IV.

The second method—closed-vocabulary analysis—involves quantifying the relative frequency of theoretically relevant words for each body of text (here, each participant narrative). The theoretically relevant words for a construct or topic are documented in predetermined dictionaries. In Study 3, I use the LIWC software, which applies previously validated

dictionaries to quantify the corresponding constructs in each narrative by calculating the relative

frequency of the relevant words. This approach was chosen because of its fit to the narrative data

collected for this study. Compared to many other NLP methods, most dictionaries have been

developed using text corpora that are similar to the narratives in terms of text length and data

collection method. Furthermore, through internal and external dictionaries, LIWC can

simultaneously analyze participants' narratives on tens of psychological and linguistic features,

providing the opportunity to compare the narratives from the two conditions on a large

heterogeneous set of constructs. Given these methodological considerations, I incorporate LIWC

analyses (including both internal and external dictionaries) to investigate the psychological and

linguistic characteristics of participants' justified and unjustified anger across a multitude of

predetermined dimensions.

The third approach—open-vocabulary analysis—consists of data-driven methods that

algorithmically search and identify clusters of semantically associated words (i.e., topics) that

occur in a text corpus (Griffiths et al., 2007). In Study 3, I use topic modeling to find the topics

that are most associated with each anger variant. This involves modeling the topics across all

narratives using STM and creating topic scores representing the relative presence of each topic in

each narrative (i.e., p(topic | narrative); Boyd, 2017; Eichstaedt et al., 2021; Roberts et al., 2014),

and comparing these topic scores between the two conditions to find the topics that are most

associated with each variant of anger.

Using these three methods, I examine participants' narratives in search of insights into

the similarities and differences between justified and unjustified anger.

Situating Anger Variants in a Multi-Dimensional Space

> Like other vernacular lexemes, the emotion labels in natural languages do not have
> definite, stable, mutually transparent meanings, and any one vernacular word may be

used to denote multiple scientifically distinct entities. […] So scientists need to coin new technical names for scientifically derived constructs—names precisely defined in terms of the constellation of features or components that characterize the constructs they denote. (Fiske, 2020, p. 95)

It is common to conceptualize emotional experiences on one or more dimensions (Scherer, 2005). By increasing the number of theoretically relevant dimensions when describing an emotional experience, we can provide a more nuanced description of that experience, which is particularly relevant to differentiating emotional experiences with fuzzy boundaries (Cohen et al., 2011). For example, suppose we adopt a unidimensional approach and describe emotions on a positive-negative continuum. In that case, we will be more successful in distinguishing sadness from happiness than distinguishing sadness from fear. However, adding dimensions beyond valence (e.g., perception of threat or loss) can facilitate demarcating similarly-valenced emotions. Accordingly, given the goal of this research program to understand the distinct features of justified and unjustified anger experiences, an essential step is to situate these anger variants in a high-dimensional framework.

A review of the literature on negative moral emotions, their appraisals, and social consequences indicated ten dimensions that are considered central to morally-laden emotional experiences (Chapman & Anderson, 2011; A. Fischer et al., 2018; Fiske, 2002; Gray & Wegner, 2011; Hutcherson & Gross, 2011; Sunar et al., 2020; Tangney et al., 2007) and can potentially vary between prototypical experiences of justified and unjustified anger. To achieve a multidimensional and nuanced understanding of justified and unjustified anger, Study 4 adopts a prototype approach (J. A. Russell & Fehr, 1994; Shaver et al., 1987) where participants' recalled experiences of justified and unjustified anger are evaluated across theoretically relevant dimensions. These dimensions fall under four broad categories. Informed by the literature, the examined research questions and hypotheses are organized around these four themes:

Perceptions of the Behavior that Led to Anger

How does justified anger differ from unjustified anger in terms of anger-eliciting behavior? When it comes to moral emotions, three characteristics of the behavior often determine the type and intensity of the experienced emotions. First, the perceived existence of harm (Gutierrez & Giner-Sorolla, 2007) or threat (Miceli & Castelfranchi, 2019) is a consistent theme in appraisals associated with anger and other moral emotional experiences (Sunar et al., 2020; Tangney et al., 2007). Importantly, whether the perceived harm or threat is directed at the self or others is an essential part of harm/threat perceptions, with potentially distinct social consequences (as extensively discussed in Studies 1 and 2). Second, the extent to which the emotion-eliciting behavior is perceived as unfair affects the type of emotion experienced (Batson et al., 2007) and the behavioral response associated with the experience (Miceli & Castelfranchi, 2019; Pillutla & Murnighan, 1996). Finally, whether a behavior is perceived as a norm violation, and if so, the type of violated norm (i.e., descriptive vs. injunctive; Gao et al. [2016]; Heerdink et al. [2019]) is another integral part of the appraisals associated with moral emotions, with distinct phenomenological and social consequences (Eriksson et al., 2017; Ohbuchi et al., 2004). As part of the over-arching goal to provide a multi-dimensional comparison of justified and unjustified anger, in Study 4, I examine the differences between these two anger variants in terms of participants' perceptions of harm and threat, fairness, and norm violations.

Perceptions of the Target

Are there systematic differences between justified and unjustified anger experiences in terms of the way people perceive the person/entity who made them angry? Moral-emotional reactions are fundamentally influenced by the experiencer's perceptions of the intentions and character of the person(s) involved in an emotion-eliciting event (Hutcherson & Gross, 2011).

From the point of view of the experiencer, whether the emotion-eliciting behavior stemmed from internal and stable characteristics of the target or due to circumstances beyond the target's control affects the type of emotion (Neumann, 2000; Weiner, 1985), its intensity (Allen et al., 2009), and the behavior following the experience (Brun et al., 2021). Relatedly, moral and relational perceptions are often influenced by events or behavior that generate negative moral emotions (Huebner et al., 2009; Laurent et al., 2014). As demonstrated by Goodwin et al. (2014), judgments of morality and warmth are separable and can provide unique informational value for person perception. Considering the interrelated nature of moral and relational inferences (Crockett et al., 2021), in Study 4, I examine the evaluations of the target in terms of the perceived dispositionality of their behavior, and their perceived moral and relational character.

Experiencer's Emotional Processes

Emotions are often experienced concurrently (Miyamoto et al., 2010; Vansteelandt et al., 2005). Studies on negative moral emotions suggest that the co-occurrence of specific emotions (or lack thereof) can depend on the appraisals of the emotion-eliciting event (Kollareth & Russell, 2019) and may lead to different behavioral responses. For example, the combination of anger and hostile emotions, such as contempt and disgust, is considered a basic element of intergroup aggression (Matsumoto et al., 2016). Most relevant to the present goal, past research has demonstrated that investigating concurrent emotions can shed light on the differences between the variants of an emotion concept and the unique motivational tendencies associated with each variant (Guan et al., 2019; Razavi et al., 2022; Tracy & Robins, 2007). In Study 4, I examine the broader affective experiences associated with justified and unjustified anger events across a wide range of negative and positive emotions.

Another important dimension inherently linked to the justifiability and acceptability of emotional experiences is expressivity. In their dual-threshold model of anger, Geddes and Callister (2007) posit that there is an "impropriety threshold" for the expression of anger. This threshold is crossed when individuals go "too far" when expressing their anger, which results in their behavior being judged as "socially and/or culturally inappropriate" (p. 722). In the present context, one can imagine two non-mutually exclusive instances where expressing anger could be perceived as going "too far." One possibility is that amplifying and exaggerating one's anger is perceived as a norm violation (Matsumoto et al., 2010). Another possibility is that high-intensity (compared to mild) anger expression can be perceived as aversive and inappropriate (Adam & Brett, 2018). In Study 4, I examine these two alternatives based on participants' retrospective reports of how they expressed their anger towards the target during justified and unjustified anger episodes.

Experiencer's Relational Processes

Social functionalist accounts of anger unanimously suggest that one of anger's functions is to cause a change in the other person's behavior, attitudes, or future intentions (Lench et al., 2016; Van Kleef et al., 2004). On the part of the target, this intention to change behavior may be reflected as a sense of regret for their actions and/or a desire to apologize (Baumeister et al., 1990; Pace et al., 2010). This motivational dimension of anger is so fundamental that some researchers consider it one of the key distinctions between anger and other moral emotions (A. Fischer et al., 2018; A. H. Fischer & Roseman, 2007). However, the extent to which the perceived impact of anger on the target varies among different variants of anger is an open question, which I examine in Study 4.

Furthermore, a large body of research has documented the negative impact of anger on relationships in various contexts (DiGiuseppe & Tafrate, 2007; A. H. Fischer & Evers, 2011; Liu et al., 2018; Snyder et al., 2007; L. Wang et al., 2012). A relatively smaller number of studies have suggested that the relational outcomes associated with anger are not necessarily universally negative, especially in the long term (Kassinove et al., 1997; Reifen Tagar et al., 2011; Roberts Callister et al., 2017; Stickney & Geddes, 2016). Overall, this literature suggests that the negative influence of anger experience and expression on relationships is non-uniform.

I propose that the distinction between justified and unjustified anger can explain some of the variability in these negative relational outcomes. It is plausible that the negative relational impact of anger is stronger and more long-lasting for anger experiences that are perceived as justified (vs. unjustified). There are two potential mechanisms that inform this prediction: First, the more profound sense of harm/threat and the target's perceived immorality associated with the justified (relative to unjustified) anger can be a greater threat to the relationship with the target, as people are justifiably motivated to avoid harmful or immoral actors. Second, considering the inherent value of relationships, when people perceive their anger as unjustified, they should be more likely to make attempts at repairing the negative effect of anger (e.g., via apologies; Van Kleef & Dreu, 2010). Building on this theoretical background, Study 4 examines the negative influence of anger events on the relationship between the experiencer and the target, both in the short and long term.

CHAPTER II: STUDY 1

This study aims to examine the differences in expressivity norms between anger in response to harm to self and anger in response to harm to others. As discussed in the Introduction chapter, cultural writings and scholarly work suggest that these two types of anger have different meanings and social interpretations. Anger that is grounded in self-interest is generally perceived negatively. In contrast, anger elicited due to harm to others is often interpreted in a positive light. Considering people's sensitivity and responsiveness to the social outcomes of emotional expressivity (Anderson & Guerrero, 1998), if the expression of anger in response to harm to others is perceived as more acceptable or judged more favorably by others, there should be a stronger relation between the experience and expression of anger when the anger is in response to harm to others (compared to harm to the self).

To test this hypothesis, in the present study, I used secondary data previously collected for a survey of the association between the experience and expression of emotions. In this dataset, participants provide their ratings of emotional experience and expressivity for a set of diverse emotion-eliciting scenarios. The dataset has characteristics that are advantageous for the present study. Notably, the scenarios were developed using an emic-etic approach (Arshad & Chung, 2022) based on a large collection of open-ended responses from participants from four countries. As a result, they represent a wide range of common anger-eliciting appraisals (e.g., betrayal, rudeness, intrusion, goal obstruction) and interaction partners (e.g., romantic partner, close friend, casual acquaintance), which can contribute to the generalizability of the findings (Brunswik, 1949; Yarkoni, 2022).

To use this secondary dataset for the present research question, the scenarios had to be categorized based on the primary target of harm in each situation. This task was achieved using a preliminary study, which is discussed next.

Preliminary Study

The goal of this study was to evaluate and categorize a set of anger scenarios in terms of their target-of-harm appraisals. These scenarios were previously developed by asking participants from four countries (China, Japan, Malaysia, and the US) to write about events that would generally lead to anger. These open-ended responses were later analyzed for common themes. The most common themes across all samples were selected to produce eight scenarios. As a result, the scenarios covered a wide range of anger-related appraisals (e.g., betrayal, rudeness, goal obstruction) and varied in terms of the distribution of the normative intensity of anger elicited across situations (see Figure A.1 in Appendix A). Furthermore, since the expression of emotions is highly dependent on the relationship closeness between the expresser and the recipient of the emotional communication (Matsumoto, 1990; Safdar et al., 2009), two different versions of the scenarios were developed. In one version, the interaction partner was a person close to the protagonist (i.e., a close friend or romantic partner). In the other version, the interaction partner had a relatively distant relationship with the protagonist (e.g., a casual acquaintance or a worker at a hospital).

In this preliminary study, to evaluate the harm to self versus harm to others appraisal dimension, participants were asked to imagine themselves in each scenario and indicate the extent to which they believe (a) they are the primary person being harmed (the "harm to self" item), and (b) someone else is the primary person being harmed (the "harm to other" item). Participants also reported their general perception of the presence of harm (or lack thereof) for

each scenario (the "perception of harm" item). To categorize the scenarios as "harm to self" or "harm to others," I used the mean differences between the "harm to self" and "harm to others" items, as well as the partial correlation between these items and the "perception of harm" item. In other words, for a scenario to be categorized as a situation in which the self is the primary target of harm, two conditions must be satisfied: First, the mean of "harm to self" must be considerably greater than the mean of "harm to other." This will be assessed based on the significance and the effect size. Second, the variance in the "perception of harm" should be primarily explained by "harm to self" (not "harm to others"). In other words, in a model where "perception of harm" is predicted by "harm to self" and "harm to others," only "harm to self" must remain as a significant predictor of the "perception of harm." The opposite pattern would be true for scenarios that are categorized as situations where others are the primary target of harm.

These two conditions were tested for all scenarios in order to categorize them into "harm to self" and "harm to other(s)" situations. Those scenarios that did not meet these conditions were classified as "mixed" (i.e., situations where both self and others are targeted).

Preliminary Study's Method

Participants. Participants ($N = 314$, $M_{age} = 19.38$, $SD_{age} = 3.14$) were recruited from the University of Oregon's Psychology and Linguistics subject pool and completed this study as part of their course requirements. The majority identified as female (64.8%), followed by male (32.4%); one participant identified as non-binary. The majority identified as White (66.0%), followed by Asian (11.8%), Hispanic, Latinx, or Spanish origin (9.3%), Black (3.4%), Native Hawaiian or other Pacific Islander (1.9%), Multiracial (1.9%), and Middle Eastern or North African (1.2%). Data collection for this research was approved by the University of Oregon's Institutional Review Board (IRB; protocol number: 09072010.006).

Procedure and Materials. After completing the consent form, participants received the

following instructions, which provided them with some background about the questions and

clarified the broad scope of harm:

> In the following section, you will read 8 scenarios. In each of these scenarios, someone is committing a norm violation that may lead to harming or hurting you or someone else (or both). For each scenario, please indicate to what extent you think you or someone else is the **primary** person who is being harmed or hurt. When we talk about harm or hurt, it can be both physical (e.g., losing something valuable) or non-physical (e.g., being insulted).

Participants were then randomly assigned to one of two groups. In each group, they read

eight anger scenarios. The two groups varied in terms of the interaction partner in the scenarios

(see Appendix A for study materials).

For each scenario, participants rated the extent to which they believed the violation

primarily involves harm to self ("I am the primary person who is hurt in this situation.") and

harm to others ("Someone else (other than me) is the primary person who is hurt in this

situation."; 1 = s*trongly agree*, 4 = *neutral*, 7 = *strongly disagree*).

They also provided their perception of the presence or absence of harm for each scenario

("No one is hurt in this situation.") on a 7-point scale (1 = s*trongly agree*, 4 = *neutral*, 7 =

strongly disagree).

Preliminary Study's Results

To classify each scenario based on the target of harm, two sets of analyses were

conducted[1]. First, a paired-samples t-test was used to compare participants' ratings of "harm to

self" and "harm to others" for each scenario. Results (Table 2.1) indicated that for both versions

of scenarios four and eight, the ratings of harm to others were considerably higher than harm to

self ($1.07 \leq d$s ≤ 2.18, ps $< .001$). For the remainder of the scenarios, harm to self had

---

[1] Data and R code to reproduce the present results are available at http://bit.ly/3jJJozE

significantly higher endorsements ($0.30 \leq ds \leq 2.11$, $ps < .001$). It is worth noting that among these scenarios, two (i.e., scenarios one and seven) had relatively smaller mean differences ($0.30 \leq ds \leq 0.64$) compared to the rest ($1.04 \leq ds \leq 2.11$).

Second, a regression model with the "harm to self" and "harm to other" items as the predictors and "perception of harm" as the outcome variable was conducted for each scenario. As demonstrated in Table 2.2, "harm to self" was the only significant correlate of "perception of harm" for four scenarios (i.e., two, three, five, and six; $-0.75 \leq bs \leq -0.48$, $ps < .001$). Furthermore, "harm to others" was the only significant correlate of "perception of harm" for two scenarios (i.e., four and eight; $-0.72 \leq bs \leq -0.33$, $ps < .001$). For two scenarios (i.e., one and seven), both harm to self and harm to others remained as significant correlates of "perception of harm" for at least one version of the scenario. Semi-partial correlation analyses produced the same conclusions (Table 2.2).

Considering the mean differences (Table 2.1) and partial correlations (Table 2.2), four scenarios (i.e., two, three, five, and six) are categorized as situations where the self is the primary target of harm and two scenarios (i.e., four and eight) are classified as situations where another person is the primary target of harm. These categorizations were used in the Study 1 analyses.

Table 2.1

Participants' Evaluations of the Target of Harm for Each Scenario

Scenario	Means Self is harmed	Means Other is harmed	Difference*	95%CI of Diff.	Welch's t-test	Cohen's d*
S1	4.80	4.09	0.71	(0.45, 0.97)	$t(619.22) = 5.33, p < .001$	0.30
S2A	5.59	2.78	2.81	(2.49, 3.12)	$t(298.37) = 17.50, p < .001$	1.40
S2B	5.78	2.35	3.43	(3.12, 3.74)	$t(309.31) = 21.98, p < .001$	1.75
S3A	5.03	3.10	1.93	(1.64, 2.22)	$t(306.38) = 13.04, p < .001$	1.04
S3B	5.28	2.98	2.30	(2.02, 2.58)	$t(298.81) = 15.92, p < .001$	1.27
S4A	2.23	6.34	-4.11	(-4.41, -3.81)	$t(266.15) = -27.28, p < .001$	-2.18
S4B	2.34	6.18	-3.84	(-4.15, -3.54)	$t(297.26) = -24.90, p < .001$	-1.99
S5	6.39	2.72	3.67	(3.44, 3.90)	$t(514.66) = 31.27, p < .001$	1.77
S6A	5.67	2.23	3.44	(3.19, 3.70)	$t(306.60) = 26.37, p < .001$	2.11
S6B	5.36	2.25	3.11	(2.83, 3.40)	$t(311.00) = 21.51, p < .001$	1.72
S7A	4.83	3.51	1.32	(1.00, 1.65)	$t(296.15) = 8.02, p < .001$	0.64
S7B	4.76	3.90	0.86	(0.50, 1.21)	$t(304.54) = 4.77, p < .001$	0.38
S8A	3.26	5.63	-2.37	(-2.70, -2.04)	$t(272.5) = -14.06, p < .001$	-1.13
S8B	3.60	5.78	-2.18	(-2.51, -1.86)	$t(287.87) = -13.35, p < .001$	-1.07

* Mean differences and Cohen's ds were calculated using [harm to self – harm to other].

Table 2.2

Regression and Semi-Partial Correlations based on Predicting "Perception of Harm" from "Harm to Self" and "Harm to Others"

Scenario	Predictor	b	b 95% CI [LL, UL]	beta	beta 95% CI [LL, UL]	sr^2	sr^2 95% CI [LL, UL]	r	Fit
1	(Intercept)	2.17**	[2.03, 2.32]						
	harm: self	-0.23**	[-0.32, -0.13]	-0.28	[-0.39, -0.16]	.06	[.01, .12]	-.15**	
	harm: other	-0.23**	[-0.33, -0.14]	-0.30	[-0.42, -0.18]	.07	[.02, .13]	-.19**	
									R^2 = .098** 95% CI[.04,.16]
2A	(Intercept)	2.26**	[2.08, 2.44]						
	harm: self	-0.51**	[-0.67, -0.35]	-0.50	[-0.66, -0.35]	.21	[.09, .32]	-.46**	
	harm: other	-0.08	[-0.21, 0.05]	-0.10	[-0.26, 0.06]	.01	[-.02, .03]	.12	
									R^2 = .221** 95% CI[.11,.32]
2B	(Intercept)	2.25**	[2.08, 2.41]						
	harm: self	-0.68**	[-0.81, -0.55]	-0.65	[-0.77, -0.52]	.38	[.26, .50]	-.66**	
	harm: other	0.04	[-0.09, 0.16]	0.04	[-0.09, 0.16]	.00	[-.01, .01]	.23**	
									R^2 = .434** 95% CI[.31,.52]
3A	(Intercept)	2.83**	[2.63, 3.03]						
	harm: self	-0.74**	[-0.90, -0.57]	-0.58	[-0.71, -0.45]	.33	[.21, .45]	-.57**	
	harm: other	-0.05	[-0.20, 0.10]	-0.05	[-0.18, 0.09]	.00	[-.01, .01]	.04	
									R^2 = .330** 95% CI[.21,.43]
3B	(Intercept)	2.59**	[2.38, 2.81]						
	harm: self	-0.70**	[-0.90, -0.49]	-0.51	[-0.67, -0.36]	.22	[.10, .33]	-.49**	
	harm: other	-0.07	[-0.23, 0.10]	-0.06	[-0.21, 0.09]	.00	[-.01, .02]	.15	
									R^2 = .240** 95% CI[.13,.34]
4A	(Intercept)	1.67**	[1.54, 1.80]						
	harm: self	-0.05	[-0.14, 0.04]	-0.08	[-0.21, 0.05]	.01	[-.01, .02]	.19*	
	harm: other	-0.72**	[-0.86, -0.59]	-0.69	[-0.82, -0.56]	.40	[.28, .52]	-.66**	
									R^2 = .437**

Table 2.2 (continued)

Scenario	Predictor	b	b 95% CI [LL, UL]	beta	beta 95% CI [LL, UL]	sr^2	sr^2 95% CI [LL, UL]	r	Fit
4B	(Intercept)	1.72**	[1.58, 1.85]						95% CI[.32,.53]
	harm: self	0.05	[-0.04, 0.15]	0.06	[-0.05, 0.18]	.00	[-.01, .02]	.26**	
	harm: other	-0.70**	[-0.82, -0.58]	-0.69	[-0.81, -0.57]	.44	[.32, .55]	-.71**	
									R^2 = .508**
									95% CI[.40,.59]
5	(Intercept)	1.49**	[1.36, 1.61]						
	harm: self	-0.48**	[-0.63, -0.34]	-0.48	[-0.63, -0.34]	.22	[.10, .33]	-.50**	
	harm: other	0.04	[-0.04, 0.11]	0.07	[-0.07, 0.21]	.00	[-.01, .02]	.21**	
									R^2 = .259**
									95% CI[.14,.36]
6A	(Intercept)	2.38**	[2.21, 2.55]						
	harm: self	-0.75**	[-0.91, -0.58]	-0.61	[-0.74, -0.47]	.32	[.21, .44]	-.62**	
	harm: other	0.04	[-0.11, 0.19]	0.03	[-0.10, 0.17]	.00	[-.01, .01]	.24**	
									R^2 = .381**
									95% CI[.26,.48]
6B	(Intercept)	2.82**	[2.62, 3.03]						
	harm: self	-0.71**	[-0.88, -0.54]	-0.54	[-0.67, -0.41]	.26	[.15, .37]	-.61**	
	harm: other	0.26**	[0.09, 0.43]	0.20	[0.07, 0.33]	.03	[-.01, .08]	.37**	
									R^2 = .403**
									95% CI[.28,.50]
7A	(Intercept)	2.62**	[2.40, 2.83]						
	harm: self	-0.38**	[-0.55, -0.21]	-0.35	[-0.50, -0.19]	.11	[.02, .21]	-.33**	
	harm: other	-0.08	[-0.22, 0.05]	-0.09	[-0.25, 0.06]	.01	[-.02, .04]	-.02	
									R^2 = .115**
									95% CI[.03,.21]
7B	(Intercept)	3.01**	[2.79, 3.24]						
	harm: self	-0.43**	[-0.59, -0.27]	-0.38	[-0.51, -0.24]	.14	[.04, .23]	-.42**	
	harm: other	-0.28**	[-0.42, -0.15]	-0.29	[-0.43, -0.15]	.08	[.01, .16]	-.35**	
									R^2 = .260**
									95% CI[.14,.36]

Table 2.2 (continued)

Scenario	Predictor	b	b 95% CI [LL, UL]	$beta$	$beta$ 95% CI [LL, UL]	sr^2	sr^2 95% CI [LL, UL]	r	Fit
8A	(Intercept)	2.09**	[1.94, 2.24]						
	harm: self	-0.08	[-0.17, 0.00]	-0.13	[-0.27, 0.01]	.02	[-.02, .05]	-.06	
	harm: other	-0.46**	[-0.59, -0.33]	-0.50	[-0.64, -0.36]	.25	[.13, .36]	-.48**	
									R^2 = .250**
									95% CI[.13,.35]
8B	(Intercept)	1.89**	[1.76, 2.02]						
	harm: self	-0.02	[-0.10, 0.06]	-0.04	[-0.18, 0.10]	.00	[-.01, .01]	-.02	
	harm: other	-0.33**	[-0.44, -0.22]	-0.44	[-0.58, -0.29]	.19	[.08, .30]	-.43**	
									R^2 = .190**
									95% CI[.08,.29]

Note. A significant *b*-weight indicates the beta-weight and semi-partial correlation are also significant. *b* represents unstandardized regression weights. *beta* indicates the standardized regression weights. sr^2 represents the semi-partial correlation squared. *r* represents the zero-order correlation. *LL* and *UL* indicate the lower and upper limits of a confidence interval, respectively. * indicates $p < .05$. ** indicates $p < .01$.

Study 1's Method

Participants

Participants ($N = 2{,}353$, $M_{age} = 19.54$, $SD_{age} = 2.29$) were recruited from the University of Oregon's Psychology and Linguistics subject pool and completed this study as part of their course requirements. The majority identified as female (67.7%), followed by male (31.0%) and other (1.1%). The majority identified as White (69.0%), followed by Asian (11.9%), Hispanic, Latinx, or Spanish origin (10.8%), Black (3.9%), Native Hawaiian or other Pacific Islander (1.7%), Middle Eastern or North African (1.4%), and American Indian or Alaska Native (1.2%). Data collection for this research was approved by the University of Oregon's IRB (protocol number: 12122018.015).

Procedure and Materials

After completing the consent form, participants received some background information on emotional experience and expressivity, and how these experiences may or may not differ from each other:

> When an event causes us to experience a certain emotion, sometimes the intensity of our feelings and the intensity of our expression is the same. However, this might not always be the case. For example, we might want to hide our emotions and not express them as much as we are feeling them. Or, depending on the situation, we might want to amplify our feelings and express them with greater intensity than what we are actually experiencing.

These information were followed by instructions about completing the questionnaire:

> In this questionnaire, you will be asked to **imagine yourself in different scenarios**. For each scenario, you will be asked to report the intensity of a certain emotion you experience, and how much of that emotion you express to others. **It is important that your responses reflect how you think you would actually react in each situation**— there are no right or wrong answers.

Finally, two additional notes were presented to clarify to participants (1) the broad scope of "emotional expression," and (2) the meaning of the terms "partner" and "casual acquaintances:"

> *Note 1:* Emotional expressions can manifest in different ways, including displaying how one is feeling through words, facial expressions, non-verbal behaviors, and tone of voice.
> *Note 2:* In these scenarios, "partner" refers to your romantic partner, including boyfriend/girlfriend or spouse. "Casual acquaintance" refers to a person you know, but you are not close to, and your relationship with them might be short-term, such as a classmate or a colleague who you rarely interact with or a roommate who is only staying with you for a short period of time.

The inclusion of the above instructions and clarifications were deemed necessary based on prior testing of these materials. After these instructions, participants read the anger scenarios and provided their ratings of anger experience and anger expression.

Anger Scenarios. Each participant was presented with eight anger scenarios. Based on the findings of the preliminary study, four scenarios were consistent with the "harm to self" appraisal (e.g., "You have been in a committed relationship for a year. You learn that your partner has become romantically involved with another person.") and two scenarios were consistent with the "harm to other" appraisal (e.g., "You bring one of your friends to the emergency room due to abdominal pain. Your partner is accompanying you. Despite waiting in the triage for a long time, none of the medical staff attends to you or your friend."). These six scenarios were included in the analyses for the present study.

Note that, as discussed in the previous section, to introduce variability in (and increase the generalizability of) the scenarios, two versions of each scenario were created and presented to the participants. The two versions of each scenario were identical in most aspects (e.g., the focal event and the thematic cause of anger) but varied in terms of the person causing the anger and/or the person who was the target of the anger expression. Each participant was randomly

assigned to one of two versions of the scenarios (for a complete list of scenarios, see Appendix B).

Anger Experience and Expressivity. For each scenario, participants reported how angry they would feel (1 = *not at all*, 4 = *to some extent*, 7 = *a lot*) and how much anger they would express (1 = *not at all*, 4 = *to some extent*, 7 = *a lot*). Since the norms about expressivity are strongly context-dependent, the question about expressivity provided some additional information about the context (e.g., the person towards which anger is expressed; Appendix B).

Results

To test the relation between the experience and expression of anger and the moderating effect of target of harm (self vs. other), I conducted three cross-classified random effects models (Table 2.3)[2]. First, an "intercept only" (or null) model with the responses to the anger expression items as the outcome and the intercept (nested within individuals and scenarios) as the predictor was conducted, which produced a high intraclass correlation coefficient (ICC = .42), confirming the necessity of a random effects modeling approach. Second, participants' ratings of anger experience were entered as the level one predictor. Since the primary research question is concerned with the effect of the level two variable (see the next model), participants' ratings of their anger experience were centered around the grand mean (Enders & Tofighi, 2007). As expected, results indicated a significant positive relation between the experience and expression of anger ($b = 0.61$, $p < .001$). Finally, a third model was tested in which the target of harm (0 = self, 1 = other) was added to the previous model as a level two moderator of the relation between the experience and expression of anger. Consistent with the hypothesis, there was a significant interaction between the experience of anger and the target of harm ($b = 0.13$, $p < .001$), such that

---

[2] R code and analyses output are available at http://bit.ly/3jJJozE

the relation between the experience and expression of anger was stronger for scenarios where

another person was the primary target of harm[3].

Table 2.3

The Relation between the Experience and Expression of Anger is Moderated by the Target of

Harm

		Model 1	Model 2	Model 3
Fixed effects	(Intercept)	3.73 (0.33)*	3.71 (0.16)*	3.59 (0.21)*
	Anger experience		0.61 (0.01)*	0.56 (0.01)*
	Target of harm (0 = self, 1 = other)			0.36 (0.36)
	Anger experience X Target of harm			0.13 (0.01)*
Random effects	Var: ID (Intercept)	0.52	0.26	0.26
	Var: Scenarios (Intercept)	0.64	0.16	0.18
	Var: Residual	1.61	1.17	1.16
ICC	Adjusted	.42	.26	.27
	Conditional	.42	.17	.18
Model fit	AIC	49326.06	44242.93	44174.18
	BIC	49356.28	44280.70	44227.06
	Log Likelihood	-24659.03	-22116.46	-22080.09

Note. Model 1 = the null model; Model 2 = anger experience predicting anger expression; Model 3 = the experience-expression relation moderated by the target of harm.
* indicates $p < .001$.

Discussion

The present findings are consistent with the notion that people's normative tendency to

express their anger differs depending on whether their anger is in response to a violation that

---

[3] Sensitivity analyses with three different mean centering methods (i.e., centering on scenario means, person means, and scenario- *and* person means) produced the same conclusions.

primarily affects them or others. Even in scenarios where anger is the expected response, participants, on average, reported that they would attenuate the intensity of their anger expression. However, participants' anticipatory expression of anger was more likely to reflect their feelings in situations where their anger was in response to others being harmed.

This leads to an important question: Why would people report a stronger normative tendency to express anger when others (vs. themselves) are being harmed? One way to answer this question is through the lens of anticipated social consequences of expressivity. There is a robust relation between the tendency to be emotionally expressive and the expected impressions that such expressivity might leave on others (Joseph et al., 1994; King & Emmons, 1990). In the case of anger, people may generally be concerned about the negative consequences of their expression. However, these worries may be attenuated if their anger is perceived as an alter-centric prosocial act (van Doorn et al., 2014), which could explain the present finding. To further investigate this mechanism, in the following study, I will examine the social judgments of people who express (vs. do not express) their anger as a function of the elicitor of anger (harm to self vs. harm to others).

CHAPTER III: STUDY 2

A sizeable set of inferences can be made from the knowledge that, say, "John is angry." A negative thing has happened to John; he blames it on someone; he regards it as unjust; he is aroused, flushed, and prone to swear or lash out; he may seek revenge on the instigator, and so on" (Abelson, 1981, p. 727).

Expressing emotions plays a critical role in communicating one's internal thoughts and intentions (Fridlund, 2014; Hareli & Rafaeli, 2008; Keltner & Haidt, 1999). Those who are at the receiving end of such communication, as well as the other observers, use this information to form impressions and social judgments about the expresser (Hareli et al., 2009; Tackman & Srivastava, 2016). Understanding how people form judgments from different expressivity patterns is important because of the downstream behavioral and affiliative consequences of such social impressions for the expresser and the target. For example, in the context of electoral politics, social impressions are one of the primary pathways through which the emotional displays of a candidate can influence voting behavior (Glaser & Salovey, 1998): Once a candidate expresses an emotion (e.g., anger in response to injustice), voters will make inferences about the candidate's personality (e.g., passionate, strong) and ideology (e.g., compassionate liberal), which can influence their liking of the candidate and their voting preferences.

The present study investigates the social judgments of people who express anger in response to harm to others compared to those who express anger in response to harm to self. While this distinction has not been studied empirically, as discussed in the Introductory Chapter, theoretical accounts suggest that these two types of anger might have different social consequences. For example, Geddes and Callister (2007) point out that observers in a workplace tend to perceive anger elicited as a result of concern for others as more appropriate than anger with an egocentric focus. Furthermore, behavior following anger in response to injustice to others is perceived as a prosocial act (van Doorn et al., 2014), which can nullify the generally

46

negative judgments associated with anger expression as selfishness and lack of interest in maintaining relationships (Knutson, 1996; Tiedens, 2001). Building on the theoretical literature about the differences between anger in response to harm or threat to the self (vs. others), the first goal of the present research is to empirically test the idea that the expressions of these two anger variants have distinct social consequences:

Research question 1: What are the differences in character judgments and social impressions formed based on anger expression (or lack thereof) in response to harm to others versus harm to self?

Furthermore, a notable body of research suggests that the social consequences of expressing anger differ for men and women. Female anger expressers often receive more negative (and less positive) judgments than their male counterparts (A. H. Fischer & Evers, 2011; Ohbuchi et al., 2004). As elaborated in the Introduction, there is reason to believe that these dynamics might be different for anger in response to harm to self versus others. Considering the prosocial nature of anger expressed in response to harm to others (vs. the self), its expression may signal that the expresser is relationship-oriented and caring, an impression that does not contradict gender stereotypes about women (Ellemers, 2018). If this is the case, the stereotype-based negative judgments about a female expresser might be absent (or weaker) for anger expressed due to harm to others. The second goal of the present study is to test this idea:

Research question 2: To what extent are the character judgments and social impressions formed based on anger expressed in response to harm to others (vs. harm to self) dependent on the expresser's gender?

To examine these two research questions, participants were presented with vignettes in which the protagonists react to anger eliciting violations (i.e., betrayal or rudeness). Across

different conditions, the target of the violation (protagonist or another person), the protagonist's gender (male or female), and their response to the violation (anger expressed or not) are experimentally manipulated. For each vignette, the participants evaluate the protagonist on a range of theoretically informed positive and negative social impressions and character judgments.

The theoretical and empirical literature informed the choice of these outcome variables on the social perceptions and functions of anger expression. I identified eight categories of social evaluations related to expressions or suppression of anger. Specifically, the expression of anger has been linked to perceived higher social status and, relatedly, the conferral of respect from the members of the collective (J. Park et al., 2013; Tiedens et al., 2000; Tiedens, 2001). Furthermore, expressing anger has been associated with evaluations of the expresser's moral character (e.g., moral integrity, moral courage, and virtue; (Bell, 2009; Sasse et al., 2020; Shao, 2019), warmth and benevolence (Knutson, 1996; Shao, 2019; Tiedens, 2001), and prosocial tendencies (Lindebaum & Geddes, 2016; van Doorn et al., 2014). Finally, research in different domains suggests that, in response to anger expressions, people form impressions about the expresser's toughness (Sinaceur & Tiedens, 2006), competence, and effectiveness (Guerrero, 1994; L. Wang et al., 2018). Drawing from this literature, the social impressions that are formed as a result of expressing anger in response to different violations (i.e., against the self or others) will be measured on these eight categories (i.e., social status and respect, moral behavior, self-respect, prosociality, warmth, competence, toughness/obstinacy, and virtue).

The existing literature on the potential distinctions between the two types of anger is primarily theoretical and discusses the social consequences of these two variants in terms of broad categories (e.g., appropriateness or morality; Geddes & Callister, 2007; Lindebaum &

48

Geddes, 2016). Further, the empirical studies on the social consequences of anger expression which have examined more precise operationalizations of evaluative outcomes have often included one or two categories of interpersonal judgments. In contrast, the present study aims to provide a comprehensive multidimensional understanding of the variations in interpersonal consequences of expressing these two variants of anger. To this end, the first analytical step in the present investigation will be to assess the dimensionality and structure of the social and character evaluations. Building on the outcome of these initial data-driven analyses, the social consequences of expressing the two anger variants will be examined to address the previously discussed research questions in a nuanced and accurate manner.

Method

Participants

Participants ($N = 853$, $M_{age} = 19.59$, $SD_{age} = 2.07$) were recruited from the University of Oregon's Psychology and Linguistics subject pool and completed this study as part of their course requirements. The majority identified as female (65.4%), followed by male (31.5%) and non-binary (1.3%); three participants (0.4%) self-described as agender, questioning, and transgender. The majority identified as White (67.7%), followed by Hispanic, Latinx, or Spanish origin (11.5%), Asian (10.7%), Black (4.4%), Multiracial (1.1%), Native Hawaiian or other Pacific Islander (0.8%), and Middle Eastern or North African (0.7%). Twelve participants (1.4%) did not complete the demographics questions. Data collection for this research was approved by the University of Oregon's IRB (protocol number: 09072010.006).

Procedure and Materials

After providing consent, participants were presented with the following general instructions about the study:

Research shows that we can make quick judgements about people's character even based on limited information. In this study, you will read about four people who are around your age: Emily, Scott, Sarah, and Jon. For each person, you will be given a brief story about a recent interaction they had. You will be asked to judge each person's character based on what you read about them. *Some of the stories about these people may seem similar, but they are not. All stories are unique in important ways; so please make sure to read each story carefully.*

Participants were then randomly assigned to one of four conditions. In all conditions, participants were presented with four vignettes. After reading each vignette, they rated the characteristics of the protagonist. For a summary of the study design, see Table 3.1; see Appendix C for the complete scenario list.

Table 3.1.

Study 2's Design

Scenarios (within-subjects)		Condition (between-subjects)			
		A	B	C	D
Vignette 1	Target of harm*	Self	Self	Self	Self
	Protagonist's gender	Male	Male	Female	Female
	Anger expression	Yes	No	Yes	No
Vignette 2	Target of harm	Self	Self	Self	Self
	Protagonist's gender	Female	Female	Male	Male
	Anger expression	No	Yes	No	Yes
Vignette 3	Target of harm	Other	Other	Other	Other
	Protagonist's gender	Female	Female	Male	Male
	Anger expression	Yes	No	Yes	No
Vignette 4	Target of harm	Other	Other	Other	Other
	Protagonist's gender	Male	Male	Female	Female
	Anger expression	No	Yes	No	Yes

* For the target of harm, "self" refers to the protagonist, and "other" refers to someone other than the protagonist.

Vignettes. In each vignette, the protagonist was faced with a previously validated anger-eliciting situation. The cause of anger was either betrayal (vignettes one and three) or rudeness (vignettes two and four). Across different conditions, three focal aspects of the vignettes were experimentally manipulated: (1) target of harm (protagonist or other), (2) the protagonist's gender (male or female), and (3) whether the protagonist expressed anger or not. For example, the following is the second vignette presented to participants in Condition B, where the target of harm is *the protagonist*, the protagonist's gender is *female*, and the protagonist *does not express* anger:

> In a recent incident, one of Emily's casual acquaintances was rude to her. Emily decides to talk to this acquaintance about the incident. During the conversation, she does not express her anger towards the acquaintance.

Character Judgments. After reading each vignette, participants evaluated the protagonist on 32 characteristics, such as "I believe [Emily] is someone who is loyal and truehearted" (1 = *strongly disagree*, 5 = *strongly agree*). Half of these items were adapted from a previously validated list of "features of honor" (Cross et al., 2014b). These items represent four clusters of characteristics (i.e., social status and respect, moral behavior, self-respect, and helping others) that are considered to be important indicators of a person who has a good social standing. The remaining items were adapted from a list of virtues and character strengths developed in research with diverse cultures across the world (N. Park et al., 2006) and relevant to similar conditions where protagonists are judged based on their emotional reactions to relational violations (Razavi et al., 2022).

Results

The first step in the analyses was to reduce the 32 character judgment items into broader dimensions using principal components analysis (PCA)[4]. Each participant provided ratings for four vignettes; 128 ratings (four per character judgment) were collected from each participant. By using the ratings from all conditions, the mean differences between the conditions may lead to spurious correlations between items, which might influence the results of the dimensionality analysis. To avoid this issue, the item responses were centered around the mean of the corresponding condition. All mean-centered ratings were gathered in a long data format and used in the following analyses.

To prevent the possibility of redundant, highly correlated items disproportionately affecting the dimensionality of the ratings (i.e., a 'bloated specific' component; Cattell & Tsujioka, 1964), item intercorrelations were reviewed in search of highly correlated items (i.e., $r > .65$). Two pairs were detected: "honorable" was highly correlated with "noble" ($r = .74$), and "brave" was highly correlated with "capable of leadership" ($r = .67$). Considering the higher relevance of honorable and brave (as indicated by the previously discussed literature), these two items were kept for the remaining analyses, while the other two were excluded.

To decide the potential number of components/factors, I used the scree test, parallel analysis (Horn, 1965), and the *nfactors* function from the *psych* package (Revelle, 2021) in R. The scree plot of the eigenvalues (Figure 3.1) suggested a four-component structure to be optimal. A comparison of the actual eigenvalues and the average of the parallel simulated eigenvalues (i.e., parallel analysis) also pointed to a four-component structure (Figure 3.1).

---

[4] Data and R code to reproduce the present results are available at http://bit.ly/3jJJozE

Figure 3.1

The Scree and Parallel Analysis Plots of the Character Judgements
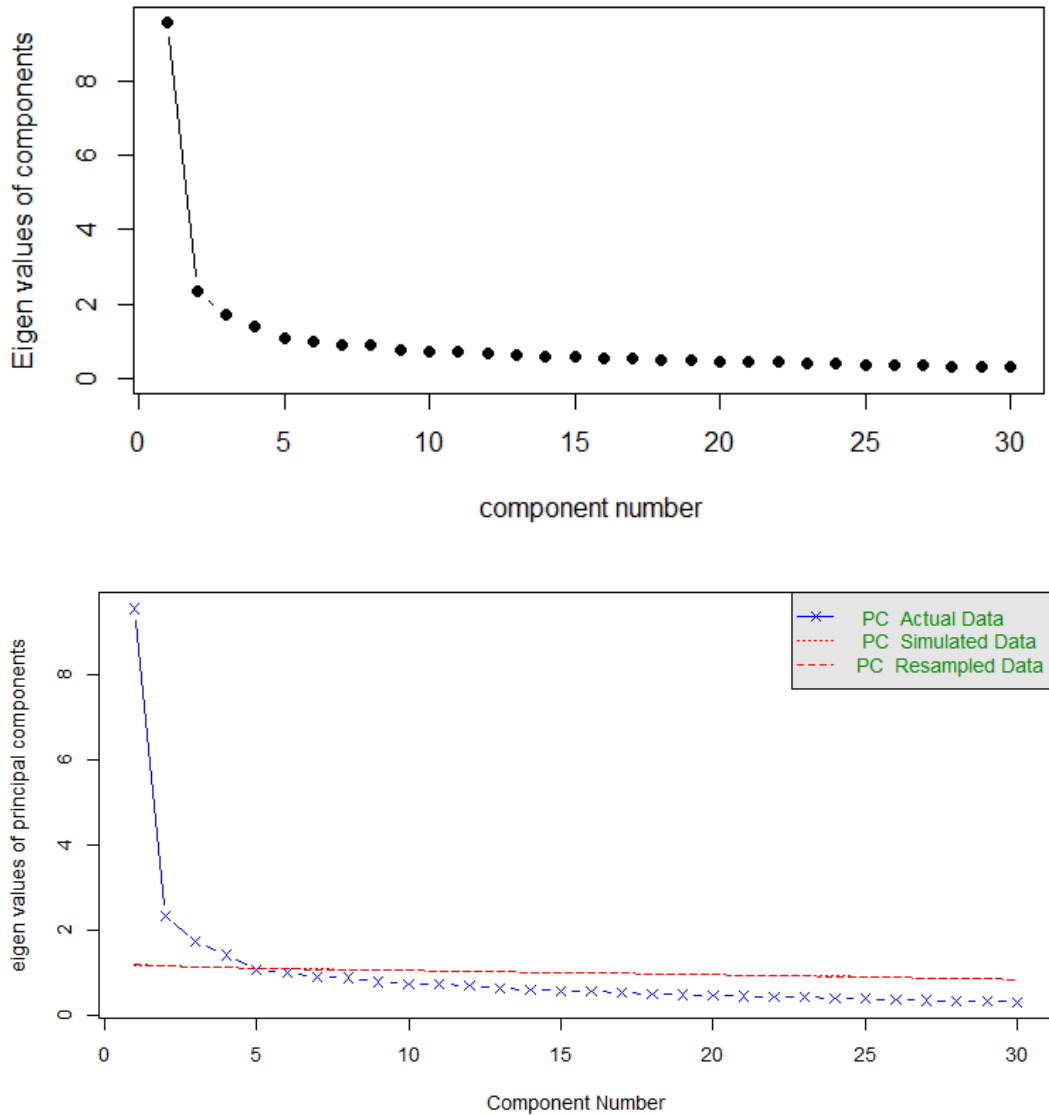
Note. The scree plot (top panel) and parallel analysis plot comparing eigenvalues based on actual and simulated data (lower panel) suggest a four-component solution.

Additionally, I examined the characteristics of factor analytic models ranging from a single-factor to a 30-factor model using the *psych* package's *nfactors* function. This function

produces multiple fit statistics informative for selecting the number of factors or components to be assessed manually. The results from different methods pointed to factor solutions between one and ten factors: (a) very simple structure (VSS; Revelle & Rocklin, 1979) index reached the local minimum of 0.82 with one factor; (b) minimum average partial correlation (MAP; Velicer, 1976) index achieved the local minimum of 0.01 with four factors; and (c) empirical Bayesian information criterion (BIC) achieved a minimum of -1088.91 with ten factors. Using these indices as initial guideposts, I conducted multiple PCA ranging from one- to 10-component solutions and manually examined the results in terms of content and interpretability. Consistent with the outcome of the scree plot, parallel analysis, and Velicer's MAP, a 4-component structure emerged as the most interpretable solution with fewer cross-loading items. Structures with fewer dimensions tended to generate components that were too broad and heterogeneous. Structures with more than four components had an increasing number of cross-loading items (i.e., items with high loadings on more than one component) as well as single-item components.

PCA with four components (varimax rotation) was conducted on the 30 character judgment items. One item (i.e., modest) had close loadings above .40 on two components (.49 and .45); this item was excluded, and a second PCA was conducted. One item (i.e., religious) did not have a high loading (i.e., $\geq$ .40) on any component; this item was excluded, and a follow-up PCA was conducted. In the final model, all items loaded highly on one factor, and no factor had cross-loadings (Table 3.2). The four components were as follows: (a) Communalism: consisted of 12 character judgments, including "is helpful to others," "is willing to sacrifice for the greater good," "is respected in the community," and "is virtuous" (α = .90); (b) steadfastness: consisted of seven character judgments, including "does not allow others to oppress him/her," "has high self-esteem," and "does not compromise their principles" (α = .80); (c) wisdom: consisted of four

character judgments, including "acts calculated," "has self-control," and "is wise" (α = .85); and

(d) obstinacy: consisted of five character judgments, including "holds grudges," "is pessimistic

and suspicious," and "is stubborn" (α = .76).

Table 3.2

PCA Standardized Loadings based on Correlation Matrix of the Character Judgments

Item	Components			
	1	2	3	4
is helpful to other people.	**0.71**	0.25	0.14	-0.08
is willing to sacrifice for the greater good.	**0.70**	0.08	0.11	-0.05
is admired by people who know them.	**0.67**	0.22	0.23	-0.09
is respected in the community.	**0.67**	0.18	0.27	-0.14
gets involved with community work.	**0.66**	-0.04	0.10	-0.03
is loyal and truehearted.	**0.66**	0.35	0.13	-0.07
is grateful.	**0.61**	0.14	0.22	-0.09
is honorable.	**0.61**	0.30	0.35	-0.12
keeps promises.	**0.60**	0.37	0.05	-0.10
values relationships.	**0.54**	0.38	0.13	-0.08
is virtuous.	**0.54**	0.21	0.19	0.00
fits into customs and traditions of the society.	**0.51**	0.03	0.10	0.04
does not allow others to oppress him/her.	0.10	**0.75**	0.15	0.06
has high self-esteem.	0.12	**0.68**	0.20	0.05
does not compromise their principles.	0.31	**0.64**	0.06	-0.02
is honest.	0.39	**0.60**	0.12	-0.06
is brave.	0.34	**0.53**	0.42	-0.02
is persistent and steadfast.	0.29	**0.52**	0.37	0.08
in indifferent.	-0.01	**-0.44**	0.33	0.27
acts calculated.	0.19	0.11	**0.73**	-0.05
has self-control.	0.28	0.11	**0.70**	-0.25
is wise.	0.35	0.31	**0.66**	-0.15
is intellectual.	0.41	0.25	**0.62**	-0.15
is pessimistic and suspicious.	-0.07	-0.09	-0.11	**0.74**
holds grudges.	-0.04	0.06	-0.21	**0.73**
is stubborn.	-0.09	0.09	-0.15	**0.69**
is dogmatic.	0.01	0.00	0.07	**0.62**
is a hypocrite.	-0.36	-0.28	0.03	**0.46**

For each component, a score was calculated for each participant by averaging the responses to the corresponding items. These scores were used in the following analyses.

For each character judgment category, I conducted an omnibus linear mixed-effects model using the *lmerTest* package in R (Kuznetsova et al., 2017) with the character judgment ratings as the outcome variable, three predictors: target of harm (contrast-coded as -1 for "self" and 1 for "other"), protagonist's response (-1: no expression, 1: anger expressed), and protagonist's gender (-1: male, 1: female), and the intercept nested in each participant. The main and interaction effects are reported in Table 3.3. To answer the focal research questions, I conducted four sets of follow-up analyses on these models, which are reported next.

Main Effect of Expressivity

How does expressing (vs. not expressing) anger affect character judgments of the protagonists? As shown in Table 3.3, anger expression had a significant effect on all four character judgments ($165.96 \leq F\text{s} \leq 1047.72$, $p\text{s} < .001$). Compared to the protagonists who did not express their anger, the anger expressers were perceived as significantly less communal ($b = -0.21$, $t(2547) = -12.88$, $p < .001$), more steadfast ($b = 0.30$, $t(2547) = 16.22$, $p < .001$), less wise ($b = -0.77$, $t(2545) = -32.37$, $p < .001$), and more obstinate ($b = 0.54$, $t(2547) = 29.57$, $p < .001$).

Table 3.3

ANOVA Results for the Four Character Judgment Categories

Outcome	Effect	*F*	*df1*	*df2*	*p*
Communalism	Target of harm (self vs. other)	19.87	1	2546.19	< .001
	Protagonist's gender (male vs. female)	1.78	1	2546.19	0.182
	Anger expressed (yes vs. no)	165.96	1	2546.19	< .001
	Target X Gender	18.89	1	2546.19	< .001
	Target X Expression	34.27	1	2546.19	< .001
	Gender X Expression	8.82	1	2546.19	0.003
	Target X Gender X Expression	0.88	1	849.41	0.349
Steadfastness	Target of harm (self vs. other)	0.1	1	2546.60	0.755
	Protagonist's gender (male vs. female)	9.14	1	2546.60	0.003
	Anger expressed (yes vs. no)	263.12	1	2546.60	< .001
	Target X Gender	13.69	1	2546.60	< .001
	Target X Expression	8.25	1	2546.60	0.004
	Gender X Expression	13.17	1	2546.60	< .001
	Target X Gender X Expression	0.24	1	849.66	0.626
Wisdom	Target of harm (self vs. other)	52.49	1	2542.92	< .001
	Protagonist's gender (male vs. female)	11.79	1	2542.92	< .001
	Anger expressed (yes vs. no)	1047.72	1	2542.92	< .001
	Target X Gender	9.16	1	2542.92	0.003
	Target X Expression	5.74	1	2542.92	0.017
	Gender X Expression	18.79	1	2542.92	< .001
	Target X Gender X Expression	0.05	1	847.64	0.819
Obstinacy	Target of harm (self vs. other)	143.62	1	2545.63	< .001
	Protagonist's gender (male vs. female)	6.76	1	2545.63	0.009
	Anger expressed (yes vs. no)	874.3	1	2545.63	< .001
	Target X Gender	4.28	1	2545.63	0.039
	Target X Expression	0.33	1	2545.63	0.566
	Gender X Expression	5.73	1	2545.63	0.017
	Target X Gender X Expression	6.16	1	848.48	0.013

Note. These outputs are generated using the *anova* function in the *car* package (Fox et al., 2022).

Degrees of freedom are calculated using the Satterthwaite's method (Satterthwaite, 1946).

Target and Expressivity

Do the consequences of expressing (or not expressing) anger differ depending on whether anger is a response to harm to self versus harm to others? The results of the Target X Expression interactions (Table 3.3) suggest that the answer is yes for three of the four character judgment categories. In terms of perceptions of communalism, contrasts analysis indicated that the protagonists who did not express anger (compared to the ones who did) were perceived as more communal, both when the target of harm was the self ($b = 0.30$, $t(2546) = 13.26$, $p < .001$) and another person ($b = 0.11$, $t(2547) = 4.97$, $p < .001$). The difference was significantly larger when the target of harm was the self ($F(1, 2546.19) = 34.27$, $p < .001$; Figure 3.2). The protagonists were also perceived as wiser if they did not express anger, both when the target of harm was the self ($b = 0.82$, $t(2544) = 24.59$, $p < .001$) and another person ($b = 0.71$, $t(2546) = 21.18$, $p < .001$). The interaction effect results were suggestive that this difference might be larger when the self was the target of harm ($F(1, 2542.92) = 5.74$, $p = .017$; Figure 3.2).

Contrast analysis revealed that the protagonists who expressed anger were perceived as more steadfast (compared to those who did not), both when anger was in response to harm to self ($b = -0.35$, $t(2546) = -13.51$, $p < .001$) and when it resulted from harm to another person ($b = -0.25$, $t(2548) = -9.43$, $p < .001$). This effect was stronger when the protagonist was the target of harm ($F(1, 2546.60) = 8.25$, $p = .004$; Figure 3.2). Furthermore, the protagonists who expressed anger (compared to the ones who did not) were perceived as more obstinate, both when the target of harm was the self ($b = -0.55$, $t(2546) = -21.33$, $p < .001$) and when it was another person ($b = -0.53$, $t(2548) = -20.49$, $p < .001$). The strength of the effect did not significantly differ for the two target conditions ($F(1, 2545.63) = 0.33$, $p = .566$; Figure 3.2)[5].

---

[5] When interpreting these interaction effects, it should be noted that in all scenarios it was implied that the protagonist *experienced* anger. Consequently, even when the protagonists did not express their anger, just feeling

Gender and Expressivity

Are the social consequences of expressing (or not expressing) anger different for women and men? The results of the gender X expressivity interactions (Table 3.3) suggest they are. Follow-up contrast analyses indicate that while there was no difference in communalism ratings of the male and female protagonists who did not express anger (b = -0.03, $t(2547)$ = -1.16, p = .248), women who expressed anger were perceived as more communal (b = 0.07, $t(2546)$ = 3.05, p = .002). This interaction was significant ($F(1, 2546.19)$ = 8.82, p = .003; Figure 3.3). Similarly, there was no gender difference in ratings of protagonists' steadfastness when they did not express anger (b = -0.01, $t(2547)$ = -0.43, p = .668). However, the female protagonists who expressed anger were perceived as more steadfast compared to their male counterparts (b = 0.12, $t(2546)$ = 4.71, p < .001). This interaction was also significant ($F(1, 2546.60)$ = 13.17, p < .001; Figure 3.3).

---

angry in response to harm to others (vs. the self) affected participants' perceptions of the protagonist as significantly less wise (b = -0.23, $t(2546)$ = -6.81, p < .001), significantly more obstinate (b = 0.23, $t(2548)$ = 8.88, p < .001), and suggestively more steadfast (b = 0.06, $t(2547)$ = 2.25, p = .025).

Figure 3.2

The Consequences of Expressing (vs. Not Expressing) Different Anger Types
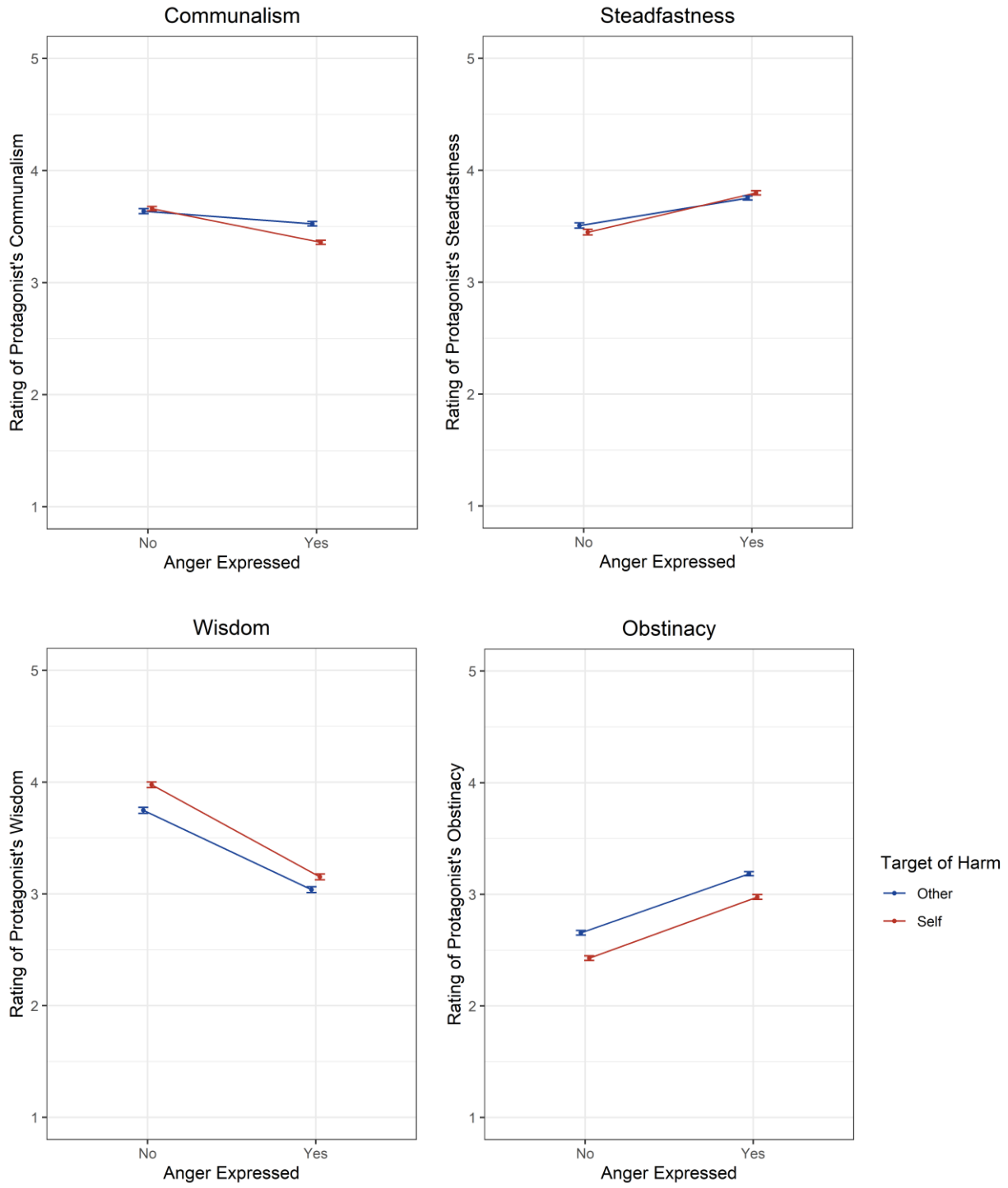
Furthermore, while the men and women who did not express anger were not rated differently in terms of wisdom ($b = -0.02$, $t(2546) = -0.61$, $p = .541$), female protagonists who expressed anger were perceived as wiser than male protagonists ($b = 0.18$, $t(2546) = 5.47$, $p < .001$). This interaction was significant ($F(1, 2542.92) = 18.49$, $p < .001$; Figure 3.3). Finally, despite no gender differences in obstinacy ratings of the protagonists who did not express anger ($b = -0.01$, $t(2548) = -0.14$, $p = .886$), women who expressed anger were perceived as less obstinate than expressive men ($b = -0.09$, $t(2547) = -3.53$, $p < .001$). The ANOVA results were suggestive of an interaction effect ($F(1, 2545.63) = 5.74$, $p = .017$; Figure 3.3).

Target of Harm, Expressivity, and Gender

To what extent are the character judgments formed based on anger expressed in response to harm to others (versus harm to self) dependent on the expresser's gender? The three-way interactions (Table 3.3) were non-significant for three outcomes (i.e., communalism, steadfastness, and wisdom; $0.05 \leq Fs \leq 0.88$, $.349 \leq ps < .819$), and suggestive for obstinacy $F(1, 848.48) = 6.16$, $p = .013$). I conducted follow-up simple interaction effects analyses to examine the obstinacy ratings of men and women who expressed anger in response to harm to self or harm to others.

Figure 3.3

The Consequences of Expressing Anger and the Role of Protagonists' Gender
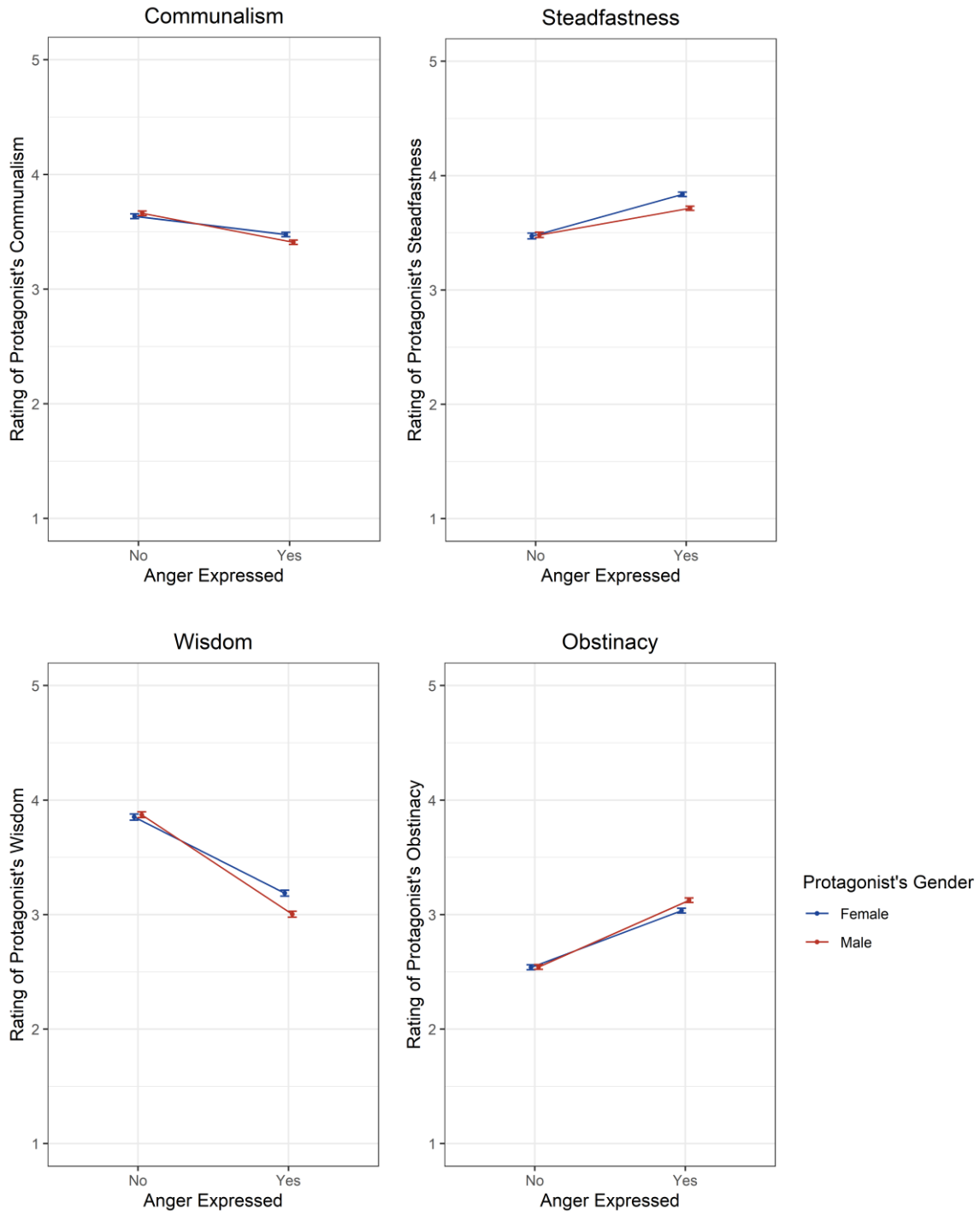
As shown in Figure 3.4, when the target of harm was the self, the gender X expressivity interaction was significant ($F(1, 850.00) = 11.78$, $p < .001$). Female protagonists who expressed (vs. did not express) anger were perceived as more obstinate ($b = 0.44$, $t(1685) = 10.43$, $p < .001$). A similar effect was present for male expression ($b = 0.66$, $t(1674) = 13.39$, $p < .001$); however, the effect was significantly stronger for male protagonists.

When the target of harm was another person, the interaction between expressivity and the protagonists' gender was not significant ($F(1, 849.02) = 0.46$, $p = .499$). Both men ($b = 0.51$, $t(1664) = 13.05$, $p < .001$) and women ($b = 0.55$, $t(1664) = 14.07$, $p < .001$) who expressed anger in response to harm to others were perceived as more obstinate than their non-expressive counterparts (Figure 3.4).

Figure 3.4

Obstinacy Judgments based on Anger Expression and Expresser's Gender
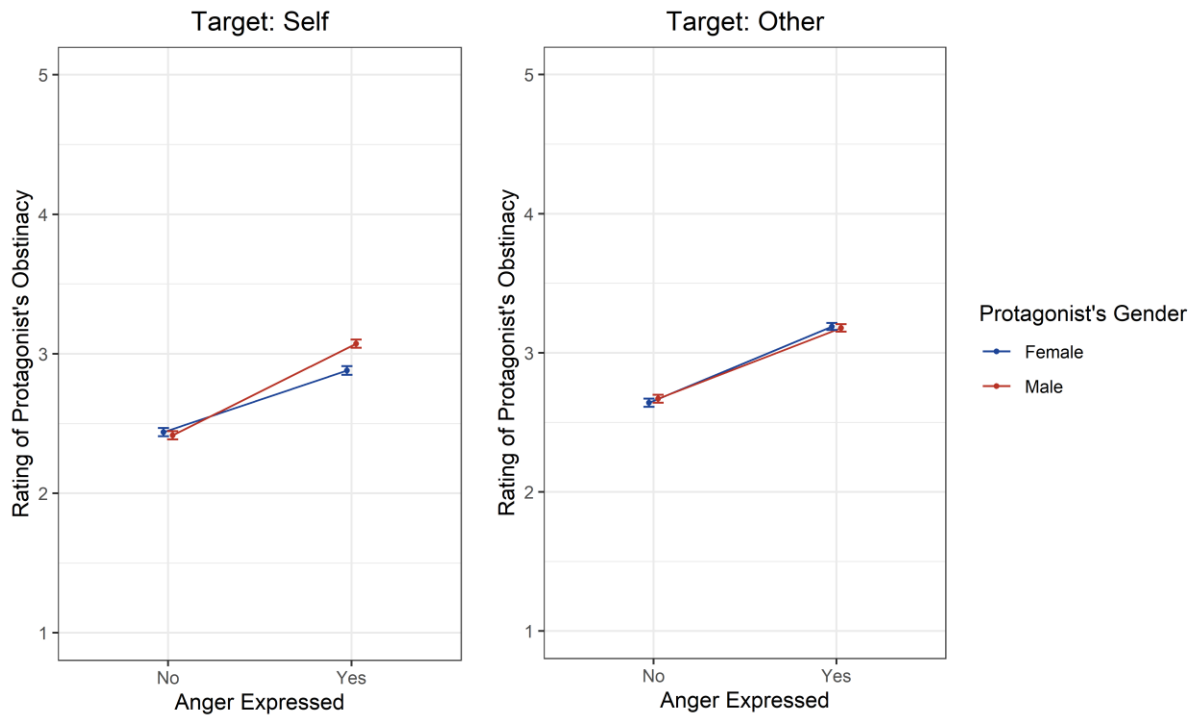
Discussion

In the present study, I investigated how participants judge the protagonists who express (or do not express) anger in various conditions. The dimensionality analyses of participants' ratings resulted in four categories of character judgments. High scores in the communalism category indicate that a person is perceived as possessing relational virtues such as prosociality, reliability, and loyalty. The steadfastness component describes a person who is principled, brave, and resistant to injustice. The wisdom category refers to a person who is a rational thinker and has the self-control to act accordingly. Finally, the obstinacy component describes a person who stubbornly holds onto opinions and grudges. Using these four categories as the outcomes, I examined the social consequences of expressing anger, the target of harm, and the protagonists' gender.

Results demonstrated that expressing anger affects the way a person is perceived. In general, protagonists who expressed anger were perceived as more steadfast and obstinate, and less communal and wise. These findings are consistent with the functionalist perspectives on anger that suggest anger expressions can work as a deterrent against violations (Keltner & Haidt, 1999; I. J. Roseman, 2018). According to the present results, a person who expresses anger is likely to be seen as having characteristics such as courage, resistance to oppression, and a tendency to hold grudges stubbornly. Sending these social signals demotivates future attempts to victimize such a person or treat them as a "pushover." This effect, however, comes with some costs—the anger expressers are also perceived as less communal and relationship-oriented and were conferred lower intellect and self-control. Essentially, the deterrent qualities of anger expression are conjoined with negative repercussions regarding affiliation and competence.

Some of these dynamics vary depending on whether the anger-eliciting violation is targeted at the protagonist or someone else. Notably, while anger expressers were perceived as less communal, this effect was considerably weaker for those who expressed anger in response to harm or insult to others (as opposed to themselves). This finding is consistent with the theoretical accounts that consider anger in defense of others as a prosocial act (van Doorn et al., 2014). Such alter-centric anger may signal the expresser's tendency to value relationships and social norms, and their willingness to sacrifice for such values. Consequently, these impressions buffer against the potential damage that expressing anger can do to a person's communal image.

Perhaps the most surprising findings of the present study are the results about gender differences in impressions of anger expressivity. Prior literature suggests that expressing anger often leads to stronger negative social consequences and weaker positive outcomes for women (compared to men; Brescoll & Uhlmann, 2008). The present findings demonstrated a different pattern: the broader negative consequences of expressing anger (i.e., being perceived as less communal, less wise, and more obstinate) were weaker, and the positive social outcome (i.e., being perceived as more steadfast) was stronger for female protagonists who expressed anger compared to their male counterparts. Furthermore, comparing the social consequences for male and female protagonists who expressed anger, results indicated that the relative "benefits" of expressing anger for women were primarily driven by anger expressed in response to harm to self. There were no gender differences in the consequences of expressivity when the target was another person.

In understanding these results, two possibilities are worth considering. First, societal norms tend to be variable (e.g., see Pearse & Connell [2016] and Seguino [2007] for examples of changes in gender norms). Once a critical proportion of the members of a collective (i.e.,

approximately 25%) adopt a new norm or mindset, there tends to be a collective shift toward

adopting such new norms (Centola et al., 2018). The increased awareness and social activism

against gender double standards may have influenced some of the societal norms about

emotional expressivity and its consequences over the recent years. Whether the present results

are indicators of a potential shift, at least within the population of university students studied

here, is an important topic worth further investigation. Second (and related to the first point), the

present findings may be driven by the demographic composition of the sample. The majority of

the participants (65.5%) were female young adults. Compared to the general population, they

may empathize with a female protagonist who expresses anger in response to relational

violations and hold lower negative attitudes towards such a person. Future research with a larger

sample of male participants and a broader age range would clarify whether perceivers' gender

and cohort may influence the character judgments of men and women based on their anger

expressivity.

CHAPTER IV: STUDY 3

The previous studies investigated a single dimension of appraisal (i.e., harm to self vs. harm to others) which, based on the theoretical literature, was deemed essential to the justifiability and acceptability of anger. As discussed in the Introduction chapter, testing a single dimension, as informative as it is, does not provide a comprehensive framework for explaining the complexities of the emotional processes (C. A. Smith & Ellsworth, 1985). The present study aims to complement the top-down approach of Studies 1 and 2 with a bottom-up approach by using multi-method text analyses of participants' descriptions of their past experiences of anger to generate insights about the different variants of anger.

Question-driven text analysis is a promising approach for developing novel theoretical insights (e.g., moral framing and donations [Hoover et al., 2018]) or revising and extending prior theoretical models (e.g., components of honor [Cross et al., 2014] and stereotype content model [Nicolas et al., 2022]). Notably, the analysis of open-ended text data allows researchers to expand their theoretical framework by incorporating participants' lay conceptions about a phenomenon. As pointed out by Cross et al. (2014), engaging with and studying lay conceptions about a phenomenon can mitigate the risk of a theoretical framework "being overly narrow and neglecting key elements of a phenomenon" (p. 247). The spontaneous content generated in open-ended text responses can broaden our understanding of a phenomenon by illuminating previously neglected dimensions and nuances (Nicolas et al., 2022).

In the present study, depending on their randomly assigned condition, participants were asked to write about an anger episode where either they believe their anger was justified (i.e., they felt they were right to get angry), or they think their anger was unjustified (i.e., they felt they were wrong to get angry). The study's primary goal is to examine these narratives in search

of the similarities and differences between these two variants of anger. To this end, I used an integrative multi-method approach inspired by Nelson's (2020) computational grounded theory framework. I applied three complementary methods to analyze open-ended narratives written by participants about their experiences of anger: qualitative thematic analysis (Braun & Clarke, 2006; Robinson, 2021), closed-vocabulary text analysis using Linguistic Inquiry and Word Count (LIWC; Tausczik & Pennebaker, 2010), and open-vocabulary text analysis using Structural Topic Modeling (STM; Roberts et al., 2014)[6].

Method

Participants

The data for this study and Study 4 were collected concurrently. Considering the primarily inductive approach of the present analyses, a priori sample size determination was made based on the focal hypotheses tested in Study 4 and is described in detail under the Participants section of the next chapter. The final sample consisted of 1179 participants (M_{age} = 19.51, SD_{age} = 2.53) recruited from the University of Oregon's Psychology and Linguistics subject pool who completed the study as part of their course requirements. The majority of the participants identified as female (65.2%), followed by male (30.5%), non-binary (2.9%), and other (0.9%). Further, the majority identified as White (65.0%), followed by Hispanic, Latinx, or Spanish origin (11.2%), Asian (7.6%), bi- or multi-racial (7.6), Black (3.2%), Native Hawaiian or other Pacific Islander (1.6%), Middle Eastern or North African (1.2%), American Indian or Alaska Native (0.8%), and other (0.3%). Data collection for this research was approved by the University of Oregon's IRB (protocol number: 09072010.006).

---

[6] In addition to STM, I also conducted another set of open-vocabulary analyses using the Meaning Extraction Method (MEM; Chung & Pennebaker, 2008; Markowitz, 2021). STM proved to be a better-suited approach for the present data and produced a more comprehensive set of topics. To save space, MEM results are reported in Appendix G.

Procedure and Materials

After providing consent, participants were randomly assigned to one of two conditions:

justified and unjustified anger. First, they received instructions to think about a time in the past

when they experienced anger. Depending on the condition, they were directed to consider an

experience where their anger was justified or unjustified. For example, the following instructions

were presented to the participants in the justified anger condition:

> Please spend one minute thinking about a time you experienced anger. Importantly, we
> are interested in a time when you felt angry, and you believe that your anger *was*
> justified; meaning that you were *right* to feel angry.
> Think about this experience for at least one minute, and try to recall as many details of
> the incident as possible. After one minute, you can move forward to the next page where
> you will be asked to write about your experience.

Participants were asked to spend at least one minute thinking about this experience. The

"next" button on the Qualtrics page appeared after one minute. On the next page, they were

given the following instructions to encourage them to write about their anger experience in

detail:

> In the space below, please write about a time when **(a) you experienced anger and (b)
> you believe that your anger was justified**—meaning that you believe that you were
> right to feel angry.
> Please provide as many details as possible about the situation, your feelings, and your
> reactions. For example, who made you angry? What about the situation caused your
> anger? How did you react in that situation?

The instructions for the unjustified anger condition were identical, with the exception of

the descriptions of the type of anger (see Appendix D). After writing about their anger

experience, participants were instructed to complete a series of questionnaires that provided data

for the prototype study (i.e., Study 4).

Results

Qualitative Thematic Analysis

These analyses aimed to extract themes about the causes of anger, how people appraise and justify their anger experiences, and the similarities and differences between justified and unjustified anger in terms of participants' theories and rationales for interpreting their anger as justified or unjustified. To this end, using a four-step process, I conducted thematic analysis (Braun & Clarke, 2006; Robinson, 2021) of participants' narratives.

The Analytic Process

Generating Initial Codes. The first step involved extracting qualitative codes from the participants' narratives by four research assistants (RAs). The RAs received extensive hands-on training in extracting codes from open-ended text. For each narrative, the RAs searched for (a) the cause(s) of anger, and (b) the reasoning offered by the participant for categorizing their anger as justified or unjustified[7]. Each week, the RAs were assigned a new set of narratives to review. This was followed by weekly group meetings dedicated to reviewing the extracted codes, addressing questions or challenges, and providing additional methodological training relevant to the coding task. I consistently monitored the RAs' analyses and, after coding approximately 400 narratives, determined that all RAs had become highly skilled in the task. At this point, the RAs started a review process of the previously coded narratives and revised their codes before working on the rest of the data. Thematic saturation (Saunders et al., 2018) was reached after approximately 640 narratives were coded. At that point, it became clear that the analysis of new data was not leading to new themes or insights. We continued the coding process for another 100

---

[7] In addition to extracting these themes, the RAs also coded other aspects of the narratives (e.g., their relevance to the study prompt). For the specific questions, see Appendix E.

narratives to ensure this judgment was accurate. The RAs coded a total of 747 unique narratives in a span of 5.5 months. Each narrative was coded by at least three RAs.

Searching for Themes. In this step, I created two separate datasets—one for justified anger and the other for unjustified anger. For each dataset, I combined the extracted codes generated by the RAs in a single data sheet, evaluated them, and made revisions or edits when necessary to improve the coding accuracy. Afterward, I collated the codes into potential themes. For each possible theme, I gathered the relevant data extracts. At the end of this step, I created a list of candidate themes and subthemes with supporting data.

Reviewing Themes. I reviewed and refined the themes in this step to ensure they appropriately represented the coded extracts and the corresponding dataset. Throughout this process, I evaluated the internal homogeneity (i.e., coherence in data within themes) and external heterogeneity (i.e., the clear distinction between themes; Patton, 1990). As part of the review and refinement phase, some separate themes were merged, and some single themes were broken into separate ones.

Defining, Naming, and Comparing Themes. Once each dataset (i.e., justified and unjustified anger narratives) was represented with a satisfactory set of themes and subthemes, I labeled each theme. I created a table of the themes in relation to the data extracts. Based on the emerging themes and subthemes, I searched for and identified the differences that emerged from justified and unjustified anger narratives, both thematically and in terms of participants' writing and reasoning patterns.

In the following sections, I report the results from this four-step process by first describing the themes that emerged from the justified anger narratives and then discussing the themes extracted from unjustified anger narratives. Since participants' elaborations of the cause

of anger and their rationale (or lay theories) for considering their anger as justified or unjustified were strongly intertwined, I will cover these two aspects simultaneously for each anger type. These sections are followed by three additional ones that present insights about the pattern of reasoning and justification among the two types of narratives and post-anger attempts to manage the potential fall-out from the anger episode.

In reporting qualitative results, connecting the extracted themes to data excerpts is critical for providing the reader with an in-depth understanding of participants' experiences and theories. Consistent with the APA reporting guidelines for qualitative research (Levitt et al., 2018), I have included data excerpts from participants' narratives for every theme and sub-theme.

Justified Anger: Causes and Rationales

Injustice. A prominent theme emerging from the justified anger narratives was anger elicited in response to perceived injustice. Participants' experiences of perceived injustice were diverse and often involved one of three appraisals: unfair or unequal treatment, wrongful accusations, and experiences of systemic injustice.

In situations where participants felt they were being unfairly treated, there was often a comparison component. These included comparing the treatment they received to another person who, in their mind, was receiving favoritism or an established standard or norm that was not applied to them. They described anger and frustration in response to such unequal treatment, especially when it was perceived as intentional and something that could have been avoided or when their pleas for fairness were unheard or ignored:

> […] it was when my sister was able to do something that I was not able to do when I was her age. It made me really mad because my parents always focused on making things fair and making sure we got things at the same ages and all that and then she was getting different treatment from me when at that same time, I had been wanting to do these things and my parents got mad and wouldn't let me. They also did not understand why it upset me so much. […] –Female, 20 years old, intensity: 5

Another subtheme revolved around being falsely accused of wrongdoing. In these cases, the accused described being insulted and threatened by the accusations, which led to anger or resentment towards the person or group making the accusations. Some participants also conveyed a sense of helplessness when trying to defend themself and clear their names:

> My roommate and I were buying drinks and food […], we filled two drawstring bags with drinks and got three things of food as well. When we were checking out the cashier was convinced that I had taken apples and did not tell him about it. I had not taken any apples but understood that it was his job. but even after I told him and showed him that I did not take any apples he still didn't believe me. He let us go but it was still clear that he did not believe me and I was angry […]. –Male, 18 years old, intensity: 3

Furthermore, some participants described anger in response to experiencing or witnessing systemic injustice, such as discrimination, inequality, or inequity. Many alluded to long-term experiences, which led to accumulated frustration and anger. Some narratives reflected a sense of powerlessness or helplessness in the face of unjust treatment, and some echoed a desire to assert their rights and agency in the face of others' attempts to control or undermine them:

> An experience in which I experienced anger: caused by misogynist frat boy not accepting "go away" until a male friend intervened. Nothing about the situation felt unsafe, my anger came from the unfairness of the respect imbalance just due to the genders of my friend vs me. –Female, 21 years old, intensity: 5

> One time I distinctly remember being angry was caused by the new abortion law in Texas. It angered me to the point of me needing to get my anger out by literally screaming. I was very mad that people in the government think they can tell a women [sic] what to do with her own body. They have no right to tell me what to do and what not to do when it comes to how I deal with a situation like that. –Female, 19 years old, intensity: 5

It is noteworthy that when discussing their anger in response to injustice, participants often did not elaborate on their rationale for evaluating their anger as justified. This pattern was present in several other themes that emerged among the justified (but not unjustified) anger narratives.

Betrayal. Participants wrote about various experiences where their anger was associated with the appraisal that they had been betrayed. One of the common subthemes among these narratives was betrayals in the context of romantic relationships. These experiences tended to elicit a wide range of strong, negative emotions, as well as long-term intra- and inter-personal consequences:

> A time when I was really angry was when I discovered my boyfriend cheated on me. Not only did he cheat on me but he completely had an intimate moment with this girl as well. I felt betrayed, played, hurt, disrespected, not enough, and so many other horrible feelings. This situation has caused me many issues today such as trust and commitment issues with relationships with other people. –Female, 19 years old, intensity: 5

It is noteworthy that while many instances revolved around betrayal against the self (i.e., the narrative writer), this was not the only case. Betrayal towards a close other also generated emotional and relational consequences:

> About a year ago I had a friend betray one of my very close friends by sleeping with her boyfriend. Even though I was not someone who was directly involved, it did happen within my friend group and it made me mad at the girl who betrayed my close friend. I was mad that out of all people she had chose [sic] him. I reacted by completely cutting all ties with her. –Female, 18 years old, intensity: 5

The sense of betrayal was not exclusive to romantic relationships. Some participants framed other experiences within the context of friendships (such as inconsiderate or harmful behavior) as betrayal, which often led to strong emotional reactions and interpersonal consequences:

> Me and some friends rented an Airbnb […]. We had lots of friends that we knew over at our Airbnb for a party. Not long after the night began, a hole was kicked in a bathroom door and then someone shattered the bottom oven glass. I was extremely angry because these were people I knew and no one owned up to either incident. I was mad because it felt sort of like betrayal and I knew my Airbnb would have to pay for the damages. I started yelling at people and kicked everyone out, saying things I didn't mean. –Male, 20 years old, intensity: 5

While many narratives corresponding to this theme provided details about the event and the context that led the participant to interpret the situation as a betrayal, participants often did not elaborate on their reasoning for considering their anger as justified. However, when discussing their sense of betrayal (both in romantic and non-romantic contexts), there was sometimes a reference to how the established trust between the participant and the target was broken by the target's action, which made the participant's anger justified:

> A time when I experienced anger is when one of my best friends who I was very close with in high school spread a lot of my secrets to her other friend. I believed that my anger was justified because I had been friends with her for a very long time and had a lot of trust in her. […] –Female, 18 years old, intensity: 4

Among the experiences of trust betrayal, a common cause was dishonesty from someone considered close and/or trusted. Participants described feelings of hurt, surprise, frustration, and anger rooted in the perception that someone with whom they had established a trusting relationship was not being truthful or acting in good faith:

> I experienced anger when my best friend of 10 years lied and betrayed for months without me finding out and continuously lied about it. I felt this was justified because never in 10 years of friendship has she lied to me and I trusted this person with my life […]. –Female, 21 years old, intensity: 5

> When someone lied to me about where they were going and we were really close. I developed a close relationship to this girl to the point that I trusted her. At this point we were about to be dating but weren't so she could go out with other people and I wouldn't have cared. She told me she was going to a party but it turns out she went on a date dash. See, I wouldn't have cared if she jus [sic] told me the truth but she lied. She found out I knew and rushed back. Knowing I knew she asked me why I was irratated [sic] when she first saw me. I waited for her to tell the truth to me but she never did. –Male, 18 years old, intensity: 5

Goal Obstruction. Participants described frustration and disappointment at being unable to fulfill a goal or achieve a desired outcome as a cause of anger. These narratives often described goal obstruction by a specific person, who would become the direct target of anger:

I got mad when my brother would turn off my ps4 when I was in the middle of a game of Fortnite Battle Royale. I definitely think my anger was justified. I was mad because I was in the middle of a game and he turned it off for no reason. –Male, 18 years old, intensity: 3

While goal obstruction by others was relatively more common, the target of anger was not always another person. Some participants described frustration and disappointment towards themselves (e.g., for poor performance; first excerpt below) or an event for which they did not hold a specific person or entity responsible (e.g., an injury or a cancellation; second excerpt below). The feeling of anger sometimes became more intense and evolved into a long-term frustration, especially if the desired goal or unachieved outcome was something that the participant had been looking forwards to for a while:

> The time I experienced anger was when I got a bad grade on a test. I really studied a lot […]. I was really confident going into the test but once I got my test score back I was down and really sad at the moment. […] I just felt super confident on the test beforehand. and just got really angry at me for doing bad because I was very ready and confident. No one made me angry it was more at myself because I should've done better. I reacted in silence at first but was disappointed in myself as well." –Male, 19 years old, intensity: 3

> A time in which I feel [sic] angry was when current COVID-19 came along and caused a nationwide shut down. Where I am from […] all schools were shut down causing my senior year to not go the way I planned. Is it [sic] something I have to look forward to for most of my life, being able to graduate in person in front of my family from high school just like my sister had the year prior was exciting for me. So getting that taken away from me from one day to the next was very hard. I do believe my anger was justified because it is something I had to work towards for four years and within less than a month or two it was taken away. –Female, 19 years old, intensity: 4

When discussing their rationale for considering their anger justified, participants often focused on how strongly they desired or anticipated the goal, how hard they have worked towards the outcome, or how strongly the goal obstruction impacted them:

> […] After losing the state championship in hockey. I remember it being a close game with goals back and forth and the goal that made us lose was off a bad play on my team's part. I was captain so I remember feeling the pressure of the loss, although I was not on the ice for that last goal. I believe this anger was justified because getting all the way to the championship game and then losing is crushing. We had had a hard season and I was

just back from a concussion, so losing this game and ending the season on this note is, what I think, a justified reason to be angry.—Female, 18 years old, intensity: 4

Harm and Threat. Another prominent cause of anger emerged among narratives in which harm and/or threat was experienced or anticipated. These experiences were diverse regarding the nature of harm and threat, as well as the person affected by it. The events involving harm or threat often generated intense anger and strong behavioral or relational reactions. The expressed feelings and reactions were particularly strong in situations where the participants experienced physical harm (e.g., harm to their health or property):

> […] On Halloween of 2020 I was with some of my friends goofing off and driving around and while we were driving down a street a kid that was a few years younger than me threw an egg that exploded on the windshield of my friend's car. We turned around and drove up to them and I jumped out of the car and pinned this kid to a wall and proceeded to beat him up because my friend could've lost control of the car and we could've been seriously hurt by the incident. Did I overreact? sure, but in the moment, it was completely and totally justified, and that kid deserved the blackeye and broken nose. –Male, 20 years old, intensity: 5

Though it was more common for the participant to be the target of harm, harm to others also generated strong anger:

> I remember feeling absolutely furious when one of my friends told me she had been raped. I felt like hurting the person who did this to her, I felt guilty that I wasn't there to stop it, I felt pure anger. –Female, 20 years old, intensity: 5

In addition to *experienced* physical harm, some participants described anger as a result of *anticipated* harm, such as occasions when they felt threatened or endangered by the actions of another person:

> I was driving when I came to a four way intersection. Another car got there after me. I proceeded to drive through the intersection when it pulls forward and almost hits me. The car then tailgates me for the next minute or so even though it was the one not following traffic laws. –Male, 20 years old, intensity: 5

In many cases, the perception of threat had a social nature. For example, bullying and

harassment (targeted at the self or another) emerged as one of the causes of strong negative

reactions together with a desire to protect oneself or support others:

> I experienced anger when I saw that there were some kids from my high school targeting people of color and members of the LGBT community by creating a group chat to harass them. I felt that it was justified because people of color and the LGBT community are often treated unfairly in our society and they deserve to be treated with equality. There was a post about it exposing the texts, and I commented on that post saying how disgusting it was. I'm tired of how much discrimination there is in our society.—Female, 19 years old, intensity: 5

Additionally, a prominent subtheme among anger-eliciting events in this category

involved threats centered on the experiences of social exclusion. Participants often described

feeling surprised, disappointed, and hurt due to being excluded. Many also described attempts,

often without positive results, to understand and prevent the cause of such exclusion:

> […] I had just gotten over having Covid 19. It is important to include that I am unvaccinated for Covid 19. I had received a negative covid test so I was guaranteed to not have covid [sic] but my friends were still weary [sic] about hanging out with me. I was angry because I had been unvaccinated that whole summer, while all of them were vaccinated, and we were still hanging out and there were no problems. But now they didn't want to hang out with me. […] No matter how many scientific studies about natural immunity or covid contagiousness I sent them, most of them did not budge on their stance. […] it made me very angry and frustrated and I almost got the vaccine because of it. –Male, 18 years old, intensity: 4

Compared to most causes, the narratives that contained the theme of exclusion were more

homogeneous—someone(s) close (often a friend or group of friends) participated in activities

without inviting the participant. However, there were some narratives that suggested the sense of

exclusion may also involve systemic and long-term experiences of threat to one's belonging:

> I experienced anger when a person said I didn't belong at this school. I've always felt out of place, especially being black in America. So when people I met began to ask me invasive and uncomfortable questions about my racial identity, I stopped being friends with them. This caused a whole issue and they began to spread lies and rumors about me everywhere. It made me so angry I wanted to transfer to an HBCU, so I never had to deal with this many racist white people again. I told them how their comments made me feel

and I told them that it makes me feel like I don't belong here, and they said, "Well maybe you don't." In that moment I'd never felt more genuine anger. I didn't do anything to them, I just calmly walked away and began to throw things when I got back to my dorm room. –Non-binary, 18 years old, intensity: 5

Finally, participants reported feeling frustrated and unsettled over conflicts in which someone expressed beliefs fundamentally at odds with their values. In describing why they felt threatened and defensive when encountering such opposing moral values, participants often referenced the potential harm (to themselves or others) in the opposing values:

A few years ago, during a conversation with my mom, she said that "gays like conversion therapy" and that they "are happy to be cured." This enraged me in ways I didn't know possible. It wasn't a loud screaming anger. Instead, I became speechless and started to shake. I was in shock and all I felt was disbelief and rage. I think I said "What?!" and then left the room to cool down. I believe I came back later that evening to discuss how ignorant and unbelievable those statements were. I think initially I tried to keep my cool but got angry again. I think I got angry because in my mind, conversion therapy tends to involve a lot of psychological and physical torture and someone is saying this is a good thing. –Female, 20 years old, intensity: 4

As evident in the example narratives above, when writing about their experience of anger that resulted from harm or threat, participants mainly described the context, the actions that led to their anger, and how they behaviorally reacted. It was relatively less common for participants to discuss their rationale for interpreting their anger as justified, perhaps due to a perceived consensus that anger is a valid and justifiable response to harm. In cases where the participants elaborated their justifications, they often focused on the intensity or seriousness of the harm that was experienced, or the fact that the target of harm or threat did not deserve it:

I remember that a time when I was really angry was when I found out that a group of girls at my sister's school were being really mean to her and that she was scared to go to school […]. I remember that one day she came to me with this and it made me really angry because they were being mean to her for no reason, and that is why I believe that in a way my anger was justified because my sister wasn't doing anything to deserve that treatment. […] I love her more than anyone else in the world and have always wanted to protect her no matter the cost so when I heard that someone was hurting her it was really hard for me. […] –Female, 18 years old, intensity: 5

79

Inconsiderate Behavior. This theme emerged among the narratives where the

participants described the cause of their anger as a behavior that indicated a lack of consideration

for others' well-being and/or established social norms of conduct:

> My friend decided to make a joke about my sexuality in front of a bunch of people I was
> no [sic] comfortable knowing when I was not very out about it. I was very angry, overly
> anxious, and upset that someone I trusted would do that at the cost of a joke that wasn't
> even all that funny without the context of me coming out to them two months ago. I
> reacted by taking them aside to explain that they hurt me […]. –Non-binary, 18 years old,
> intensity: 4

What was perceived as inconsiderate behavior was diverse. For example, some

participants referred to targets' disregard for their boundaries (the excerpt above) or rudeness,

disrespect, and disdain towards socially accepted norms (the excerpt below) as the characteristics

of such anger-eliciting behavior:

> […] There was a big group in the store, and as the person who was around them I asked
> them to put on masks because we require them at all times in our store. The man in the
> family was very antagonistic towards me and kept asking me why I had the authority to
> ask that of them and they all refused. I told them they would have to leave if they didn't
> and they all started spreading out over the whole store because there were not enough
> employees to talk to them all separately. They proceeded to touch all of out [sic] products
> and verbally insult the whole staff and I had to call security to get them out of the store. –
> Female, 23 years old, intensity: 5

It is noteworthy that the kind of acts that participants interpreted as disrespect was

strikingly heterogeneous. Participants perceived a wide range of behavior, such as invalidating

their thoughts and feelings or not showing trust in them, as a sign of disrespect:

> […] School is expensive and because of this, I gave myself a sort of ultimatum that if I
> don't have a direction by the end of this school year I want to take a break, get a job, and
> see where that gets me. […] I told this plan to my mom and she broke down in tears
> saying that she felt like she failed her children […]. She told me that I should look at
> what classes I have already taken and shoot for the closest degree. […] I said that I
> enjoyed cinema studies so maybe I'll get a degree in that. She then said "anything but"
> that. I'm angry because she told me that I could get a degree in anything and I don't even
> have to end up in that field but as soon as I showed interest in something specific she shot
> it down. […] it's not like I had my heart set on that degree specifically but it's more the

principle of the thing. It feels insulting and like she doesn't trust me to make decisions for myself. –Non-binary, 18 years old, intensity: 3

Furthermore, some narratives suggested that the effect of relatively minor inconsiderate behaviors can accumulate over time and lead to strong reactions:

I am not a person that gets super angry often. However, my roommate aggravated me in little ways a couple of times every day. By the time Spring term came around, he would ask and expect things of me that purposely took my time and energy out of already busy days that I had, which I felt made it justified. –Male, 21 years old, intensity: 4

Self-Centered Behavior. Participants described anger in response to behavior they perceived as selfish and thoughtless, coming from people who seemed to prioritize their own needs and desires over the needs and well-being of others:

Being sat down and told my mother was cheating on my father with our family friend for years. I felt betrayed, especially because I had a feeling it was going on. Felt like a second option for my mom, like she was being selfish and hurting us all just for her to be a little happy. –Female, 21 years old, intensity: 4

Instances of such self-centered behavior involved the target taking more than their fair share, disregarding reciprocity norms, or not considering the impact of their actions on others:

One time, my friend wanted to date a guy that another friend had a crush on. I told her that the other friend would always resent her for it if she ended up dating him, and that it would drive a wedge between them. She didn't listen, and ended up dating him. This made the other friend incredibly depressed and she began to act super erratically and dangerously. I was so angry at the friend who dated the guy because she knew the hurt she was putting our other friend through and she absolutely knew that it was causing problems.—Female, 22 years old, intensity: 5

The target's prioritization of their own needs and desires sometimes led to ignoring, dismissing, or discounting the participants' emotions, which made them feel unheard or misunderstood. The appraisal that one's feeling or perspective was not acknowledged or considered, especially coming from someone close or trusted, led to strong emotional reactions:

During an argument with my mother, it got blown way out of proportion. I kept getting steadily angrier as she wouldn't listen to what I was trying to say, and I felt disrespected and invalidated and like what I felt didn't matter so long as she got to say she was in the

right. Unfortunately this led to yelling on both sides, and she kept persisting, so I resorted to saying hurtful things in the hopes that it would get her to back down and stop engaging with me. […] –Female, 21 years old, intensity: 5

Like most other causes of justified anger, participants often did not elaborate on their rationale for believing their anger in response to perceived selfish behavior was justified. However, in those cases where they discussed their reasoning, participants often mentioned how they consider selfishness to be, in principle, wrong and unacceptable or how they would not have acted the way the target had behaved:

> I experienced anger when one of my roommates began to annoy me a lot. I started to notice how often she would talk about herself and not ask about anyone else. This made me angry because of how there for her I am as a friend and I did not feel that it was being reciprocated. I believe this was justified because I know that I would not act this way with my friends. If I could tell that I was talking about myself too much and started to notice somebody being disengaged, I would immediately reflect on my actions. I also don't like when people are selfish and I think that is why this made me so angry. – Female, 20 years old, intensity: 3

Unjustified Anger: Causes and Rationales

Emotion Spillover. Among the unjustified anger narratives, one of the more prominent themes emerged from scenarios where the participants' anger in one situation affected their behavior and emotions in a different situation or relationship. The participants often recognized that their anger and frustration from a previous experience, or their general negative mood, carried over into an unrelated interaction. They considered such anger as unjustified because it was misdirected at the target, who did not do anything to deserve their anger:

> A time where I felt angry and believed that my anger was not justified was when I got very angry and irritable towards my sister one evening. […] I took my anger out on her verbally and projected a lot of angry feelings that I was having because I was not having a good day and was going through some difficult times. I think in the situation, her tone of voice may have made me act in an angry way, even though she didn't do anything wrong towards me. I was already in an angry/unhappy state, so I think small, intricate things in that moment set me off. In that situation, I was rude and abrasive, and made comments out of irritation and anger, even though those comments were not deserved. In

that situation, I basically reacted very defensively and in a way that is intended to get a rise out of someone, in order to feel better about myself.—Male, 18 years old, intensity: 4

Even in instances where the target may have behaved frustratingly, participants recognized that their spillover anger was not solely caused by the target's anger-eliciting behavior and evaluated such anger as unjustified and disproportionate:

> A time I felt unjustifiably angry was right after I broke up with my now ex-girlfriend. I felt alot of guilt and was very self-conscious and questioned my own integrity so I was already in a place of pre-disposition to be having an illogical sense of my emotions. […] I criticized one of my friends behind his back about his attitude towards other people. […] Everyone of my friends had always been angry with B.'s demeanor towards people and how [he] is untruthful, yet […] my anger in the situation was not justified […]. I had felt the guilt of just ending things with my girlfriend and that guilt seeped into my own self-conscious view of myself. Looking back, the anger was never about B. and how his tendencies to be fake in friendships, it seemed like it was anger that I had taken upon myself and externally posed it upon other people that night.—Male, 20 years old, intensity: 4

Jealousy. Participants often interpreted anger experienced as a result of insecurity, inadequacy, or a perceived threat from another person's success or happiness as unjustified. This theme emerged in both romantic and non-romantic contexts. In non-romantic contexts, participants described experiencing a sense of anger towards another person who they believed has something that they want or deserve:

> During my freshman year of college, I had an underlying anger toward my roommate. My anger toward my roommate was rooted in jealousy. The day that her parents helped her move-in they invited me to spend the day with them. Her parents were very kind to each other and to her, and they seemed to have no reservations about spending money at the grocery store or at a restaurant. While this was very nice, it also made me angry. My thoughts ran along the lines of: "Why don't my parents seem to like each other?" "Why don't my parents show me any affection?" "Why do we have to be so cheap?". The situation made me wonder why she had a better family life than me. […] I knew my anger was not justified […]—Female, 19 years old, intensity: 4

In romantic contexts, participants often described experiencing anger due to feeling threatened by their partner's affiliation with another person. In most of these narratives, the participants considered their anger as unjustified because: (a) They did not see a logical reason

for being threatened (e.g., their partner was trustworthy, the other person had no romantic intentions), and (b) their anger often led to behavior that harmed their relationship:

> I was 17 and my girlfriend at the time had a guy friend that she spent a lot of time with. I know it shouldn't have bothered me even then, but I couldn't help but let it get to me. Eventually, my jealousy got the best of me and I said some things that I regret.—Male, 23 years old, intensity: 4

Goal obstruction. Similar to the justified anger narratives, a prominent theme emerged among the unjustified narratives in which participants experienced anger due to an inability to achieve or fulfill a desired goal, need, or highly anticipated outcome. However, in these narratives, participants often reflected on different aspects of the event (e.g., by taking the target's perspective) and concluded that their anger was unfair or unwarranted. For example, anger elicited by goal obstruction was perceived as unjustified if the target of anger did not have any control over the events that blocked a desired outcome (first excerpt) or was not the actual reason behind the obstacle they faced (second excerpt):

> […] I was told I couldn't go to a four year college. I was angry at my mom because she was the one who told me I shouldn't, even though I had gotten into one of my dream schools and worked so hard to get to that point. She wanted me to go to community college first […] because we couldn't afford to especially since my school was out-of-state. Although I understood that we didn't have a lot of money and as a single mom she was already working so hard to take care of my siblings and I, it still made me angry because I felt my future fading away. […] I did feel that it wasn't right to be angry with my mom knowing the reasons and the sacrifices she has already made for my family. […]—Female, 20 years old, intensity: 4

> I was angry because my teacher gave me a bad grade when it was my fault that I didn't study for the test. My anger was a cover up for my disappointment in myself.—Male, 19 years old, intensity: 4

Additionally, anger in response to goal obstruction was perceived as unjustified if the participant believed that the person who blocked a particular goal or progress had some understandable reasons for doing so:

When I was in middle school (age 12) I was not allowed to have social media (Instagram in specific) and I went behind my parents back and downloaded it onto the iPad that they bought me. I remember my mom seeing the app and getting mad at me, and instead of deleting it and reasoning with her, I screamed and cried and got extremely rude (using the word bitch at her). I slammed a door in her face when she took away my tablet. I believe I was wrong in this situation because her reasoning for saying no to the social media app was that I was not old enough, which was true, and that it was on a computer device that she has [sic] bought for me. I broke her rules under her roof essentially on her laptop.— Female, 18 years old, intensity: 5

Annoyance and Inconvenience. A theme emerged among narratives where participants described experiencing (often minor) annoyances or inconveniences that triggered frustration and irritation. Participants considered their anger in response to these experiences unjustified if the target of anger was not the real cause of their annoyance (first excerpt) or the target did not have agency or intentionality over their actions (second excerpt):

When customers order acai bowls and I'm in charge of the smoothie side. […]
Situational cause: I make 30+ acai bowls a day, it drives a person insane...
Reaction: grip the knife harder, take a deep breath, make a bowl
When I hear a customer order an acai or green banana bowl I feel immediate anger directed towards them, however, this anger is never justified because they're simply a customer ordering food.—Female, 21 years old, intensity: 4

When my grandmother starting [sic] showing signs of dementia, I was very angry and frustrated at her. She kept forgetting things I had just told her, and kept repeating herself over and over. I acted disrespectful towards her because I was frustrated at her and her disease. I think behind it all I was scared and worried about her, and how quickly her disease was progressing. […]—Female, 18 years old, intensity: 4

Even if the target was perceived as responsible for and agentic in their actions, participants interpreted their anger as unjustified if its severity did not match the situation or if there were other alternatives (e.g., better communication) that could have prevented the conflict:

[…] about a month ago my friends and I planned a trip to go to the beach. We all agreed to meet at 5:30, but some of the members of the group went to get dinner first before telling anyone. That left the rest of us stuck waiting for them to finish before we could leave. I recall being very annoyed and angry at them […]. I also had a math project due at midnight that night, so the added stress of having to finish that before the deadline only made me angrier; almost as if they were being inconsiderate towards my time. Looking back though, it was not a big deal. […] the level of annoyance towards them wasn't really

justified. I think my anger was unjustified because I didn't let them know my situation and how important being punctual was -- they were just trying to get a quick bite to eat before leaving and running a bit late is not the end of the world.—Male, 18 years old, intensity: 3

Disagreements. A theme emerged among situations where the participant would experience anger in response to a disagreement or opposing views with another person. Such anger was often experienced in the context of a conversation or an argument and was accompanied by strong expressions of anger. Participants considered such anger as unjustified if it was perceived as a violation of the other person's right to their opinions (first excerpt) or an indication of failure to take the target's perspective (second excerpt):

> A time I experienced anger and it didn't feel justified is when I am around my peers and get this heated feeling in my chest if they say, or do something that I don't agree with. When in fact everyone has the right to act in their own ways. Being around one of roommates lately had gotten me upset, when she acts like she is better than, and makes unkind remarks to others. I usually just try to ignore it and get it off my chest later with another friend or peer. She has the right to her own opinions, and personality that she has developed and I need to be mindful of that. […]—Female, 19 years old, intensity: 4

> I get really angry with other people who don't have the same political beliefs as I do. Recently, I was having a heated conversation with one of my neighbors in my residence hall about Donald Trump. There got to a point where I go so mad at them, I had to walk away because I couldn't stand hearing them talk about their beliefs any more. I wish I didn't get so immediately angry and defensive about political controversy, and in that moment I had no right to be mad at them; they were raised believing one thing while I was raised believing something else, and as angry as Donald Trump makes me, there was really no reason to lay that anger back onto my dorm mate. […] In these types of situations, I really need to work on my listening and perspective taking […]—Female, 18 years old, intensity: 5

Similar to some other themes, anger in response to disagreements was perceived negatively if it was deemed disproportionate or if the issue was judged trivial:

> I was in an argument with a friend over a really small idea, that we both had different opinions on. He believed the best way to cope with things was to take medication, where I justified or told him that I disagreed. So stupid, right? However, in the moment, it seemed as though I needed to be heard. […]—Male, 18 years old, intensity: 4

Misappraising the Situation. This theme was present in narratives where the participant encountered behavior that would justifiably cause anger (e.g., rudeness, disrespect, or harm). However, they realize their initial appraisal of the situation has been incorrect or inappropriate, which made their anger unjustified:

> My girlfriend was stressed out and having a minor panic attack, and I was trying to comfort her. In her panic she pushed me away and accused me of looking at her like "a wounded dog" which led me to feel anger. I knew it wasn't justified anger, as she was just trying to express her pain, but I still felt my blood rise. Something about the situation icked me the wrong way and made me angry for no reason.—Male, 19 years old, intensity: 3

The common reasoning for considering the initial appraisal as inappropriate was the acknowledgment that the target's behavior was not intentional or agentic, or that the initial appraisal was unfair or harmful towards the target:

> Just yesterday, […] my depressed uncle overdosed on proscribed sleeping medications knowing he had an appointment later that day. I was so angry and still have a sort of anger. Why I was angry was because he did this with his wife, two babies, and me being home. Why I shouldn't be angry is because he obviously really needs help. He mentally is not okay and instead of me being angry I need to just try and be there for him and his family. I need to understand that he's not okay and just support him through this rough time.—Female, 19 years old, intensity: 5

Many Experiences Were Multicausal.

As is evident in several of the justified and unjustified excerpts in the previous two sections, some narratives included more than one theme, pointing to the notion that multiple causes may contribute to a specific experience of anger. The presence of a second contributor often had an additive influence on the intensity or impact of the participant's anger. For example, one participant described how their frustration caused by failure to achieve a highly desired outcome was magnified due to a perception of unequal treatment:

> During middle school, we would have an end-of-the-year field trip to an entertainment camp every year. One particular experience was the Go-Karts which were reserved for the 8th graders. Every year we waited until we were 8th graders to be able to ride said

Go-Karts. When the time finally came, I was denied access to be in the driver position due to my height compared to the height requirement which was something I could not control. So an event that was anticipated over the last 2 years was met with disappointment as I was forced to be in the passenger seat of rides instead. To make matters worse, upon leaving that section of the camp, I noticed the workers were allowing students from lower grades to use the Go-Karts as well which made the whole situation even more unfair. This resulted in me feeling sour for the rest of the day at the camp and in short killing my mood for any other events planned. –Male, 19 years old, intensity: 4

Perceived Consensus and Justified Anger

It was common among the justified anger narratives for participants to not explicitly discuss their rationale for thinking that their anger was justified. This was perhaps due to their perception that there is a consensus that the target's behavior (e.g., betrayal, harm, or inconsiderate behavior) was wrong and would justifiably elicit anger:

My roommate continually does not wash his dishes. He has made several excuses such as "they are soaking" but you can't really soak dishes for 3-4 days. Anyway I think it's clear that my anger is justified.—Male, 20 years old, intensity: 3

Some participants explicitly referenced such consensus by, for example, elaborating how others who were associated with the situation or target also endorsed such anger (first excerpt) or how there is an established 'code' or norm that the target's action has violated (second excerpt):

My friend is super rude to me and bossy and not considerate of anyones [sic] feelings. tries to leave me out of stuff with our friends. I think my anger is justified because my other friends have shared similar feelings.—Female, 18 years old, intensity: 5

[…] It was horribly painful and it felt like betrayal hearing that the two of them, my ex gf and [my] friend, had entered into a relationship without regard to how it would affect me. I felt my anger was justified because it is against the code of friendship to start dating someone else's significant other, especially so soon after a break up. […].—Female, 21 years old, intensity: 4

Unjustified Anger, Retrospection, and Time

In contrast, many unjustified anger narratives entailed reflective language, suggesting that the participants have given thought to the justifiability of their feeling and behavior. Remarkably, there was considerable variability in the time when the participants realized their anger was

unjustified. In many narratives, the participants recognize the unjustifiability of their anger after

time has passed and they have had the chance to reflect on the incident with a fresh perspective:

> When I was younger I would typically ask advice from my mother and father about school […]. I remember I think there was a kid in my class who was giving me a hard time and I asked my mom and dad about the situation, so they told me relatively what to do and when I tried my best at doing what they told me, I was shocked that it didn't work out the way I had hoped and I felt a bit uneasy and angry with my parents for some reason, looking back on those types of instances I think I was just a stupid little kid that had misdirected anger at his parents when they were only trying to help. […]—Male, 19 years old, intensity: 4

In some cases, the participant realized that their anger was unjustified as soon as they

acted on it:

> […] At the time me and my best friend were hanging out together. […] That particular day I was driving her home and was playing a specific playlist on my stereo. When I drive, I like to listen to music in playlists that I have created, as it helps make me less anxious on the road. My friend decided that she wanted to change the music and without permission took my phone to play the song she wanted. As soon as she started singing along, I turned off the music and started yelling at her. I don't quite remember what exactly I said but I remember how enraged I was, and just screaming at her. Whatever I said made both of us quiet for the rest of the ride. As soon I dropped her off at home I realized what had just happened and began to feel bad. There was truly no reason for me to be that angry with her to the point that I began screaming.—Female, 18 years old, intensity: 4

And there were cases where the participants seemed to know that their anger was not

justified as they were experiencing or expressing it:

> […] I worked […] as a crafter which meant I was in charge of decorating any and all cakes with cellophane or decoration sets we had for purchase. One of my friends, whom at the time I was actually pretty close with was working the same shift as well which was a relief. Though, maybe an hour into our 5 hour shift, I was overcome with a sense of anger. It started out as annoyance to the fact that my friend wasn't doing her job correctly but it wasn't like she was doing a horrible job, it was more just my control issues for having things done a certain way that was annoying me. By the time my anger had kicked in, I was saying out of line things and could recognize this behavior, almost from a third person perspective, but could not and necessarily didn't want to stop. I was getting satisfaction from releasing my anger at others. […]—Female, 18 years old, intensity: 4

Managing Relational Harm after Unjustified Anger

Consistent with the social nature of anger, many justified and unjustified anger narratives entailed descriptions of how the anger-eliciting event damaged participants' relationship with the target. However, a unique pattern emerged among unjustified anger narratives in which participants described attempts to reduce the possibility of harm to their relationship with the target, for example, by not expressing their anger:

> […] Of course, I did not express this [anger] during the time that her parents were with us, nor did I ever say anything about it to her afterwards. I knew my anger was not justified, and I talked it out with a friend and eventually forgot about the whole situation.—Female, 19 years old, intensity: 4

Had the participant acted on their anger, they would make adjustments to their behavior (first excerpt) or apologize afterward (second excerpt) to manage the potential relational harm of their behavior:

> While being a fuel attendant, I experienced a deaf driver. Initially, when he pulled up, I thought he was simply being rude by refusing to talk to me and was using hand gestures, I acted like I couldn't understand what he said at first out of anger from my assumption. However, he did try to talk, but he could barely even make a sound and I realized that I had made a horrible judgment based off my anger and started being nice and polite and visually respondant [sic] to him once I had realized he was actually a nice individual.—Male, 24 years old, intensity: 3

> A year ago, when my girlfriend still smoked cannabis I got mad about it and I do not know why. I feel like I got angry for no real reason. Maybe I was jealous that she was having a good time without me. I'm not really sure. I think my anger was not justified especially since it was hypocritical for me to get mad at her since I did the same. I reacted to the situation by giving her a hard time and making her feel bad for doing it without me. I feel terrible for doing this and have apologized for this numerous times.—Male, 19 years old, intensity: 4

Closed-Vocabulary Analyses

These analyses aimed to compare how participants write about justified and unjustified anger narratives in terms of a broad range of theoretically relevant psychological constructs and linguistic features. To this end, I used a collection of previously validated dictionaries to quantify

90

the relative frequency of words in each narrative using the most recent version of the LIWC software (i.e., LIWC-22; Boyd et al., 2022). The LIWC outcomes were imported into R, where the comparison analyses were conducted[8].

To analyze participants' narratives, I used internal LIWC dictionaries and external dictionaries relevant to social, emotional, and moral processes. In this section, after a descriptive summary of the linguistic features of the narratives, I will present the findings organized by the characteristics that were (a) more prominent among justified narratives, (b) more prominent among unjustified narratives, and (c) did not vary considerably based on the type of anger. Considering the high number of comparisons, I will evaluate the differences between the anger types based on the effect size estimates. I will interpret the differences with at least a small-to-moderate effect size (i.e., $|d| \geq 0.20$; Lovakov & Agadullina, 2021) as *considerable* and the differences with an effect size of $|d| \leq 0.10$ (i.e., where the 95% confidence interval suggests the plausibility of both positive and negative effects) as *minimal*. The results of Welch's t-test and corresponding *p*-values for all comparisons are reported in tables within each section.

Descriptive Summary of the Linguistic Features

As shown in Table 4.1, justified and unjustified anger narratives differed on a number of linguistic features. In terms of the total word count, justified anger narratives ($M = 142.08$, $SD = 143.92$) were, on average, approximately 23 words longer than unjustified ones ($M = 118.91$, $SD = 78.55$; $d = 0.20$). However, the average percentage of words in the narratives captured by LIWC dictionaries was 1.31% higher for the unjustified anger narratives ($M_{justified} = 80.41$, $M_{unjustified} = 81.72$; $d = -0.26$). More detailed results, including the analyses of grammatical/linguistic dimensions, are presented in Table 4.1.

---

[8] R code and the analysis output are available at http://bit.ly/3jJJozE

Prominent Characteristics of Justified Anger Narratives

As shown in Figure 4.1, several characteristics were more pronounced in justified (vs. unjustified) anger narratives. The writing style in these narratives suggests that when participants wrote about their justified anger, they had a stronger sense of confidence and high status ($d = 0.42$; as captured by LIWC's Clout algorithm; Kacewicz et al., 2014; Moore et al., 2021). They also engaged in more formal and logical (as opposed to intuitive) thinking ($d = 0.30$; as detected by LIWC's Analytical Thinking algorithm; Pennebaker et al., 2014).

The results from LIWC's Social Processes dictionary indicated a stronger presence of words associated with social situations and interactions in the justified (vs. unjustified) anger narratives ($d = 0.40$). For example, these narratives contained more words related to social behavior ($d = 0.25$; e.g., "love, say, care"), interpersonal communications (e.g., "said, say, tell, thank;" $d = 0.23$), and social referents (e.g., "you, we, he, she;" $d = 0.35$). Relatedly, LIWC's Drive dictionary indicated that justified anger narratives tend to include more affiliation words (e.g., "we, our, help, ally, friend;" $d = 0.23$). Consistently, the external Big Two dictionary (Pietraszkiewicz et al., 2019), which captures communal and agentic expressions in language, indicated that justified anger narratives were written with more communal language.

Figure 4.1

Differences Between Anger Variants Based on Closed-Vocabulary Analyses
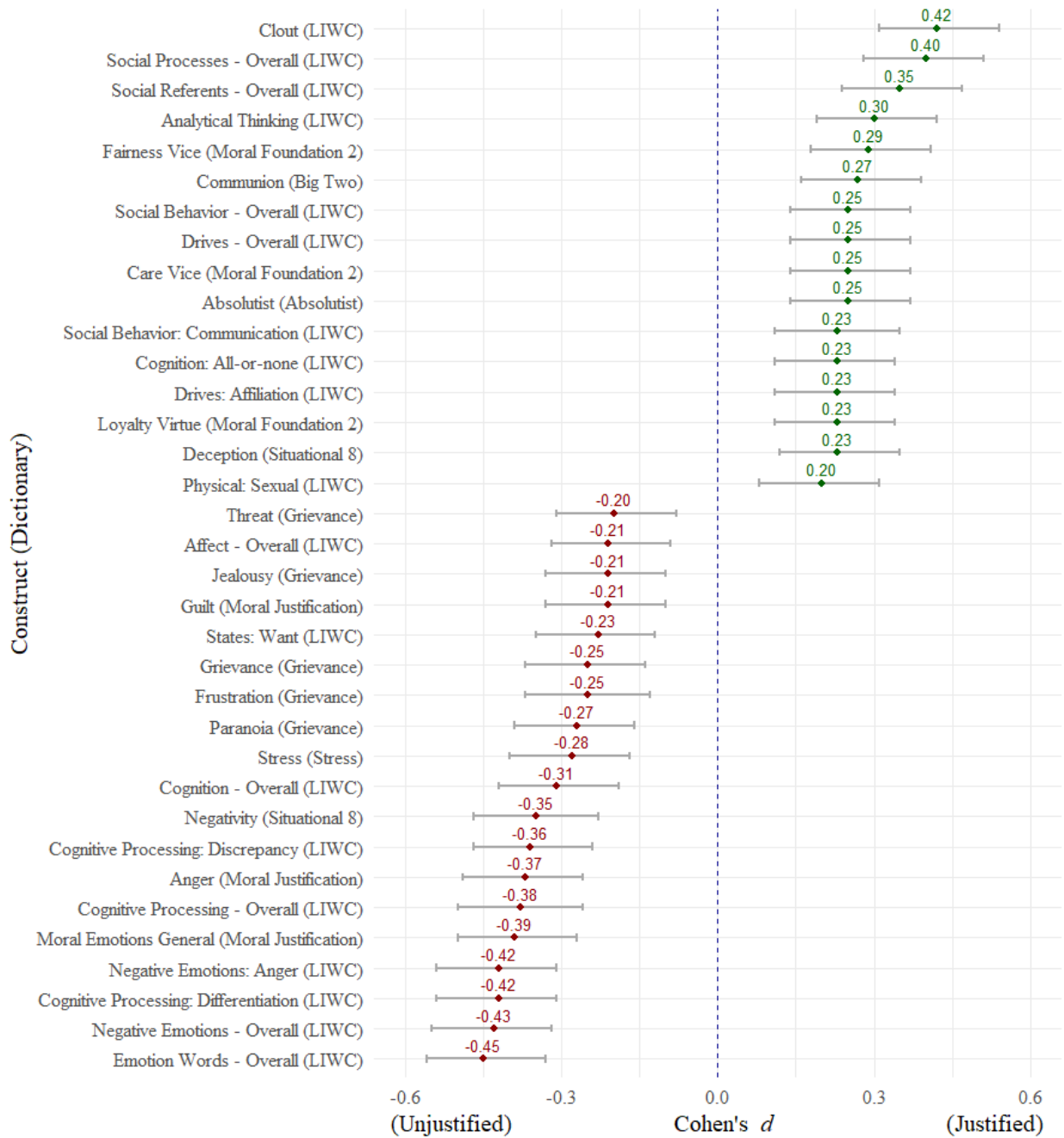
Notes. Differences above the |*d*| = 0.20 threshold are included in the figure. Negative effect sizes (in red) indicate that the mean is larger for the unjustified anger condition, and positive effect sizes (in green) indicate higher means for the justified condition. The error bars are 95% confidence intervals around *d*.

Table 4.1

Summary Variables and Linguistic Dimensions of Anger Narratives Produced by LIWC-22

Dictionary[1]	Construct	Anger Type[2,3] Justified	Unjustified	Welch's t-test	Cohen's *d* [95%CI]
Descriptive Summary Variables					
	Total word count	142.08 (143.92)	118.91 (78.55)	$t(945.1) = 3.43, p = 0.001$	**0.20 [0.09, 0.31]**
	Words per sentence	22.58 (9.15)	22.94 (8.26)	$t(1154.5) = -0.71, p = 0.481$	-0.04 [-0.16, 0.07]
	Use of big words (≥ 7 letters)	14.93 (4.73)	14.22 (4.32)	$t(1154.9) = 2.69, p = 0.007$	0.16 [0.04, 0.27]
	% words captured by LIWC	80.42 (4.99)	81.72 (4.95)	$t(1148.9) = -4.47, p < .001$	**-0.26 [-0.38, -0.15]**
Algorithmic Summary Variables					
	Analytical thinking	24.03 (22.30)	17.86 (18.46)	$t(1142.1) = 5.14, p < .001$	**0.30 [0.19, 0.42]**
	Clout	20.51 (24.93)	11.35 (17.63)	$t(1083.9) = 7.26, p < .001$	**0.42 [0.31, 0.54]**
	Perceived authenticity	80.69 (24.76)	85.21 (22.10)	$t(1153.8) = -3.28, p = 0.001$	-0.19 [-0.31, -0.08]
	Emotional tone	9.44 (15.73)	7.04 (14.85)	$t(1154.4) = 2.67, p = 0.008$	0.16 [0.04, 0.27]
Linguistic Dimensions	Overall	79.65 (4.96)	81.03 (4.92)	$t(1148.9) = -4.77, p < .001$	**-0.28 [-0.40, -0.16]**
Function words	Total	63.71 (5.28)	64.97 (4.48)	$t(1147.3) = -4.38, p < .001$	**-0.26 [-0.37, -0.14]**
Pronouns	Total	21.74 (4.92)	21.77 (4.24)	$t(1149.8) = -0.12, p = 0.905$	-0.01 [-0.12, 0.11]
	Personal (total)	16.60 (4.51)	16.78 (3.89)	$t(1149.7) = -0.74, p = 0.457$	-0.04 [-0.16, 0.07]
	1st person singular (I)	11.28 (4.11)	11.99 (3.46)	$t(1145.6) = -3.21, p = 0.001$	-0.19 [-0.30, -0.07]
	1st person plural (we)	0.78 (1.31)	0.62 (1.04)	$t(1130.5) = 2.30, p = 0.022$	0.13 [0.02, 0.25]
	2nd person (you)	0.13 (0.50)	0.10 (0.46)	$t(1155.0) = 1.08, p = 0.280$	0.06 [-0.05, 0.18]
	3rd person singular (she/he)	3.07 (3.04)	3.01 (3.08)	$t(1145.1) = 0.30, p = 0.767$	0.02 [-0.10, 0.13]
	3rd person plural (they)	1.09 (1.87)	0.92 (1.67)	$t(1153.7) = 1.63, p = 0.103$	0.10 [-0.02, 0.21]
	Impersonal (total)	5.14 (2.86)	4.99 (2.61)	$t(1154.9) = 0.94, p = 0.346$	0.06 [-0.06, 0.17]
Determiners	Total	14.47 (3.73)	13.57 (3.75)	$t(1146.1) = 4.09, p < .001$	**0.24 [0.12, 0.36]**
	Articles	5.13 (2.86)	4.87 (2.66)	$t(1154.9) = 1.59, p = 0.113$	0.09 [-0.02, 0.21]
	Numbers	0.99 (1.14)	0.81 (1.04)	$t(1154.8) = 2.83, p = 0.005$	0.17 [0.05, 0.28]
Prepositions		13.44 (3.68)	13.05 (3.62)	$t(1150.3) = 1.81, p = 0.070$	0.11 [-0.01, 0.22]
Auxiliary verbs		9.03 (3.16)	10.20 (3.40)	$t(1127.5) = -6.04, p < .001$	**-0.36 [-0.47, -0.24]**

Table 4.1 (continued)

Dictionary[1]	Construct	Anger Type[2,3]		Welch's t-test	Cohen's d [95%CI]
		Justified	Unjustified		
Adverbs		6.07 (2.91)	6.52 (3.03)	$t(1138.4) = -2.58, p = 0.01$	-0.15 [-0.27, -0.04]
Conjunctions		8.68 (2.61)	9.05 (2.47)	$t(1154.1) = -2.51, p = 0.012$	-0.15 [-0.26, -0.03]
Negations		1.97 (1.41)	2.68 (1.81)	$t(1045.4) = -7.47, p < .001$	**-0.44 [-0.56, -0.32]**
Common verbs		19.48 (4.92)	20.25 (4.22)	$t(1149.3) = -2.88, p = 0.004$	-0.17 [-0.28, -0.05]
Common adj.		5.67 (2.77)	6.32 (2.96)	$t(1131.2) = -3.83, p < .001$	**-0.23 [-0.34, -0.11]**
Quantities		3.55 (2.43)	3.09 (2.16)	$t(1153.3) = 3.41, p = 0.001$	**0.20 [0.08, 0.32]**

Notes. [1] Most frequently used exemplars for each dictionary/construct is reported in Table 2 of the publicly available LIWC-22 technical report (Boyd et al., 2022).

[2] Each cell in these two columns represents the mean (and standard deviation) for the corresponding condition.

[3] The results for all constructs are reported in percentages, with two exceptions: (a) The results for "total word count" and "word per sentence" are based on the number of words. (b) The results for the four "algorithmic summary variables" are standardized scores that have been converted to percentiles; their range is from 1 to 99.

The results from the Moral Foundations 2.0 dictionary (Frimer, 2020) indicated that, based on the measured moral foundations, the justified anger narratives tend to include considerably more "moral language" ($d = 0.47$). Specifically, there were more words related to fairness – vice (e.g., "cheat, fraud, unfair, injustice," $d = 0.29$), care – vice (e.g., "suffer, cruel, hurt, harm," $d = 0.25$), and loyalty – virtue (e.g., "loyal, sacrifice, fidelity, together" $d = 0.23$) foundations in the justified (vs. unjustified) anger condition.

Furthermore, the results from LIWC's cognition language suggest that the justified anger narratives reflected a stronger all-or-none pattern (e.g., "all, no, never, always;" $d = 0.23$). Consistently, the findings from the external Absolutist dictionary (Al-Mosaiwi & Johnstone, 2018) showed that the linguistic markers of absolutist thinking were more frequent in justified anger narratives ($d = 0.25$).

Finally, two findings related to the situations described in justified anger narratives are noteworthy. LIWC's Physical dictionary found a higher frequency of terms related to sex and sexuality (e.g., "sex, gay, pregnancy;" $d = 0.20$) in the justified anger narratives. And the Situational Eight dictionary (Serfass & Sherman, 2015), which scores natural language on various dimensions of the situation (Rauthmann et al., 2014), found that these narratives tend to reflect a more substantial presence of deception ($d = 0.23$).

Prominent Characteristics of Unjustified Anger Narratives

A reliable pattern in the findings emerged such that there were more emotion words in participants' unjustified anger narratives. This difference was primarily driven by the higher use of negative moral emotions (Table 4.2 and Figure 4.1). For example, LIWC's Affect dictionary captured more emotional content in the unjustified anger narratives ($d = -0.45$). A review of the specific constructs within this dictionary demonstrates that the affective differences are generally

driven by a stronger presence of negative emotion words ($d = -0.43$), especially words related to LIWC's anger category (e.g., "hate, mad, angry, frustrated;" $d = -0.42$).

External dictionaries painted a similar picture. The Moral Justification dictionary (Wheeler & Laham, 2016), which includes emotion categories more granular than LIWC, as well as moral reasoning patterns such as consequentialist and deontological reasoning, detected a higher frequency of emotive language ($d = -0.39$) in unjustified anger narratives, primarily driven by anger ($d = -0.37$) and guilt ($d = -0.21$) words. The Situational Eight dictionary (Serfass & Sherman, 2015) captured a higher presence of negativity in the situation ($d = -0.35$). This construct consists of a set of words that reflect negative states, both in terms of their appraisals (e.g., "adversity," "distrust," "fml") and emotional experiences (e.g., "hostile," "lonely," "pissed"). Relatedly, the Stress dictionary (W. Wang et al., 2016), which has been developed to detect demanding situations where a person's ability to cope or to be in control is threatened, captured a higher frequency of stress words in unjustified anger narratives ($d = -0.28$). Furthermore, the Grievance dictionary (van der Vegt et al., 2021), which assesses the presence of different types of threat and violence-related grievances in language, detected a higher proportion of words related to paranoia (e.g., "suspicious, conspiracy, suspect;" $d = -0.27$), frustration (e.g., "annoyed, problem, powerless;" $d = -0.25$), grievance (e.g., "wrong, disappointed, injustice;" $d = -0.27$), jealousy (e.g., "cheat, jealous, bitter;" $d = -0.21$), and threat (e.g., "warn, danger, unsafe;" $d = -0.20$) among unjustified (vs. justified) anger narratives.

Finally, LIWC's Cognition dictionary captured several differences between the two conditions, suggesting that the participants in the unjustified (vs. justified) anger narratives were more involved in cognitive processing ($d = -0.38$). This pattern was primarily reflected in

participants' more frequent use of discrepancy (e.g., "would, can, want, could;" d = -0.36) and differentiation (e.g., "but, not, if, or;" d = -0.42) terms.

Minimal Differences ($|d| \leq 0.10$)

When interpreting small differences, it is essential to note the mean percentages (i.e., the number of words related to a construct per hundred words of text). The positive correlation between the mean percentages and the absolute effect sizes (r = .42, ρ = .31) supports the intuitive notion that detecting a linguistic difference between the conditions partly depends on the number of words captured by the corresponding dictionary. For some constructs, the differences are small because there are simply "too few" relevant words in the narratives that are detectable by the dictionary. Deciding what percentage of words would be considered "too few," however, can be challenging, as some broader categories tend to have a relatively higher frequency (e.g., emotion words) compared to others (e.g., moral language). In interpreting the minimal differences, I evaluated the mean percentages of each construct in relation to the other constructs in the same dictionary. For example, the results from the Moral Justifications dictionary (Table 4.3) suggest that the words related to moral justification constructs tend to be low frequency (M = 0.26, Mdn = 0.07). Among these constructs, the differences between justified and unjustified anger narratives in terms of positive moral emotions (e.g., gratitude, elevation, and compassion) are minimal ($-0.09 \leq d \leq 0.07$) because there are hardly any words related to these constructs in the narratives ($M_{gratitude}$ = 0.00, $M_{elevation}$ = 0.05, $M_{compassion}$ = 0.07). In contrast, the words associated with deontological reasoning have a relatively higher frequency ($M_{justified}$ = 0.14, $M_{unjustified}$ = 0.13). For this construct, it is plausible to interpret the minimal difference between the two conditions (d = 0.02) as an indication that when participants write

about justified and unjustified anger, they use these types of moral reasoning with similar frequency.

Following this logic, some cases of minimal differences between the conditions are noteworthy. For example, the newly expanded LIWC-22 dictionaries (Table 4.4) did not detect substantial linguistic differences in categories such as lifestyle (e.g., language related to leisure, work, or money), motives (e.g., language related to risk, curiosity, or allure), perceptual processes (e.g., attention and visual perception), and time orientation (i.e., the use of language that shows participants' focus on past, present, or future). Furthermore, the results from the Schwartz Personal Values dictionary (Ponizovskiy et al., 2020) indicate that for the majority (i.e., 11 out of 14) of the personal value constructs, the differences between justified and unjustified anger are minimal, even though the text related to these constructs are present in participants' narratives.

Table 4.2

Comparing Justified and Unjustified Anger Narratives Using LIWC-22's "Basic" Dictionaries for Psychological Processes

Dictionary[1]	Construct	Anger Type[2]		Welch's t-test	Cohen's d [95%CI]
		Justified	Unjustified		
Drives	Overall	5.70 (5.17)	4.63 (2.99)	t(976.7) = 4.33, p < .001	**0.25 [0.14, 0.37]**
	Affiliation	3.69 (3.08)	3.05 (2.47)	t(1133.3) = 3.90, p < .001	**0.23 [0.11, 0.34]**
	Achievement	1.09 (4.26)	0.84 (1.25)	t(711.7) = 1.37, p = 0.172	0.08 [-0.03, 0.19]
	Power	1.00 (1.41)	0.78 (1.17)	t(1141.9) = 2.79, p = 0.005	0.16 [0.05, 0.28]
Cognition	Overall	14.15 (4.90)	15.68 (5.00)	t(1143.1) = -5.23, p < .001	**-0.31 [-0.42, -0.19]**
All-or-none	All-or-none	1.21 (1.48)	0.91 (1.15)	t(1121.5) = 3.85, p < .001	**0.23 [0.11, 0.34]**
Cognitive processing	Overall	12.86 (4.73)	14.69 (4.87)	t(1140.9) = -6.45, p < .001	**-0.38 [-0.50, -0.26]**
	Insight	3.44 (2.49)	3.66 (2.41)	t(1152.3) = -1.53, p = 0.126	-0.09 [-0.21, 0.03]
	Causation	3.15 (2.30)	3.26 (2.30)	t(1147.8) = -0.85, p = 0.393	-0.05 [-0.17, 0.07]
	Discrepancy	1.29 (1.23)	1.78 (1.54)	t(1058.5) = -6.02, p < .001	**-0.36 [-0.47, -0.24]**
	Tentative	1.46 (1.43)	1.58 (1.69)	t(1089.5) = -1.24, p = 0.216	-0.07 [-0.19, 0.04]
	Certitude	0.65 (0.98)	0.71 (1.10)	t(1110.9) = -0.96, p = 0.339	-0.06 [-0.17, 0.06]
	Differentiation	3.44 (2.07)	4.39 (2.38)	t(1102.1) = -7.17, p < .001	**-0.42 [-0.54, -0.31]**
Memory	Memory	0.13 (0.44)	0.19 (0.51)	t(1090.8) = -2.11, p = 0.035	-0.12 [-0.24, -0.01]
Affect	Overall	6.52 (5.12)	7.43 (3.43)	t(1056.1) = -3.55, p < .001	**-0.21 [-0.32, -0.09]**
Tone	Positive tone	1.52 (1.63)	1.61 (2.02)	t(1065.4) = -0.85, p = 0.398	-0.05 [-0.17, 0.07]
	Negative tone	4.86 (5.00)	5.66 (3.13)	t(1020.7) = -3.26, p = 0.001	-0.19 [-0.30, -0.08]
Emotion	Overall	3.68 (2.57)	4.82 (2.53)	t(1149.8) = -7.58, p < .001	**-0.45 [-0.56, -0.33]**
	Positive Emotions	0.34 (0.70)	0.41 (0.87)	t(1065.0) = -1.54, p = 0.123	-0.09 [-0.21, 0.02]
	Negative Emotions (overall)	3.21 (2.41)	4.24 (2.34)	t(1151.7) = -7.37, p < .001	-0.43 [-0.55, -0.32]
	Anxiety	0.12 (0.48)	0.20 (0.60)	t(1058.9) = -2.40, p = 0.017	-0.14 [-0.26, -0.03]
	Anger	2.27 (1.84)	3.08 (1.99)	t(1126.0) = -7.20, p < .001	**-0.42 [-0.54, -0.31]**
	Sadness	0.42 (0.86)	0.50 (0.89)	t(1141.0) = -1.48, p = 0.138	-0.09 [-0.20, 0.03]
Swear words	Swear words	0.09 (0.37)	0.06 (0.33)	t(1154.9) = 1.56, p = 0.118	0.09 [-0.02, 0.21]

Table 4.2 (continued)

Dictionary[1]	Construct	Anger Type[2] Justified	Anger Type[2] Unjustified	Welch's t-test	Cohen's *d* [95%CI]
Social Processes	Overall	14.1 (5.97)	11.82 (5.48)	*t(1155.0) = 6.77, p < .001*	**0.40 [0.28, 0.51]**
Social behavior	Overall	4.78 (2.96)	4.05 (2.91)	*t(1150.4) = 4.27, p < .001*	**0.25 [0.14, 0.37]**
	Prosocial behavior	0.55 (1.04)	0.48 (1.09)	*t(1134.3) = 1.07, p = 0.283*	0.06 [-0.05, 0.18]
	Politeness	0.09 (0.32)	0.15 (0.58)	*t(851.0) = -1.85, p = 0.065*	-0.11 [-0.23, 0.01]
	Interpersonal conflict	0.72 (1.35)	0.63 (1.20)	*t(1153.3) = 1.18, p = 0.239*	0.07 [-0.05, 0.18]
	Moralization	0.60 (1.34)	0.59 (0.97)	*t(1093.6) = 0.09, p = 0.930*	0.01 [-0.11, 0.12]
	Communication	2.22 (1.97)	1.77 (1.92)	*t(1151.8) = 3.91, p < .001*	**0.23 [0.11, 0.35]**
Social referents	Overall	9.33 (4.57)	7.80 (4.07)	*t(1153.6) = 5.99, p < .001*	**0.35 [0.24, 0.47]**
	Family	1.06 (2.10)	0.80 (1.36)	*t(1039.0) = 2.47, p = 0.014*	0.14 [0.03, 0.26]
	Friends	1.24 (1.80)	1.05 (1.55)	*t(1149.8) = 1.84, p = 0.066*	0.11 [-0.01, 0.22]
	Female references	2.24 (3.17)	1.90 (2.89)	*t(1154.8) = 1.88, p = 0.060*	0.11 [0.00, 0.23]
	Male references	1.98 (2.77)	2.04 (3.16)	*t(1104.5) = -0.33, p = 0.743*	-0.02 [-0.13, 0.10]

Notes. [1] Most frequently used exemplars for each dictionary/construct is reported in Table 2 of the publicly available LIWC-22 technical report (Boyd et al., 2022).

[2] Each cell in these two columns represents the mean (and standard deviation) for the corresponding condition. The results for all constructs represent percentages.

Table 4.3

Comparing Justified and Unjustified Anger Narratives Using Nine Non-LIWC Dictionaries

| Dictionary[2] | Construct | Anger Type[1] | | Welch's t-test | Cohen's *d* [95%CI] |
		Justified	Unjustified		
Absolutist	Absolutist	1.09 (1.34)	0.78 (1.06)	*t*(1129.1) = 4.35, *p* < .001	**0.25 [0.14, 0.37]**
Big Two	Agency	3.21 (2.49)	3.40 (2.42)	*t*(1151.6) = -1.30, *p* = 0.193	-0.08 [-0.19, 0.04]
	Communion	3.40 (2.89)	2.67 (2.49)	*t*(1149.6) = 4.65, *p* < .001	**0.27 [0.16, 0.39]**
Grievance	Deadline	1.21 (1.22)	1.32 (1.46)	*t*(1085.6) = -1.36, *p* = 0.176	-0.08 [-0.20, 0.04]
	Desperation	1.20 (1.37)	1.35 (1.40)	*t*(1143.8) = -1.86, *p* = 0.064	-0.11 [-0.22, 0.01]
	Fixation	0.57 (0.87)	0.71 (0.96)	*t*(1118.3) = -2.70, *p* = 0.007	-0.16 [-0.28, -0.04]
	Frustration	1.16 (1.36)	1.51 (1.44)	*t*(1132.8) = -4.25, *p* < .001	**-0.25 [-0.37, -0.13]**
	God	0.19 (0.53)	0.11 (0.42)	*t*(1126.2) = 2.72, *p* = 0.007	0.16 [0.04, 0.27]
	Grievance	1.22 (1.39)	1.59 (1.54)	*t*(1116.0) = -4.30, *p* < .001	**-0.25 [-0.37, -0.14]**
	Hate	1.36 (1.49)	1.62 (1.63)	*t*(1121.3) = -2.88, *p* = 0.004	-0.17 [-0.29, -0.05]
	Help	1.04 (1.36)	0.96 (1.27)	*t*(1154.8) = 0.93, *p* = 0.351	0.05 [-0.06, 0.17]
	Honor	0.51 (0.92)	0.43 (0.83)	*t*(1154.1) = 1.56, *p* = 0.118	0.09 [-0.02, 0.21]
	Impostor	0.11 (0.40)	0.20 (0.64)	*t*(909.6) = -2.81, *p* = 0.005	-0.17 [-0.28, -0.05]
	Jealousy	1.78 (1.88)	2.17 (1.82)	*t*(1152.3) = -3.60, *p* < .001	**-0.21 [-0.33, -0.10]**
	Loneliness	1.07 (1.27)	1.08 (1.16)	*t*(1155.0) = -0.16, *p* = 0.872	-0.01 [-0.12, 0.11]
	Murder	1.49 (1.53)	1.61 (1.55)	*t*(1144.5) = -1.41, *p* = 0.159	-0.08 [-0.20, 0.03]
	Paranoia	0.57 (0.94)	0.87 (1.23)	*t*(1035.0) = -4.59, *p* < .001	**-0.27 [-0.39, -0.16]**
	Planning	1.30 (1.32)	1.52 (1.45)	*t*(1120.4) = -2.66, *p* = 0.008	-0.16 [-0.27, -0.04]
	Relationship	2.78 (2.34)	2.68 (2.24)	*t*(1153.3) = 0.78, *p* = 0.436	0.05 [-0.07, 0.16]
	Soldier	0.39 (0.78)	0.29 (0.68)	*t*(1151.6) = 2.20, *p* = 0.028	0.13 [0.01, 0.24]
	Suicide	0.72 (1.01)	0.87 (1.15)	*t*(1104.6) = -2.34, *p* = 0.019	-0.14 [-0.25, -0.02]
	Surveillance	0.45 (0.82)	0.50 (0.94)	*t*(1101.5) = -1.06, *p* = 0.288	-0.06 [-0.18, 0.05]
	Threat	1.04 (1.34)	1.31 (1.41)	*t*(1135.0) = -3.32, *p* = 0.001	**-0.20 [-0.31, -0.08]**
	Violence	1.29 (1.49)	1.59 (1.59)	*t*(1131.3) = -3.25, *p* = 0.001	-0.19 [-0.31, -0.08]
	Weaponry	0.24 (0.64)	0.16 (0.45)	*t*(1078.2) = 2.46, *p* = 0.014	0.14 [0.03, 0.26]

Table 4.3 (continued)

Dictionary[2]	Construct	Anger Type[1]		Welch's t-test	Cohen's d [95%CI]
		Justified	Unjustified		
Moral Foundation 2.0	Overall	2.75 (2.69)	1.68 (1.80)	$t(1057.6) = 8.03, p < .001$	0.47 [0.35, 0.58]
	Care -Virtue	0.38 (0.85)	0.28 (0.62)	$t(1097.9) = 2.40, p = 0.017$	0.14 [0.03, 0.26]
	Care - Vice	0.40 (0.86)	0.22 (0.56)	$t(1043.4) = 4.34, p < .001$	**0.25 [0.14, 0.37]**
	Fairness - Virtue	0.44 (0.87)	0.42 (0.74)	$t(1147.0) = 0.39, p = 0.700$	0.02 [-0.09, 0.14]
	Fairness - Vice	0.26 (0.84)	0.06 (0.37)	$t(841.0) = 5.08, p < .001$	**0.29 [0.18, 0.41]**
	Loyalty - Virtue	0.36 (0.77)	0.21 (0.59)	$t(1115.1) = 3.91, p < .001$	**0.23 [0.11, 0.34]**
	Loyalty- Vice	0.17 (1.06)	0.05 (0.39)	$t(772.3) = 2.58, p = 0.010$	0.15 [0.04, 0.26]
	Authority- Virtue	0.29 (0.88)	0.17 (0.55)	$t(1021.6) = 2.93, p = 0.004$	0.17 [0.06, 0.29]
	Authority- Vice	0.09 (0.65)	0.03 (0.24)	$t(779.6) = 2.25, p = 0.025$	0.13 [0.02, 0.24]
	Sanctity - Virtue	0.16 (0.63)	0.14 (0.62)	$t(1150.4) = 0.44, p = 0.657$	0.03 [-0.09, 0.14]
	Sanctity - Vice	0.20 (0.63)	0.10 (0.78)	$t(1069.6) = 2.31, p = 0.021$	0.14 [0.02, 0.25]
Moral Justification	Deontology	0.14 (0.51)	0.13 (0.44)	$t(1148.9) = 0.41, p = 0.685$	0.02 [-0.09, 0.14]
	Consequentialism	0.10 (0.43)	0.07 (0.29)	$t(1056.9) = 1.13, p = 0.258$	0.07 [-0.05, 0.18]
	Moral Emotions (General)	2.54 (2.00)	3.31 (1.99)	$t(1148.1) = -6.56, p < .001$	**-0.39 [-0.50, -0.27]**
	Contempt	0.11 (0.67)	0.03 (0.19)	$t(702.3) = 2.86, p = 0.004$	0.17 [0.05, 0.28]
	Anger	1.92 (1.67)	2.58 (1.85)	$t(1116.5) = -6.35, p < .001$	**-0.37 [-0.49, -0.26]**
	Disgust	0.09 (0.35)	0.05 (0.26)	$t(1106.9) = 2.27, p = 0.023$	0.13 [0.02, 0.25]
	Shame	0.01 (0.11)	0.01 (0.09)	$t(1136.2) = 0.08, p = 0.935$	0.00 [-0.11, 0.12]
	Embarrassment	0.03 (0.20)	0.04 (0.28)	$t(993.8) = -0.99, p = 0.322$	-0.06 [-0.17, 0.06]
	Guilt	0.07 (0.29)	0.15 (0.45)	$t(922.2) = -3.59, p < .001$	**-0.21 [-0.33, -0.10]**
	Compassion	0.08 (0.30)	0.06 (0.25)	$t(1148.3) = 1.25, p = 0.211$	0.07 [-0.04, 0.19]
	Gratitude	0.00 (0.06)	0.00 (0.03)	$t(853.9) = 0.98, p = 0.329$	0.06 [-0.06, 0.17]
	Elevation	0.00 (0.03)	0.01 (0.09)	$t(668.1) = -1.49, p = 0.136$	-0.09 [-0.21, 0.03]
Motivated Social Cognition	Threat	0.33 (0.65)	0.46 (0.82)	$t(1054.0) = -2.98, p = 0.003$	-0.18 [-0.29, -0.06]
	Uncertainty Avoidance	0.00 (0.05)	0.02 (0.23)	$t(599.7) = -1.52, p = 0.129$	-0.09 [-0.21, 0.03]
	Resistance to Change	0.07 (0.27)	0.06 (0.28)	$t(1141.8) = 0.81, p = 0.415$	0.05 [-0.07, 0.16]

Table 4.3 (continued)

Dictionary[2]	Construct	Anger Type[1]		Welch's t-test	Cohen's d [95%CI]
		Justified	Unjustified		
	Endorsement of Inequality	0.23 (0.72)	0.14 (0.54)	$t(1112.5) = 2.57, p = 0.010$	0.15 [0.04, 0.27]
Schwartz Personal Values	Conservation	0.56 (0.98)	0.54 (0.85)	$t(1150.7) = 0.40, p = 0.691$	0.02 [-0.09, 0.14]
	Self-Transcendence	1.96 (2.29)	1.65 (1.64)	$t(1089.8) = 2.66, p = 0.008$	0.16 [0.04, 0.27]
	Openness To Change	1.10 (1.33)	1.15 (1.36)	$t(1143.2) = -0.65, p = 0.513$	-0.04 [-0.15, 0.08]
	Self-Enhancement	0.81 (4.18)	0.60 (0.99)	$t(674.2) = 1.16, p = 0.245$	0.07 [-0.05, 0.18]
	Security	0.22 (0.57)	0.24 (0.62)	$t(1124.5) = -0.73, p = 0.467$	-0.04 [-0.16, 0.07]
	Conformity	0.30 (0.70)	0.25 (0.56)	$t(1132.4) = 1.21, p = 0.227$	0.07 [-0.04, 0.19]
	Tradition	0.04 (0.33)	0.04 (0.26)	$t(1134.1) = 0.14, p = 0.887$	0.01 [-0.11, 0.12]
	Benevolence	1.73 (2.05)	1.46 (1.57)	$t(1117.6) = 2.49, p = 0.013$	0.15 [0.03, 0.26]
	Universalism	0.23 (0.78)	0.19 (0.42)	$t(940.0) = 1.19, p = 0.233$	0.07 [-0.04, 0.18]
	Self-Direction	0.67 (0.97)	0.73 (1.01)	$t(1138.3) = -0.92, p = 0.356$	-0.05 [-0.17, 0.06]
	Stimulation	0.16 (0.50)	0.14 (0.38)	$t(1117.2) = 1.04, p = 0.300$	0.06 [-0.05, 0.18]
	Hedonism	0.27 (0.71)	0.29 (0.86)	$t(1081.8) = -0.55, p = 0.585$	-0.03 [-0.15, 0.08]
	Achievement	0.55 (4.13)	0.36 (0.77)	$t(646.3) = 1.09, p = 0.277$	0.06 [-0.05, 0.18]
	Power	0.26 (0.67)	0.24 (0.59)	$t(1152.1) = 0.48, p = 0.631$	0.03 [-0.09, 0.14]
Situational Eight	Duty	0.58 (0.98)	0.51 (1.07)	$t(1125.2) = 1.11, p = 0.266$	0.07 [-0.05, 0.18]
	Intellect	0.47 (0.80)	0.61 (0.88)	$t(1117.1) = -2.79, p = 0.005$	-0.16 [-0.28, -0.05]
	Adversity	0.16 (0.48)	0.21 (0.59)	$t(1074.6) = -1.43, p = 0.153$	-0.08 [-0.20, 0.03]
	Mating	0.55 (0.95)	0.53 (0.92)	$t(1151.8) = 0.38, p = 0.705$	0.02 [-0.09, 0.14]
	Positivity	0.88 (1.14)	1.04 (1.32)	$t(1096.9) = -2.27, p = 0.024$	-0.13 [-0.25, -0.02]
	Negativity	2.38 (1.98)	3.06 (1.90)	$t(1153.1) = -5.96, p < .001$	**-0.35 [-0.47, -0.23]**
	Deception	0.26 (0.87)	0.09 (0.47)	$t(935.4) = 4.03, p < .001$	**0.23 [0.12, 0.35]**
	Sociality	2.03 (2.30)	1.65 (1.81)	$t(1127.9) = 3.11, p = 0.002$	0.18 [0.07, 0.30]
Stress	Stress	2.56 (2.15)	3.17 (2.13)	$t(1149.0) = -4.82, p < .001$	**-0.28 [-0.40, -0.17]**

Notes. [1] Each cell in these two columns represents the mean (and standard deviation) for the corresponding condition. The results for all constructs represent percentages.

[2] The sources for the dictionaries are as follows: the Absolutist dictionary (Al-Mosaiwi & Johnstone, 2018), the Big Two (agency and communion) dictionaries (Pietraszkiewicz et al., 2019), the Grievance dictionary (van der Vegt et al., 2021), the Moral Foundations 2.0 dictionary (Frimer, 2020), the Moral Justifications dictionary (Wheeler & Laham, 2016), the Motivated Social Cognition dictionary (Neiman et al., 2016), the Schwarz Personal Values dictionary (Ponizovskiy et al., 2020), the Situational Eight dictionary (Serfass & Sherman, 2015), and the Stress dictionary (W. Wang et al., 2016).

Table 4.4

Comparing Justified and Unjustified Anger Narratives Using LIWC-22's "Expanded" Dictionaries for Psychological Processes

Dictionary[1]	Construct	Anger Type[2]		Welch's t-test	Cohen's d [95%CI]
		Justified	Unjustified		
Culture	Overall	0.38 (1.30)	0.29 (0.84)	$t(1036.0) = 1.37, p = 0.171$	0.08 [-0.03, 0.19]
	Politics	0.03 (0.26)	0.02 (0.26)	$t(1147.4) = 0.34, p = 0.734$	0.02 [-0.10, 0.14]
	Ethnicity	0.07 (0.61)	0.01 (0.10)	$t(636.8) = 2.42, p = 0.016$	0.14 [0.03, 0.25]
	Technology	0.28 (1.11)	0.26 (0.80)	$t(1092.9) = 0.37, p = 0.71$	0.02 [-0.09, 0.14]
Lifestyle	Overall	2.96 (3.06)	2.71 (2.82)	$t(1155.0) = 1.42, p = 0.157$	0.08 [-0.03, 0.20]
	Leisure	0.62 (1.65)	0.70 (1.60)	$t(1152.3) = -0.78, p = 0.438$	-0.05 [-0.16, 0.07]
	Home	0.67 (1.40)	0.61 (1.33)	$t(1153.5) = 0.73, p = 0.467$	0.04 [-0.07, 0.16]
	Work	1.35 (2.20)	1.21 (2.15)	$t(1150.6) = 1.14, p = 0.255$	0.07 [-0.05, 0.18]
	Money	0.34 (0.98)	0.26 (0.71)	$t(1092.6) = 1.66, p = 0.096$	0.10 [-0.02, 0.21]
	Religion	0.02 (0.15)	0.02 (0.21)	$t(993.8) = 0.06, p = 0.952$	0.00 [-0.11, 0.12]
Physical	Overall	1.33 (1.87)	1.16 (1.82)	$t(1152.1) = 1.64, p = 0.102$	0.10 [-0.02, 0.21]
Health	Health (overall)	0.36 (0.92)	0.36 (1.02)	$t(1118.7) = -0.05, p = 0.963$	0.00 [-0.12, 0.11]
	Illness	0.14 (0.57)	0.11 (0.53)	$t(1154.9) = 0.69, p = 0.489$	0.04 [-0.07, 0.16]
	Wellness	0.01 (0.15)	0.02 (0.18)	$t(1085.1) = -0.88, p = 0.379$	-0.05 [-0.17, 0.06]
	Mental health	0.07 (0.34)	0.08 (0.52)	$t(929.5) = -0.65, p = 0.517$	-0.04 [-0.15, 0.08]
Substances	Substances	0.03 (0.20)	0.01 (0.13)	$t(1037.7) = 1.71, p = 0.088$	0.10 [-0.01, 0.21]
Sexual	Sexual	0.08 (0.40)	0.02 (0.21)	$t(916.9) = 3.38, p = 0.001$	**0.20 [0.08, 0.31]**
Food	Food	0.33 (1.30)	0.35 (1.19)	$t(1155.0) = -0.19, p = 0.851$	-0.01 [-0.13, 0.10]
Death	Death	0.05 (0.31)	0.05 (0.32)	$t(1139.8) = 0.39, p = 0.697$	0.02 [-0.09, 0.14]
States					
	Need	0.37 (0.89)	0.40 (0.88)	$t(1149.3) = -0.56, p = 0.577$	-0.03 [-0.15, 0.08]
	Want	0.25 (0.48)	0.39 (0.73)	$t(944.8) = -3.91, p < .001$	**-0.23 [-0.35, -0.12]**
	Acquire	1.18 (1.56)	1.34 (1.42)	$t(1154.9) = -1.80, p = 0.072$	-0.11 [-0.22, 0.01]
	Lack	0.15 (0.49)	0.18 (0.60)	$t(1068.3) = -0.90, p = 0.370$	-0.05 [-0.17, 0.06]
	Fulfill	0.10 (0.39)	0.09 (0.30)	$t(1126.3) = 0.36, p = 0.721$	0.02 [-0.09, 0.14]

Table 4.4 (continued)

Dictionary[1]	Construct	Anger Type[2]		Welch's t-test	Cohen's d [95%CI]
		Justified	Unjustified		
	Fatigue	0.07 (0.41)	0.06 (0.34)	$t(1144.4) = 0.25$, $p = 0.804$	0.01 [-0.10, 0.13]
Motives					
	Reward	0.06 (0.38)	0.04 (0.30)	$t(1126.1) = 1.30$, $p = 0.193$	0.08 [-0.04, 0.19]
	Risk	0.36 (4.14)	0.16 (0.47)	$t(617.7) = 1.20$, $p = 0.230$	0.07 [-0.04, 0.18]
	Curiosity	0.08 (0.33)	0.07 (0.31)	$t(1154.7) = 0.58$, $p = 0.561$	0.03 [-0.08, 0.15]
	Allure	6.06 (3.05)	6.38 (3.15)	$t(1139.9) = -1.77$, $p = 0.077$	-0.10 [-0.22, 0.01]
Perception	Overall	8.70 (3.94)	8.70 (4.18)	$t(1132.7) = 0.00$, $p = 0.997$	0.00 [-0.12, 0.12]
	Attention	0.28 (0.63)	0.27 (0.63)	$t(1147.8) = 0.24$, $p = 0.813$	0.01 [-0.10, 0.13]
	Motion	1.51 (1.57)	1.50 (1.59)	$t(1143.7) = 0.11$, $p = 0.916$	0.01 [-0.11, 0.12]
	Space	5.28 (2.99)	5.25 (3.10)	$t(1138.7) = 0.20$, $p = 0.845$	0.01 [-0.10, 0.13]
	Visual	0.43 (0.83)	0.47 (0.86)	$t(1139.5) = -0.71$, $p = 0.478$	-0.04 [-0.16, 0.07]
	Auditory	0.34 (0.75)	0.36 (0.88)	$t(1092.5) = -0.46$, $p = 0.644$	-0.03 [-0.14, 0.09]
	Feeling	1.20 (1.59)	1.27 (1.45)	$t(1154.9) = -0.72$, $p = 0.469$	-0.04 [-0.16, 0.07]
Time Orientation					
	Time	5.02 (2.72)	5.01 (2.75)	$t(1145.1) = 0.02$, $p = 0.983$	0.00 [-0.11, 0.12]
	Past focus	11.13 (3.82)	11.36 (3.96)	$t(1139.0) = -0.99$, $p = 0.322$	-0.06 [-0.17, 0.06]
	Present focus	1.62 (2.14)	1.65 (2.18)	$t(1143.5) = -0.22$, $p = 0.827$	-0.01 [-0.13, 0.10]
	Future focus	0.63 (1.06)	0.69 (1.16)	$t(1121.1) = -0.91$, $p = 0.361$	-0.05 [-0.17, 0.06]
Conversational	Overall	0.18 (0.76)	0.10 (0.41)	$t(934.6) = 2.22$, $p = 0.027$	0.13 [0.01, 0.24]
	Netspeak	0.10 (0.69)	0.04 (0.30)	$t(838.1) = 1.85$, $p = 0.065$	0.11 [-0.01, 0.22]
	Assent	0.07 (0.32)	0.06 (0.26)	$t(1130.7) = 0.95$, $p = 0.344$	0.06 [-0.06, 0.17]
	Non-fluencies	0.01 (0.13)	0.00 (0.03)	$t(690.5) = 1.86$, $p = 0.064$	0.11 [-0.01, 0.22]
	Fillers	0.00 (0.01)	0.00 (0.00)	$t(601.0) = 1.00$, $p = 0.318$	0.06 [-0.06, 0.17]

Notes. [1] Most frequently used exemplars for each dictionary/construct is reported in Table 2 of the publicly available LIWC-22 technical report (Boyd et al., 2022).

[2] Each cell in these two columns represents the mean (and standard deviation) for the corresponding condition. The results for all constructs represent percentages.

Open-Vocabulary Analyses

The goal of these analyses was to search and identify clusters of semantically associated words (i.e., topics) that occur in participants' anger narratives and to find the differences between justified and unjustified conditions across these topics. To this end, I used structural topic modeling (STM; Roberts et al., 2014). STM is similar to other popular probabilistic topic modeling approaches, such as Latent Dirichlet Allocation (LDA; Blei et al., 2003), with one crucial extension: STM allows the incorporation of covariates in the modeling process. This makes STM a particularly good fit for the present study's design and research question. In the following STM analyses, anger type is entered as a covariate in all the models. In other words, the model is "informed" that the words in the narratives are drawn from two possibly different populations of words (i.e., justified and unjustified anger narratives) and that the prevalence of the topics could vary for these two conditions.

I conducted the following analyses using the *stm* package (v. 1.3.6) in R (Roberts et al., 2019). Prior to analyses, standard text preprocessing (i.e., converting to lowercase, removing punctuations, stop-words, and numbers, as well as stemming) was applied to the corpus. The terms that appeared in at least five (0.43%) narratives were included in the analyses. After preprocessing, the corpus consisted of 1157 narratives, 1176 terms, and 43530 tokens. The R code for the analyses, figures, and tables is available at http://bit.ly/3jJJozE.

Three important considerations are helpful when interpreting structural models. First, STM requires the researcher to determine the number of topics (κ). As I will discuss later, there are no deterministic ways to make this decision. Instead, one should evaluate different quantitative and qualitative criteria and carefully calibrate interpretations accordingly. Considering the importance of this step, a detailed report of the decision process is provided in

the next section. Second, STM is a mixed-membership model. Each document (here, narrative) can contain all κ topics to varying degrees. For each document, the model estimates a document-topic proportion (θ) for each topic. Furthermore, the model estimates topic-word proportions (β) for each word, which indicates the probability of the word being part of a topic's vocabulary. Document-topic proportions can be used to compare the prevalence of topics in each anger condition, and topic-word proportions can be used for interpreting the topics. Third, due to the data-driven nature of STM, the emerging topics might represent constructs at different conceptual levels. For example, one topic may capture text that reflects the writing style, while others capture specific situations, emotional reactions, or interaction partners. As such, a qualitative review of the exemplar documents (i.e., the documents with the highest θ for each topic) and the high probability words (i.e., the words with the highest β for each topic) are critical for determining the "theme" captured by each topic.

Selecting the Number of Topics

One important and often challenging aspect of STM is choosing the number of topics. The consensus is that "there is no 'right' answer to this choice" (Roberts et al., 2014, p. 1069). An effective strategy is to evaluate multiple models and select the number of topics based on (a) characteristics of the data, such as length of documents and content heterogeneity, (b) quantitative indices of topic or model quality, and (c) topic interpretability (Bai et al., 2021; Roberts et al., 2014; Tvinnereim et al., 2017). These three criteria informed my topic selection process.

I started by evaluating the model fit for two- to forty-topic models, using the *searchK* algorithm from the *stm* R package (Roberts et al., 2019). This algorithm produces several model diagnostic indices, two of which are particularly useful for determining the initial range of topic

numbers for further evaluation: held-out likelihood (an index of cross-validation of the structural model on a 10% held-out sample of documents) and residuals (an index of the multinomial dispersion of the model residuals). The results (Figure 4.2) suggested a steep increase in held-out likelihood as the number of topics increased from two to six; there was also a considerable decrease in residuals within the same range. Beyond this point, the held-out likelihood varied within a stable range while residuals slowly decreased through the mid-twenties. Considering these outcomes, I selected five topic numbers within the six to 25 range with higher held-out likelihood (i.e., 6-, 12-, 16-, 22-, and 25-topic models) and conducted additional in-depth evaluations of these models.

Figure 4.2

Model Fit and Topic Quality Diagnostics for 2- to 40-topic STM Models
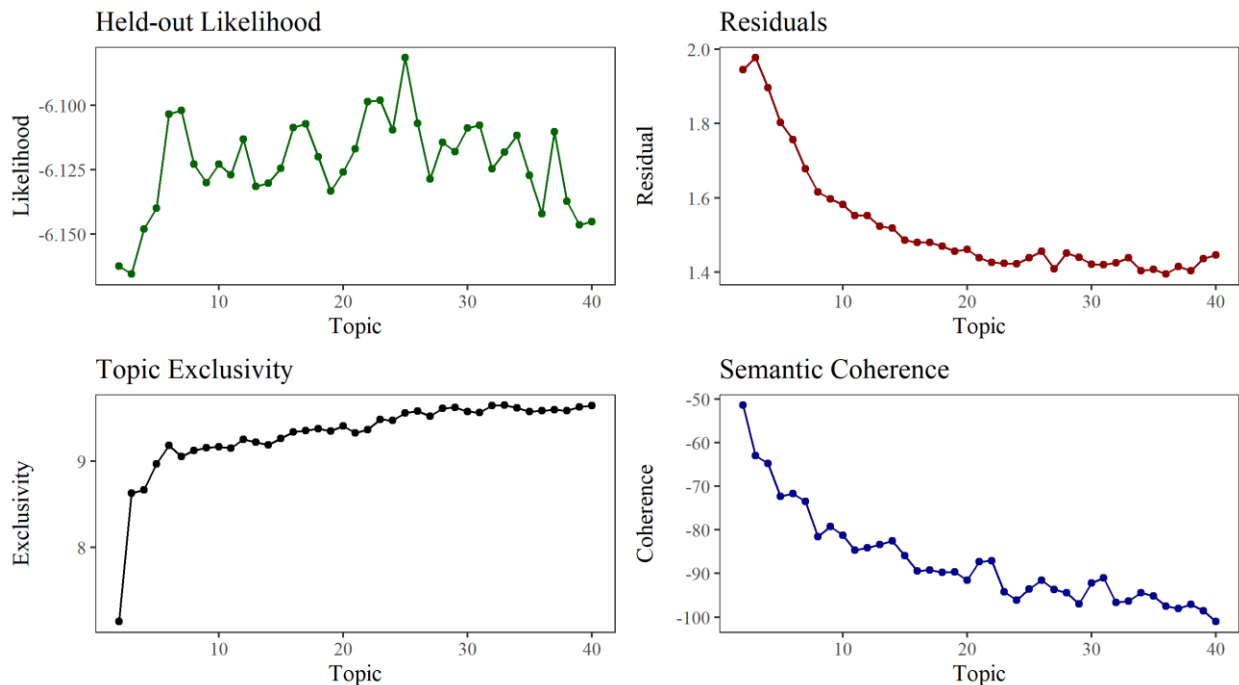
Note. Model fit diagnostics are presented in the top row, and topic quality diagnostics are in the second row.

After carefully examining these five models, I chose the 12-topic model for further analysis. This decision was made based on three criteria. First, topic quality comparisons, as evaluated by topic exclusivity (i.e., the uniqueness of the high probability words contributing to each topic) and semantic coherence (i.e., the extent to which high probability words from a topic cooccur in the same documents), indicated that the increase in overall topic quality was considerable from 6 to 12 topics, but slowed down for the remaining higher-dimensional models (Figure 4.3). Second, it is often the case that as the number of topics increases, the proportion of topics per document tends to decrease. This is less of an issue when the analyzed documents are relatively long (i.e., scientific journal articles or books). However, for shorter documents, such as narratives provided in a survey, high dimensional models tend to produce topics that are, on average, rare (e.g., see the topic proportions for 6-, 12-, and 22-topic models in Figure 4.4). This can interfere with one of the primary goals of this study, which is to detect the differences between the two anger types—very low prevalence rates can reduce the statistical power and increase the ambiguity of interpreting null effects.

Third, a manual review of the high probability words for each topic across different models indicated that while the topics are more granular in higher dimension models, overlap among the top words associated with each topic (which is an indication of redundancy) increased considerably in the 16-topic model and beyond. Given these considerations, I chose the 12-topic model for further analysis.

Figure 4.3

The Coherence-Exclusivity Indices of the Topics in Five Structural Topic Models

Figure 4.4

Expected Topic Proportions and FREX Exemplars for Three Models

6 Topics

Topic	FREX Exemplars
Topic6	anger, experienc, feel, justifi, emot, partner, situat
Topic2	friend, hang, relationship, girl, talk, lie, date
Topic4	dad, mom, parent, drive, mother, brother, famili
Topic3	clean, roommat, food, eat, room, money, pay
Topic5	game, team, coach, covid, class, play, grade
Topic1	loud, trip, invit, music, test, without, cancel

12 Topics

Topic	FREX Exemplars
Topic7	anger, experienc, justifi, react, believ, emot, life
Topic2	friend, hang, best, girl, talk, guy, trust
Topic10	parent, sister, realli, dont, think, younger, brother
Topic4	boyfriend, mad, dad, see, phone, come, call
Topic3	roommat, room, eat, sleep, leav, clean, left
Topic8	class, work, school, didn't, help, job, birthday
Topic11	drive, car, wait, drink, park, pull, side
Topic6	trash, money, store, post, use, bought, buy
Topic9	team, game, coach, play, teammat, player, season
Topic5	group, covid, import, part, music, effort, posit
Topic12	word, cloth, hall, laundri, incred, heat, fact
Topic1	bad, cancel, test, wrong, without, loud, poor

22 Topics

Topic	FREX Exemplars
Topic7	anger, justifi, experienc, react, caus, believ, situat
Topic2	friend, best, hang, guy, lie, date, talk
Topic16	didnt, want, said, anyth, say, stay, wasnt
Topic4	cheat, mad, boyfriend, got, girlfriend, kiss, block
Topic14	dont, feel, sometim, think, partner, valid, usual
Topic19	leav, sleep, annoy, deal, big, laugh, night
Topic10	parent, younger, kid, realli, allow, excit, divorc
Topic21	mom, sister, mother, brother, famili, father, aunt
Topic15	test, studi, bad, mood, stress, score, felt
Topic20	work, wait, dad, shift, hour, order, call
Topic8	school, high, class, teacher, senior, homework, offer
Topic18	trip, reaction, head, behind, face, talk, sad
Topic11	drink, taken, experi, children, avoid, side, abus
Topic6	trash, car, park, use, pull, drive, mask
Topic13	disrespect, covid, girl, trust, month, respect, break
Topic12	incred, hall, women, live, view, opinion, speak
Topic17	group, import, cut, project, meet, fell, part
Topic9	coach, team, season, soccer, teammat, rule, practic
Topic5	play, game, lose, music, video, basketbal, individu
Topic3	room, clean, roommat, mess, dog, apart, left
Topic22	eat, food, though, text, even, eaten, free
Topic1	invit, loud, wrong, cancel, includ, intent, poor

Expected Topic Proportions

The 12-Topic Model

In selecting the number of topics, I primarily focused on the differences between the models. However, within-model variability in topic characteristics is especially relevant to STM interpretation. Topics in a model often differ in important ways in terms of the central tendency and the distribution of topic proportions per document (i.e., θ), as well as topic interpretability and coherence. As such, the histograms of per-document probabilities for each of the 12 topics (Figure 4.5) and the ten highest probability word stems associated with each topic (Table 4.5) are presented, which provide helpful information for interpreting the following results.

Figure 4.5

Distribution and Median of Per-Document Probabilities for Each Topic in the 12-Topic Model

Table 4.5

High Probability Words Related to Each Topic

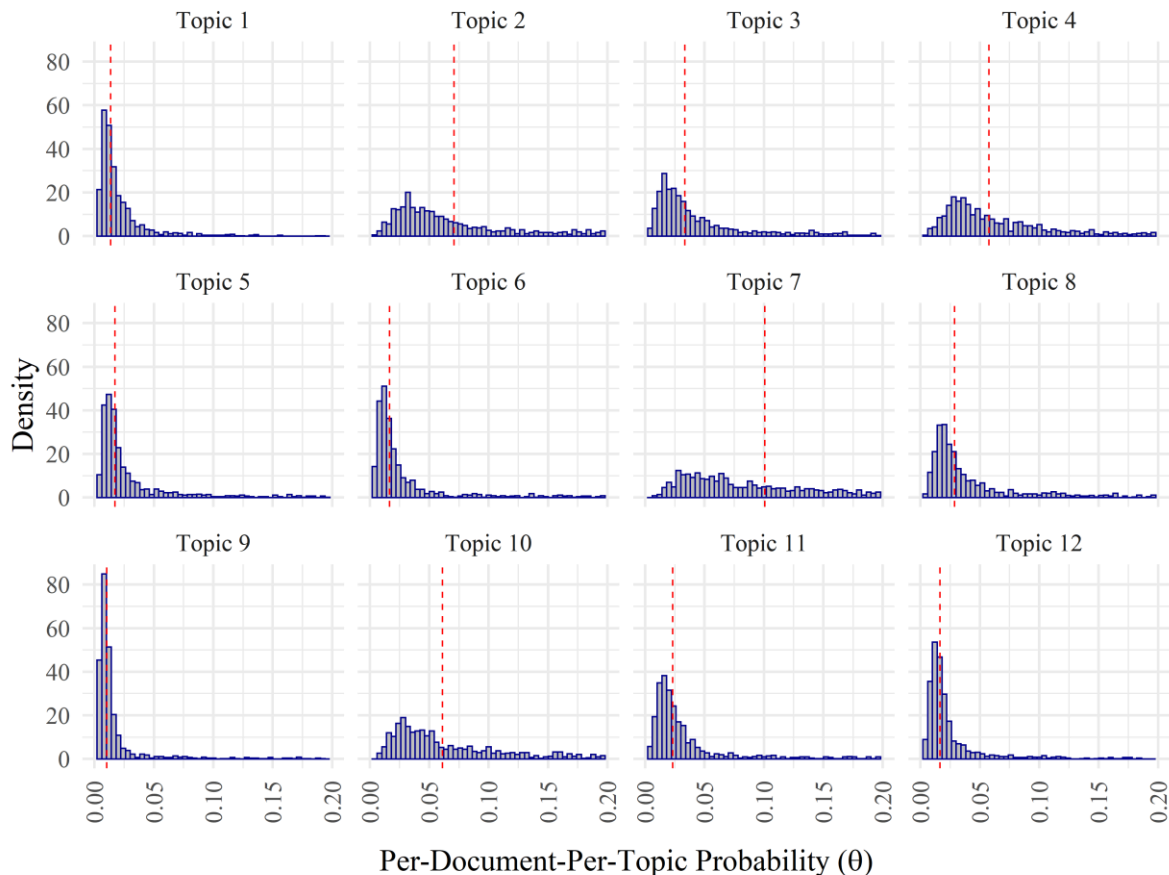| Topic[1]	Method[2]	Word Stems
Topic 1	Prob.	bad, wrong, without, felt, test, got, loud, invit, studi, cancel
	FREX	bad, cancel, test, wrong, without, poor, loud, sudden, studi, chore
Topic 2	Prob.	friend, like, talk, didnt, want, told, felt, best, said, feel
	FREX	friend, hang, best, girl, talk, guy, trust, relationship, lie, date
Topic 3	Prob.	roommat, angri, room, leav, left, one, time, day, back, upset
	FREX	roommat, room, eat, sleep, leav, clean, left, apart, bed, dog
Topic 4	Prob.	mad, got, day, boyfriend, didnt, see, dad, call, come, time
	FREX	boyfriend, mad, dad, see, phone, come, break, call, plan, mom
Topic 5	Prob.	group, time, covid, peopl, tri, decid, put, part, import, work
	FREX	group, covid, import, part, music, effort, posit, member, fun, danc
Topic 6	Prob.	just, use, ask, peopl, like, money, thing, said, take, told
	FREX	trash, store, money, post, use, buy, bought, mask, saw, doesnt
Topic 7	Prob.	anger, angri, time, felt, justifi, feel, situat, react, experienc, believ
	FREX	anger, experienc, justifi, react, believ, emot, life, entir, cheat, moment
Topic 8	Prob.	school, work, get, class, angri, one, help, day, ask, high
	FREX	class, work, school, didn't, help, job, birthday, pay, full, stress
Topic 9	Prob.	game, play, team, coach, one, got, time, angri, kid, get
	FREX	team, game, coach, play, teammat, player, season, lose, soccer, kid
Topic 10	Prob.	angri, get, realli, feel, just, think, parent, sister, time, dont
	FREX	parent, sister, realli, dont, think, younger, brother, usual, sometim, rememb
Topic 11	Prob.	car, drive, back, anger, get, say, wait, peopl, left, tri
	FREX	drive, car, wait, drink, park, pull, side, sit, avoid, order
Topic 12	Prob.	say, situat, tri, angri, made, fact, word, caus, someth, make
	FREX	word, cloth, hall, incred, laundri, heat, fact, lunch, irrat, wash

[1] Topics in bold were more prominent in unjustified narratives, and italicized topics were more pronounced in justified narratives. The rest were similarly frequent in both conditions.

[2] "Prob." refers to the words with the highest probability (β) within each topic. "FREX" weighting highlights the words that are both frequent and exclusive to the corresponding topic. Taking the results from both methods into consideration facilitates the interpretation of each topic.

A review of the high-probability words associated with each topic, as well as narratives

that are most representative of each topic, suggests the following interpretations.

Topics Prominent in Unjustified Narratives. Topic 1, with high probability word stems

such as "bad, test, poor, studi," represents text that describes anger as a result of performing

poorly on a test or receiving unsatisfactory grades. A Welch's independent-samples t-test with

anger type as the predictor and θ estimates for this topic as the outcome indicated that this theme

was considerably more prevalent in the unjustified anger narratives, $t(760.2) = -6.87, p < .001, d$

$= -0.41$[9]. Topic 3, with high probability stem words such as "roommat, room, sleep, clean, dog,"

refers to descriptions of anger-eliciting conflicts that had happened where the participant lives.

The described conflict often involved the participants' roommate, but could also include others,

such as a partner or a pet. This topic was more prevalent in the unjustified anger narratives,

$t(1075.8) = -3.71, p < .001, d = -0.22$. Topic 9, with high probability stem words such as "team,

game, coach, play, teammat," captured the text related to conflicts experienced in high school or

college sports or online gaming. The t-test result was suggestive that this theme might be more

prevalent in unjustified anger narratives, $t(1090.7) = -2.52, p = 0.012, d = -0.15$. Topic 10, with

high probability words such as "parent, sister, brother, reali, hurt," captures conflicts with family

members (usually parents) in which the participant had felt and expressed a high intensity of

anger (the phrase "really angry" is common in these narratives). This theme was considerably

more prevalent among unjustified anger narratives, $t(1041.4) = -8.49, p < .001, d = -0.50$.

Topics Prominent in Justified Narratives. Topic 2, which includes top words such as

"friend, girl, guy, trust, relationship," captures text related to perceived betrayal in romantic

contexts that involve both a romantic partner (or interest) and a friend. This theme was more

prevalent in the justified anger narratives, $t(1139.9) = 4.53, p < .001, d = 0.27$. Topic 4, which

---

[9] The *stm* package offers a "global" method for incorporating uncertainty in the STM estimation when modeling the
relation between the covariate and topic prevalence. This method uses the sum of the covariance matrices that
inform the variational posterior of each document. The outcomes from this method tend to vary slightly every time
the function is run; however, they produce similar conclusions to that of the t-tests reported here.

includes top words such as "boyfriend, mad, phone, dad, mom," captured non-romantic conflict situations involving parents or a romantic partner (or both), often related to reasons such as not following through with a plan or promise. The conflict usually arose or intensified during, or as a result of, a conversation with the other party (in-person or over the phone). This theme was suggestively more prevalent among justified anger narratives, $t(1088.6) = -2.74$, $p = 0.006$, $d = -0.16$. Topic 5, with high probability words such as "group, import, effort, member," was prevalent in narratives where the participant described a perceived violation often happening in a group context (e.g., a party, a work or school group projects). The perceived violations were heterogenous and included instances such as social loafing by a co-worker or classmate, and incompetence or inconsiderate behavior that negatively affected the participant. This theme was more common in the justified anger narratives, $t(926.7) = 6.55$, $p < .001$, $d = 0.38$. Topic 6, which includes top words such as "just, people, money, store, mask," was most prevalent in narratives where participants discussed violations of agreed-upon moral, societal, or interpersonal norms (e.g., theft or harm to property, racist or homophobic behavior, being inconsiderate) which usually led to direct or indirect harm or distress to the participant. This theme was more common among the justified anger narratives, $t(1048.7) = 6.46$, $p < .001$, $d = 0.38$. Topic 11, with top words such as "drive, car, wait, park," captures discussions of commuting, driving, or a personal vehicle. In many (but not all) instances, the anger-eliciting event had to do with experiences during driving one's car or riding the bus. This theme was more prevalent in justified anger narratives, $t(1150) = 3.41$, $p = 0.001$, $d = 0.20$.

Topics with Minimal Between-Condition Differences. Topic 7, with high probability stem words such as "anger, experienc, justifi, react, believ, emot," captures the general terms used by the participants to describe their anger-related experience (e.g., "a time I experienced anger and I think it was (un)justified…"). There was no difference in the prevalence of this topic

between the justified and unjustified anger narratives, $t(1153.5) = 0.08$, $p = 0.934$, $d = 0.00$.

Topic 8, which was associated with top words such as "class, work, school, job" was prevalent in narratives where the anger-eliciting event was related to school or (less commonly) work contexts. The review of the exemplar narratives and high probability words suggests that this topic captured the context (i.e., school or work) but not the conflict or violation associated with anger. There was no difference in this topic's average prevalence between the two anger types, $t(1153.2) = 0.53$, $p = 0.599$, $d = 0.03$. Topic 12, with high probability terms such as "say, situat, word, caus, make" captures participants' general discussions of the cause of their anger and their descriptions of the situation (e.g., "the fact that she said that made me angry because…"). There was no significant difference in the prevalence of this topic between the justified and unjustified anger narratives, $t(1154.6) = 0.83$, $p = 0.405$, $d = 0.05$.

Discussion

The goal of the present study was to move beyond the harm to self versus others distinction and capture the broader universe of appraisals and lay theories associated with justified and unjustified anger. To this end, I analyzed participants' anger narratives by applying qualitative thematic analysis, closed-vocabulary analysis using various pre-determined psycholinguistic dictionaries, and open-vocabulary analysis using structural topic modeling. The results revealed differences between the two variants regarding (a) the characteristics of the anger-eliciting event and (b) how people narrate, interpret, and reason about their experiences. In the following sections, I will provide an overview of the differences between the anger variants and reflect on the methodological strengths of multimethod text analyses.

Differences between Anger Variants

The present results indicate a clear difference between justified and unjustified anger in the experiencers' appraisals of the anger-eliciting event or act. These findings suggest that justified anger is often associated with perceived injustice, betrayal, goal obstruction, perception of harm and threat, and the target's inconsiderate or self-centered behavior. Consistent with many theoretical accounts of anger, justified anger generally involves a perception that the target of anger has violated a societal or moral norm and therefore deserves the experiencer's anger. In comparison, anger is considered unjustified when it results from emotion spillover (i.e., anger carrying over from a previous unrelated experience), jealousy, minor or unintentional goal obstruction, annoyance and inconvenience, disagreements, and misappraisal of the target's behavior. These appraisals are fundamentally different from those related to justified anger in that, from the experiencers' perspective, the target of anger either had not committed any moral or normative violations or had committed a boundary violation that was too trivial to deserve an angry response.

Beyond the differences in the perceived causes of anger, justified and unjustified anger narratives differed in how people rationalized and described their reasoning for believing their anger was (un)justified. Participants who wrote about justified anger usually went into detail about the context, the interactions with the target, and the other social aspects of the event that led to their experience of anger. However, discussions of the reasons for considering their anger justified were sporadic. The narratives often conveyed a sense that it is clear, to the writer and perhaps to the reader, that the target's behavior is a violation deserving of anger; consequently, there is no need to discuss the righteousness of the anger.

In drastic contrast to justified anger narratives, participants who wrote about their experiences of unjustified anger were more likely to describe their feelings of frustration, negative emotions, or perceived threats in detail. This was followed by cognitive reasoning about how the participants' feelings and/or behavior were inappropriate. These results suggest that justified anger experiences are associated with moral confidence (if not superiority) and perceived consensus about the wrongness of the target's behavior and the justifiability of the anger towards the target. In contrast, unjustified anger is associated with extended cognitive reasoning, reflection, and introspection about the rightfulness or proportionality of anger as well as the target's deservingness of punishment. These fundamentally distinct processes have implications for theoretical accounts of anger and interventions to address its relational impact, which I will discuss in detail in the General Discussion chapter.

Methodological Reflections

An essential feature of this study was the use of multiple methods to investigate participants' narratives. In practice, engaging with these complementary methods helped provide a more comprehensive interpretation of the narratives. For example, as described in the Results section, one of the challenges of STM (and most other topic modeling approaches) is determining the correct number of topics and interpreting them. In studies where the goal of topic extraction is primarily to predict an outcome, the choice of the number of topics can be made based on fully quantitative indices of the model's predictive ability. However, in studies (such as the present work and many others in psychology) where the interpretability of the topics and detection of patterns in the data is the primary goal, choosing the number of topics and being able to interpret the emerging topics accurately will require an in-depth familiarity with the text. As Nelson (2020) noted, conducting qualitative analysis prior to topic modeling creates a

profound understanding of the data necessary to ensure the model and its interpretations truly reflect the dynamics in the text.

Moreover, quantitative approaches can help improve the comprehensiveness and robustness of qualitative findings. For example, the previously discussed insight about the differences between anger variants in terms of moral and cognitive reasoning emerged from linking the results of closed-vocabulary and qualitative analyses. On the one hand, LIWC's cognition dictionary detected a stronger all-or-none pattern in participants' justified anger narratives (which was further corroborated by the linguistic markers of absolutist thinking captured by the Absolutist dictionary; Al-Mosaiwi & Johnstone, 2018). On the other hand, this dictionary found a higher frequency of the linguistic markers of cognitive processing in the unjustified anger narratives, as reflected in the participants' frequent use of discrepancy and differentiation terms. These findings informed my investigation of the narratives in search of qualitative themes that can speak to the differences in moral reasoning style across anger variants. Reflecting on the analytic process of the present study, I believe researchers would benefit from complementing qualitative and quantitative text analysis methods, especially when explanation (as opposed to prediction) is of high priority.

CHAPTER V: STUDY 4

In Study 3, I analyzed participants' open-ended narratives about a time they experienced anger to generate insights about the differences and similarities between justified and unjustified anger. The relatively flexible structure afforded by this method (compared to closed-ended questions) allows participants to write about the most salient aspects of the event and their experiences from their own perspective, with fewer constraints imposed by the researchers. While this is a rich source of data, it has a noteworthy boundary: As participants write about the most salient aspect(s) of their experience, they may leave out other theoretically relevant dimensions. For example, in response to the prompt about unjustified anger, one participant may write about their reason for interpreting their anger as unjustified by mentioning fairness (e.g., "I think my anger towards this person was unjustified because this person's behavior towards me was completely fair") while another participant might mention causal attribution (e.g., "It was wrong of me to get so angry because this person didn't have much control over the situation that angered me"). Each of these narratives provides essential information about one dimension of the event but not the other, constraining our ability to quantify the weight of each dimension across all participants.

The present study complements the previous analyses by adopting a prototype approach (J. A. Russell & Fehr, 1994; Shaver et al., 1987) to investigate the differences between justified and unjustified anger in terms of established dimensions relevant to moral, emotional, and relational experiences. The data for this study were collected concurrently with the previous study. After the participants wrote about their experience of justified or unjustified anger (Study 3), they were instructed to complete questionnaires about the various theory-driven components of the anger episode they described. These components were selected based on an extensive

literature review (described in the Introduction chapter), which identified ten dimensions of morally-laden emotional experiences that can vary between prototypical experiences of justified and unjustified anger. Accordingly, the following research questions and hypotheses were preregistered (https://osf.io/mj8hs) and examined in the present study.

Hypotheses and Research Questions

Perceptions of the Behavior that Led to Anger

How does justified anger differ from unjustified anger regarding the perceptions of anger-eliciting behavior? Informed by the literature discussed earlier, three characteristics of anger-eliciting behaviors were investigated: perceptions of harm or threat, (un)fairness of the act, and evaluations of norm violations. Specifically, I tested the hypotheses that justified anger events (compared to the unjustified ones) involve a stronger perception of harm and threat to the self and to others, are perceived as more unfair, and are judged as stronger norm violations. In addition to these four main effects, I tested two interaction effects. Namely, I tested the hypothesis that the difference between justified and unjustified anger in terms of perceptions of harm or threat is moderated by the target of harm, such that this difference is larger for harm to others (vs. harm to self). Finally, I tested the hypothesis that the difference between justified and unjustified anger events is moderated by the type of norm violation, such that this difference is larger for injunctive norms (compared to descriptive norms).

Perceptions of the Target

Are there systematic differences between justified and unjustified anger experiences in terms of the way people perceive or judge the person/entity who made them angry? To answer this question, I tested two hypotheses: First, to examine the variability in causal attributions, I tested the hypothesis that in justified anger events (compared to unjustified ones), participants

are more likely to consider the cause of anger to stem from the target's internal and stable

characteristics (as opposed to the external and changeable circumstances). Second, to evaluate

the differences in perceived moral character, I tested the hypothesis that in anger events

perceived as justified (compared to the unjustified ones), the target is more likely to be seen as

having weaker moral character and ethical values.

In addition to these two hypotheses, I investigated the moral and relational perceptions of

the target using additional question-driven analyses. Goodwin et al. (2014) demonstrate that

judgments of morality and warmth are distinguishable and uniquely informative for person

perception. They propose a set of 32 trait judgments organized based on the amount of

information they provide about the target's morality and warmth (e.g., humble and empathetic

are "high morality, high warmth," whereas courageous and honest are "high morality, low

warmth"). To examine the perceptions of the target along these two critical dimensions, I

conducted data-driven analyses to examine the differences in character judgments between the

two conditions.

Experiencer's Emotional Processes

Participants were asked to rate their emotional experience during the anger-eliciting event

using 23 negative and positive emotions. These emotions cover diverse motivational tendencies

such as hostility, self-blame, social fears, and boldness/empowerment. They have been

previously used to evaluate affective experiences in response to moral-relational violations

(Razavi et al., 2022). Using these emotion items, I conducted question-driven analyses to

investigate the differences in emotional experiences associated with the two anger variants.

Additionally, I examined a second aspect of emotional processes—expressivity—in

relation to justified and unjustified anger. Specifically, the goal of these analyses were to

evaluate two possibilities: (a) amplifying and exaggerating one's anger is perceived as a norm violation (Matsumoto et al., 2010), (b) high intensity (compared to mild) anger expression can be perceived as an aversive norm violation and labeled inappropriate (Adam & Brett, 2018). Consistent with the first possibility, I tested the hypothesis that participants are more likely to evaluate their anger expression as "exaggerated" in the unjustified (vs. justified) anger condition. To assess the second possibility, I examined the relation between participants' experience and expression of anger and the moderating role of anger variant. Specifically, using a curvilinear model similar to Adam and Brett's (2018), I tested the hypothesis that the strength of the experience-expression relation tamps down as the anger intensity increases, and this deceleration is stronger for the justified (vs. unjustified) anger condition.

Experiencer's Relational Processes

To better understand the relational differences between justified and unjustified anger, this study examined two interpersonal aspects of the anger experience: (a) the perception of the target's regret and their tendency to apologize, and (b) the impact of the anger experience on the relationship closeness with the target. For the former, I examined whether participants' perceptions of the target as regretful and apologetic vary depending on the (un)justifiability of anger. For the latter, I tested two hypotheses: (1) Relationship closeness deteriorates following an anger event, both "short-term" (i.e., comparing closeness before and immediately after the event) and "long-term" (i.e., comparing closeness before the event and at the time of the study). (2) The long-term deterioration of relationship closeness is stronger for justified (vs. unjustified) anger experiences.

Method

Participants

The sample for this study was the same as Study 3. Since the majority of analyses consist of comparisons of two independent samples, the target sample size was determined such that these analyses have 90% power (with α = .05, two-tailed) to detect a small-to-moderate between-groups difference (i.e., Cohen's d = 0.20; Lovakov & Agadullina, 2021). A priori power analysis using the *pwr* package in R (Champely, 2020) indicated that this goal can be achieved with a minimum sample size of 1054 participants. A total of 1179 participants (M_{age} = 19.51, SD_{age} = 2.53) were recruited from the University of Oregon's Psychology and Linguistics subject pool and completed the study as part of their course requirements. Of this sample, following the preregistered plans, 22 responses (1.87%) were excluded because the participant either could not remember an instance, or their narratives did not follow the instructions (e.g., the narrative described participants' theory about anger, instead of a specific event or experience). Sensitivity analyses indicate that the final sample (N = 1,157, M_{age} = 19.50, SD_{age} = 2.55) has 90% power (with α = .05, two-tailed) to detect small-to-moderate between-subjects differences (i.e., Cohen's d = 0.19) and modest correlations (i.e., $|ρ|$ = .09). The demographic characteristics of the sample are reported in Study 3.

Procedure and Materials

After recalling and writing about an experience of anger from their past (Study 3), participants completed a series of questionnaires about the various aspects of their experience. The complete set of items is presented in Appendix F.

Event Features. Participants provided information about three aspects of the experience they described earlier: (a) Time elapsed: Using an open-ended text box, participants reported

how long ago the incident happened. Participants' responses ranged from "an hour ago" to "42 years ago." Since the question was open-ended, participants used different units. Their responses were quantified using the units they used (for the handful of cases where participants used "hours," the response was converted to the equivalent quantity in days). The summary results for time elapsed for each category is as follows: days ($n = 105$, $M = 4.95$, $SD = 23.10$, $Mdn = 2$), weeks ($n = 185$, $M = 1.73$, $SD = 0.95$, $Mdn = 1.5$), months ($n = 291$, $M = 3.88$, $SD = 3.00$, $Mdn = 3$), and years ($n = 460$, $M = 3.55$, $SD = 3.71$, $Mdn = 2$).

(b) Memory accessibility of the event: Participants reported how easy or difficult it was to recall the incident (1 = v*ery easy*; 5 = *very difficult*). The responses suggested that the event was generally accessible ($M = 1.77$, $Mdn = 1$, $SD = 1.05$). However, it was relatively easier to recall the justified anger experiences ($M = 1.56$, $Mdn = 1$, $SD = 0.89$) compared to the unjustified ones ($M = 2.00$, $Mdn = 2$, $SD = 1.15$; $t(1038.9) = -7.27$, $p < .001$, $d = -0.43$).

(c) The person/entity who caused the anger (i.e., the target): Choosing from a list of options, participants reported the person (e.g., "my romantic partner," "my boss") or entity (e.g., "a corporation, company, or organization") which made them angry. The five most common responses were "close friend" (28.4%), "parent" (15.4%), "romantic partner" (15.2%), "other" (10.5%), and "sibling" (8.1%). See Table 5.1 for more details.

Experience and Expression of Anger. In response to two Likert-style items, participants reported the intensity with which they felt angry (1 = *not at all angry*; 5 = *extremely angry*) and expressed their anger during the incident (1 = *none*; 5 = *a lot*).

Additionally, participants reported their anger reaction using an item with four ordinal options (1 = I completely concealed my anger; 2 = I partially concealed my anger; 3 = I fully expressed my anger as I felt it; 4 = I exaggerated my anger and expressed it more than I felt it.).

Table 5.1

The Persons or Entities that Caused the Anger Experience

	Justified Anger		Unjustified Anger		Overall	
Person/Entity	Frequency	Percentage	Frequency	Percentage	Frequency	Percentage
Close friend	176	29.24	153	27.57	329	28.44
Parent	80	13.29	98	17.66	178	15.38
Romantic partner	76	12.62	100	18.02	176	15.21
Other	63	10.47	59	10.63	122	10.54
Sibling	45	7.48	49	8.83	94	8.12
Stranger	42	6.98	21	3.78	63	5.45
Acquaintance	29	4.82	18	3.24	47	4.06
Teacher	20	3.32	12	2.16	32	2.77
Classmate	19	3.16	11	1.98	30	2.59
A corporation/organization	16	2.66	9	1.62	25	2.16
Roommate	13	2.16	12	2.16	25	2.16
Coworker	10	1.66	7	1.26	17	1.47
Boss	7	1.16	5	0.9	12	1.04
Public figure	5	0.83	1	0.18	6	0.52
Child	1	0.17	0	0	1	0.09

Affective Experience. The affective experiences during the anger episode were measured using 27 items from the Positive and Negative Affect Scale (PANAS-X; Clark & Watson, 1994). These items were previously used in studying affective experiences in response to relational violations (Razavi et al., 2022). They comprise of items measuring hostile emotions (e.g., "hostile" and "loathing"), self-blame emotions (e.g., "guilty" and "disgusted with self"), socially fearful emotions (e.g., "afraid" and "anxious"), and a cluster of bold and empowering emotions (e.g., "proud" and "daring"). Participants rated the intensity with which they experienced each emotion on a 5-point scale (1= *not at all*; 5 = *extremely*). The component structure of these emotions is discussed in the Results section.

Influence on Relationship Closeness. Three items were used to measure the extent to which the anger-eliciting experience influenced the participants' relationship with the person or

entity that caused the anger. The participants reported how close they felt towards this person or entity (a) before the incident, (b) immediately after, and (c) right now (i.e., at the time of the study). The responses were on a 5-point scale (1 = *not at all close*, 5 = *very close*).

Perceptions of the Person/Entity that Caused Anger. Participants provided their evaluations of this person or entity using 32 character judgments from Goodwin et al. (2014). These items cover previously validated characteristics crucial for person perception. Goodwin et al. (2014) demonstrated that eight of these characteristics are indicators of a person who is perceived as high in morality and warmth (e.g., "humble" and "cooperative"), another eight indicate high morality but relatively lower warmth (e.g., "courageous" and "honest"), another eight are associated with high warmth but relatively lower morality (e.g., "enthusiastic" and "funny"), and the rest are associated with competence and ability (e.g., "innovative" and "clever"). The component structure of these items is discussed in the Results section.

Additionally, participants provided their perceptions of the target using items from a previously developed list of the prototypic attributes of "highly moral persons" (Walker & Pitts, 1998). Of the top ten attributes in the list, two ("honest" and "principled") were already included in Goodwin et al. (2014). The remaining eight (e.g., "is concerned about doing the right thing") were administered. For each item, on a 5-point scale (1 = *not at all*, 3 = *moderately*, 5 = *extremely*), participants indicated the extent to which the target had the corresponding characteristic.

Perceptions of Harm and Threat. Four items measured participants' perceptions of the extent to which the target's behavior (a) harmed them, (b) harmed others, (c) threatened them, or (d) threatened others. The response options were on a 5-point scale (1 = *not at all*; 5 = *a lot*). The two "harm/threat to self" items were strongly correlated ($r(1152) = .60$ [.56, .63], $p < .001$); so

were the "harm/threat to others" items ($r(1152) = .69$ [.66, .72], $p < .001$). As preregistered, the responses to the two harm and threat items for self versus others were averaged to create two composite scores (i.e., harm/threat to self and harm/threat to others).

Perceptions of Fairness. Two items were used to measure participants' perceptions of the target's behavior in terms of fairness (1 = *not at all fair*; 5 = *completely fair*) and justification (1 = *not at all justified*; 5 = *completely justified*). The two items were strongly correlated ($r(1152) = .81$ [.79, .83], $p < .001$). They were averaged to create a composite score.

Causal Attributions. Participants' attributions of the target's behavior were measured using two items from Peterson et al. (1982). Participants reported the extent to which they believed the target's behavior had an external or internal cause on a 5-point scale (1 = *totally due to other people or circumstances*, 5 = *totally due to this person*). Their evaluation of the cause of the target's behavior as stable versus unstable was measured using the item "In the future, if a similar incident happens again, do you think this person will behave the same way?" (1 = *will never behave the same way*, 5 = *will certainly behave the same way*). The two items were correlated ($r(1151) = .20$ [.14, .25], $p < .001$). As preregistered, since the correlation between the items did not meet the $r > .50$ threshold, I did not create a composite score for causal attribution. In the analyses, each item will be examined separately.

Target's Regret. Participants reported the extent to which they believe the target regrets their behavior (1 = *not at all*, 5 = *very much*).

Target's Apology. Participants reported the extent to which they believe the target would apologize for their behavior if given the opportunity (1 = *very unlikely*, 5 = *very likely*).

Injunctive and Descriptive Norms. Using two items from Moon et al. (2018), participants reported their evaluation of the target's behavior in relation to the societal norms.

Consistency with the injunctive norms was measured with the item "In our society, how acceptable is this person's behavior during the incident?" (1 = *completely unacceptable*, 5 = *completely acceptable*). Consistency with the descriptive norms was measured using the item "How common is it for an average person in our society to act the way this person acted?" (1 = *not at all common*, 5 = *extremely common*).

Results

The primary goal of this study was to provide a multidimensional examination of the differences between prototypical justified versus unjustified anger experiences in terms of (a) perceptions of the targets' behavior, (b) perceptions of the target, (c) experiencers' emotional processes, and (d) experiencers' relational processes. The first part of this Results section is organized around these four themes. Most of these analyses follow preregistered hypotheses and/or research questions (the preregistration document is available at https://osf.io/mj8hs).

A secondary goal of this study was to investigate the relation between different aspects of the anger-eliciting event and participants' self-reported intensity of anger experience and expression during the event. These question-driven analyses were preregistered, but they do not test specific directional hypotheses.

For each analysis, I clarify whether it corresponds to a preregistered hypothesis, preregistered research question, or a non-preregistered research question. For tests of preregistered hypotheses, I use the traditional significance threshold of $\alpha = .05$. For others, I follow Benjamin et al.'s (2018) recommendations to reduce the rate of false positives. Namely, the significance threshold will be set at $\alpha = .005$, and the analysis results with $.05 > ps \geq .005$ will be reported as "suggestive." The data, codebook, study materials, and the R code for reproducing all the analyses and figures are available at https://bit.ly/3jJJozE

Perceptions of Target's Behavior

Three aspects of the behavior that was perceived as the cause of the participants' anger were examined: harm and threat (to the self and to others), fairness, and norm violations.

Perceptions of Harm and Threat. I tested the preregistered hypotheses that (a) justified anger events (compared to unjustified ones) involve a stronger perception of harm and threat to the self and to others, and (b) the difference between justified and unjustified anger in terms of perceptions of harm and threat is moderated by the target of harm, such that this difference is larger for harm/threat to others (vs. to self). To test these hypotheses, I conducted a 2 (anger variant: justified vs. unjustified) X 2 (target of harm: self vs. other) mixed factorial ANOVA, with the perceived intensity of harm and threat as the dependent variable. The main effect of anger type was significant ($F(1, 1152) = 203.00$, $p < .001$, $\eta^2 = 0.12$), supporting the first hypothesis. However, inconsistent with the second hypothesis, the interaction effect was not significant ($F(1, 1152) = 0.82$, $p = .366$, $\eta^2 < 0.001$). In other words, the perception of harm and threat was stronger for justified anger events, both in terms of perceived harm to self ($t(1130.1) = 12.66$, $p < .001$, $d = 0.74$) and to others ($t(986.6) = 12.21$, $p < .001$, $d = 0.71$); and the magnitude of the effect did not differ significantly (see Figure 5.1).

Perceptions of Fairness. I conducted an independent-samples t-test to test the preregistered hypothesis that the target's behavior is perceived as less fair in the justified (vs. unjustified) anger condition. The results supported this hypothesis, $t(920.5) = -25.47$, $p < .001$, $d = -1.51$.

Perceptions of Norm Violation. I tested two preregistered hypotheses: (a) The target's behavior during justified anger events (vs. unjustified ones) is judged as a stronger norm violation. (b) The difference between justified and unjustified anger events is moderated by the

132

type of norm violation, such that this difference is larger for injunctive (compared to descriptive) norms. Results of a 2 (anger variant) X 2 (type of norm: descriptive vs. injunctive) mixed factorial ANOVA supported both hypotheses. The main effect of the anger variant ($F(1, 1152) = 244.47$, $p < .001$, $\eta^2 = 0.14$) and the interaction effect ($F(1, 1152) = 56.50$, $p < .001$, $\eta^2 = 0.01$) were both significant, corresponding to the first and second hypotheses, respectively. As shown in Figure 5.1, the perception of norm violation was significantly stronger in the justified anger scenarios, for both descriptive ($t(1150) = 10.09$, $p < .001$, $d = 0.59$) and injunctive norms ($t(1143.4) = 16.95$, $p < .001$, $d = 1.00$). This effect was significantly stronger for injunctive norms.

Figure 5.1

Perceptions of Harm and Threat and Norm Violations for Justified and Unjustified Anger
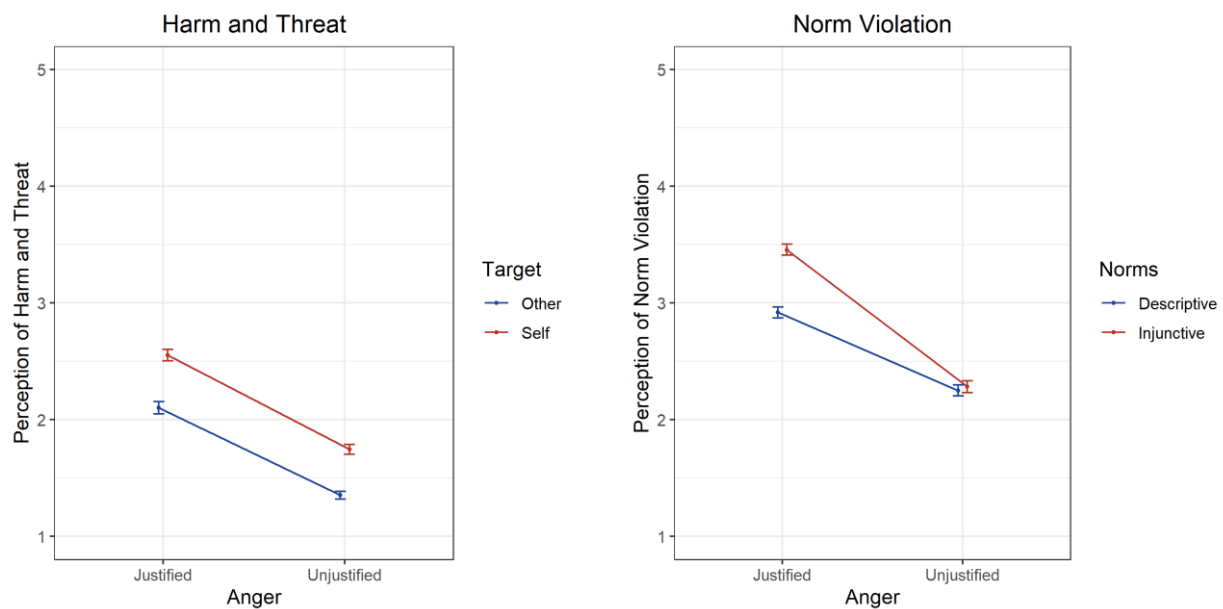
Perceptions of the Target

The evaluations of the participants about the person or entity who was perceived as the cause of anger (i.e., the target) were examined on three aspects: perceived dispositionality (as reflected in causal attributions), adherence to moral values, and moral-relational character.

Causal Attributions. I tested the preregistered hypotheses that in justified anger events, participants are more likely to consider the cause of anger to stem from the target's (a) internal characteristics (as opposed to external circumstances) and (b) stable qualities (as opposed to changeable ones). As predicted, the belief that the target's behavior was due to the circumstances was stronger for unjustified anger, $t(1127.4) = 10.28$, $p < .001$, $d = 0.61$. Furthermore, the participants in the justified anger condition were more likely to believe that the target would behave the same in a similar situation in the future, $t(1145.5) = 2.56$, $p = 0.010$, $d = 0.15$.

Adherence to High Moral Standards. To test the preregistered hypothesis that in justified (vs. unjustified) anger events, the target is more likely to be seen as having a weaker adherence to moral and ethical values, an independent-samples t-test was conducted. The results supported the hypothesis, $t(1153.5) = -13.85$, $p < .001$, $d = -0.81$.

Perceptions of Moral-Relational Attributes. Beyond adherence to high moral standards, one of the goals of this study was to examine the perceptions of targets' moral-relational characteristics as measured using a list of characteristics from Goodwin et al. (2014). Following the preregistered analysis plan, I first conducted dimensionality reduction on the 32 moral-relational characteristics prior to testing the difference between anger types. The scree plot and Velicor's MAP index pointed to a four-component structure, while parallel analysis suggested a three-component structure (Figure 5.2). As such, I examined both alternatives using PCA with varimax rotation. Based on the number of cross-loading items, as well as the breadth

and interpretability of the emerging components, I chose the four-component structure.

Following the preregistered plan, four cross-loading items (i.e., "principled," "courageous,"

"warm," and "agreeable") were dropped in an iterative process. The final structure explained

74% of the total variance and represented the following four constellations of character

evaluations (Table 5.2): (a) Communal, which consisted of 13 characteristics, such as

trustworthy, empathetic, and kind ($\alpha = .97$); (b) Sociable, including seven characteristics, such as

sociable, happy, and playful ($\alpha = .92$); (c) Smart, which entailed five items such as organized,

logical, and intelligent ($\alpha = .91$); and (d) Creative, which consisted of three characteristics (i.e.,

musical, creative, and innovative; $\alpha = .85$). Note that these four components were strongly

correlated (Table 5.3).

Figure 5.2

Scree Plot, Parallel Analysis, and MAP Index for the Moral-Relational Character Judgments
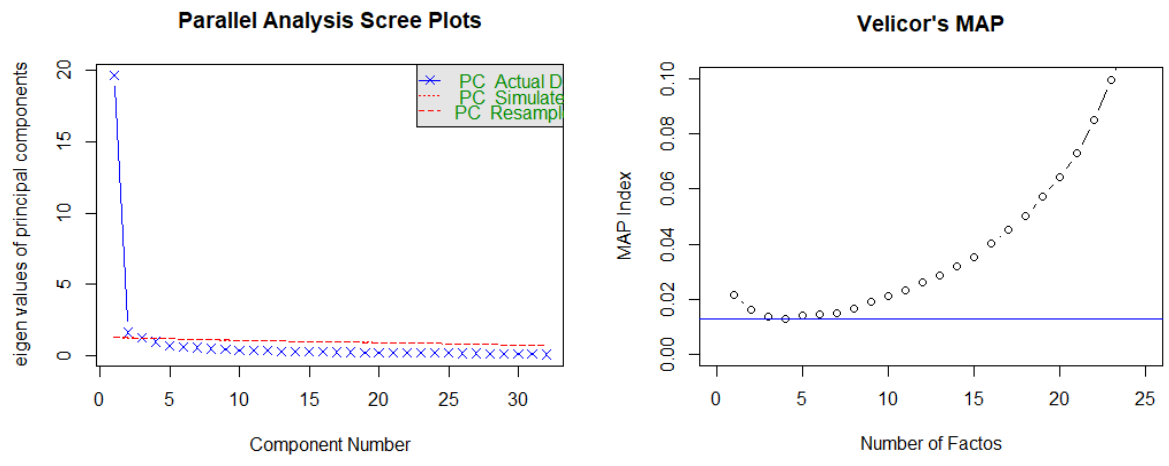
Table 5.2

Pattern Matrix based on the Principal Component Analysis of the Moral-Relational Character

Judgments

Item	Communal	Sociable	Smart	Creative
trustworthy	**0.78**	0.26	0.31	0.16
empathetic	**0.77**	0.26	0.20	0.27
kind	**0.75**	0.41	0.23	0.18
forgiving	**0.74**	0.39	0.16	0.17
fair	**0.74**	0.28	0.30	0.20
humble	**0.72**	0.26	0.22	0.18
loyal	**0.72**	0.34	0.26	0.18
giving	**0.72**	0.34	0.26	0.19
grateful	**0.71**	0.34	0.29	0.24
just	**0.71**	0.25	0.39	0.19
honest	**0.71**	0.20	0.35	0.15
cooperative	**0.71**	0.30	0.23	0.20
helpful	**0.69**	0.32	0.36	0.22
sociable	0.27	**0.76**	0.19	0.13
enthusiastic	0.34	**0.74**	0.17	0.19
happy	0.36	**0.73**	0.27	0.10
playful	0.41	**0.72**	0.12	0.29
easygoing	0.51	**0.64**	0.09	0.15
funny	0.42	**0.64**	0.22	0.33
athletic	0.12	**0.62**	0.28	0.19
organized	0.25	0.18	**0.81**	0.09
logical	0.44	0.24	**0.71**	0.21
responsible	0.53	0.20	**0.66**	0.08
intelligent	0.43	0.34	**0.60**	0.32
clever	0.37	0.36	**0.58**	0.34
musical	0.18	0.20	0.08	**0.83**
creative	0.34	0.30	0.23	**0.74**
innovative	0.36	0.30	0.42	**0.62**

Table 5.3

Descriptive Statistics and Correlations between Moral-Relational Character Judgments

Characteristic	Means (*SD*s)			Correlations		
	All	Justified	Unjustified	1	2	3
1. Communal	2.90	2.44	3.40			
	(1.21)	(1.15)	(1.20)			
2. Sociable	3.03	2.73	3.36	.78		
	(1.15)	(1.20)	(1.00)	[.76, .80]		
3. Smart	3.00	2.64	3.39	.81	.69	
	(1.21)	(1.19)	(1.10)	[.79, .83]	[.66, .72]	
4. Creative	2.58	2.33	2.85	.67	.66	.65
	(1.18)	(1.17)	(1.14)	[.64, .70]	[.63, .69]	[.62, .69]

*Note. SD*s (within parentheses) indicate standard deviations. Values in square brackets indicate the 95% confidence interval for each correlation. All correlations were significant at $p < .001$.

To examine the differences between the moral-emotional judgments of the target between the two conditions, I conducted four independent-samples t-tests. The results indicated that the targets in the justified anger condition were perceived as significantly less communal ($t(1155) =$ -14.78, $p < .001$, $d =$ -0.87), less sociable ($t(1143) =$ -9.77, $p < .001$, $d =$ -0.57), less smart ($t(1155) =$ -11.12, $p < .001$, $d =$ -0.65), and less creative ($t(1151.3) =$ -7.68, $p < .001$, $d =$ -0.45) compared to the targets in the unjustified anger condition.

Experiencer's Emotional Processes

Two aspects of participants' emotional processes (i.e., affective experience and anger expressivity) were examined.

Affective Experience. The goal of these analyses was to investigate the differences between justified and unjustified anger across a wide range of negative and positive emotions. Following the preregistered analysis plan, the dimensionality of the 27 emotion items was reduced using PCA. All three preregistered criteria for determining the number of components

137

(i.e., scree plot, parallel analysis, and Velicor's MAP) pointed to a four-component structure

(Figure 5.3). As such, a four-component PCA with varimax rotation was applied to the emotion

items. One cross-loading item (i.e., "strong") and one item that did not have a strong loading

(i.e., ≥ .40) on any component (i.e., "surprised") were excluded from the final PCA. The

resulting structure (Table 5.4) represented the following four emotion categories: (a) Self-blame,

which entailed five negative emotions such as "disgusted with myself" and "ashamed" (α = .88);

(b) Hostility, which consisted of eight emotions such as "hostile," "loathing/hateful," and

"frustrated" (α = .78); (c) Forlorn, with six negative emotions such as "depressed" and "lonely"

(α = .81); and (d) Joy, represented by five positive emotional states including "excited" and

"happy" (α = .75).

Figure 5.3

Scree Plot, Parallel Analysis, and the Velicor's MAP Index for the Affective Experience Items
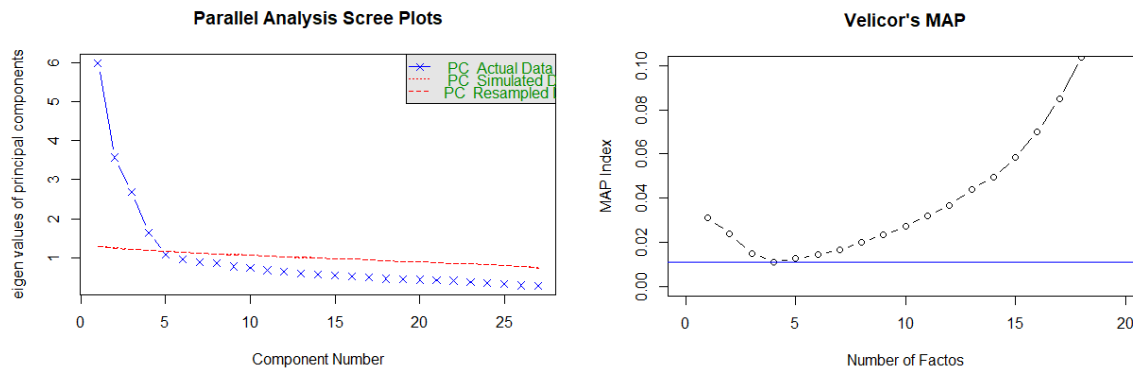
Table 5.4

Pattern Matrix based on the Principal Component Analysis of the Affective Experience Items

Item	Self-blame	Hostility	Forlorn	Joy
disgusted with myself	**0.82**	0.15	0.17	0.04
ashamed	**0.81**	0.07	0.25	-0.01
guilty	**0.81**	0.02	0.13	0.05
angry at myself	**0.81**	0.08	0.20	-0.05
embarrassed	**0.68**	0.11	0.31	-0.02
hostile	0.10	**0.70**	0.01	0.07
loathing/hateful	0.06	**0.67**	0.23	0.05
frustrated	0.00	**0.63**	0.18	-0.21
irritable	0.10	**0.61**	0.02	-0.13
upset	0.05	**0.57**	0.39	-0.22
disgusted	0.11	**0.57**	0.24	0.10
alert	0.05	**0.54**	0.10	0.29
daring	0.03	**0.51**	-0.02	0.49
depressed	0.21	0.19	**0.76**	-0.03
sad	0.16	0.18	**0.74**	-0.16
lonely	0.20	0.15	**0.74**	-0.01
anxious	0.18	0.20	**0.66**	-0.05
afraid	0.24	0.21	**0.59**	0.04
shy	0.15	-0.12	**0.48**	0.24
excited	0.05	0.00	0.05	**0.75**
happy	0.03	-0.23	0.06	**0.70**
enthusiastic	0.02	0.09	-0.05	**0.70**
proud	-0.11	0.10	-0.05	**0.63**
relaxed	-0.05	-0.27	0.09	**0.61**
lively	0.10	0.31	-0.18	**0.60**

To compare the affective experiences of participants in the justified versus unjustified anger conditions, I conducted four independent-samples t-tests. Participants in the justified anger condition reported significantly lower feelings of self-blame ($t(1116.5) = -7.77$, $p < .001$, $d = -0.46$), as well as significantly higher hostility ($t(1141.2) = 8.77$, $p < .001$, $d = 0.52$) and forlorn feelings ($t(1155) = 4.63$, $p < .001$, $d = 0.27$). The results for the joy category were suggestive ($t(1108.8) = 2.49$, $p = 0.013$, $d = 0.15$), indicating the possibility that justified anger experiences

might be, on average, associated with slightly higher positive emotions. Descriptive statistics and intercorrelations between these affective categories are presented in Table 5.5.

Table 5.5

Descriptive Statistics and Correlations between Affective Categories

Affect	Means (*SD*s)			Correlations		
	All	Justified	Unjustified	1	2	3
1. Self-blame	2.33	2.08	2.60			
	(1.17)	(1.08)	(1.20)			
2. Hostility	3.14	3.33	2.94	.26*		
	(0.79)	(0.75)	(0.78)	[.20, .31]		
3. Forlorn	2.54	2.67	2.39	.51*	.41*	
	(1.01)	(1.04)	(0.95)	[.46, .55]	[.36, .46]	
4. Joy	1.28	1.32	1.25	.01	.13*	-.04
	(0.47)	(0.53)	(0.40)	[-.05, .07]	[.07, .18]	[-.09, .02]

*Note. SD*s (within parentheses) indicate standard deviations. Values in square brackets indicate the 95% confidence interval for each correlation. * indicates $p < .001$.

Anger Expressivity. I tested the preregistered hypothesis that participants are more likely to evaluate their anger expression as "exaggerated" in the unjustified (vs. justified) anger condition. Participants reported the extent to which they expressed their anger during the incident using four ordered categories: fully concealed (15.7%), partially concealed (45.0%), fully expressed (33.0%), and exaggerated (6.2%). A chi-square test of independence showed that these proportions are significantly different for the two anger variants, $\chi^2(3) = 39.20$, $p < .001$. A follow-up preregistered chi-square indicated that, as predicted, the proportion of participants who considered their expression to have been exaggerated was significantly higher in the unjustified (compared to justified) anger condition (11% vs. 2%; $\chi^2(1) = 34.73$, $p < .001$). Additional exploratory tests did not reveal a significant difference for the "fully concealed" ($\chi^2(1) = 1.35$, p

140

= .245) and "fully expressed" ($\chi^2(1) = 2.54$, $p = .111$) categories. The results were suggestive for the "partially concealed" category (48% vs. 42% endorsement for justified and unjustified conditions, respectively; $\chi^2(1) = 4.75$, $p = .029$).

The Experience-Expression Association. I tested the preregistered hypotheses that (a) the strength of the experience-expression relation tamps down as the anger intensity increases, and (b) this deceleration is stronger for justified (vs. unjustified) anger. A linear regression model with the intensity of anger experience as the predictor and anger expression as the outcome showed a strong relation between the two ($b_{linear} = 0.63$ [95%CI: 0.56, 0.71], $p < .001$). The results of a second regression model with the squared anger experience added as the second predictor indicated that the relation between the two variables is non-linear ($b_{quadratic} = 0.10$ [95%CI: 0.03, 0.17], $p = .007$) but in the opposite direction of the first hypothesis—the accelerating curve indicates that as the anger intensity increases, the experience-expression relation strengthens. The results of a third regression model with the anger type added as the moderator did not support the second hypothesis about the experience-expression relation being dependent on the anger type ($b_{linear\ interaction} = 0.13$ [95%CI: -0.04, 0.33], $p = .141$; $b_{quadratic\ interaction} = 0.07$ [95%CI: -0.08, 0.23], $p = .341$).

Experiencer's Relational Processes

Two aspects of the participants' relationship with the target were examined: the perceptions that the target regrets their behavior and is apologetic, and the impact of the event on the relationship closeness.

Perceptions of Regret and Apology. I conducted two independent-samples t-tests to investigate whether the perceptions of the target as regretful and apologetic vary depending on whether they consider their anger justified or unjustified. Results indicated that the participants

in the justified (vs. unjustified) anger condition considered the target to regret their behavior more, $t(1146.6) = 4.26$, $p < .001$, $d = 0.25$. However, there was no significant difference in terms of anticipating that the target would apologize if given a chance, $t(1145.3) = -0.34$, $p = 0.735$, $d = -0.02$.

Relationship Closeness. I tested the preregistered hypothesis that the relationship closeness (between the participant and the target) deteriorates following an anger event, both "short-term" (i.e., comparing closeness before and immediately after the event) and "long-term" (i.e., comparing closeness before the event and at the time of the study). A 2 (anger type) X 3 (time: prior, immediately after, now) mixed factorial ANOVA with relationship closeness as the outcome revealed a significant effect of time ($F(2, 2303.3) = 495.25$, $p < .001$, $\eta_p^2 = .30$), anger type ($F(1, 1152.1) = 114.64$, $p < .001$, $\eta_p^2 = .09$), and the time X anger type interaction ($F(2, 2303.3) = 36.69$, $p < .001$, $\eta_p^2 = .03$). Follow-up analyses indicated that, as predicted, relationship closeness was negatively affected both "short-term" ($M_{diff} = 1.23$, $t(2303) = 31.20$, $p < .001$, $d = 0.90$) and "long-term" ($M_{diff} = 0.76$, $t(2303) = 19.19$, $p < .001$, $d = 0.54$).

Additionally, I conducted simple contrast analyses to test the second preregistered hypothesis that the long-term deterioration of relationship closeness is stronger for justified (vs. unjustified) anger experiences. The time (prior vs. now) X anger type interaction was significant ($b = 0.16$, $t(2303) = 7.24$, $p < .001$). Follow-up simple effects analyses indicated that, as predicted, the long-term reduction in relationship closeness was stronger in the justified ($M_{diff} = 1.10$, $t(2303) = 20.05$, $p < .001$, $d = 0.72$) compared to unjustified ($M_{diff} = 0.42$, $t(2303) = 7.37$, $p < .001$, $d = 0.34$) anger conditions (Figure 5.4).

Figure 5.4

The Negative Effect of the Anger-Eliciting Event on Relationship Closeness
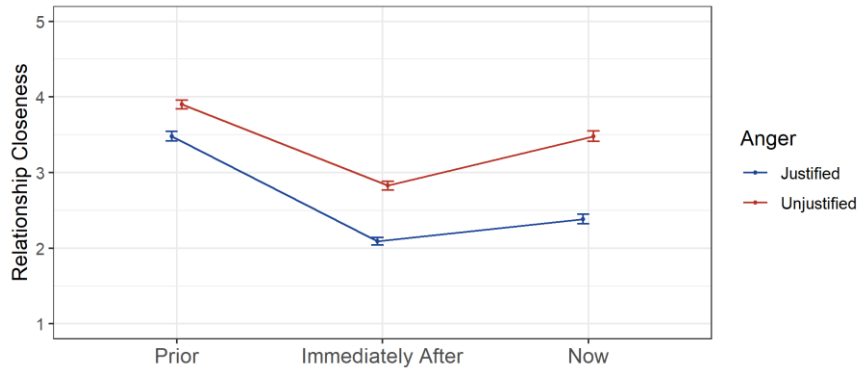
Predicting the Intensity of Anger Experience

I investigated the association between different aspects of the anger-eliciting event and the intensity of participants' anger in two ways. First, I investigated the incremental association between different variables and anger experience above and beyond perceptions of harm and threat. Next, I tested models in which different aspects of the anger-eliciting event were entered as predictors simultaneously.

Incremental Associations. Following the preregistered analysis plan, I conducted a regression model with anger intensity as the outcome and perceptions of threat and harm to the self and others as the two predictors. Both harm to self ($b = 0.25$ [95%CI: 0.20, 0.30], $p < .001$) and harm to others ($b = 0.12$ [95%CI: 0.07, 0.17], $p < .001$) were significant predictors ($R^2 = .18$). This model served as the reference to which the other models with additional predictors were compared. In each of the eight comparison models, a third predictor was added to examine whether it significantly predicts anger intensity above and beyond participants' perceptions of harm and threat. Results indicated that the extent to which the target's behavior was perceived as

fair (b = -0.10 [95%CI: -0.14, -0.06]) was a significant negative predictor of anger intensity, and

the perceptions of injunctive norm violation (b = 0.08 [95%CI: 0.04, 0.12]) and target's

regretfulness (b = 0.05 [95%CI: 0.02, 0.09]) were positive predictors of anger intensity, after

controlling for harm. The outcomes of all models are reported in Table H.1 of Appendix H.

     A second set of preregistered analyses were conducted to examine the extent to which the

predictors of anger intensity (based on the models above) vary depending on the justifiability of

anger. These analyses consisted of models that resembled those explained previously, with one

addition: anger type (0 = justified, 1 = unjustified) was entered as the moderator for all

predictors. The results of the first (i.e., reference) model pointed to harm to self (b = 0.22

[95%CI: 0.16, 0.28], p < .001) and harm to others (b = 0.09 [95%CI: 0.04, 0.15], p = .001) as

significant predictors, and anger type as a suggestive predictor (b = -0.26 [95%CI: -0.48, -0.04],

p = .019) of anger intensity. Both interaction effects were small and not significant. For the

remaining models, the specific output corresponding to the present research question was the

result of the anger type X incremental predictor interactions (e.g., anger type X perception of

fairness). None of these interactions were significant. In two cases, the results were suggestive of

a possible interaction. For fairness, the more participants in the justified anger condition

considered the targets' behavior fair, the less they experienced anger (b = -0.13 [95%CI: -0.21,

-0.05], p = .002). However, the anger type X fairness interaction suggested that this effect might

not generalize to unjustified anger (Δb = 0.10 [95%CI: 0.001, 0.20], p = .046). Furthermore,

while perceiving the target's behavior as part of a stable pattern did not predict anger experience

significantly in the justified anger condition (b = 0.02 [95%CI: -0.02, 0.07], p = .339), the anger

type X stability interaction suggested that there might be a relation between the two variables in

144

the unjustified condition (Δb = -0.07 [95%CI: -0.15, -0.0003], p = .0489). Results for all models are reported in Table H.2.

Simultaneous Associations. In addition to the incremental models above, I also tested two models in which the different aspects of the anger-eliciting event were entered as predictors simultaneously. Before testing the models, I used three preregistered criteria to search for evidence of multicollinearity: (a) very strong correlations between variables (i.e., $r \geq .90$), (b) tolerance estimates smaller than 0.1, and (c) variance inflation factors (VIF) larger than five. No evidence of multicollinearity was found. The results of the first model demonstrated that, without taking the anger condition into account, when entering all ten predictors into the same model, perceptions of harm to self (b = 0.22 [0.17, 0.27], $p < .001$), harm to others (b = 0.09 [0.04, 0.14], $p < .001$) and fairness of target's behavior (b = -0.09 [-0.14, -0.05], $p < .001$) are significant predictors of anger experience. There was also a suggestive negative association for perceptions of descriptive norm violation (b = -0.06 [-0.10, -0.01], $p = 0.022$). In a second model where anger type (0 = justified, 1 = unjustified) was entered as the moderator for all predictors, none of the interaction effects were significant (Table H.3).

Predicting the Intensity of Anger Expression

I investigated the association between different aspects of the anger-eliciting event and participants' anger expression using analyses parallel to the ones described in the previous section—the same models were tested, with self-reported anger expression (instead of anger experience) as the outcome variable.

Incremental Associations. The first set of analyses tested the association between different variables and expressivity above and beyond harm and threat. In the initial reference model, harm to self was a significant predictor (b = 0.21[95%CI: 0.14, 0.29], $p < .001$), and

harm to others was a suggestive predictor ($b = $ [95%CI: 0.01, 0.16], $p = .021$) of expressivity. In

the additional comparison models, expecting that the target regrets their behavior ($b = 0.12$

[95%CI: 0.06, 0.17]) and would apologize if given the change ($b = 0.11$[95%CI: 0.06, 0.16])

were significant positive predictors of anger expression, after controlling for perceptions of harm

and threat. Furthermore, believing that the target's behavior had an internal cause ($b = $

-0.08[95%CI: -0.13, -0.03]) and that the target would behave the same in the future ($b = $

-0.11[95%CI: -0.17, -0.05]) were significant negative predictors of expressivity. It is noteworthy

that the total variance explained in these models are considerably smaller than the parallel

models discussed in the previous section (where the outcome was anger intensity). The detailed

results are presented in Table H.4.

To examine whether any of these associations vary for justified versus unjustified anger, I

tested a second set of preregistered models with anger type (0 = justified, 1 = unjustified) added

as the moderator. As shown in Table H.5, anger type was not a significant predictor or moderator

when predicting anger expressivity in any of these models.

Simultaneous Associations. In addition to the incremental models above, I also tested

two preregistered models in which all predictors were entered simultaneously. No evidence of

multicollinearity was found based on an examination of the variable intercorrelations, tolerance,

and IVF indices. The results of the first model demonstrated that when entering all ten predictors

into the same model, perceptions of harm to self ($b = 0.22$ [0.14, 0.29], $p < .001$) and harm to

others ($b = 0.12$ [0.04, 0.20], $p = .003$) were significant predictors of anger expressivity. There

was also a suggestive negative association for perceiving the behavior to have an internal cause

($b = $ -0.08 [-0.13, -0.02], $p = 0.007$). In a second model where anger type (0 = justified, 1 =

unjustified) was entered as the moderator for all predictors, none of the interaction effects were significant (Table H.6).

Discussion

This study investigated the differences between justified and unjustified anger experiences across ten theoretically informed dimensions. The results demonstrate that these two variants of anger are distinct in terms of the characteristics of the anger-eliciting behavior, the target of anger, the broader affective experiences of the angered person, and the behavioral and relational consequences of the anger episode.

Past research has connected anger to experiences of harm and threat, perceived injustice or unfairness, and norm violations (Batson et al., 2007; Gutierrez & Giner-Sorolla, 2007; Miceli & Castelfranchi, 2019). The present results showed that the two anger variants differ in these dimensions. Justified anger is associated with stronger perceptions of harm and threat to the self and others, and a stronger sense that the target's behavior is unfair and a norm violation. Notably, participants in both justified and unjustified anger episodes reported a greater perception of harm and threat to self (compared to others), and the size of the difference was almost identical for the two conditions. This finding is particularly relevant to the theories primarily focused on anger in response to harm to others as justified anger (as discussed in Studies 1 and 2). The present results are not inconsistent with this perspective—perceptions of harm and threat to others were, on average, stronger in the justified anger narratives. However, these results confirm that concentrating on harm to others as the primary indicator or definer of justified anger will only capture a small subset of the justified anger experiences. People are indeed sensitive and reactive to harm and threat to others, but, as we saw in the qualitative results

of Study 3, many anger experiences perceived as justified are primarily or exclusively concerned with harm and threat to self.

The two variants also differ in how the target of anger is judged. In justified anger events, the target's behavior is more likely to be perceived as a representation of their internal characteristics and stable qualities. Furthermore, it appears that the targets of justified anger are more likely to become the subject of a negative halo effect (Pohl, 2022): compared to unjustified anger targets, they are seen as more immoral and unethical, and less communal, sociable, smart, and creative. The negative perceptions of the targets of justified anger as someone who is profoundly and consistently immoral resemble the evaluations associated with other hostile emotions such as hate and contempt (A. Fischer et al., 2018; A. H. Fischer & Roseman, 2007). This notion is further corroborated by the analyses of the concurrent emotions experienced during the anger episode. Significantly higher feelings of self-blame (e.g., "disgusted with myself, ashamed, guilty") accompany unjustified anger, whereas justified anger is experienced together with stronger hostile (e.g., "loathing/hateful, disgusted") and forlorn (e.g., "depressed, lonely, anxious") emotions. These findings allude to the possibility that of the two variants, justified anger has more in common with other hostile, negative emotions and unjustified anger may overlap more with self-directed emotions such as guilt, shame, and embarrassment. These possibilities have implications for regulatory strategies and interventions to address the maladaptive consequences of each anger variant, which I will discuss further in the next chapter.

In terms of anger expressivity, participants were more likely to evaluate their anger expression as an overreaction in the unjustified (vs. justified) anger condition. This finding is consistent with the thematic analysis results in Study 3, where the participants interpreted their anger as unjustified if it felt disproportionate to the target's behavior. This notion has important

implications for modeling anger dynamics: the overall appraisal of an event (which is highly consequential for all aspects of an emotional experience; Frijda, 1993; Kuppens et al., 2003; Roseman & Evdokas, 2004; Smith & Ellsworth, 1985) does not end after the primary emotion-eliciting event is concluded. Post-event components, such as the experiencer's reaction to the target, can merge with the original event and lead to an "updated appraisal" that might be consequentially distinct from the initial one.

Finally, the present findings revealed that the relational impact of anger varies depending on whether it is perceived as justified or unjustified. Consistent with past research on the adverse effects of anger on affiliations (Liu et al., 2018; Snyder et al., 2007; L. Wang et al., 2012), relationship closeness with the target was negatively affected in both conditions. However, deterioration of relationship closeness was stronger for justified (vs. unjustified) anger experiences in both the short-term and long-term. These results, together with the qualitative results of the previous study, point to an important possibility: Once people recognize their anger to be unjustified, they are likely to engage in efforts to avoid (e.g., expressive suppression) or repair (e.g., apologies or behavioral change) any harm to their relationship with the target. These findings have implications for understanding and managing the relational consequences of anger in different contexts (Chen et al., 2020; Cooley & Fite, 2016; Dewi & Kyranides, 2022; von Salisch & Zeman, 2018), which I will elaborate on in the next chapter.

CHAPTER VI: GENERAL DISCUSSION

Inspired by the duality of perspectives in the literature on anger, I started this program of research with the overarching goal of examining and understanding two anger variants: an anger that is perceived as moral, appropriate, and justified; and an anger that is considered wrong, inappropriate, and unjustifiable. In search for the distinction between these variants, I came across a consistent theme in the literature. Several scholarly works suggested that anger elicited due to harm to others (vs. the self) is considered moral and justifiable and might even be a prosocial act. Building on this idea, in Study 1, I examined the differences in expressivity norms between anger in response to harm to self versus harm to others. This study tested the notion that if anger resulting from harm to others (vs. self) is perceived as more acceptable, people should report a stronger willingness to express such anger. The results supported this proposition—there was a stronger relation between self-reported experience and expression of anger in scenarios where another person (vs. the self) was the primary target of harm.

In Study 2, I examined whether the social consequences of expressing anger depend on the target of harm (i.e., self vs. others). The results of this study demonstrated that expressing anger sends social signals that make others less likely to transgress against the expresser. However, these signals come with relational costs, as the anger expressers are seen as less communal and affiliative. Importantly, consistent with the notion that anger against harm to others is a prosocial act (van Doorn et al., 2014), the affiliative cost of expressing anger was smaller when the expresser was reacting to harm to others (vs. the self). It is plausible that the alter-centric nature of such anger buffers against the general costs of anger expression by communicating to others an inclination to care.

The first two studies generated valuable insights about a single anger-related appraisal. However, providing a more comprehensive picture of the two variants of anger needed a different approach, one in which an unrestricted range of jusitfied and unjustified anger experiences can be examined to uncover the unique characteristics of each variant. This need motivated the following two studies. In Study 3, I investigated participants' narratives describing their experience of justified or unjustified anger using qualitative and quantitative text analysis methods. In Study 4, I used a prototype approach to examine the differences between the two anger variants across ten theory-driven dimensions. Both studies revealed unique features of each anger variant that were not captured by the harm to self versus other distinction.

Justified anger events were often elicited when the target engaged in an act perceived as immoral, unfair, harmful, and a norm violation. On the contrary, for much of the unjustified anger cases, participants admitted that there was either no wrongdoing on the target's part or, even if there was, it was not deserving of a strong anger reaction. The experiencers often realized that their anger was carried over from a previous unrelated episode, was a result of general frustration or misunderstanding, or was disproportionate to the trivial wrongdoing committed by the target.

Those who experienced justified anger had a stronger tendency to consider the anger-eliciting behavior rooted in the targets' dispositional character and often expressed strongly negative judgments about the target's morality. When narrating their justified anger experience, the participants wrote with confidence, used absolutist language, and barely attempted to discuss their rationale for considering their anger justified. In contrast, when writing about their unjustified anger, participants were reflective, engaged in cognitive reasoning and retrospection, and expressed self-directed emotions such as guilt and embarrassment.

In addition to noteworthy differences in appraisals and affective experiences, the two anger types varied considerably in their relational impact. The incident leading to justified anger had a larger negative effect on the relationship with the target immediately after the event and in the long term. Many of those who discussed such anger mentioned attempts to end or limit their relationship with the target. In contrast, the participants reflecting on unjustified anger wrote about efforts to avoid or minimize the impact of such anger in order to restore their relationship.

Theoretical Implications

The present findings have important implications for current theories of anger. In this section, I will discuss these implications for understanding the relation between anger and other emotions, anger's downstream consequences, and the broader issues with theory construction.

Concurrent Emotional Experiences

> "Oh my god [sic]. I'm shaking. I'm just shaking all over. With fear. With anger. With resolve." –Chris Murphy (US Senator from Connecticut); tweeted on May 24, 2022, in response to a mass shooting at a Texas elementary school

It is common for people to experience anger concurrently with other emotions (Kirchner et al., 2018; Miyamoto et al., 2010; Vansteelandt et al., 2005). And the feelings experienced together with anger can have downstream cognitive and behavioral consequences (Matsumoto et al., 2016). In Study 3, some participants spontaneously mentioned experiencing a wide range of negative emotions (e.g., rage, guilt, fear, and sadness) together with anger. Study 4 demonstrated that justified and unjustified anger experiences vary systematically in terms of their concurrent emotions—unjustified anger co-occurred with stronger feelings of self-blame, while justified anger was accompanied by more intense feelings of hostility and forlornness.

These findings are important because they point to potentially distinct motivational tendencies among the two anger variants. On the one hand, the self-directed emotions

accompanying unjustified anger (e.g., shame, guilt, and embarrassment) are often related to a tendency to withdraw from others and/or repair one's relationship with the target (Cohen et al., 2011; Tangney et al., 2007; Young et al., 2021). On the other hand, the other-directed emotions that co-occurred with justified anger (e.g., hostility, hate, and disgust) are generally associated with attempts to distance oneself from the target and punish, retaliate against, or harm another person (A. Fischer et al., 2018; Matsumoto et al., 2016). Many theoretical models and definitions of anger (see Carver & Harmon-Jones, 2009) are more consistent with the latter and fail to incorporate the former. The present findings call for a reevaluation of our current models of anger, a notion that I will return to in a later section.

Boundaries between Variants of Anger, Hate, and Contempt

Considering the overlap between negative emotions such as anger, hate, and contempt, theoretical and empirical attempts have been made to find the distinguishing features of each emotion (e.g., A. Fischer et al., 2018; A. H. Fischer & Roseman, 2007; P. S. Russell & Giner-Sorolla, 2011). The present findings about the differences between justified and unjustified anger have implications for demarcating anger and other negative moral emotions, especially hate and contempt.

Theoretical accounts of the distinction between anger on the one hand and hate and contempt on the other point to a key difference: Compared to hate or contempt targets, which are generally perceived as malevolent, dispositionally immoral, and incapable of or unwilling to change (Royzman et al., 2005; Schoenewolf, 1996), the target of anger is perceived as someone whose anger-eliciting behavior can be changed or influenced (A. H. Fischer & Roseman, 2007; Halperin et al., 2011). Study 4 results demonstrated that this dimension varies between justified and unjustified anger: the anger-eliciting behavior of the justified (vs. unjustified) anger targets is

more likely to be perceived as internally motivated and an indication of the target's stable characteristics. This is not the only overlap between justified anger and hate and contempt appraisals. For example, A. Fischer et al. (2018) posit that individuals experience hatred once they feel they are "badly treated, unsupported, humiliated, ignored, or uncared for" (p. 310)—a list of appraisals that are remarkably similar to many of the experiences described by the participants who wrote about justified anger, and largely absent from the unjustified anger narratives. As a whole, there are sufficient indications in these findings to conclude that of the two anger variants, unjustified anger is considerably easier to demarcate from hatred and contempt.

The distinction between justified and unjustified anger has practical implications. Note that emotions can evolve into adjacent or overlapping emotions. For example, A. H. Fischer and Roseman (2007) demonstrated a progression from anger to contempt that may happen as people's repeated experiences of anger towards a person generate a belief that the target is dispositionally immoral and, therefore, deserving of contempt. Synthesizing this notion of emotions evolving into other emotions with our understanding of justified and unjustified anger experiences, one can reasonably expect that the two anger variants have the potential to progress into different emotions with distinct downstream behavioral consequences. Justified anger may have a higher likelihood of progressing towards contempt and/or hate, both emotions that tend to manifest as outward hostility and a willingness to harm and derogate the target (Bar-Tal, 2007; A. H. Fischer & Roseman, 2007; Matsumoto et al., 2017). In contrast, unjustified anger might be more likely to progress toward guilt, shame, and embarrassment—emotions that are often associated with healthy motives to correct one's mistake and repair the disturbed relationship (Julle-Danière et al., 2020; Keltner & Anderson, 2000; Vaish, 2018) or maladaptive reactions

such as social withdrawal and avoidance (Daniels & Robinson, 2019; M. Lewis, 1992; Tangney, 1991). The possibility that the two anger variants can progress into divergent negative emotions suggests that attempts to regulate these two variants or manage their maladaptive consequences (e.g., in the context of therapy; Neacsiu et al., 2018; Schoenewolf, 1996) would require distinct strategies.

Anger Variants and Theory Construction

As briefly pointed out in previous sections, there is an asymmetry in the representation of justified and unjustified anger in the theoretical accounts of this emotion. To demonstrate, consider the following three excerpts from authoritative texts on anger dynamics:

> Anger may be defined as an impulse, accompanied by pain, to a conspicuous revenge for a conspicuous slight directed without justification towards what concerns oneself or towards what concerns one's friends. […] It must be felt because the other has done or intended to do something to him or one of his friends. (Aristotle's Rhetoric, Book II, Chapter II)

> Anger is elicited when an individual evaluates an *important goal* as *obstructed*. […] However, goal obstruction is the basis of many emotions and not unique to anger. Anger is experienced because one believes that an agent *intentionally* obstructed this important goal […]. Finally, the internal or external norm of *injustice* and *moral violations* often plays a strong role in anger elicitation. (Wranik & Scherer, 2010, p. 248, emphasis in original)

> Because anger occurs as a result of perceived injustice and involves other-blame, there is an element of self-justification in the experience of anger that may be much less prevalent in the experience of sad or anxious moods. (Rusting & Nolen-Hoeksema, 1998, p. 791)

The above statements exclusively reflect the appraisals and motives associated with justified anger. However, if we replace the word anger with "unjustified anger," various aspects of these claims will contradict the present findings. These examples indicate a theoretical tendency to overgeneralize justified anger dynamics to all anger experiences. This is, at least partially, due to the methodological embeddedness of justified anger in many studies. For example, the most effective methods of inducing anger in psychology experiments involve

justified anger appraisals (see Siedlecka & Denson, 2019). Eliciting anger using visual stimuli that represent mistreatment of others (e.g., domestic abuse; Lobbestael et al., 2008), giving participants insulting feedback (Bushman & Baumeister, 1998), and instructing participants to imagine scenarios involving moral violations (e.g., sexual assault; Salerno & Peter-Hagene, 2013) are some of the commonly used anger elicitation methods that mainly trigger appraisals leading to justified anger. Even when more neutral approaches, such as autobiographical recall, are used, we know, based on the Study 4 findings, that it is easier for participants to recall a justified (vs. unjustified) anger experience. In the absence of prompts that elicit unjustified anger, the anger produced by autobiographical recall might be more likely to fall under the justified category. Such methodological ubiquity of justified anger may be an essential contributor to the underrepresentation of unjustified anger in the theoretical literature.

One might argue that such disproportionality could be a reflection of the frequency of the two anger variants in daily life. There are two responses to such a proposition. First, the relative frequency of the two variants is an essential question for future research and cannot be speculated with confidence in the absence of trustworthy empirical studies. Second, even if empirical studies demonstrate that justified anger experiences are more common, this does not rationalize the exclusion of less common experiences in our explanatory or predictive models. The marginalization of events or experiences, even those that are extremely rare (i.e., Black Swans), can have severe consequences for the robustness, validity, and predictive power of a model (Taleb, 2010). Researchers studying anger would benefit from attempts to ensure both variants of anger are appropriately represented, theoretically and methodologically, at every stage of the research process.

Methodological Implications

The array of methods and approaches used in this research program creates an opportunity to reflect on the epistemological and practical characteristics of different methods and perspectives. In this section, I will reflect on the methodological lessons learned during this program of research and their implications for future endeavors at addressing the theoretical gaps described in the previous section.

Top-Down versus Bottom-Up Approaches

> Before we inquire into origins and functional relations, it is necessary to know the thing we are trying to explain. (Asch, 1952/1987, p. 65)

Studies 1 and 2 investigated the social dynamics of a specific anger-related appraisal (i.e., perception of harm to self vs. others) based on the theoretical literature on the justifiability and morality of anger. This "top-down" approach allowed the possibility of generating specific hypotheses to be tested based on secondary data (Study 1) and designing an experiment to investigate the effect of unidimensional anger appraisal on social perceptions (Study 2). While this approach offered valuable insights to make indirect inferences about the justifiability of a particular anger appraisal and examine the validity of the prior theoretical literature, the findings were limited to the narrow subset of anger experiences that had received previous theoretical attention.

After these two studies, the broader and perhaps more impactful question about the nature of justified and unjustified anger experiences remained largely unanswered. Consequently, the top-down approach of Studies 1 and 2 was complemented with a bottom-up approach in the subsequent two studies, where participants shared their lived experiences of justified and unjustified anger. The results of these studies presented a more extensive and heterogeneous range of appraisals associated with each anger variant. Consistent with the prior arguments in

157

favor of understanding the fundamental dynamics of phenomena through descriptive research (Cross et al., 2014a; Razavi et al., 2023; Rozin, 2001; Scheel et al., 2021), the present research demonstrates the effectiveness of a bottom-up approach as a stepping stone towards generating a comprehensive theoretical model.

Extending the Prototype Approach

The prototype approach (Niedenthal, 2008; J. A. Russell & Fehr, 1994; Shaver et al., 1987) is a highly generative methodology for examining emotion-related experiences, especially those with fuzzy boundaries. The participants are often instructed to recall an experience (e.g., "write about a time you felt lonely"). This step is followed by theory-driven questionnaires that investigate different aspects of the recalled experience and allow the researchers to test hypotheses or research questions developed based on past theories. In practice, the data generated in this second step tends to be the primary (but not exclusive) target of the analyses (e.g., Guevarra & Howell, 2015; Razavi et al., 2020, 2023). However, as shown in Study 3, it is possible to extend the scope of the insights from prototype studies with relatively small adjustments to the study design. By altering the study instructions such that participants are guided to write sufficient and relevant details about their experience, the researchers can obtain valuable data that can be analyzed inductively using a variety of natural language processing approaches.

To encourage in-depth open-ended responses, the following adjustments to the design of the common prototype studies are necessary: First, it is critical to guide participants to write in detail about the aspects of the experience that are relevant to the research question. For example, asking participants to take some time (e.g., one minute) to remember and review the incident in their mind prior to allowing them to write their open-ended narrative tends to increase the quality

and length of responses. Furthermore, giving specific instructions about which aspects of the experience to write about (e.g., who, what, where, when, and why questions) will improve the relevance of the narrative contents to the planned analyses. Second, while it is essential to ask for details, it should be noted that open-ended responses tend to increase the rate of attrition, especially if the participants are not receiving compensation. Early planning and piloting are necessary to ensure only relevant details are asked from the participants. Third, sample size planning should consider the possibility that one of the prototypes might be more difficult to remember (or more prone to causing attrition or non-compliance, e.g., Razavi et al., 2020) than others. Oversampling can sometimes help buffer against analytical challenges related to unbalanced sample sizes.

Measurement of Anger

> When individuals are studied with respect to their anger proneness, careful consideration of the contexts in which angry reactions occur are essential because, most probably, complex interactions are at hand: Some people express their anger openly (or suppress it) when provoked by some types of situations, but not when confronted with other types […]. In clinical contexts […] it is self-evident that the modification of the client's hostile behavior ideally should be directed to relevant and, for every individual client, crucial anger situations (Törestad, 1990, p. 14).

Considering the prevalence and clinical relevance of anger, there is a long history of efforts to produce measurements related to various aspects of the anger experience (Latif, 2021; Spielberger & Reheiser, 2010). Yet, there is still a need for a valid and non-propriety measure of proneness to experiencing anger. Some of the available non-propriety scales include items that are not necessarily related to anger (e.g., "I will criticize someone to their face if they deserve it," Reynolds et al., 1994), conflate anger experiences with other constructs such as aggression (e.g., Zelin et al., 1972), do not distinguish between different aspects of the anger experience, such as appraisal, expression, and regulation (e.g., Snell Jr. et al., 1995), or cover a limited range of

anger-eliciting situations or appraisals (e.g., Siegel, 1986). The present research findings offer valuable insights for future endeavors to address this gap. Most relevant, the themes extracted from the participants' narratives (Study 3) provide a comprehensive list of anger-eliciting situations and appraisals that can be a starting point for developing a scenario-based measure of proneness to anger.

A noteworthy methodological challenge may arise when using a self-report questionnaire to measure unjustified anger experiences. Recall the narrative from Study 3 where the participant described her anger in response to her grandmother's behaviors (i.e., forgetfulness and repetitive behavior) caused by dementia. The participant reported experiencing a high intensity of anger (i.e., 4 out of 5) in this situation. Consider the following item, inspired by this narrative, that aims to capture participants' tendency to experience unjustified anger:

> Imagine that your grandmother starts showing signs of dementia. She keeps forgetting things you have just told her and constantly repeats herself over and over. How angry would you feel?

For participants who have not been in such a situation before, two sources may contribute to providing a response that does not match their "actual" reaction in this situation: (a) There is, understandably, a strong social desirability concern against endorsing anger in this scenario (e.g., "what kind of person gets angry at their grandmother for having dementia?"), and (b) even if the participant is not concerned about social desirability, they may not be able to anticipate their anger intensity in this scenario with an accuracy similar to other anger-eliciting situations such as experiences of harm to self or romantic betrayal. This point is corroborated by some of the unjustified anger narratives in which participants mentioned being surprised by their anger. The inaccurate anticipation might be biased towards underestimating unjustified anger intensity (e.g., "I may get a little angry at her, but it's not going to be high-intensity anger"). The plausibility of

160

measurement error associated with the anger type offers a notable challenge for future attempts at measuring context-specific anger proneness.

Future Directions

The present research has several limitations and boundaries that should be taken into account when interpreting the findings. First, the samples in these studies consist of undergraduate university students who reside in the Pacific Northwest region of the United States. Compared to the national population, this sample is considerably younger, more homogenous in terms of education and career background, and has a higher proportion of female participants. When interpreting and generalizing the current findings, it is necessary to be mindful of these characteristics. For example, it is highly plausible that what is considered justified or unjustified anger may have both universal and culture-specific dimensions. In cultural contexts characterized by interdependent self-construal, anger is perceived as a highly undesirable emotional state, the expressions of which may lead to intense social sanctions (Boiger et al., 2014; Cheung & Park, 2010; Kirchner et al., 2018; Matsumoto et al., 2010). In contrast, cultural contexts with a societal emphasis on the concept of honor (e.g., US South, Southern Europe, or Turkey) may show a higher acceptance of anger in response to norm violations that could affect a person or their community's social standing (Mosquera et al., 2000; Uskul et al., 2014, 2019). Considering such variability in the functionality and acceptability of anger, it is likely that the boundaries between justified and unjustified anger differ across these cultures. Future research should investigate the role of cultural dimensions (such as varieties of interdependence or a societal emphasis on honor; Cross et al., 2014; Kitayama et al., 2022) in how people conceptualize and rationalize justified and unjustified anger.

Second, the retrospective design of Studies 3 and 4 means that the conceptualizations of justified and unjustified anger based on these results partially depend on participants' reflections on their experiences. These results provide a picture of the norms regarding the justifiability of anger. However, people's "real-time" evaluations of their anger as justified or unjustified remain a topic for future research. Study 3 results suggest that the interpretation of some anger experiences as unjustified is likely dependent on participants' reflections over time. Some participants described an awareness of the unjustifiability of their anger as they were experiencing it or immediately afterward. However, many referenced a change of perspective over time that let them see the triviality of the issue, take the target's perspective, and acknowledge that their anger was unjustified. This reflectiveness component was absent from the justified anger narratives, suggesting that organic changes in anger appraisals over time may be a more prominent feature of unjustified anger experiences. Building on these insights, future research using longitudinal designs can extend our understanding of the role of reflection and the passage of time in the evolution of anger appraisals. Furthermore, using methods such as ecological momentary assessment (Shiffman et al., 2008), researchers can shed light on the real-time perceptions of anger as justified versus unjustified.

Third, the present research was primarily concerned with the variability between (but not within) the two anger variants. As the thematic analysis results in Study 3 indicate, there is considerable heterogeneity in the appraisals associated with each anger variant. Building on this work, future research should address the sources and consequences of such variability within each anger variant. For example, it is plausible that there are differences between anger perceived as unjustified because it was misdirected or an emotional spillover versus anger considered unjustified because the response to the target's behavior was disproportionate. The

former does not involve any moral or normative violations, raising the possibility that the long-term consequences of these two anger types and the social judgments of the people who express them vary in meaningful ways.

Fourth, in addition to the external factors and elicitors studied in this research, individual differences and person characteristics are other likely contributors to appraising an anger episode as justified or unjustified. For example, goal obstruction emerged as a theme in both justified and unjustified anger scenarios in Study 3. Even though many instances of goal obstruction were considerably different across the two conditions, there were some examples where the experience was similar (e.g., poor grade on an exam). Still, the interpretation (i.e., blameworthiness of the teacher) differed considerably. Analogous dynamics were present in narratives about anger during intense arguments over political views. Some participants considered the target's opposing view threatening and, consequently, perceived their anger as justified. Others thought their angry reaction to the target's opposing views (regardless of the threatening nature of those views) to be a violation of the other person's right to their opinion and, therefore, unjustifiable. Future research on the individual differences in personality and attitude that can explain such variability would be highly informative for anger regulation in domains such as education, organizational behavior, and political discourse, where individuals regularly face conflicting opinions and attitudes.

Finally, the present work offers insights that can be leveraged in future interventions to reduce the negative impact of anger on relationships. Considering the differences in appraisals and rationalizations associated with each anger variant, interventions would benefit from approaches tailored to the distinct features of the specific anger type. For example, Studies 3 and 4 highlight the critical role of perceived consensus in appraising a situation as a moral violation

that justifiably deserves anger. Perceived consensus is subjective, not consistently accurate, and likely influenced by the boundaries and homogeneity of an individual's social network (Atari et al., 2022). Furthermore, for certain violations such as betrayal or unfair treatment, people seek information to validate their intuitions about the immorality of others' behaviors. The viral online resources such as the "Am I The Asshole (AITA)" forum on Reddit primarily serve such a function. Leveraging norm-based interventions (Bursztyn et al., 2020; Tankard & Paluck, 2016), where the participants are offered alternative belief structures contrary to their perceived consensus, would be a promising avenue for helping individuals cognitively reappraise their justified anger. Such an approach, however, might be less relevant to unjustified anger experiences. Study 3 results point to the role of personal reflections in appraising anger as unjustified and attempting to repair its consequences. Creating mechanisms and opportunities for introspection (Hannah & Carpenter-Song, 2013; Hixon & Swann, 1993) can be an effective strategy for reducing the negative impact of unjustified anger experiences.

Instructions: In the following section, you will read 8 scenarios. In each of these scenarios, someone is committing a norm violation that may lead to harming or hurting you or someone else (or both). For each scenario, please indicate to what extent you think you or someone else is the **primary** person who is being harmed or hurt. When we talk about harm or hurt, it can be both physical (e.g., losing something valuable) or non-physical (e.g., being insulted).

After the instructions, participants were randomly assigned to either Version A or B (see below). For each scenario, participants rated these three statements:

a) I am the primary person who is hurt in this situation.

Strongly disagree			Neutral			Strongly agree
1	2	3	4	5	6	7

b) Someone else (other than me) is the primary person who is hurt in this situation.

Strongly disagree			Neutral			Strongly agree
1	2	3	4	5	6	7

c) No one is hurt in this situation.

Strongly disagree			Neutral			Strongly agree
1	2	3	4	5	6	7

Version A [half of participants read these scenarios]

1. You saved money to buy a gift for your partner. You finally buy the gift, and right before you give it to your partner, you decide to test it. You then realize that the salesperson sold you a fake product.

2. You are working on an important project that needs to be completed soon. Despite your requests not to be interrupted, your partner continually distracts you, which interrupts your work.

3. You come back from a long day at work and notice that the house is a mess. Your roommate is your close friend, and it was his/her turn to clean up, but they didn't.

4. You bring one of your friends to the emergency room due to abdominal pain. Your partner is accompanying you. Despite waiting in the triage for a long time, none of the medical staff attends to you or your friend.

5. You have been in a committed relationship for a year. You learn that your partner has become romantically involved with another person.

6. One of your classmates (whom you rarely interact with) borrows a book from you. When they return the book to you, you notice that it is in bad condition. There are coffee stains on some pages, and some serious wear and tear on the cover.

7. You are waiting in a long line at the grocery store, and you are in a hurry to join your friends who are waiting for you. Suddenly, someone decides to cut in line to get ahead.

8. You hear about a recent incident where one of your casual acquaintances was rude to your parents.

Version B [half of participants read these scenarios]

1. You saved money to buy a gift for your partner. You finally buy the gift, and right before you give it to your partner, you decide to test it. You the realize that the salesperson sold you a fake product.

2. You are working on an important project that needs to be completed soon. Despite your requests not to be interrupted, a classmate (who you rarely interact with) continually distracts you, which interrupts your work.

3. You come back from a long day at work and notice that the house is a mess. You recently got a new roommate, who is staying with you for a short time. It was his/her turn to clean up, but he/she didn't.

4. You bring one of your friends to the emergency room due to abdominal pain. One of your colleagues (who you rarely interact with) is accompanying you. Despite waiting in the triage for a long time, none of the medical staff attends to you or your friend.

5. You have been in a committed relationship for a year. You learn that your partner has become romantically involved with another person.

6. Your close friend borrows a book from you. When they return the book to you, you notice that it is in bad condition. There are coffee stains on some pages, and some serious wear and tear on the cover.

7. You are waiting in a long line at the grocery store with your partner, and you are in a hurry to join your friends who are waiting for you. Suddenly, someone decides to cut in line and get ahead.

8. You hear about a recent incident where your partner was rude to your parents.

Note: Scenarios 1 and 5 (in italics) were the same in both versions. The rest of the scenarios varied in terms of the person involved in the norm violation.

Figure A.1

Distribution of Participants' Self-Reported Anger Experience
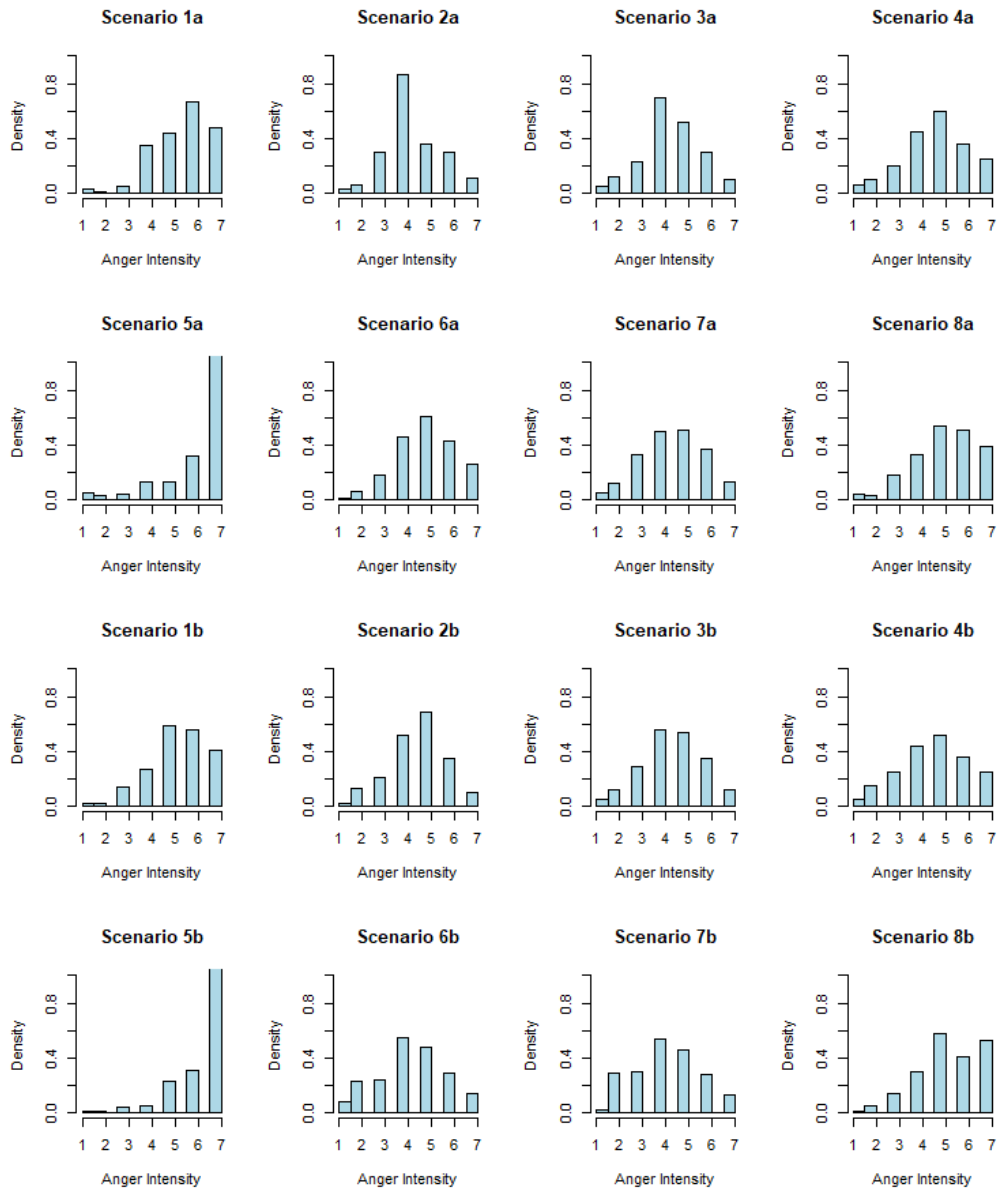
Note. Distribution of participants' self-report of how angry they would feel in each situation (1 = *not at all*, 4 = *to some extent*, 7 = *a lot*), based on a pilot study of the scenarios ($n_{v. A}$ = 169, $n_{v. B}$ = 175).

APPENDIX B: ANGER SCENARIOS

Instructions: When an event causes us to experience a certain emotion, sometimes the intensity of our feelings and the intensity of our expression is the same. However, this might not always be the case. For example, we might want to hide our emotions and not express them as much as we are feeling them. Or, depending on the situation, we might want to amplify our feelings and express them with greater intensity than what we are actually experiencing.

In this questionnaire, you will be asked to **imagine yourself in different scenarios**. For each scenario, you will be asked to report the intensity of a certain emotion you experience, and how much of that emotion you express to others. **It is important that your responses reflect how you think you would actually react in each situation**—there are no right or wrong answers.

Note 1: Emotional expressions can manifest in different ways, including displaying how one is feeling through words, facial expressions, non-verbal behaviors, and tone of voice.

Note 2: In these scenarios, "partner" refers to your romantic partner, including boyfriend/girlfriend or spouse. "Casual acquaintance" refers to a person you know, but you are not close to, and your relationship with them might be short-term, such as a classmate or a colleague who you rarely interact with or a roommate who is only staying with you for a short period of time.

Not at all			*To some extent*			*A lot*
1	2	3	4	5	6	7

Version A

1. You are working on an important project that needs to be completed soon. Despite your requests not to be interrupted, your partner continually distracts you, which interrupts your work.

- How angry do you feel?
- How much anger do you express to your partner?

2. You come back from a long day at work and notice that the house is a mess. Your roommate is your close friend, and it was his/her turn to clean up, but they didn't.

- How angry do you feel?
- You decide to talk to your roommate (who is also your close friend) about it. How much anger do you express to him/her?

3. You bring one of your friends to the emergency room due to abdominal pain. Your partner is accompanying you. Despite waiting in the triage for a long time, none of the medical staff attends to you or your friend.

- How angry do you feel?
- How much anger do you show to your partner?

4. You have been in a committed relationship for a year. You learn that your partner has become romantically involved with another person.

- How angry do you feel?
- Directly after this discovery, you are talking to a casual acquaintance who you just met at a party and the conversation leads to this experience. As you are talking about this betrayal, how much anger do you express?

5. One of your classmates (whom you rarely interact with) borrows a book from you. When they return the book to you, you notice that it is in bad condition. There are coffee stains on some pages, and some serious wear and tear on the cover.

- How angry do you feel?
- You decide to talk to your classmate about it. How much anger do you express to him/her?

6. You hear about a recent incident where one of your casual acquaintances was rude to your parents.

- How angry do you feel?
- You decide to talk to this acquaintance about the situation. How much anger do you express to him/her?

Version B

1. You are working on an important project that needs to be completed soon. Despite your requests not to be interrupted, a classmate (who you rarely interact with) continually distracts you, which interrupts your work.

- How angry do you feel?
- How much anger do you express to your classmate?

2. You come back from a long day at work and notice that the house is a mess. You recently got a new roommate, who is staying with you for a short time. It was his/her turn to clean up, but he/she didn't.

- How angry do you feel?
- You decide to talk to your roommate about it. How much anger do you express to him/her?

3. You bring one of your friends to the emergency room due to abdominal pain. One of your colleagues (who you rarely interact with) is accompanying you. Despite waiting in the triage for a long time, none of the medical staff attends to you or your friend.

- How angry do you feel?
- How much anger do you show to your colleague?

4. You have been in a committed relationship for a year. You learn that your partner has become romantically involved with another person.

- How angry do you feel?

- Directly after this discovery, you are talking to your close friend at a party and the conversation leads to this experience. As you are talking about this betrayal, how much anger do you express?

5. Your close friend borrows a book from you. When they return the book to you, you notice that it is in bad condition. There are coffee stains on some pages, and some serious wear and tear on the cover.

- How angry do you feel?
- You decide to talk to your close friend about it. How much anger do you express to him/her?

6. You hear about a recent incident where your partner was rude to your parents.

- How angry do you feel?
- You decide to talk to your partner about the situation. How much anger do you express to him/her?

APPENDIX C: MATERIALS FOR STUDY 2

[Note: This study had four conditions (A, B, C, D). Participants were randomly assigned to one of these conditions. The difference between the conditions was in the scenarios—the person being harmed (protagonist or other), the gender of the protagonist (male or female) and the emotional reaction (expression or no expression of anger) was manipulated across conditions. The rest was the same across conditions.]

Instructions: Research shows that we can make quick judgements about people's character even based on limited information. In this study, you will read about four people who are around your age: Emily, Scott, Sarah, and Jon. For each person, you will be given a brief story about a recent interaction they had. You will be asked to judge each person's character based on what you read about them. *Some of the stories about these people may seem similar, but they are not. All stories are unique in important ways; so please make sure to read each story carefully.*

Condition A:

Please read this story about Scott:

Scott has been in a committed relationship for a year. He learns that his partner has become romantically involved with another person. He calls his partner to talk about it. During the conversation, he expresses his anger towards her.

Please read this story about Emily:

In a recent incident, one of Emily's casual acquaintances was rude to her. Emily decides to talk to this acquaintance about the incident. During the conversation, she does not express her anger towards the acquaintance.

Please read this story about Sarah:

Sarah's friend has been in a committed relationship for a year. Sarah learns that her friend's partner has become romantically involved with another person. Sarah calls her friend's partner to talk about it. During the conversation, she expresses her anger towards him.

Please read this story about Jon:

Jon hears about a recent incident where one of his casual acquaintances was rude to his parents. Jon decides to talk to this acquaintance about the incident. During the conversation, he does not express his anger towards the acquaintance.

Condition B:

Please read this story about Scott:

Scott has been in a committed relationship for a year. He learns that his partner has become romantically involved with another person. He calls his partner to talk about it. During the conversation, he does not express his anger towards her.

Please read this story about Emily:

In a recent incident, one of Emily's casual acquaintances was rude to her. Emily decides to talk to this acquaintance about the incident. During the conversation, she expresses her anger towards the acquaintance.

Please read this story about Sarah:

Sarah's friend has been in a committed relationship for a year. Sarah learns that her friend's partner has become romantically involved with another person. Sarah calls her friend's partner to talk about it. During the conversation, she does not express her anger towards him.

Please read this story about Jon:

Jon hears about a recent incident where one of his casual acquaintances was rude to his parents. Jon decides to talk to this acquaintance about the incident. During the conversation, he expresses his anger towards the acquaintance.

Condition C:

Please read this story about Emily:

Emily has been in a committed relationship for a year. She learns that her partner has become romantically involved with another person. She calls her partner to talk about it. During the conversation, she expresses her anger towards him.

Please read this story about Scott:

In a recent incident, one of Scott's casual acquaintances was rude to him. Scott decides to talk to this acquaintance about the incident. During the conversation, he does not express his anger towards the acquaintance.

Please read this story about Jon:

Jon's friend has been in a committed relationship for a year. Jon learns that his friend's partner has become romantically involved with another person. Jon calls his friend's partner to talk about it. During the conversation, he expresses his anger towards her.

Please read this story about Sarah:

Sarah hears about a recent incident where one of her casual acquaintances was rude to her parents. Sarah decides to talk to this acquaintance about the incident. During the conversation, she does not express her anger towards the acquaintance.

Condition D:

Please read this story about Emily:

Emily has been in a committed relationship for a year. She learns that her partner has become romantically involved with another person. She calls her partner to talk about it. During the conversation, she does not express her anger towards him.

Please read this story about Scott:

In a recent incident, one of Scott's casual acquaintances was rude to him. Scott decides to talk to this acquaintance about the incident. During the conversation, he expresses his anger towards the acquaintance.

Please read this story about Jon:

Jon's friend has been in a committed relationship for a year. Jon learns that his friend's partner has become romantically involved with another person. Jon calls his friend's partner to talk about it. During the conversation, he does not express his anger towards her.

Please read this story about Sarah:

Sarah hears about a recent incident where one of her casual acquaintances was rude to her parents. Sarah decides to talk to this acquaintance about the incident. During the conversation, she expresses her anger towards the acquaintance.

After reading each scenario, participants completed this questionnaire about the protagonist.

Based on what you read about {protagonist's name}, please evaluate {his/her} character using the questionnaire below.

Strongly disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Strongly agree
1	2	3	4	5

I believe {protagonist's name} is someone who ….

1. Is capable of leadership.
2. Is brave.
3. Is persistent and steadfast.
4. Is wise.
5. Has self-control.
6. Is intellectual.
7. Acts calculated.
8. Is stubborn.

9. Holds grudges.
10. Is pessimistic and suspicious.
11. Is dogmatic.
12. Is indifferent.
13. Values relationships.
14. Is loyal and truehearted.
15. Is grateful.
16. Is virtuous.
17. Is religious.
18. Is modest.
19. Is noble.
20. Is honorable.
21. Is respected in the community.
22. Fits into customs and traditions of the society.
23. Is admired by people who know them.
24. Is a hypocrite.
25. Is honest.
26. Keeps promises.
27. Does not compromise their principles.
28. Has high self-esteem.
29. Does not allow others to oppress him/her.
30. Is helpful to other people.
31. Is willing to sacrifice for the greater good.
32. Gets involved with community work.

APPENDIX D: INSTRUCTIONS FOR PARTICIPANTS' NARRATIVES

Participants were randomly assigned to one of these two conditions:

Condition 1: Justified Anger

Please spend one minute thinking about a time you experienced anger. Importantly, we are interested in **a time when you felt angry, and you believe that your anger *was* justified; meaning that you were *right* to feel angry.**

Think about this experience for at least one minute, and try to recall as many details of the incident as possible. After one minute, you can move forward to the next page where you will be asked to write about your experience.

<div align="center">

[one minute pause; then the >> button appeared.]

</div>

In the space below, please write about a time when **(a) you experienced anger and (b) you believe that your anger was justified**—meaning that you believe that you were right to feel angry.

Please provide as many details as possible about the situation, your feelings, and your reactions. For example, who made you angry? What about the situation caused your anger? How did you react in that situation?

<div align="center">

[A large open-ended text box was provided here.]

</div>

Condition 2: Unjustified Anger

Please spend one minute thinking about a time you experienced anger. Importantly, we are interested in **a time when you felt angry, and you believe that your anger *was not* justified; meaning that you were *wrong* to feel angry.**

Think about this experience for at least one minute, and try to recall as many details of the incident as possible. After one minute, you can move forward to the next page where you will be asked to write about your experience.

<div align="center">

[one minute pause; then the >> button appeared.]

</div>

In the space below, please write about a time when **(a) you experienced anger and (b) you believe that your anger was not justified**—meaning that you believe that you were wrong to feel angry.

Please provide as many details as possible about the situation, your feelings, and your reactions. For example, who made you angry? What about the situation caused your anger? How did you react in that situation?

<div align="center">

[A large open-ended text box was provided here.]

</div>

APPENDIX E: RESEARCH ASSISTANTS' CODE SHEET

Table E.1

Descriptions of the Columns in Research Assistants' Code Sheets (Study 3)

Column name	Description	Response type
Relevance	Is the participant's response relevant to the prompt?	Y or N
Cause of anger	What caused the person's anger?	Brief themes (e.g., betrayal, annoyance/frustration)
Mention of justification	Does the participant mention anything about why they thought their anger was/wasn't justified?	Y or N
Reason for (un)justification	If the answer to previous question is Y, what is the theme in participant's reasoning?	Brief theme(s) summarizing why the participant thought the anger was/wasn't justified (e.g., target of anger didn't have a choice)
Other notes	In this column you can write any notes or reflections about the narrative that you think is important to share with me.	Open-ended text

APPENDIX F: MATERIALS FOR STUDY 4

After providing consent, participants received instructions to write about a time they experienced anger. See Appendix D for the details.

[>>>Next page >>>]

Instructions: Please think about the incident you just described and respond to the following questions about this incident.

How easy was it for you to remember this incident? (1: Very difficult – 5: Very easy)

How long ago did this incident happen?

```
┌─────────────────────────────┐
│                             │
│                             │
└─────────────────────────────┘
```

How angry did you feel during this incident? (1: not at all angry – 5: extremely angry)

How much anger did you express during this incident? (1: none – 5: a lot)

Which option describes your behavioral reaction to this incident:

- I completely concealed my anger.
- I partially concealed my anger.
- I fully expressed my anger as I felt it.
- I exaggerated my anger and expressed it more than I felt it.

During this experience, who made you angry?

> [Answer options were provided via a drop-down list with the following choices: My romantic partner; My parent(s); My sibling(s); My child; A close friend; A coworker; A classmate; An acquaintance; My teacher; My boss; A stranger; A public figure (such as a politician or celebrity); A corporation; company, or organization; Other.]

[>>>Next page >>>]

Now think about the experience you described earlier and recall the different emotions you felt during the incident. How intensely did you experience each emotion?

(Response options: 1: *Not at all* – 5: *Extremely*)

I felt…

1. embarrassed
2. surprised
3. relaxed
4. disgusted with myself
5. sad
6. afraid

7. happy
8. lonely
9. shy
10. guilty
11. proud
12. lively
13. angry at myself
14. enthusiastic
15. disgusted
16. alert
17. daring
18. strong
19. depressed
20. irritable
21. upset
22. anxious
23. excited
24. hostile
25. loathing (hateful)
26. ashamed
27. frustrated

[>>>Next page >>>]

All the questions in this section are about <u>the person or object that made you angry</u>.

Before this incident, how close did you feel towards the person or object that made you angry? (1: Not at all close; 5: Very close)

Immediately after this incident, how close did you feel towards the person or object that made you angry? (1: Not at all close; 5: Very close)

Right now, how close do you feel towards the person or object that made you angry? (1: Not at all close; 5: Very close)

To what extent did this incident influence your evaluations of the person who made you angry? (1: Not at all – 5: A lot)

We want to know more about your evaluations of the person who made you angry. Using the list below, please indicate your overall impressions of this person.

I see this person as someone who is…

Response scale: (1 = Not at all, 3 = Moderately, 5 = Extremely)

1. humble
2. kind
3. forgiving
4. giving
5. helpful
6. grateful
7. empathetic
8. cooperative
9. courageous
10. fair
11. principled
12. responsible
13. just
14. honest
15. trustworthy
16. loyal
17. warm
18. sociable
19. happy
20. agreeable
21. enthusiastic
22. easy-going
23. funny
24. playful
25. athletic
26. musical
27. creative
28. innovative
29. intelligent
30. organized
31. logical
32. clever

I see this person as someone who…

1. is concerned about doing the right thing.

2. is faithful.
3. has clear values.
4. is law-abiding.
5. has strong beliefs.
6. is able to distinguish right and wrong.
7. has a highly developed conscience.
8. is ethical.

[>>>Next page >>>]

All the questions in this section are about the <u>behavior</u> of the person or object that made you angry.

- To what extent did this person's behavior <u>harm you</u>? (1: Not at all; 5: A lot)

- To what extent did this person's behavior <u>harm others</u>? (1: Not at all; 5: A lot)

- To what extent was this person's behavior <u>justified</u>? (1: Not at all justified; 5: Completely justified)

- To what extent was this person's behavior <u>a threat to you</u>? (1: Not at all; 5: A lot)

- To what extent was this person's behavior a <u>threat to others</u>? (1: Not at all; 5: A lot)

- To what extent was this person's behavior <u>fair</u>? (1: Not at all fair; 5: Completely fair)

- In your opinion, was the cause of this person's behavior due to something about him/her or due to something about other people or circumstances? (1 = Totally due to other people or circumstances; 5 = Totally due to this person)

- In the future, if a similar incident happens again, do you think this person will behave the same way? (1 = Will never behave the same way; 5 = Will certainly behave the same way.)

- How much do you think this person regrets his or her behavior during this incident? (1: Not at all – 5: Very much)

- Given the opportunity, how likely is it that this person apologizes for his or her behavior during this incident? (1: Very unlikely – 5: Very likely)

- In our society, how acceptable is this person's behavior during the incident? (1: Completely unacceptable – 5: Completely acceptable)

- In our society, how common is it for an average person to act the way this person acted? (1: Not at all common – 5: Extremely common)

APPENDIX G: MEANING EXTRACTION METHOD

Meaning Extraction Method (MEM; Chung & Pennebaker, 2008; Markowitz, 2021) is a bottom-up approach to discovering the "themes" or "topics" in text. The MEM process involves creating a document-term matrix based on the corpus and conducting PCA on this matrix (e.g., Entwistle et al., 2021; Fitzpatrick & Armstrong, 2010). I conducted MEM on participants' justified and unjustified anger narratives as a secondary approach (the primary being the STM) to explore the differences and similarities in themes emerging from these two categories, using an analytic process similar to that described by Chung and Pennebaker (2008) and Markowitz (2021).

To extract and compare the dimensions for each type of anger, I conducted MEM on each condition separately. For each dataset, I created a document-term-matrix using LIWC-22. Prior to the analyses, standard preprocessing steps, as described by Markowitz (2021), were applied to the data. Namely, all narratives that contained at least ten words were included. Before the analyses, stop-words were removed, and the text was lemmatized (e.g., "dunno" was replaced by "do not know"). LIWC produced a document-term-matrix for each condition, representing the narratives (rows) and words (columns). Each cell in the matrix records the presence (coded as one) or absence (coded as zero) of the corresponding word (column) in the corresponding narrative (row). Since very high and very low-frequency words tend to negatively affect the interpretability of PCA results, I limited the analyses to the words present in at least five and at most 30 percent of the narratives. This excluded very common words such as "angry" and "time" as well as very rare words such as "ready" or "return."

The final document-term-matrix for the justified anger condition consisted of 104 words, with high-frequency words such as "justify" (which appeared in 29.77% of the narratives),

"situation" (25.75%), and "day" (22.41%), and low-frequency words such as "text," "problem,"

and "couple" (all appeared in 5.02% of the narratives). The document-term-matrix for the

unjustified anger narratives contained 81 words, with high-frequency words such as "justify"

(29.84%), "mad" (25.86%), and "upset" (24.59%), and low-frequency words such as "car,"

"class," and "phone" (all 5.06%). See Figure G.1 for a visual demonstration.

Figure G.1

Words Included in the Document-Word-Matrix for Each Anger Condition

Note. These words appear in at least five and at most 30 percent of the documents for each condition. The figures in the top panel represent higher-frequency words (appearing in at least 8.08% of the corresponding condition's narratives), and the lower panel represents lower-frequency words (appearing in less than 8.08% of the narratives).

Themes Extracted from The Justified Anger Narratives

I conducted PCA (with varimax rotation) on each document-term-matrix to reduce the number of dimensions. The scree plot for the justified anger narratives (Figure G.2) suggested the presence of five topics. The evaluation of the top-loading words in each topic indicated that participants in the justified anger condition wrote about the following five themes (Figure G.3): (a) romantic relationships (with high-loading words such as "relationship, trust, together, break, boyfriend"); (b) the context (e. g., location and time) where the anger experience happened (with high loading words such as "hour, night, late, phone, text, work"); (c) conflicts with family members (with high loading words such as "mom, family, brother, dad, yell"); (d) school-related experiences (with high loading words such as "school, high, class, start, group"); and (e) emotional and communicative aspects of the event (with high loading words such as "feeling, talk, hurt, happen, hear, people"). See Figure G.3 for a visual summary of the themes.

Figure G.2

Scree Plot Based on the Document-Word-Matrix of the Justified Anger Narratives

Figure G.3

Five Themes Emerged from the Justified Anger Narratives.

Note. Highest loading (≥ .25) words for each topic/theme based on the PCA of the document-work-matrix are presented in these word clouds. The word sizes are proportionate to the loadings.

Themes Extracted from The Unjustified Anger Narratives

Based on the scree plot for the unjustified anger narratives (Figure G.4), I evaluated multiple structures (i.e., from four to 11 components). The 9-component model produced themes that were most interpretable, granular, and non-redundant. The examination of the highest loading words for each component indicated that participants in the unjustified anger condition wrote about the following nine themes (Figure G.5): (1) school related experiences (with high loading words such as "school, high, year"); (2) games (with high loading words such as "play,

game, stop"); (3) conflicts experienced while commuting (with high loading words such as "car, happen, yell, drive"); (4) conflicts with roommates (with high loading words such as "roommate, room, together, class, live"); (5) family (with high loading words such as "family, dad, parent"); (6) communication/interaction (with high loading words such as "phone, hang, relationship, place, spend"); (7) emotional aspects of the event (with high loading words such as "feeling, experience, hurt, wrong"); (8) conflicts involving a partner (with high loading words such as "late, boyfriend, day, end, upset"); and (9) cognitive evaluation of the event (with high loading words such as "realize, fact, frustrate, reason").

Figure G.4

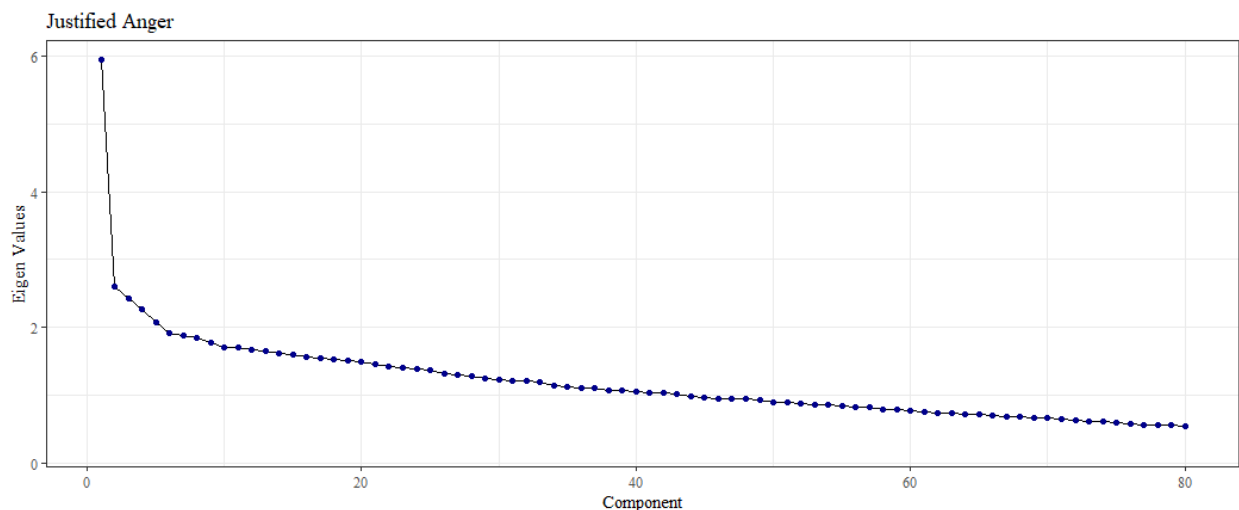*Scree Plot Based on the Document-Word-Matrix of the Unjustified Anger Narratives*
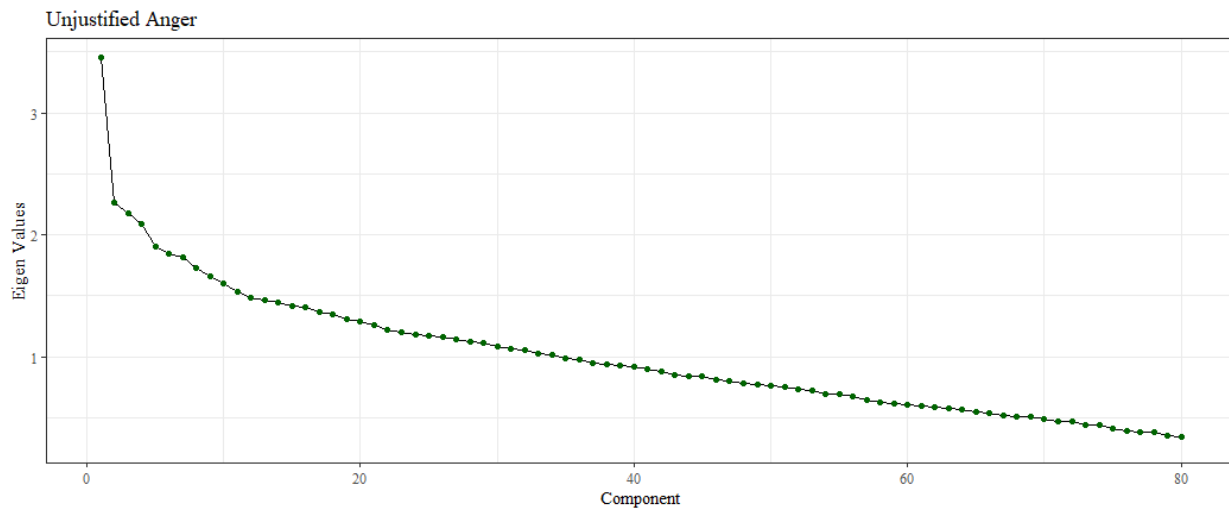
Figure G.5

Seven Themes Emerged from the Unjustified Anger Narratives.

Note. Highest loading (≥ .25) words for each topic/theme based on the PCA of the document-work-matrix are presented in these word clouds. The word sizes are proportionate to the loadings.

Similarities and Differences

The MEM results point to both similarities and differences between the two types of narratives. In both conditions, similar themes related to school experiences and conflicts with family were present, reflecting the fact that many anger-eliciting conflicts experienced by this sample involve family members or happen in the context of school. Furthermore, unsurprisingly, a common theme in both conditions was the description of negative emotional experiences.

An important distinction between the two conditions was in the themes involving romantic relationships. In the justified anger narratives, this theme was relatively prominent and contained words that clearly pointed to experiences such as romantic break-ups or betrayals (e.g., "relationship, trust, together, break, boyfriend"); these aspects were not present in the unjustified anger themes about relationships (e.g., see themes 6 and 8 in Figure G.5).

Furthermore, four topics emerged from the unjustified narratives without any equivalents among the justified anger themes. These involved conflicts related to games, commuting, roommates, and cognitive evaluations of the anger-eliciting event. In conjunction with the results from the qualitative and STM analyses, the emergence of these themes in the unjustified (but not the justified) anger narratives can be an indication that the anger experienced in response to events during a game (e.g., frustration over losing), commute (e.g., road rage), or interaction with a roommate (e.g., annoyance) were more commonly discussed in the unjustified anger narratives. Moreover, participants who described their unjustified anger engaged in more cognitive reasoning in their writing (as reflected by the theme containing "realize, fact, frustrate, reason") than participants who described justified anger.

Table H.1

Predicting the Intensity of Anger based on the Perception of Harm /Threat and other Incremental Predictors

Model	Predictor	b	b 95% CI [LL, UL]	beta	beta 95% CI [LL, UL]	r	Fit	Difference
Harm	(Intercept)	3.24**	[3.14, 3.35]					
	Harm (self)	0.25**	[0.20, 0.30]	0.33	[0.27, 0.39]	.41**		
	Harm (other)	0.12**	[0.07, 0.17]	0.15	[0.09, 0.21]	.32**		
							R^2 = .182** 95% CI[.14,.22]	
Harm + Fairness	(Intercept)	3.60**	[3.43, 3.76]					
	Harm (self)	0.23**	[0.18, 0.27]	0.30	[0.23, 0.36]	.41**		
	Harm (other)	0.09**	[0.04, 0.14]	0.11	[0.04, 0.17]	.32**		
	Fairness	-0.10**	[-0.14, -0.06]	-0.15	[-0.21, -0.10]	-.30**		
							R^2 = .201** 95% CI[.16,.24]	ΔR^2 = .019** 95% CI[.00, .03]
Harm + Apologetic	(Intercept)	3.16**	[3.03, 3.29]					
	Harm (self)	0.25**	[0.20, 0.30]	0.33	[0.26, 0.39]	.41**		
	Harm (other)	0.12**	[0.07, 0.17]	0.15	[0.09, 0.22]	.32**		
	Apology	0.03	[-0.00, 0.06]	0.05	[-0.00, 0.10]	.02		
							R^2 = .184** 95% CI[.14,.22]	ΔR^2 = .003 95% CI[-.00, .01]
Harm + Cause	(Intercept)	3.19**	[3.05, 3.32]					
	Harm (self)	0.25**	[0.20, 0.30]	0.32	[0.26, 0.39]	.41**		
	Harm (other)	0.11**	[0.07, 0.16]	0.14	[0.08, 0.21]	.32**		
	Cause	0.02	[-0.01, 0.06]	0.03	[-0.02, 0.09]	.13**		
							R^2 = .183** 95% CI[.14,.22]	ΔR^2 = .001 95% CI[-.00, .00]

Table H.1 (continued)

Model	Predictor	b	b 95% CI [LL, UL]	beta	beta 95% CI [LL, UL]	r	Fit	Difference
Harm + Injunctive	(Intercept)	3.09**	[2.97, 3.22]					
	Harm (self)	0.23**	[0.19, 0.28]	0.30	[0.24, 0.37]	.41**		
	Harm (other)	0.10**	[0.05, 0.15]	0.12	[0.06, 0.18]	.32**		
	Injunctive	0.08**	[0.04, 0.12]	0.11	[0.06, 0.17]	.26**		
							$R^2 = .193**$ 95% CI[.15,.23]	$\Delta R^2 = .011**$ 95% CI[.00, .02]
Harm + Descriptive	(Intercept)	3.24**	[3.11, 3.38]					
	Harm (self)	0.25**	[0.20, 0.30]	0.33	[0.27, 0.39]	.41**		
	Harm (other)	0.12**	[0.07, 0.17]	0.15	[0.08, 0.21]	.32**		
	Descriptive	-0.00	[-0.04, 0.04]	-0.00	[-0.06, 0.05]	.11**		
							$R^2 = .182**$ 95% CI[.14,.22]	$\Delta R^2 = .000$ 95% CI[-.00, .00]
Harm + Closeness	(Intercept)	3.19**	[3.03, 3.36]					
	Harm (self)	0.25**	[0.20, 0.30]	0.33	[0.26, 0.39]	.41**		
	Harm (other)	0.12**	[0.07, 0.17]	0.15	[0.09, 0.22]	.32**		
	Closeness	0.01	[-0.02, 0.05]	0.02	[-0.03, 0.07]	-.02		
							$R^2 = .182**$ 95% CI[.14,.22]	$\Delta R^2 = .000$ 95% CI[-.00, .00]
Harm + Regret	(Intercept)	3.14**	[3.01, 3.26]					
	Harm (self)	0.25**	[0.20, 0.29]	0.32	[0.26, 0.38]	.41**		
	Harm (other)	0.12**	[0.07, 0.17]	0.15	[0.09, 0.21]	.32**		
	Regret	0.05*	[0.02, 0.09]	0.08	[0.03, 0.13]	.12**		
							$R^2 = .188**$ 95% CI[.15,.23]	$\Delta R^2 = .006*$ 95% CI[.00, .01]
Harm + Stable	(Intercept)	3.27**	[3.11, 3.43]					
	Harm (self)	0.25**	[0.20, 0.30]	0.33	[0.27, 0.39]	.41**		

Table H.1 (continued)

Model	Predictor	b	b 95% CI [LL, UL]	beta	beta 95% CI [LL, UL]	r	Fit	Difference
	Harm (other)	0.12**	[0.07, 0.17]	0.15	[0.09, 0.21]	.32**		
	Stable	-0.01	[-0.05, 0.03]	-0.01	[-0.07, 0.04]	.05		
							R^2 = .182**	ΔR^2 = .000
							95% CI[.14,.22]	95% CI[-.00, .00]

Note. b represents unstandardized regression weights. *beta* indicates the standardized regression weights. *r* represents the zero-order correlation. *LL* and *UL* indicate the lower and upper limits of a confidence interval, respectively.
* indicates $p = .004$. ** indicates $p < .001$.

Table H.2

Predicting the Intensity of Anger based on the Perception of Harm /Threat and other Incremental Predictors with Anger Types as the Moderator

Model	Predictors	b	b 95% CI [LL, UL]	Fit	Difference
Harm x Anger Type	(Intercept)	3.48**	[3.32, 3.64]		
	Harm (self)	0.22**	[0.16, 0.28]		
	Anger Type	-0.26*	[-0.48, -0.04]		
	Harm (other)	0.09**	[0.04, 0.15]		
	Harm (self) x Anger Type	-0.01	[-0.11, 0.10]		
	Harm (other) x Anger Type	-0.01	[-0.13, 0.10]		
				$R^2 = .205**$ 95% CI[.16,.24]	
+ Fairness x Anger Type	(Intercept)	3.74**	[3.52, 3.97]		
	Harm (self)	0.22**	[0.16, 0.28]		
	Anger Type	-0.40*	[-0.75, -0.04]		
	Harm (other)	0.08*	[0.02, 0.13]		
	Fairness	-0.13**	[-0.21, -0.05]		
	Harm (self) x Anger Type	-0.00	[-0.11, 0.10]		
	Harm (other) x Anger Type	-0.01	[-0.13, 0.11]		
	Fairness x Anger Type	0.10*	[0.00, 0.20]		
				$R^2 = .212**$ 95% CI[.17,.25]	$\Delta R^2 = .008**$ 95% CI[-.00, .02]
+ Apology x Anger Type	(Intercept)	3.46**	[3.26, 3.66]		
	Harm (self)	0.22**	[0.16, 0.28]		
	Anger Type	-0.37*	[-0.65, -0.10]		
	Harm (other)	0.09**	[0.04, 0.15]		
	Apology	0.01	[-0.04, 0.05]		
	Harm (self) x Anger Type	-0.01	[-0.11, 0.09]		
	Harm (other) x Anger Type	-0.01	[-0.13, 0.11]		
	Apology x Anger Type	0.05	[-0.02, 0.11]		
				$R^2 = .208**$	$\Delta R^2 = .004$

Table H.2 (continued)

Model	Predictors	b	b 95% CI [LL, UL]	Fit	Difference
				95% CI[.16,.24]	95% CI[-.00, .01]
+ Cause x Anger Type	(Intercept)	3.49**	[3.26, 3.71]		
	Harm (self)	0.22**	[0.16, 0.28]		
	Anger Type	-0.26	[-0.56, 0.03]		
	Harm (other)	0.09**	[0.04, 0.15]		
	Cause	-0.00	[-0.05, 0.05]		
	Harm (self) x Anger Type	-0.01	[-0.11, 0.10]		
	Harm (other) x Anger Type	-0.01	[-0.13, 0.10]		
	Cause x Anger Type	0.00	[-0.07, 0.07]		
				$R^2 = .205^{**}$	$\Delta R^2 = .000$
				95% CI[.16,.24]	95% CI[-.00, .00]
+ Injunctive x Anger Type	(Intercept)	3.33**	[3.10, 3.55]		
	Harm (self)	0.22**	[0.16, 0.28]		
	Anger Type	-0.16	[-0.45, 0.13]		
	Harm (other)	0.08**	[0.03, 0.14]		
	Injunctive	0.05	[-0.00, 0.11]		
	Harm (self) x Anger Type	-0.00	[-0.11, 0.10]		
	Harm (other) x Anger Type	-0.02	[-0.14, 0.10]		
	Injunctive x Anger Type	-0.02	[-0.10, 0.06]		
				$R^2 = .208^{**}$	$\Delta R^2 = .003$
				95% CI[.16,.24]	95% CI[-.00, .01]
+ Descriptive x Anger Type	(Intercept)	3.52**	[3.30, 3.73]		
	Harm (self)	0.22**	[0.16, 0.28]		
	Anger Type	-0.23	[-0.51, 0.05]		
	Harm (other)	0.09**	[0.04, 0.15]		
	Descriptive	-0.01	[-0.07, 0.04]		
	Harm (self) x Anger Type	0.00	[-0.10, 0.10]		
	Harm (other) x Anger Type	-0.01	[-0.13, 0.11]		
	Descriptive x Anger Type	-0.03	[-0.11, 0.06]		
				$R^2 = .206^{**}$	$\Delta R^2 = .001$
				95% CI[.16,.24]	95% CI[-.00, .00]

Table H.2 (continued)

Model	Predictors	b	b 95% CI [LL, UL]	Fit	Difference
+ Closeness x Anger Type	(Intercept)	3.47**	[3.25, 3.69]		
	Harm (self)	0.22**	[0.16, 0.28]		
	Anger Type	-0.45*	[-0.79, -0.10]		
	Harm (other)	0.09**	[0.04, 0.15]		
	Closeness	0.00	[-0.04, 0.05]		
	Harm (self) x Anger Type	-0.01	[-0.11, 0.09]		
	Harm (other) x Anger Type	0.00	[-0.12, 0.12]		
	Closeness x Anger Type	0.04	[-0.02, 0.11]		
				$R^2 = .207**$ 95% CI[.16,.24]	$\Delta R^2 = .002$ 95% CI[-.00, .01]
+ Regret x Anger Type	(Intercept)	3.42**	[3.23, 3.61]		
	Harm (self)	0.22**	[0.16, 0.28]		
	Anger Type	-0.33*	[-0.59, -0.06]		
	Harm (other)	0.09**	[0.04, 0.15]		
	Regret	0.03	[-0.02, 0.07]		
	Harm (self) x Anger Type	-0.01	[-0.11, 0.10]		
	Harm (other) x Anger Type	-0.03	[-0.14, 0.09]		
	Regret x Anger Type	0.04	[-0.03, 0.12]		
				$R^2 = .210**$ 95% CI[.17,.25]	$\Delta R^2 = .005*$ 95% CI[-.00, .01]
+ Stable x Anger Type	(Intercept)	3.40**	[3.17, 3.63]		
	Harm (self)	0.22**	[0.16, 0.28]		
	Anger Type	-0.02	[-0.34, 0.30]		
	Harm (other)	0.09**	[0.03, 0.15]		
	Stable	0.02	[-0.03, 0.08]		
	Harm (self) x Anger Type	-0.00	[-0.10, 0.10]		
	Harm (other) x Anger Type	-0.01	[-0.12, 0.11]		
	Stable x Anger Type	-0.07*	[-0.15, -0.00]		
				$R^2 = .208**$ 95% CI[.16,.24]	$\Delta R^2 = .003$ 95% CI[-.00, .01]

Note. *b* represents unstandardized regression weights. *LL* and *UL* indicate the lower and upper limits of a confidence interval, respectively. Anger Type was dummy coded (0 = justified, 1 = unjustified).
* indicates suggestive (i.e., .050 > *p* ≥ .005) and ** indicates significant (i.e., *p* < .005) associations.

Table H.3

Predicting the Intensity of Anger from Different Aspects of the Anger Eliciting Event

Model	Predictor	b	95% CI	t	p
1	(Intercept)	3.40	[3.06, 3.74]	19.69	< .001
	Harm (self)	0.22	[0.17, 0.27]	8.82	< .001
	Harm (others)	0.09	[0.04, 0.14]	3.40	< .001
	Fairness	-0.09	[-0.14, -0.05]	-3.83	< .001
	Regret	0.04	[-0.01, 0.08]	1.43	0.154
	Apology	0.01	[-0.03, 0.05]	0.42	0.678
	Cause	-0.01	[-0.04, 0.03]	-0.30	0.761
	Stable	0.01	[-0.03, 0.05]	0.63	0.531
	Injunctive	0.05	[0.00, 0.10]	1.89	0.059
	Descriptive	-0.06	[-0.10, -0.01]	-2.29	0.022
	Prior closeness	0.01	[-0.02, 0.05]	0.79	0.432
2	(Intercept)	3.60	[3.11, 4.08]	14.62	< .001
	Harm (self)	0.21	[0.15, 0.27]	6.77	< .001
	Anger Type	-0.41	[-1.09, 0.28]	-1.16	0.245
	Harm (other)	0.08	[0.02, 0.13]	2.50	0.013
	Fairness	-0.13	[-0.22, -0.04]	-2.83	0.005
	Regret	0.05	[-0.02, 0.11]	1.36	0.174
	Apology	0.00	[-0.06, 0.06]	-0.01	0.989
	Cause	-0.02	[-0.08, 0.03]	-0.92	0.358
	Stable	0.04	[-0.02, 0.10]	1.23	0.219
	Injunctive	0.04	[-0.03, 0.11]	1.17	0.241
	Descriptive	-0.04	[-0.11, 0.02]	-1.38	0.168
	Prior closeness	0.00	[-0.05, 0.05]	-0.02	0.985
	Harm (self)	0.01	[-0.10, 0.11]	0.12	0.908
	Harm (other) x Anger Type	0.01	[-0.12, 0.13]	0.11	0.910
	Fairness x Anger Type	0.11	[0.00, 0.22]	1.88	0.060
	Regret x Anger Type	-0.02	[-0.11, 0.08]	-0.33	0.738
	Apology x Anger Type	0.02	[-0.06, 0.11]	0.49	0.621
	Cause x Anger Type	0.02	[-0.05, 0.09]	0.50	0.617
	Stable x Anger Type	-0.06	[-0.14, 0.02]	-1.41	0.160
	Injunctive x Anger Type	0.01	[-0.10, 0.11]	0.16	0.874
	Descriptive x Anger Type	-0.03	[-0.13, 0.07]	-0.62	0.539
	Prior closeness x Anger Type	0.04	[-0.03, 0.11]	1.03	0.301

Note. b represents unstandardized regression weights. Anger Type was dummy coded (0 = justified, 1 = unjustified).

Table H.4

Predicting the Intensity of Anger Expression based on the Perception of Harm and Threat and other Incremental Predictors

Model	Predictor	b	b 95% CI [LL, UL]	beta	beta 95% CI [LL, UL]	r	Fit	Difference
Harm	(Intercept)	2.38**	[2.22, 2.54]					
	Harm (self)	0.21**	[0.14, 0.29]	0.20	[0.13, 0.26]	.24**		
	Harm (other)	0.09*	[0.01, 0.16]	0.08	[0.01, 0.14]	.18**		
							R^2 = .061** 95% CI[.04,.09]	
Harm + Fairness	(Intercept)	2.36**	[2.10, 2.62]					
	Harm (self)	0.22**	[0.14, 0.29]	0.20	[0.13, 0.26]	.24**		
	Harm (other)	0.09*	[0.01, 0.17]	0.08	[0.01, 0.15]	.18**		
	Fairness	0.01	[-0.05, 0.07]	0.01	[-0.06, 0.07]	-.09**		
							R^2 = .061** 95% CI[.04,.09]	ΔR^2 = .000 95% CI[-.00, .00]
Harm + Apologetic	(Intercept)	2.10**	[1.89, 2.30]					
	Harm (self)	0.21**	[0.14, 0.28]	0.19	[0.13, 0.26]	.24**		
	Harm (other)	0.11*	[0.03, 0.18]	0.09	[0.03, 0.16]	.18**		
	Apology	0.11**	[0.06, 0.16]	0.12	[0.07, 0.18]	.10**		
							R^2 = .076** 95% CI[.05,.11]	ΔR^2 = .015** 95% CI[.00, .03]
Harm + Cause	(Intercept)	2.58**	[2.38, 2.79]					
	Harm (self)	0.23**	[0.16, 0.30]	0.21	[0.14, 0.28]	.24**		
	Harm (other)	0.10*	[0.02, 0.17]	0.08	[0.02, 0.15]	.18**		
	Cause	-0.08**	[-0.13, -0.03]	-0.09	[-0.14, -0.03]	-.03		
							R^2 = .068** 95% CI[.04,.10]	ΔR^2 = .007** 95% CI[-.00, .02]
Harm + Injunctive	(Intercept)	2.38**	[2.19, 2.57]					
	Harm (self)	0.21**	[0.14, 0.29]	0.20	[0.13, 0.26]	.24**		

Table H.4 (continued)

Model	Predictor	b	b 95% CI [LL, UL]	beta	beta 95% CI [LL, UL]	r	Fit	Difference
	Harm (other)	0.09*	[0.01, 0.17]	0.08	[0.01, 0.15]	.18**		
	Injunctive	-0.00	[-0.06, 0.06]	-0.00	[-0.06, 0.06]	.09**		
							R^2 = .061** 95% CI[.04,.09]	ΔR^2 = .000 95% CI[-.00, .00]
Harm + Descriptive	(Intercept)	2.44**	[2.24, 2.64]					
	Harm (self)	0.22**	[0.15, 0.29]	0.20	[0.13, 0.27]	.24**		
	Harm (other)	0.09*	[0.02, 0.17]	0.08	[0.02, 0.15]	.18**		
	Descriptive	-0.03	[-0.10, 0.03]	-0.03	[-0.09, 0.03]	.04		
							R^2 = .062** 95% CI[.04,.09]	ΔR^2 = .001 95% CI[-.00, .00]
	(Intercept)	2.10**	[1.85, 2.36]					
Harm + Closeness	Harm (self)	0.20**	[0.13, 0.28]	0.19	[0.12, 0.25]	.24**		
	Harm (other)	0.11**	[0.04, 0.19]	0.10	[0.03, 0.17]	.18**		
	Closeness	0.07*	[0.02, 0.12]	0.08	[0.02, 0.14]	.05		
							R^2 = .067** 95% CI[.04,.09]	ΔR^2 = .006** 95% CI[.00, .01]
Harm + Regret	(Intercept)	2.15**	[1.96, 2.34]					
	Harm (self)	0.20**	[0.13, 0.27]	0.18	[0.12, 0.25]	.24**		
	Harm (other)	0.09*	[0.01, 0.16]	0.08	[0.01, 0.14]	.18**		
	Regret	0.12**	[0.06, 0.17]	0.12	[0.06, 0.17]	.14**		
							R^2 = .075** 95% CI[.05,.10]	ΔR^2 = .014** 95% CI[.00, .03]
Harm + Stable	(Intercept)	2.73**	[2.49, 2.96]					
	Harm (self)	0.22**	[0.15, 0.30]	0.20	[0.14, 0.27]	.24**		
	Harm (other)	0.10*	[0.03, 0.18]	0.09	[0.02, 0.16]	.18**		
	Stable	-0.11**	[-0.17, -0.05]	-0.11	[-0.17, -0.05]	-.07*		
							R^2 = .073** 95% CI[.04,.10]	ΔR^2 = .012** 95% CI[.00, .02]

Note. *b* represents unstandardized regression weights. *beta* indicates the standardized regression weights. *r* represents the zero-order correlation. *LL* and *UL* indicate the lower and upper limits of a confidence interval, respectively. * indicates suggestive (i.e., .050 > *p* ≥ .005) and ** indicates significant (i.e., *p* < .005) associations.

Table H.5

Predicting the Anger Expression based on the Perception of Harm /Threat and other Incremental Predictors with Anger Types as the

Moderator

Model	Predictors	b	b 95% CI [LL, UL]	Fit	Difference
Harm x Anger Type	(Intercept)	2.30**	[2.05, 2.54]		
	Harm (self)	0.22**	[0.13, 0.32]		
	Anger Type	0.11	[-0.22, 0.45]		
	Harm (other)	0.10*	[0.01, 0.19]		
	Harm (self) x Anger Type	0.00	[-0.15, 0.16]		
	Harm (other) x Anger Type	-0.03	[-0.21, 0.16]		
				R^2 = .062** 95% CI[.03,.09]	
+ Fairness x Anger Type	(Intercept)	2.38**	[2.03, 2.73]		
	Harm (self)	0.22**	[0.13, 0.31]		
	Anger Type	0.05	[-0.50, 0.60]		
	Harm (other)	0.10*	[0.01, 0.19]		
	Fairness	-0.04	[-0.17, 0.08]		
	Harm (self) x Anger Type	0.00	[-0.15, 0.16]		
	Harm (other) x Anger Type	-0.02	[-0.21, 0.16]		
	Fairness x Anger Type	0.04	[-0.11, 0.19]		
				R^2 = .062** 95% CI[.03,.09]	ΔR^2 = .000 95% CI[-.00, .00]
+ Apology x Anger Type	(Intercept)	1.93**	[1.62, 2.24]		
	Harm (self)	0.22**	[0.13, 0.31]		
	Anger Type	0.28	[-0.15, 0.70]		
	Harm (other)	0.13**	[0.04, 0.22]		
	Apology	0.13**	[0.07, 0.20]		
	Harm (self) x Anger Type	0.00	[-0.15, 0.16]		
	Harm (other) x Anger Type	-0.04	[-0.22, 0.14]		
	Apology x Anger Type	-0.05	[-0.15, 0.05]		

Table H.5 (continued)

Model	Predictors	b	b 95% CI [LL, UL]	Fit	Difference
				$R^2 = .078**$ 95% CI[.05,.10]	$\Delta R^2 = .016**$ 95% CI[.00, .03]
+ Cause x Anger Type	(Intercept)	2.53**	[2.18, 2.87]		
	Harm (self)	0.23**	[0.14, 0.33]		
	Anger Type	0.09	[-0.37, 0.54]		
	Harm (other)	0.10*	[0.02, 0.19]		
	Cause	-0.07	[-0.15, 0.00]		
	Harm (self) x Anger Type	0.00	[-0.16, 0.16]		
	Harm (other) x Anger Type	-0.02	[-0.21, 0.16]		
	Cause x Anger Type	-0.01	[-0.12, 0.10]		
				$R^2 = .068**$ 95% CI[.04,.09]	$\Delta R^2 = .006*$ 95% CI[.00, .02]
+ Injunctive x Anger Type	(Intercept)	2.19**	[1.84, 2.54]		
	Harm (self)	0.22**	[0.12, 0.31]		
	Anger Type	0.25	[-0.20, 0.69]		
	Harm (other)	0.10*	[0.01, 0.18]		
	Injunctive	0.04	[-0.05, 0.12]		
	Harm (self) x Anger Type	0.01	[-0.15, 0.17]		
	Harm (other) x Anger Type	-0.02	[-0.20, 0.17]		
	Injunctive x Anger Type	-0.05	[-0.18, 0.07]		
				$R^2 = .063**$ 95% CI[.03,.09]	$\Delta R^2 = .001$ 95% CI[-.00, .00]
+ Descriptive x Anger Type	(Intercept)	2.34**	[2.01, 2.68]		
	Harm (self)	0.22**	[0.13, 0.32]		
	Anger Type	0.13	[-0.31, 0.57]		
	Harm (other)	0.10*	[0.02, 0.19]		
	Descriptive	-0.02	[-0.10, 0.07]		
	Harm (self) x Anger Type	0.01	[-0.15, 0.17]		
	Harm (other) x Anger Type	-0.02	[-0.21, 0.16]		
	Descriptive x Anger Type	-0.02	[-0.15, 0.11]		
				$R^2 = .062**$	$\Delta R^2 = .001$

Table H.5 (continued)

Model	Predictors	b	b 95% CI [LL, UL]	Fit	Difference
				95% CI[.03,.09]	95% CI[-.00, .00]
+ Closeness x Anger Type	(Intercept)	2.14**	[1.80, 2.48]		
	Harm (self)	0.21**	[0.12, 0.31]		
	Anger Type	-0.13	[-0.66, 0.40]		
	Harm (other)	0.12*	[0.03, 0.21]		
	Closeness	0.04	[-0.02, 0.11]		
	Harm (self) x Anger Type	-0.00	[-0.16, 0.16]		
	Harm (other) x Anger Type	-0.00	[-0.19, 0.18]		
	Closeness x Anger Type	0.05	[-0.05, 0.16]		
				R^2 = .068**	ΔR^2 = .006*
				95% CI[.04,.09]	95% CI[.00, .01]
+ Regret x Anger Type	(Intercept)	1.98**	[1.69, 2.28]		
	Harm (self)	0.21**	[0.12, 0.30]		
	Anger Type	0.24	[-0.16, 0.65]		
	Harm (other)	0.11*	[0.02, 0.20]		
	Regret	0.13**	[0.06, 0.21]		
	Harm (self) x Anger Type	0.01	[-0.14, 0.17]		
	Harm (other) x Anger Type	-0.05	[-0.23, 0.13]		
	Regret x Anger Type	-0.03	[-0.15, 0.08]		
				R^2 = .077**	ΔR^2 = .015**
				95% CI[.05,.10]	95% CI[.00, .03]
+ Stable x Anger Type	(Intercept)	2.57**	[2.22, 2.92]		
	Harm (self)	0.23**	[0.14, 0.32]		
	Anger Type	0.27	[-0.23, 0.77]		
	Harm (other)	0.11*	[0.03, 0.20]		
	Stable	-0.09*	[-0.17, -0.01]		
	Harm (self) x Anger Type	0.00	[-0.15, 0.16]		
	Harm (other) x Anger Type	-0.03	[-0.21, 0.15]		
	Stable x Anger Type	-0.04	[-0.16, 0.07]		
				R^2 = .074**	ΔR^2 = .012**
				95% CI[.04,.10]	95% CI[.00, .02]

Note. *b* represents unstandardized regression weights. *LL* and *UL* indicate the lower and upper limits of a confidence interval, respectively. Anger Type was dummy coded (0 = justified, 1 = unjustified).
* indicates suggestive (i.e., .050 > *p* ≥ .005) and ** indicates significant (i.e., *p* < .005) associations.

Table H.6

Predicting the Intensity of Anger Expression from Different Aspects of the Anger Eliciting Event

Model	Predictor	b	95% CI	t	p
1	(Intercept)	2.47	[1.95, 2.99]	9.31	< .001
	Harm (self)	0.22	[0.14, 0.29]	5.64	< .001
	Harm (others)	0.12	[0.04, 0.20]	3.00	0.003
	Fairness	-0.03	[-0.10, 0.05]	-0.73	0.468
	Regret	0.05	[-0.03, 0.12]	1.27	0.203
	Apology	0.05	[-0.02, 0.11]	1.49	0.136
	Cause	-0.08	[-0.13, -0.02]	-2.70	0.007
	Stable	-0.05	[-0.11, 0.02]	-1.49	0.136
	Injunctive	0.01	[-0.07, 0.08]	0.14	0.891
	Descriptive	-0.03	[-0.10, 0.05]	-0.74	0.462
	Prior closeness	0.04	[-0.01, 0.10]	1.60	0.110
2	(Intercept)	2.32	[1.57, 3.06]	6.11	< .001
	Harm (self)	0.22	[0.12, 0.31]	4.51	< .001
	Anger Type	0.33	[-0.73, 1.38]	0.61	0.545
	Harm (other)	0.11	[0.02, 0.20]	2.42	0.015
	Fairness	-0.12	[-0.26, 0.02]	-1.62	0.106
	Regret	0.06	[-0.04, 0.16]	1.19	0.233
	Apology	0.09	[0.00, 0.19]	1.90	0.058
	Cause	-0.07	[-0.15, 0.01]	-1.80	0.073
	Stable	-0.01	[-0.10, 0.08]	-0.18	0.859
	Injunctive	0.03	[-0.07, 0.14]	0.65	0.513
	Descriptive	-0.02	[-0.12, 0.08]	-0.39	0.697
	Prior closeness	0.00	[-0.07, 0.08]	0.12	0.902
	Harm (self)	0.01	[-0.15, 0.17]	0.17	0.862
	Harm (other) x Anger Type	0.01	[-0.18, 0.20]	0.06	0.950
	Fairness x Anger Type	0.09	[-0.09, 0.26]	0.99	0.324
	Regret x Anger Type	-0.02	[-0.17, 0.13]	-0.30	0.766
	Apology x Anger Type	-0.07	[-0.20, 0.06]	-1.06	0.290
	Cause x Anger Type	0.00	[-0.11, 0.11]	-0.06	0.951
	Stable x Anger Type	-0.08	[-0.21, 0.04]	-1.29	0.199
	Injunctive x Anger Type	-0.06	[-0.22, 0.10]	-0.75	0.451
	Descriptive x Anger Type	-0.01	[-0.16, 0.14]	-0.11	0.915
	Prior closeness x Anger Type	0.08	[-0.03, 0.18]	1.38	0.168

Note. b represents unstandardized regression weights. Anger Type was dummy coded (0 = justified, 1 = unjustified).

REFERENCES CITED

10 Key Bible Verses on Anger. (2021, April 17). Crossway.
    https://www.crossway.org/articles/10-key-bible-verses-on-anger/

Abelson, R. P. (1981). Psychological status of the script concept. *American Psychologist*, *36*,
    715–729. https://doi.org/10.1037/0003-066X.36.7.715

Adam, H., & Brett, J. M. (2018). Everything in moderation: The social effects of anger depend
    on its perceived intensity. *Journal of Experimental Social Psychology*, *76*, 12–18.
    https://doi.org/10.1016/j.jesp.2017.11.014

Allen, M. S., Jones, M. V., & Sheffield, D. (2009). Causal attribution and emotion in the days
    following competition. *Journal of Sports Sciences*, *27*(5), 461–468.
    https://doi.org/10.1080/02640410802538754

Al-Mosaiwi, M., & Johnstone, T. (2018). Linguistic markers of moderate and absolute natural
    language. *Personality and Individual Differences*, *134*, 119–124.
    https://doi.org/10.1016/j.paid.2018.06.004

Anderson, P. A., & Guerrero, L. K. (1998). Principles of communication and emotion in social
    interaction. In P. A. Anderson & L. K. Guerrero (Eds.), *Handbook of communication
    and emotion: Research, theory, applications, and contexts* (pp. 49–96). Academic
    Press.

Arshad, M., & Chung, J. M. (2022). Practical recommendations for considering culture, race, and
    ethnicity in personality psychology. *Social and Personality Psychology Compass*, *16*(2),
    e12656. https://doi.org/10.1111/spc3.12656

Asch, S. E. (1987). *Social Psychology*. Oxford University Press.

Atari, M., Davani, A. M., Kogon, D., Kennedy, B., Ani Saxena, N., Anderson, I., & Dehghani,
    M. (2022). Morally Homogeneous Networks and Radicalism. *Social Psychological and
    Personality Science*, *13*(6), 999–1009. https://doi.org/10.1177/19485506211059329

Bai, X., Zhang, X., Li, K. X., Zhou, Y., & Yuen, K. F. (2021). Research topics and trends in the
    maritime transport: A structural topic model. *Transport Policy*, *102*, 11–24.
    https://doi.org/10.1016/j.tranpol.2020.12.013

Bar-Tal, D. (2007). Sociopsychological Foundations of Intractable Conflicts. *American
    Behavioral Scientist*, *50*(11), 1430–1453. https://doi.org/10.1177/0002764207302462

Batson, C. D., Kennedy, C. L., Nord, L.-A., Stocks, E. L., Fleming, D. A., Marzette, C. M.,
    Lishner, D. A., Hayes, R. E., Kolchinsky, L. M., & Zerger, T. (2007). Anger at
    unfairness: Is it moral outrage? *European Journal of Social Psychology*, *37*(6), 1272–
    1285. https://doi.org/10.1002/ejsp.434

Baumeister, R. F., Stillwell, A., & Wotman, S. R. (1990). Victim and perpetrator accounts of interpersonal conflict: Autobiographical narratives about anger. *Journal of Personality and Social Psychology*, *59*(5), 994–1005. https://doi.org/10.1037/0022-3514.59.5.994

Beck, R., & Fernandez, E. (1998). Cognitive-Behavioral Therapy in the Treatment of Anger: A Meta-Analysis. *Cognitive Therapy and Research*, *22*(1), 63–74.

Bell, M. (2009). Anger, Virtue, and Oppression. In L. Tessman (Ed.), *Feminist Ethics and Social and Political Philosophy: Theorizing the Non-Ideal* (pp. 165–183). Springer Netherlands. https://doi.org/10.1007/978-1-4020-6841-6_10

Ben-Zur, H., & Breznitz, S. (1991). What makes people angry: Dimensions of anger-evoking events. *Journal of Research in Personality*, *25*(1), 1–22. https://doi.org/10.1016/0092-6566(91)90002-8

Berkowitz, L. (1989). Frustration-aggression hypothesis: Examination and reformulation. *Psychological Bulletin*, *106*(1), 59–73. https://doi.org/10.1037/0033-2909.106.1.59

Blei, D. M., Ng, A. Y., & Jordan, M. I. (2003). Latent Dirichlet Allocation. *Journal of Machine Learning Research*, *3*, 993–1022.

Boiger, M., Güngör, D., Karasawa, M., & Mesquita, B. (2014). Defending honour, keeping face: Interpersonal affordances of anger and shame in Turkey and Japan. *Cognition and Emotion*, *28*(7), 1255–1269. https://doi.org/10.1080/02699931.2014.881324

Boll, K. (2019, November 18). *Anger Management:How to Deal with Anger God's Way*. Tacoma Christian Counseling. https://tacomachristiancounseling.com/articles/anger-managementhow-to-deal-with-anger-gods-way

Boyd, R. L. (2017). Psychological Text Analysis in the Digital Humanities. In S. Hai-Jew (Ed.), *Data Analytics in Digital Humanities* (pp. 161–189). Springer International Publishing. https://doi.org/10.1007/978-3-319-54499-1

Boyd, R. L., Ashwini Ashokkumar, Seraj, S., & Pennebaker, J. W. (2022). *The Development and Psychometric Properties of LIWC-22*. https://doi.org/10.13140/RG.2.2.23890.43205

Braun, V., & Clarke, V. (2006). Using thematic analysis in psychology. *Qualitative Research in Psychology*, *3*(2), 77–101. https://doi.org/10.1191/1478088706qp063oa

Brescoll, V. L., & Uhlmann, E. L. (2008). Can an Angry Woman Get Ahead?: Status Conferral, Gender, and Expression of Emotion in the Workplace. *Psychological Science*, *19*(3), 268–275. https://doi.org/10.1111/j.1467-9280.2008.02079.x

Brun, L., Pansu, P., & Dompnier, B. (2021). The role of causal attributions in determining behavioral consequences: A meta-analysis from an intrapersonal attributional perspective in achievement contexts. *Psychological Bulletin*, *147*(7), 701–718. https://doi.org/10.1037/bul0000331

Brunswik, E. (1949). Systematic and Representative Design of Psychological Experiments. With Results in Physical and Social Perception. *Proceedings of the [First] Berkeley Symposium on Mathematical Statistics and Probability*, *1*, 143–203.

Bursztyn, L., González, A. L., & Yanagizawa-Drott, D. (2020). Misperceived Social Norms: Women Working Outside the Home in Saudi Arabia. *American Economic Review*, *110*(10), 2997–3029. https://doi.org/10.1257/aer.20180975

Bushman, B. J., & Baumeister, R. F. (1998). Threatened egotism, narcissism, self-esteem, and direct and displaced aggression: Does self-love or self-hate lead to violence? *Journal of Personality and Social Psychology*, *75*(1), 219–229. https://doi.org/10.1037//0022-3514.75.1.219

Cai, Z., Goertzel, B., Zhou, C., Zhang, Y., Jiang, M., & Yu, G. (2012). Dynamics of a computational affective model inspired by Dörner's PSI theory. *Cognitive Systems Research*, *17–18*, 63–80. https://doi.org/10.1016/j.cogsys.2011.11.002

Callister, R. R., Gray, B., Gibson, D. E., Schweitzer, M. E., & Tan, J.-S. (2007). Exploring the Relationship between Emotion Display Rules and Social Norms and Their Influence on Anger Expressions in Organizations. *SSRN Electronic Journal*. https://doi.org/10.2139/ssrn.1087354

Carver, C. S., & Harmon-Jones, E. (2009). Anger is an approach-related affect: Evidence and implications. *Psychological Bulletin*, *135*, 183–204. https://doi.org/10.1037/a0013965

Cattell, R. B., & Tsujioka, B. (1964). The Importance of Factor-Trueness and Validity, Versus Homogeneity and Orthogonality, in Test Scales1. *Educational and Psychological Measurement*, *24*(1), 3–30. https://doi.org/10.1177/001316446402400101

Centola, D., Becker, J., Brackbill, D., & Baronchelli, A. (2018). Experimental evidence for tipping points in social convention. *Science*, *360*(6393), 1116–1119. https://doi.org/10.1126/science.aas8827

Champely, S. (2020). *pwr: Basic functions for power analysis*.

Chapman, H. A., & Anderson, A. K. (2011). Varieties of Moral Emotional Experience. *Emotion Review*, *3*(3), 255–257. https://doi.org/10.1177/1754073911402389

Chen, W.-L., Lin, J.-J., Wang, C.-T., Shen, Y.-C., Chen, S.-T., & Chao, Y.-L. (2020). Regulating anger in different relationship contexts: A comparison between psychiatric outpatients and community controls. *Heliyon*, *6*(7), e04413. https://doi.org/10.1016/j.heliyon.2020.e04413

Cheung, R. Y. M., & Park, I. J. K. (2010). Anger suppression, interdependent self-construal, and depression among Asian American and European American college students. *Cultural Diversity and Ethnic Minority Psychology*, *16*(4), 517–525. https://doi.org/10.1037/a0020655

Chung, C. K., & Pennebaker, J. W. (2008). Revealing dimensions of thinking in open-ended self-descriptions: An automated meaning extraction method for natural language. *Journal of Research in Personality*, *42*(1), 96–132. https://doi.org/10.1016/j.jrp.2007.04.006

Clark, L. A., & Watson, D. (1994). *The PANAS-X: Manual for the Positive and Negative Affect Schedule - Expanded Form* [Data set]. University of Iowa. https://doi.org/10.17077/48vt-m4t2

Cohen, T. R., Wolf, S. T., Panter, A. T., & Insko, C. A. (2011). Introducing the GASP scale: A new measure of guilt and shame proneness. *Journal of Personality and Social Psychology*, *100*(5), 947–966. https://doi.org/10.1037/a0022641

Cooley, J. L., & Fite, P. J. (2016). Peer Victimization and Forms of Aggression During Middle Childhood: The Role of Emotion Regulation. *Journal of Abnormal Child Psychology*, *44*(3), 535–546. https://doi.org/10.1007/s10802-015-0051-6

Crockett, M. J., Everett, J. A. C., Gill, M., & Siegel, J. Z. (2021). The relational logic of moral inference. In *Advances in Experimental Social Psychology* (Vol. 64, pp. 1–64). Elsevier. https://doi.org/10.1016/bs.aesp.2021.04.001

Cross, S. E., Uskul, A. K., Gerçek-Swing, B., Sunbay, Z., Alözkan, C., Günsoy, C., Ataca, B., & Karakitapoğlu-Aygün, Z. (2014a). Cultural Prototypes and Dimensions of Honor. *Personality and Social Psychology Bulletin*, *40*(2), 232–249. https://doi.org/10.1177/0146167213510323

Cross, S. E., Uskul, A. K., Gerçek-Swing, B., Sunbay, Z., Alözkan, C., Günsoy, C., Ataca, B., & Karakitapoğlu-Aygün, Z. (2014b). Cultural Prototypes and Dimensions of Honor. *Personality and Social Psychology Bulletin*, *40*(2), 232–249. https://doi.org/10.1177/0146167213510323

Daniels, M. A., & Robinson, S. L. (2019). The Shame of It All: A Review of Shame in Organizational Life. *Journal of Management*, *45*(6), 2448–2473. https://doi.org/10.1177/0149206318817604

Dewi, I. D. A. D. P., & Kyranides, M. N. (2022). Physical, Verbal, and Relational Aggression: The Role of Anger Management Strategies. *Journal of Aggression, Maltreatment & Trauma*, *31*(1), 65–82. https://doi.org/10.1080/10926771.2021.1994495

DiGiuseppe, R., & Tafrate, R. C. (2007). *Understanding anger disorders*. Oxford University Press.

Eichstaedt, J. C., Kern, M. L., Yaden, D. B., Schwartz, H. A., Giorgi, S., Park, G., Hagan, C. A., Tobolsky, V. A., Smith, L. K., Buffone, A., Iwry, J., Seligman, M. E. P., & Ungar, L. H. (2021). Closed- and open-vocabulary approaches to text analysis: A review, quantitative comparison, and recommendations. *Psychological Methods*, *26*(4), 398–427. https://doi.org/10.1037/met0000349

Ekman, P. (1984). Expression and the nature of emotion. In K. R. Scherer & P. Ekman (Eds.), *Approaches to Emotion* (pp. 319–343). Erlbaum.

Ellemers, N. (2018). Gender Stereotypes. *Annual Review of Psychology*, *69*, 275–298.

Ellis, A., & Tafrate, R. C. (1997). *How to control your anger before it controls you*. Carol Pub. Group.

Enders, C. K., & Tofighi, D. (2007). Centering predictor variables in cross-sectional multilevel models: A new look at an old issue. *Psychological Methods*, *12*(2), 121–138. https://doi.org/10.1037/1082-989X.12.2.121

Entwistle, C., Horn, A. B., Meier, T., & Boyd, R. L. (2021). Dirty laundry: The nature and substance of seeking relationship help from strangers online. *Journal of Social and Personal Relationships*, *38*(12), 3472–3496. https://doi.org/10.1177/02654075211046635

Eriksson, K., Andersson, P. A., & Strimling, P. (2017). When is it appropriate to reprimand a norm violation? The roles of anger, behavioral consequences, violation severity, and social distance. *Judgment and Decision Making*, 396–407.

Fischer, A. H., & Evers, C. (2011). The Social Costs and Benefits of Anger as a Function of Gender and Relationship Context. *Sex Roles*, *65*(1), 23–34. https://doi.org/10.1007/s11199-011-9956-x

Fischer, A. H., & Roseman, I. J. (2007). Beat them or ban them: The characteristics and social functions of anger and contempt. *Journal of Personality and Social Psychology*, *93*(1), 103–115. https://doi.org/10.1037/0022-3514.93.1.103

Fischer, A., Halperin, E., Canetti, D., & Jasini, A. (2018). Why We Hate. *Emotion Review*, *10*(4), 309–320. https://doi.org/10.1177/1754073917751229

Fiske, A. P. (2002). Socio-Moral Emotions Motivate Action to Sustain Relationships. *Self and Identity*, *1*(2), 169–175. https://doi.org/10.1080/152988602317319357

Fiske, A. P. (2020). The lexical fallacy in emotion research: Mistaking vernacular words for psychological entities. *Psychological Review*, *127*, 95–113. https://doi.org/10.1037/rev0000174

Fitzpatrick, M. R., & Armstrong, C. R. (2010). Beyond the tip of the iceberg: Exploring the potential of the meaning extraction method and aftercare e-mail themes. *Psychotherapy Research*, *20*(1), 86–89. https://doi.org/10.1080/10503300903352719

Fox, J., Weisberg, S., Price, B., Adler, D., Bates, D., Baud-Bovy, G., Bolker, B., Ellison, S., Firth, D., Friendly, M., Gorjanc, G., Graves, S., Heiberger, R., Krivitsky, P., Laboissiere, R., Maechler, M., Monette, G., Murdoch, D., Nilsson, H., … R-Core. (2022). *car: Companion to Applied Regression* (3.1-1). https://CRAN.R-project.org/package=car

Fridlund, A. J. (2014). *Human Facial Expression: An Evolutionary View*. Academic Press.

Frijda, N. H. (1993). The place of appraisal in emotion. *Cognition & Emotion*, *7*(3–4), 357–387. https://doi.org/10.1080/02699939308409193

Frimer, J. A. (2020). Do liberals and conservatives use different moral languages? Two replications and six extensions of Graham, Haidt, and Nosek's (2009) moral text analysis. *Journal of Research in Personality*, *84*, 103906. https://doi.org/10.1016/j.jrp.2019.103906

Gao, W., Chen, M., & Li, Y. (2016). Descriptive norms influence reactions to anger-related moral events. *Asian Journal of Social Psychology*, *19*(1), 31–39. https://doi.org/10.1111/ajsp.12121

Geddes, D., & Callister, R. R. (2007). Crossing the line(s): A dual threshold model of anger in organizations. *Academy of Management Review*, *32*(3), 721–746. https://doi.org/10.5465/amr.2007.25275495

Glaser, J., & Salovey, P. (1998). Affect in Electoral Politics. *Personality and Social Psychology Review*, *2*(3), 156–172. https://doi.org/10.1207/s15327957pspr0203_1

Goodwin, G. P., Piazza, J., & Rozin, P. (2014). Moral character predominates in person perception and evaluation. *Journal of Personality and Social Psychology*, *106*(1), 148–168. https://doi.org/10.1037/a0034726

Gray, K., & Wegner, D. M. (2011). Dimensions of Moral Emotions. *Emotion Review*, *3*(3), 258–260. https://doi.org/10.1177/1754073911402388

Griffiths, T. L., Steyvers, M., & Tenenbaum, J. B. (2007). Topics in semantic representation. *Psychological Review*, *114*(2), 211–244. https://doi.org/10.1037/0033-295X.114.2.211

Guan, F., Chen, J., Chen, O., Liu, L., & Zha, Y. (2019). Awe and prosocial tendency. *Current Psychology*, *38*(4), 1033–1041. https://doi.org/10.1007/s12144-019-00244-7

Guerrero, L. K. (1994). "I'm so mad I could scream:" The effects of anger expression on relational satisfaction and communication competence. *Southern Communication Journal*, *59*(2), 125–141. https://doi.org/10.1080/10417949409372931

Guetterman, T. C., Chang, T., DeJonckheere, M., Basu, T., Scruggs, E., & Vydiswaran, V. G. V. (2018). Augmenting Qualitative Text Analysis with Natural Language Processing: Methodological Study. *Journal of Medical Internet Research*, *20*(6), e9702. https://doi.org/10.2196/jmir.9702

Guevarra, D. A., & Howell, R. T. (2015). To have in order to do: Exploring the effects of consuming experiential products on well-being. *Journal of Consumer Psychology*, *25*(1), 28–41. https://doi.org/10.1016/j.jcps.2014.06.006

Gutierrez, R., & Giner-Sorolla, R. (2007). Anger, disgust, and presumption of harm as reactions to taboo-breaking behaviors. *Emotion*, *7*(4), 853–868. https://doi.org/10.1037/1528-3542.7.4.853

Haidt, J. (2003). The Moral Emotions. In R. J. Davidson, K. R. Scherer, & H. H. Goldsmith (Eds.), *Handbook of Affective Sciences* (pp. 852–870). Oxford University Press. https://pages.stern.nyu.edu/~jhaidt/articles/alternate_versions/haidt.2003.the-moral-emotions.pub025-as-html.html

Halperin, E., Russell, A. G., Dweck, C. S., & Gross, J. J. (2011). Anger, Hatred, and the Quest for Peace: Anger Can Be Constructive in the Absence of Hatred. *Journal of Conflict Resolution*, *55*(2), 274–291. https://doi.org/10.1177/0022002710383670

Hannah, S. D., & Carpenter-Song, E. (2013). Patrolling Your Blind Spots: Introspection and Public Catharsis in a Medical School Faculty Development Course to Reduce Unconscious Bias in Medicine. *Culture, Medicine, and Psychiatry*, *37*(2), 314–339. https://doi.org/10.1007/s11013-013-9320-4

Hareli, S., Harush, R., Suleiman, R., Cossette, M., Bergeron, S., Lavoie, V., Dugay, G., & Hess, U. (2009). When scowling may be a good thing: The influence of anger expressions on credibility. *European Journal of Social Psychology*, *39*(4), 631–638. https://doi.org/10.1002/ejsp.573

Hareli, S., & Rafaeli, A. (2008). Emotion cycles: On the social influence of emotion in organizations. *Research in Organizational Behavior*, *28*, 35–59. https://doi.org/10.1016/j.riob.2008.04.007

Heerdink, M. W., Koning, L. F., van Doorn, E. A., & van Kleef, G. A. (2019). Emotions as guardians of group norms: Expressions of anger and disgust drive inferences about autonomy and purity violations. *Cognition and Emotion*, *33*(3), 563–578. https://doi.org/10.1080/02699931.2018.1476324

Hixon, J. G., & Swann, W. B. (1993). When does introspection bear fruit? Self-reflection, self-insight, and interpersonal choices. *Journal of Personality and Social Psychology*, *64*(1), 35–43. https://doi.org/10.1037/0022-3514.64.1.35

Hoover, J., Johnson, K., Boghrati, R., Graham, J., & Dehghani, M. (2018). Moral Framing and Charitable Donation: Integrating Exploratory Social Media Analyses and Confirmatory Experimentation. *Collabra: Psychology*, *4*(1), 9. https://doi.org/10.1525/collabra.129

Horn, J. L. (1965). A rationale and test for the number of factors in factor analysis. *Psychometrika*, *30*(2), 179–185. https://doi.org/10.1007/BF02289447

Huebner, B., Dwyer, S., & Hauser, M. (2009). The role of emotion in moral psychology. *Trends in Cognitive Sciences*, *13*(1), 1–6. https://doi.org/10.1016/j.tics.2008.09.006

Hutcherson, C. A., & Gross, J. J. (2011). The moral emotions: A social–functionalist account of anger, disgust, and contempt. *Journal of Personality and Social Psychology*, *100*(4), 719. https://doi.org/10.1037/a0022408

Joseph, S., Williams, R., Irwing, P., & Cammock, T. (1994). The preliminary development of a measure to assess attitudes towards emotional expression. *Personality and Individual Differences*, *16*(6), 869–875. https://doi.org/10.1016/0191-8869(94)90231-3

Julle-Danière, E., Whitehouse, J., Vrij, A., Gustafsson, E., & Waller, B. M. (2020). The social function of the feeling and expression of guilt. *Royal Society Open Science*, *7*(12), 200617. https://doi.org/10.1098/rsos.200617

Kacewicz, E., Pennebaker, J. W., Davis, M., Jeon, M., & Graesser, A. C. (2014). Pronoun Use Reflects Standings in Social Hierarchies. *Journal of Language and Social Psychology*, *33*(2), 125–143. https://doi.org/10.1177/0261927X13502654

Kassinove, H., Sukhodolsky, D. G., Tsytsarev, S. V., & Solovyova, S. (1997). Self-Reported Anger Episodes in Russia and America. *Journal of Social Behavior and Personality*, *12*(2), 301–324.

Keltner, D., & Anderson, C. (2000). Saving Face for Darwin: The Functions and Uses of Embarrassment. *Current Directions in Psychological Science*, *9*(6), 187–192.

Keltner, D., & Haidt, J. (1999). Social Functions of Emotions at Four Levels of Analysis. *Cognition & Emotion*, *13*(5), 505–521. https://doi.org/10.1080/026999399379168

King, L. A., & Emmons, R. A. (1990). Conflict over emotional expression: Psychological and physical correlates. *Journal of Personality and Social Psychology*, *58*(5), 864–877. https://doi.org/10.1037/0022-3514.58.5.864

Kirchner, A., Boiger, M., Uchida, Y., Norasakkunkit, V., Verduyn, P., & Mesquita, B. (2018). Humiliated fury is not universal: The co-occurrence of anger and shame in the United States and Japan. *Cognition and Emotion*, *32*(6), 1317–1328. https://doi.org/10.1080/02699931.2017.1414686

Kitayama, S., Salvador, C. E., Nanakdewa, K., Rossmaier, A., San Martin, A., & Savani, K. (2022). Varieties of interdependence and the emergence of the Modern West: Toward the globalizing of psychology. *American Psychologist*, *77*, 991–1006. https://doi.org/10.1037/amp0001073

Knutson, B. (1996). Facial expressions of emotion influence interpersonal trait inferences. *Journal of Nonverbal Behavior*, *20*(3), 165–182. https://doi.org/10.1007/BF02281954

Kollareth, D., & Russell, J. A. (2019). Disgust and the sacred: Do people react to violations of the sacred with the same emotion they react to something putrid? *Emotion*, *19*(1), 37–52. https://doi.org/10.1037/emo0000412

Kuppens, P., Van Mechelen, I., Smits, D. J. M., & De Boeck, P. (20030915). The appraisal basis of anger: Specificity, necessity and sufficiency of components. *Emotion*, *3*(3), 254. https://doi.org/10.1037/1528-3542.3.3.254

Kuppens, P., Van Mechelen, I., Smits, D. J. M., De Boeck, P., & Ceulemans, E. (2007). Individual differences in patterns of appraisal and anger experience. *Cognition & Emotion*, *21*(4), 689–713. https://doi.org/10.1080/02699930600859219

Latif, S. (2021, August 21). *15 Best Anger Issues Tests & Assessments to Measure Anger*. PositivePsychology.Com. https://positivepsychology.com/anger-management-test-quiz/

Laurent, S. M., Clark, B. A. M., Walker, S., & Wiseman, K. D. (2014). Punishing hypocrisy: The roles of hypocrisy and moral emotions in deciding culpability and punishment of criminal and civil moral transgressors. *Cognition and Emotion*, *28*(1), 59–83. https://doi.org/10.1080/02699931.2013.801339

Lemay Jr., E. P., Overall, N. C., & Clark, M. S. (2012). Experiences and interpersonal consequences of hurt feelings and anger. *Journal of Personality and Social Psychology*, *103*(6), 982–1006. https://doi.org/10.1037/a0030064

Lench, H. C., Tibbett, T. P., & Bench, S. W. (2016). Exploring the Toolkit of Emotion: What Do Sadness and Anger Do for Us? *Social and Personality Psychology Compass*, *10*(1), 11–25. https://doi.org/10.1111/spc3.12229

Levitt, H. M., Bamberg, M., Creswell, J. W., Frost, D. M., Josselson, R., & Suárez-Orozco, C. (2018). Journal article reporting standards for qualitative primary, qualitative meta-analytic, and mixed methods research in psychology: The APA Publications and Communications Board task force report. *American Psychologist*, *73*(1), 26–46. https://doi.org/10.1037/amp0000151

Lewis, K. M. (2000). When leaders display emotion: How followers respond to negative emotional expression of male and female leaders. *Journal of Organizational Behavior*, *21*(2), 221–234. https://doi.org/10.1002/(SICI)1099-1379(200003)21:2<221::AID-JOB36>3.0.CO;2-0

Lewis, M. (1992). *Shame: The exposed self* (pp. xii, 275). Free Press.

Li, P. L., Yang, C., Liu, S., & Hu, M. (2019). Comparing Insights From Inductive Qualitative Analysis Versus Automated NLP Algorithms For Analyzing Feedback In Digital Randomized Controlled Trials. *2019 45th Euromicro Conference on Software Engineering and Advanced Applications (SEAA)*, 347–354. https://doi.org/10.1109/SEAA.2019.00060

Lindebaum, D., & Geddes, D. (2016). The place and role of (moral) anger in organizational behavior studies. *Journal of Organizational Behavior*, *37*(5), 738–757. https://doi.org/10.1002/job.2065

Liu, J., Lemay, E. P., & Neal, A. M. (2018). Mutual cyclical anger in romantic relationships: Moderation by agreeableness and commitment. *Journal of Research in Personality*, *77*, 1–10. https://doi.org/10.1016/j.jrp.2018.09.002

Lobbestael, J., Arntz, A., & Wiers, R. W. (2008). How to push someone's buttons: A comparison of four anger-induction methods. *Cognition and Emotion*, *22*(2), 353–373. https://doi.org/10.1080/02699930701438285

Lovakov, A., & Agadullina, E. R. (2021). Empirically derived guidelines for effect size interpretation in social psychology. *European Journal of Social Psychology*, *51*(3), 485–504. https://doi.org/10.1002/ejsp.2752

Markowitz, D. M. (2021). The Meaning Extraction Method: An Approach to Evaluate Content Patterns From Large-Scale Language Data. *Frontiers in Communication*, *6*. https://www.frontiersin.org/articles/10.3389/fcomm.2021.588823

Marshburn, C. K., Cochran, K. J., Flynn, E., & Levine, L. J. (2020). Workplace Anger Costs Women Irrespective of Race. *Frontiers in Psychology*, *11*. https://www.frontiersin.org/article/10.3389/fpsyg.2020.579884

Matsumoto, D. (1990). Cultural similarities and differences in display rules. *Motivation and Emotion*, *14*(3), 195–214. https://doi.org/10.1007/BF00995569

Matsumoto, D., Hwang, H. C., & Frank, M. G. (2016). The effects of incidental anger, contempt, and disgust on hostile language and implicit behaviors. *Journal of Applied Social Psychology*, *46*(8), 437–452. https://doi.org/10.1111/jasp.12374

Matsumoto, D., Hwang, H. C., & Frank, M. G. (2017). Emotion and aggressive intergroup cognitions: The ANCODI hypothesis. *Aggressive Behavior*, *43*(1), 93–107. https://doi.org/10.1002/ab.21666

Matsumoto, D., Yoo, S. H., & Chung, J. (2010). The Expression of Anger across Cultures. In M. Potegal, G. Stemmler, & C. Spielberger (Eds.), *Handbook of anger* (pp. 125–137).

Miceli, M., & Castelfranchi, C. (2019). Anger and Its Cousins. *Emotion Review*, *11*(1), 13–26. https://doi.org/10.1177/1754073917714870

Miyamoto, Y., Uchida, Y., & Ellsworth, P. C. (2010). Culture and mixed emotions: Co-occurrence of positive and negative emotions in Japan and the United States. *Emotion*, *10*(3), 404–415. https://doi.org/10.1037/a0018430

Moon, C., Weick, M., & Uskul, A. K. (2018). Cultural variation in individuals' responses to incivility by perpetrators of different rank: The mediating role of descriptive and injunctive norms. *European Journal of Social Psychology*, *48*(4), 472–489. https://doi.org/10.1002/ejsp.2344

Moore, R. L., Yen, C., & Powers, F. E. (2021). Exploring the relationship between clout and cognitive processing in MOOC discussion forums. *British Journal of Educational Technology*, *52*(1), 482–497. https://doi.org/10.1111/bjet.13033

Mosquera, P. M. R., Manstead, A. S. R., & Fischer, A. H. (2000). The Role of Honor-Related Values in the Elicitation, Experience, and Communication of Pride, Shame, and Anger: Spain and the Netherlands Compared. *Personality and Social Psychology Bulletin*, *26*(7), 833–844. https://doi.org/10.1177/0146167200269008

Neacsiu, A. D., Rompogren, J., Eberle, J. W., & McMahon, K. (2018). Changes in Problematic Anger, Shame, and Disgust in Anxious and Depressed Adults Undergoing Treatment for Emotion Dysregulation. *Behavior Therapy*, *49*(3), 344–359. https://doi.org/10.1016/j.beth.2017.10.004

Neiman, J. L., Gonzalez, F. K., Wilkinson, K., Smith, K. B., & Hibbing, J. R. (2016). Speaking Different Languages or Reading From the Same Script? Word Usage of Democratic and Republican Politicians. *Political Communication*, *33*(2), 346–349. https://doi.org/10.1080/10584609.2016.1161349

Nelson, L. K. (2020). Computational Grounded Theory: A Methodological Framework. *Sociological Methods & Research*, *49*(1), 3–42. https://doi.org/10.1177/0049124117729703

Neumann, R. (2000). The Causal Influences of Attributions on Emotions: A Procedural Priming Approach. *Psychological Science*, *11*(3), 179–182. https://doi.org/10.1111/1467-9280.00238

Nicolas, G., Bai, X., & Fiske, S. T. (2022). A spontaneous stereotype content model: Taxonomy, properties, and prediction. *Journal of Personality and Social Psychology*, No Pagination Specified-No Pagination Specified. https://doi.org/10.1037/pspa0000312

Niedenthal, P. M. (2008). Emotion concepts. In *Handbook of Emotions, 3rd ed* (pp. 587–600). The Guilford Press.

Ohbuchi, K.-I., Tamura, T., Quigley, B. M., Tedeschi, J. T., Madi, N., Bond, M. H., & Mummendey, A. (2004). Anger, Blame, and Dimensions of Perceived Norm Violations: Culture, Gender, and Relationships. *Journal of Applied Social Psychology*, *34*(8), 1587–1603. https://doi.org/10.1111/j.1559-1816.2004.tb02788.x

Pace, K. M., Fediuk, T. A., & Botero, I. C. (2010). The acceptance of responsibility and expressions of regret in organizational apologies after a transgression. *Corporate Communications: An International Journal*, *15*(4), 410–427. https://doi.org/10.1108/13563281011085510

Park, J., Kitayama, S., Markus, H. R., Coe, C. L., Miyamoto, Y., Karasawa, M., Curhan, K. B., Love, G. D., Kawakami, N., Boylan, J. M., & Ryff, C. D. (2013). Social Status and Anger Expression: The Cultural Moderation Hypothesis. *Emotion (Washington, D.C.)*, *13*(6), 10.1037/a0034273. https://doi.org/10.1037/a0034273

Park, N., Peterson, C., & Seligman, M. E. P. (2006). Character strengths in fifty-four nations and the fifty US states. *The Journal of Positive Psychology*, *1*(3), 118–129. https://doi.org/10.1080/17439760600619567

Patton, M. Q. (1990). *Qualitative evaluation and research methods, 2nd ed* (p. 532). Sage Publications, Inc.

Pearse, R., & Connell, R. (2016). Gender Norms and the Economy: Insights from Social Research. *Feminist Economics*, *22*(1), 30–53. https://doi.org/10.1080/13545701.2015.1078485

Pennebaker, J. W., Chung, C. K., Frazee, J., Lavergne, G. M., & Beaver, D. I. (2014). When Small Words Foretell Academic Success: The Case of College Admissions Essays. *PLoS ONE*, *9*(12), e115844. https://doi.org/10.1371/journal.pone.0115844

Peterson, C., Semmel, A., von Baeyer, C., Abramson, L. Y., Metalsky, G. I., & Seligman, M. E. P. (1982). The attributional Style Questionnaire. *Cognitive Therapy and Research*, *6*(3), 287–299. https://doi.org/10.1007/BF01173577

Pietraszkiewicz, A., Formanowicz, M., Gustafsson Sendén, M., Boyd, R. L., Sikström, S., & Sczesny, S. (2019). The big two dictionaries: Capturing agency and communion in natural language. *European Journal of Social Psychology*, *49*(5), 871–887. https://doi.org/10.1002/ejsp.2561

Pillutla, M. M., & Murnighan, J. K. (1996). Unfairness, Anger, and Spite: Emotional Rejections of Ultimatum Offers. *Organizational Behavior and Human Decision Processes*, *68*(3), 208–224. https://doi.org/10.1006/obhd.1996.0100

Plant, E. A., Hyde, J. S., Keltner, D., & Devine, P. G. (2000). The Gender Stereotyping of Emotions. *Psychology of Women Quarterly*, *24*(1), 81–92. https://doi.org/10.1111/j.1471-6402.2000.tb01024.x

Pohl, R. F. (Ed.). (2022). *Cognitive illusions: Intriguing phenomena in judgement, thinking and memory* (3rd edition). Routledge.

Ponizovskiy, V., Ardag, M., Grigoryan, L., Boyd, R., Dobewall, H., & Holtz, P. (2020). Development and Validation of the Personal Values Dictionary: A Theory–Driven Tool for Investigating References to Basic Human Values in Text. *European Journal of Personality*, *34*(5), 885–902. https://doi.org/10.1002/per.2294

Rauthmann, J. F., Gallardo-Pujol, D., Guillaume, E. M., Todd, E., Nave, C. S., Sherman, R. A., Ziegler, M., Jones, A. B., & Funder, D. C. (2014). The Situational Eight DIAMONDS: A taxonomy of major dimensions of situation characteristics. *Journal of Personality and Social Psychology*, *107*(4), 677–718. https://doi.org/10.1037/a0037250

Razavi, P., Shaban-Azad, H., Chai, W. J., Zhang, J. W., Nguyen, N.-H., & Howell, R. T. (2020). Benefits Associated With Experiential and Material Purchases May Depend on Culture. *Social Psychological and Personality Science*, *11*(5), 626–637. https://doi.org/10.1177/1948550619875146

Razavi, P., Shaban-Azad, H., & Srivastava, S. (2022). Gheirat as a Complex Emotional Reaction to Relational Boundary Violations: A Mixed-Methods Investigation. In *Journal of Personality and Social Psychology*. https://doi.org/10.1037/pspp0000424

Razavi, P., Shaban-Azad, H., & Srivastava, S. (2023). Gheirat as a complex emotional reaction to relational boundary violations: A mixed-methods investigation. *Journal of Personality and Social Psychology*, *124*, 179–214. https://doi.org/10.1037/pspp0000424

Reifen Tagar, M., Federico, C. M., & Halperin, E. (2011). The positive effect of negative emotions in protracted conflict: The case of anger. *Journal of Experimental Social Psychology*, *47*(1), 157–164. https://doi.org/10.1016/j.jesp.2010.09.011

Revelle, W. (2021). *psych: Procedures for Psychological, Psychometric, and Personality Research*.

Revelle, W., & Rocklin, T. (1979). Very Simple Structure: An Alternative Procedure For Estimating The Optimal Number Of Interpretable Factors. *Multivariate Behavioral Research*, *14*(4), 403–414. https://doi.org/10.1207/s15327906mbr1404_2

Reynolds, N. S., Walkey, F. H., & Green, D. E. (1994). *The anger self report: A psychometrically sound (30 item) version. 23*, 64–70.

Roberts Callister, R., Geddes, D., & Gibson, D. (2017). *When Is Anger Helpful or Hurtful? Status and Role Impact on Anger Expression and Outcomes*. https://doi.org/10.34891/Z7HP-RQ86

Roberts, M. E., Stewart, B. M., & Tingley, D. (2019). **stm**: An *R* Package for Structural Topic Models. *Journal of Statistical Software*, *91*(2). https://doi.org/10.18637/jss.v091.i02

Roberts, M. E., Stewart, B. M., Tingley, D., Lucas, C., Leder-Luis, J., Gadarian, S. K., Albertson, B., & Rand, D. G. (2014). Structural Topic Models for Open-Ended Survey Responses. *American Journal of Political Science*, *58*(4), 1064–1082. https://doi.org/10.1111/ajps.12103

Robinson, O. C. (2021). Conducting thematic analysis on brief texts: The structured tabular approach. *Qualitative Psychology*, No Pagination Specified-No Pagination Specified. https://doi.org/10.1037/qup0000189

Romero-Martínez, Á., Bressanutti, S., & Moya-Albiol, L. (2020). A Systematic Review of the Effectiveness of Non-Invasive Brain Stimulation Techniques to Reduce Violence Proneness by Interfering in Anger and Irritability. *Journal of Clinical Medicine*, *9*(3), 882. https://doi.org/10.3390/jcm9030882

Roseman, I., & Evdokas, A. (2004). Appraisals cause experienced emotions: Experimental evidence. *Cognition & Emotion*, *18*(1), 1–28. https://doi.org/10.1080/02699930244000390

Roseman, I. J. (2018). Functions of Anger in the Emotion System. In H. C. Lench (Ed.), *The Function of Emotions* (pp. 141–173). Springer International Publishing. https://doi.org/10.1007/978-3-319-77619-4_8

Royzman, E. B., McCauley, C., & Rozin, P. (2005). From Plato to Putnam: Four Ways to Think About Hate. In *The psychology of hate* (pp. 3–35). American Psychological Association. https://doi.org/10.1037/10930-001

Rozin, P. (2001). Social Psychology and Science: Some Lessons From Solomon Asch. *Personality and Social Psychology Review*, *5*(1), 2–14. https://doi.org/10.1207/S15327957PSPR0501_1

Rudman, L. A., & Fairchild, K. (2004). Reactions to Counterstereotypic Behavior: The Role of Backlash in Cultural Stereotype Maintenance. *Journal of Personality and Social Psychology*, *87*(2), 157–176. https://doi.org/10.1037/0022-3514.87.2.157

Russell, J. A., & Fehr, B. (1994). Fuzzy concepts in a fuzzy hierarchy: Varieties of anger. *Journal of Personality and Social Psychology*, *67*(2), 186–205. https://doi.org/10.1037/0022-3514.67.2.186

Russell, P. S., & Giner-Sorolla, R. (2011). Social justifications for moral emotions: When reasons for disgust are less elaborated than for anger. *Emotion*, *11*(3), 637–646. https://doi.org/10.1037/a0022600

Rusting, C. L., & Nolen-Hoeksema, S. (1998). Regulating responses to anger: Effects of rumination and distraction on angry mood. *Journal of Personality and Social Psychology*, *74*(3), 790–803. https://doi.org/10.1037/0022-3514.74.3.790

Safdar, S., Friedlmeier, W., Matsumoto, D., Yoo, S. H., Kwantes, C. T., Kakai, H., & Shigemasu, E. (2009). Variations of emotional display rules within and across cultures: A comparison between Canada, USA, and Japan. *Canadian Journal of Behavioural Science / Revue Canadienne Des Sciences Du Comportement*, *41*(1), 1–10. https://doi.org/10.1037/a0014387

Salerno, J. M., & Peter-Hagene, L. C. (2013). The interactive effect of anger and disgust on moral outrage and judgments. *Psychological Science*, *24*(10), 2069–2078. https://doi.org/10.1177/0956797613486988

Sasse, J., Halmburger, A., & Baumert, A. (2020). The functions of anger in moral courage— Insights from a behavioral study. *Emotion*, *22*(6), 1321. https://doi.org/10.1037/emo0000906

Satterthwaite, F. E. (1946). An Approximate Distribution of Estimates of Variance Components. *Biometrics Bulletin*, *2*(6), 110–114. https://doi.org/10.2307/3002019

Saunders, B., Sim, J., Kingstone, T., Baker, S., Waterfield, J., Bartlam, B., Burroughs, H., & Jinks, C. (2018). Saturation in qualitative research: Exploring its conceptualization and operationalization. *Quality & Quantity*, *52*(4), 1893–1907. https://doi.org/10.1007/s11135-017-0574-8

Scheel, A. M., Tiokhin, L., Isager, P. M., & Lakens, D. (2021). *Why Hypothesis Testers Should Spend Less Time Testing Hypotheses*. 744–755.

Scherer, K. R. (2005). What are emotions? And how can they be measured? *Social Science Information*, *44*(4), 695–729. https://doi.org/10.1177/0539018405058216

Schoenewolf, G. (1996). The couple who fell in hate: Eclectic psychodynamic therapy with an angry couple. *Journal of Contemporary Psychotherapy*, *26*(1), 65–71. https://doi.org/10.1007/BF02307706

Seguino, S. (2007). PlusÇa Change? Evidence on global trends in gender norms and stereotypes. *Feminist Economics*, *13*(2), 1–28. https://doi.org/10.1080/13545700601184880

Serfass, D. G., & Sherman, R. A. (2015). Situations in 140 Characters: Assessing Real-World Situations on Twitter. *PLOS ONE*, *10*(11). https://doi.org/10.1371/journal.pone.0143051

Shao, B. (2019). Moral anger as a dilemma? An investigation on how leader moral anger influences follower trust. *The Leadership Quarterly*, *30*(3), 365–382. https://doi.org/10.1016/j.leaqua.2018.10.002

Shaver, P., Schwartz, J., Kirson, D., & O'Connor, C. (1987). Emotion knowledge: Further exploration of a prototype approach. *Journal of Personality and Social Psychology*, *52*(6), 1061–1086. https://doi.org/10.1037/0022-3514.52.6.1061

Shiffman, S., Stone, A. A., & Hufford, M. R. (2008). Ecological momentary assessment. *Annual Review of Clinical Psychology*, *4*, 1–32. https://doi.org/10.1146/annurev.clinpsy.3.022806.091415

Siedlecka, E., & Denson, T. F. (2019). Experimental Methods for Inducing Basic Emotions: A Qualitative Review. *Emotion Review*, *11*(1), 87–97. https://doi.org/10.1177/1754073917749016

Siegel, J. M. (1986). The Multidimensional Anger Inventory. *Journal of Personality and Social Psychology*, *51*(1), 191–200. https://doi.org/10.1037/0022-3514.51.1.191

Sinaceur, M., & Tiedens, L. Z. (2006). Get mad and get more than even: When and why anger expression is effective in negotiations. *Journal of Experimental Social Psychology*, *42*(3), 314–322. https://doi.org/10.1016/j.jesp.2005.05.002

Skitka, L. J., Bauman, C. W., Aramovich, N. P., & Morgan, G. S. (2006). Confrontational and Preventative Policy Responses to Terrorism: Anger Wants a Fight and Fear Wants "Them" to Go Away. *Basic and Applied Social Psychology*, *28*(4), 375–384. https://doi.org/10.1207/s15324834basp2804_11

Smith, A. (1759). *The Theory of Moral Sentiments*. Miller.

Smith, C. A., & Ellsworth, P. C. (1985). Patterns of cognitive appraisal in emotion. *Journal of Personality and Social Psychology*, *48*(4), 813–838. https://doi.org/10.1037/0022-3514.48.4.813

Snell Jr., W. E., Gum, S., Shuck, R. L., Mosley, J. A., & Kite, T. L. (1995). The clinical anger scale: Preliminary reliability and validity. *Journal of Clinical Psychology*, *51*(2), 215–226. https://doi.org/10.1002/1097-4679(199503)51:2<215::AID-JCLP2270510211>3.0.CO;2-Z

Snyder, J., Schrepferman, L., Brooker, M., & Stoolmiller, M. (2007). The roles of anger, conflict with parents and peers, and social reinforcement in the early development of physical aggression. In *Anger, aggression and interventions for interpersonal violence* (pp. 187–214). Lawrence Erlbaum Associates Publishers.

So, J., Achar, C., Han, D., Agrawal, N., Duhachek, A., & Maheswaran, D. (2015). The psychology of appraisal: Specific emotions and decision-making. *Journal of Consumer Psychology*, *25*(3), 359–371. https://doi.org/10.1016/j.jcps.2015.04.003

Spielberger, C. D., & Reheiser, E. C. (2010). The Nature and Measurement of Anger. In M. Potegal, G. Stemmler, & C. Spielberger (Eds.), *International Handbook of Anger: Constituent and Concomitant Biological, Psychological, and Social Processes* (pp. 403–412). Springer. https://doi.org/10.1007/978-0-387-89676-2_23

Stickney, L. T., & Geddes, D. (2016). More Than Just "Blowing off Steam": The Roles of Anger and Advocacy in Promoting Positive Outcomes at Work. *Negotiation and Conflict Management Research*, *9*(2), 141–157. https://doi.org/10.1111/ncmr.12071

Sunar, D., Cesur, S., Piyale, Z. E., Tepe, B., Biten, A. F., Hill, C. T., & Koç, Y. (2020). People respond with different moral emotions to violations in different relational models: A cross-cultural comparison. *Emotion*, *21*(4), 693. https://doi.org/10.1037/emo0000736

Tackman, A. M., & Srivastava, S. (2016). Social responses to expressive suppression: The role of personality judgments. *Journal of Personality and Social Psychology*, *110*(4), 574–591. https://doi.org/10.1037/pspp0000053

Taleb, N. N. (2010). *The black swan: The impact of the highly improbable* (2nd ed., Random trade pbk. ed). Random House Trade Paperbacks.

Tangney, J. P. (1991). Moral affect: The good, the bad, and the ugly. *Journal of Personality and Social Psychology*, *61*(4), 598–607. https://doi.org/10.1037/0022-3514.61.4.598

Tangney, J. P., Stuewig, J., & Mashek, D. J. (2007). Moral Emotions and Moral Behavior. *Annual Review of Psychology*, *58*, 345–372. https://doi.org/10.1146/annurev.psych.56.091103.070145

Tankard, M. E., & Paluck, E. L. (2016). Norm Perception as a Vehicle for Social Change. *Social Issues and Policy Review*, *10*(1), 181–211. https://doi.org/10.1111/sipr.12022

Tausczik, Y. R., & Pennebaker, J. W. (2010). The Psychological Meaning of Words: LIWC and Computerized Text Analysis Methods. *Journal of Language and Social Psychology*, *29*(1), 24–54. https://doi.org/10.1177/0261927X09351676

Tavris, C. (1989). *Anger: The Misunderstood Emotion*. Simon and Schuster.

Tiedens, L. Z. (2001). Anger and advancement versus sadness and subjugation: The effect of negative emotion expressions on social status conferral. *Journal of Personality and Social Psychology*, *80*(1), 86–94. https://doi.org/10.1037/0022-3514.80.1.86

Tiedens, L. Z., Ellsworth, P. C., & Mesquita, B. (2000). Sentimental Stereotypes: Emotional Expectations for High-and Low-Status Group Members. *Personality and Social Psychology Bulletin*, *26*(5), 560–575. https://doi.org/10.1177/0146167200267004

Törestad, B. (1990). What is anger provoking? A psychophysical study of perceived causes of anger. *Aggressive Behavior*, *16*, 9–26. https://doi.org/10.1002/1098-2337(1990)16:1<9::AID-AB2480160103>3.0.CO;2-R

Tracy, J. L., & Robins, R. W. (2007). The psychological structure of pride: A tale of two facets. *Journal of Personality and Social Psychology*, *92*(3), 506–525. https://doi.org/10.1037/0022-3514.92.3.506

Trierweiler, L. I., Eid, M., & Lischetzke, T. (2002). The structure of emotional expressivity: Each emotion counts. *Journal of Personality and Social Psychology*, *82*(6), 1023–1040. https://doi.org/10.1037/0022-3514.82.6.1023

Tvinnereim, E., Fløttum, K., Gjerstad, Ø., Johannesson, M. P., & Nordø, Å. D. (2017). Citizens' preferences for tackling climate change. Quantitative and qualitative analyses of their freely formulated solutions. *Global Environmental Change*, *46*, 34–41. https://doi.org/10.1016/j.gloenvcha.2017.06.005

Uskul, A. K., Cross, S. E., Alözkan, C., Gerçek-Swing, B., Ataca, B., Günsoy, C., & Sunbay, Z. (2014). Emotional responses to honour situations in Turkey and the northern USA. *Cognition and Emotion*, *28*(6), 1057–1075. https://doi.org/10.1080/02699931.2013.870133

Uskul, A. K., Cross, S. E., Günsoy, C., & Gul, P. (2019). Cultures of Honor. In D. Cohen & S. Kitayama (Eds.), *Handbook of Cultural Psychology*. Guilford Press.

Vaish, A. (2018). The prosocial functions of early social emotions: The case of guilt. *Current Opinion in Psychology*, *20*, 25–29. https://doi.org/10.1016/j.copsyc.2017.08.008

van der Vegt, I., Mozes, M., Kleinberg, B., & Gill, P. (2021). The Grievance Dictionary: Understanding threatening language use. *Behavior Research Methods*, *53*(5), 2105–2119. https://doi.org/10.3758/s13428-021-01536-2

van Doorn, J., Zeelenberg, M., & Breugelmans, S. M. (2014). Anger and Prosocial Behavior. *Emotion Review*, *6*(3), 261–268. https://doi.org/10.1177/1754073914523794

Van Kleef, G. A., De Dreu, C. K. W., & Manstead, A. S. R. (2004). The Interpersonal Effects of Emotions in Negotiations: A Motivated Information Processing Approach. *Journal of Personality and Social Psychology*, *87*(4), 510–528. https://doi.org/10.1037/0022-3514.87.4.510

Van Kleef, G. A., & Dreu, C. K. W. D. (2010). Longer-term consequences of anger expression in negotiation: Retaliation or spillover? *Journal of Experimental Social Psychology*, *46*(5), 753–760. https://doi.org/10.1016/j.jesp.2010.03.013

Vansteelandt, K., Van Mechelen, I., & Nezlek, J. B. (2005). The co-occurrence of emotions in daily life: A multilevel approach. *Journal of Research in Personality*, *39*(3), 325–335. https://doi.org/10.1016/j.jrp.2004.05.006

Velicer, W. F. (1976). Determining the number of components from the matrix of partial correlations. *Psychometrika*, *41*(3), 321–327. https://doi.org/10.1007/BF02293557

von Salisch, M., & Zeman, J. L. (2018). Pathways to Reciprocated Friendships: A Cross-Lagged Panel Study on Young Adolescents' Anger Regulation towards Friends. *Journal of Youth and Adolescence*, *47*(3), 673–687. https://doi.org/10.1007/s10964-017-0683-7

Walker, L. J., & Pitts, R. C. (19980601). Naturalistic conceptions of moral maturity. *Developmental Psychology*, *34*(3), 403. https://doi.org/10.1037/0012-1649.34.3.403

Walsh, J., Cave, J., & Griffiths, F. (2021). Spontaneously Generated Online Patient Experience of Modafinil: A Qualitative and NLP Analysis. *Frontiers in Digital Health*, *3*. https://www.frontiersin.org/articles/10.3389/fdgth.2021.598431

Wang, L., Northcraft, G. B., & Van Kleef, G. A. (2012). Beyond negotiated outcomes: The hidden costs of anger expression in dyadic negotiation. *Organizational Behavior and Human Decision Processes*, *119*(1), 54–63. https://doi.org/10.1016/j.obhdp.2012.05.002

Wang, L., Restubog, S., Shao, B., Lu, V., & Van Kleef, G. A. (2018). Does Anger Expression Help or Harm Leader Effectiveness? The Role of Competence-based versus Integrity-based Violations and Abusive Supervision. *Academy of Management Journal*, *61*(3), 1050–1072. https://doi.org/10.5465/amj.2015.0460

Wang, W., Hernandez, I., Newman, D. A., He, J., & Bian, J. (2016). Twitter Analysis: Studying US Weekly Trends in Work Stress and Emotion: TWITTER ANALYSIS OF WORK STRESS AND EMOTION. *Applied Psychology*, *65*(2), 355–378. https://doi.org/10.1111/apps.12065

Warren, M. A., Sekhon, T., Winkelman, K. M., & Waldrop, R. J. (2022). Should I "check my emotions at the door" or express how I feel? Role of emotion regulation versus expression of male leaders speaking out against sexism in the workplace. *Journal of Applied Social Psychology*, jasp.12878. https://doi.org/10.1111/jasp.12878

Weiner, B. (1985). An attributional theory of achievement motivation and emotion. *Psychological Review*, *92*(4), 548–573.

Wheeler, M. A., & Laham, S. M. (2016). What We Talk About When We Talk About Morality: Deontological, Consequentialist, and Emotive Language Use in Justifications Across Foundation-Specific Moral Violations. *Personality and Social Psychology Bulletin*, *42*(9), 1206–1216. https://doi.org/10.1177/0146167216653374

Wranik, T., & Scherer, K. R. (2010). Why Do I Get Angry? A Componential Appraisal Approach. In M. Potegal, G. Stemmler, & C. Spielberger (Eds.), *International Handbook of Anger: Constituent and Concomitant Biological, Psychological, and Social Processes* (pp. 243–266). Springer. https://doi.org/10.1007/978-0-387-89676-2_15

Yarkoni, T. (2022). The generalizability crisis. *Behavioral and Brain Sciences*, *45*. https://doi.org/10.1017/S0140525X20001685

Young, I. F., Razavi, P., Cohen, T. R., Yang, Q., Alabèrnia-Segura, M., & Sullivan, D. (2021). A multidimensional approach to the relationship between individualism-collectivism and guilt and shame. *Emotion*, *21*(1), 108–122. https://doi.org/10.1037/emo0000689

Zelin, M. L., Adler, G., & Myerson, P. G. (1972). Anger Self-Report: An objective questionnaire for the measurement of aggression. *Journal of Consulting and Clinical Psychology*, *39*(2), 340.