Feeling within reason

How appraisals shape emotional responses to politics

Rebasso, I.

Publication date
2023

Document Version
Final published version

Link to publication

Citation for published version (APA):
Rebasso, I. (2023). *Feeling within reason: How appraisals shape emotional responses to politics*. [Thesis, fully internal, Universiteit van Amsterdam].

University of Amsterdam
Faculty of Social and Behavioural Sciences

Feeling Within Reason

How appraisals shape emotional responses to politics

Isabella Rebasso

Feeling within reason. How appraisals shape emotions in politics.

Cover design by Soju Studio.

Feeling Within Reason: How appraisals shape emotional responses to politics

ACADEMISCH PROEFSCHRIFT

ter verkrijging van de graad van doctor
aan de Universiteit van Amsterdam
op gezag van de Rector Magnificus
prof. dr. ir. P.P.C.C. Verbeek
ten overstaan van een door het College voor Promoties ingestelde commissie,
in het openbaar te verdedigen in de Aula der Universiteit
op vrijdag 10 november 2023, te 11.00 uur

door Isabella Rebasso
geboren te Vienna

PROMOTIECOMMISSIE

Promoter:	Dr. Gijs SCHUMACHER
Copromoter:	Dr. Matthijs ROODUIJN
Overige leden:	Prof.Dr. Kevin ARCENEAUX
	Prof.Dr. Theresa KUHN
	Prof.Dr. Tom W.G. VAN DER MEER
	Dr. Alessandro NAI
	Dr. Dominique WIRZ

Preface

This cumulative dissertation, titled *Feeling within Reason: How appraisals shape emotional responses to politics*, is based on the following four articles:

1. Rebasso, I., Schumacher, G., Rooduijn, M. Affective Modeling of Emotion Labels in Politics.

2. Rebasso, I., and Schumacher, G. Using Message Appraisals to Elicit Anger and Anxiety Responses to Political Issues: Two Pre-Registered Experiments.

3. Rebasso, I. Relevance, Consistence and Resistance. What explains the link between political sophistication and emotional responses to politics?

4. Rebasso, I., Schumacher, G., Rooduijn, M. Disentangling the Sophistication-Emotion Link.

In all co-authored articles, I developed the core idea and research design, collected and analyzed the data and wrote the majority of the texts. My co-authors contributed to theory development, data analysis and writing of the articles.

Each study contained in this dissertation was pre-registered on the Open Science Framework. Exploratory analyses and deviations from the pre-analysis plans are discussed as such in each chapter. The pre-registrations can be found on my OSF page: osf.io/8cbf4. Replication materials will be made available upon publication of each individual article.

This research is part of a project that has received funding from the European Research Council (ERC) under the European Union's Horizon 2020 research and innovation programme under grant agreement No 759079.

Summary

Emotions play a pivotal role in politics, and we often often argue that emotions drive people's political behavior, from their attitudes and vote choice to their participation in political events. For instance, recent media reports of "angry Dutch farmers" protesting environmental regulations, or students expressing "anger towards Macron" in French protests. But what drives these emotions about politics? Do emotions, as theories predict, really come from how people appraise their situation? This dissertation shows that it is not the case. Emotion labels do not match appraisals, as they do in non-political situations. Moreover, people vary in the extent to which they use these labels.

Two core research questions drive this dissertation. First, do emotions in politics correspond to distinct appraisal profiles of political issues and events? Second, how does political sophistication, encompassing interest, knowledge, and confidence, influence emotional responses to politics?

Using the Component Process Model (CPM), Chapter 2 demonstrates that emotions about politics do not have the same predictable links between emotion labels and appraisals as emotions in general. Chapter 3 shows that we can elicit anger in participants if we use its appraisals profile in political messages.

Chapter 4 and 5 reveal that people who are more knowledgeable and interested in politics, i.e., political sophisticates, report to be more emotional about politics. This is not necessarily because they have a better understanding of political issues and make more consistent appraisals than the less sophisticated. Rather than factual knowledge, confidence in knowledge drives emotional responses to politics.

This dissertation sheds light on the complex roots of emotions in the political domain. Based on the findings of this dissertation, I argue that to truly understand what drives emotions in politics, we need to steer away from applying psychological theories of emotions to emotions in politics. Rather, we need a theory of *political emotions*.

Samenvatting

Emoties spelen een belangrijke rol in de politiek. Vaak wordt beweerd dat emoties het politieke gedrag van mensen beïnvloeden – van hun houding en stemkeuze tot hun deelname aan politieke evenementen. Denk aan recente mediaberichten over "boze Nederlandse boeren" die protesteren tegen milieuregelgeving, of aan studenten die "woede jegens Macron" uiten in Franse protesten. Waar komen deze emoties vandaan? Komen emoties, zoals theorieën voorspellen, voort uit hoe mensen hun situatie evalueren? Dit proefschrift laat zien dat dit niet het geval is. De emotielabels die mensen gebruiken in het politieke domein corresponderen niet met hun evaluaties, zoals wel het geval is in niet-politieke situaties. Bovendien verschillen mensen in de mate waarin ze deze labels gebruiken.

Twee onderzoeksvragen vormen de drijvende kracht achter dit proefschrift. Ten eerste: corresponderen ervaren emoties in de politiek met verschillende evaluatieprofielen van politieke kwesties en gebeurtenissen? Ten tweede: hoe beïnvloedt politieke verfijndheid – waaronder interesse, kennis en vertrouwen vallen – emotionele reacties op politiek?

Met behulp van het Component Process Model (CPM) toont Hoofdstuk 2 aan dat emoties over politiek niet dezelfde voorspelbare verbanden tussen emotielabels en evaluaties laten zien als emoties in het algemeen. Hoofdstuk 3 toont aan dat we woede kunnen opwekken bij deelnemers als we het evaluatieprofiel ervan gebruiken in politieke boodschappen.

Hoofdstuk 4 en 5 laten zien dat mensen met meer kennis van en interesse in politiek, d.w.z. mensen met meer politieke verfijndheid, aangeven emotioneler te zijn over politiek. Dit is niet noodzakelijkerwijs omdat ze politieke kwesties beter begrijpen en consistenter evalueren dan mensen met minder politieke verfijndheid. Meer dan feitelijke kennis is vertrouwen in kennis de verklarende kracht achter emotionele reacties op politiek.

Dit proefschrift werpt licht op de complexe oorzaken van emoties in de politiek. Gebaseerd op de bevindingen van dit proefschrift, stel ik dat we, om te begrijpen waar emoties in de politiek vandaan komen, af moeten stappen van het direct toepassen van psychologische theorieën over emoties op emoties in de politieke arena. In plaats daarvan hebben we een theorie van *politieke emoties* nodig.

Contents

List of Tables

List of Figures

1 Introduction

Emotions are omnipresent in accounts of political events. “Angry Dutch farmers swarm The Hague to protest green rules”, *Politico* writes in their reporting on the farmer protests in the Netherlands (Schaart, 2019). *The Guardian* describes students’ involvement in the French protests as showing the “depth of anger towards Macron” (Chrisafis, 2023). People discuss the rise of “climate anxiety” among youths (Rannard, 2022) and Biden “warns Democrats of voter anger, anxiety over inflation” (Wingrove, 2022).

As demonstrated by these examples, we attach emotion labels to almost any political event, and implicitly or explicitly assign meanings to these emotion labels. Intuitively, we know what we, personally, mean when we say that we are angry or anxious. From that, we can often infer what others mean when they say that they feel these emotions. But the majority of our experiences of emotions come from our personal lives, just as most theories of emotions were formulated to explain personal experiences and not necessarily emotions in politics. It is unclear how emotions in politics compare to how we understand emotions in the personal realm. Why are Dutch farmers angry when they could just as well be anxious about regulations threatening their ways of farming? What exactly makes young people primarily anxious about climate change? Have policymakers not known about its causes and the imminent consequences for long enough but refuse to take action? Should youths not be angry, instead? To what extent are the emotion labels we use – angry, anxious, disgusted, happy – meaningful? Do they describe different emotional states or are they just synonyms we use for very similar emotional experiences?

Distinguishing emotions from one another and identifying the underlying causes of distinct emotions in politics is not just an empirical challenge but has normative implications for how we understand the role of emotions in political life. Normative accounts of emotions arguing that they have no place in politics have a long tradition dating back to Popper (1945/2012), and Habermas (1991), to more recently Nussbaum (2013), who argues that specifically the negative emotions, fear and anger, are detrimental to political life and should be avoided. Critiques of the political uses of emotion often suffer from the misconception that emotion and reason can be separated. In fact, they are inextricably linked: reason is informed by and impossible without emotion (Damasio, 1994; Marcus, 2010), and emotions are informed by reason as far as they emerge through appraisals of our environment (Ellsworth, 2013; Scherer & Moors, 2019). Thus, emotions are not per se unreasonable. Rather, emotions are often justified – and adaptive – responses to our environment.

Most people would probably agree that political debates would benefit from an avoidance of emotions stirred up by fear-mongering or rage-baiting – fear or anger based on false or exaggerated threats, or a demonizing of political opponents. However, there are many occurrences of emotions in politics that cannot be condemned as easily. Srinivasan (2018) argues that rather than focusing on potential consequences, when judging the normative aspects of emotions we should assess whether they are justified given the situation. Anger can have unproductive consequences but that does not change the fact that it can be a reasonable and justified emotional response (Srinivasan, 2018). Asking people not to feel anger is cynical in such circumstances, and the same goes for other emotions.

Emotions in the political domain should not be seen as either good or bad, as long as they are reasonable responses to the environment. Thus, the normative debate becomes an empirical question that prompts us to look deeper into the nature and roots of emotions in politics: What drives distinct emotional responses and who experiences emotions in response to politics? Emotions are the result of appraisals of our environment and help us navigate complex social situations through action tendencies, i.e., motivational states that prepare us to respond to stimuli in an appropriate manner (Frijda, 1987). For most emotions, these action tendencies can lead to both positive (e.g., prosocial), and negative (e.g., harmful) behaviors (Lerner & Keltner, 2000). Thus, emotions are not intrinsically good or bad but they are justified or unjustified depending on whether they follow appraisals of political events and issues.

Generally, discrete emotions, such as anger, fear or hope, are seen to result from distinct appraisal profiles of events and situations and lead to distinct behavioral outcomes, i.e. action tendencies. Anxiety, for instance, which is a result of feeling uncertain about and not in control of a situation, makes us alert to threats (Albertson

& Gadarian, 2015), risk-averse (Huddy, Feldman, & Cassese, 2007), and increases our attention to help us cope with uncertainty (Valentino, Hutchings, & Banks, 2008). Each of these consequences can be seen as positive or negative depending on the context in which anxiety occurs.

Anger usually emerges in situations when we feel certain about an event's causes and consequences, i.e. when we feel that we can understand it, and when we experience a strong sense of agency. Most of all, anger emerges when we blame somebody else for a negative event. Anger puts us into an approach-attack mode: it increases political participation (Valentino, Brader, Groenendyk, Gregorowicz, & Hutchings, 2011; C. Weber, 2013) but also makes people more closed-minded, more reliant on heuristics (Parker & Isbell, 2010). It makes us less likely to engage in political deliberation (MacKuen, Wolak, Keele, & Marcus, 2010), and increases polarization (Webster, Connors, & Sinclair, 2022).

While the impact of emotions on politics has been extensively studied, a deeper understanding of their underlying roots is still lacking. To uncover the complex interplay between emotions and rationality in politics, it is essential to examine the appraisals that give rise to distinct emotions. In this dissertation, I argue that political science has mostly focused on studying the *consequences*, i.e. action tendencies of emotions. Although existing work on political action tendencies rests on the assumption that action tendencies are directly or indirectly the result of underlying appraisals, it has largely skipped over this important component of an emotion episode. As a consequence, some of the core assumptions of appraisal theory have never been tested in the political domain.

Readers might ask themselves why it is necessary that we test a theory that is well established in psychology and has been applied to political science for years. I argue that emotions in politics might work differently than in the personal domain. According to Schiller et al. (2022) emotions are allostatic. This means that they are directed towards an allostatic concern, a situational demand, and help us deal with them (similarly to an emotions' action tendencies described by Frijda, 1987). Schiller et al. (2022) identify different levels at which such allostatic concerns take place, from immediate (internal, physiological), and interpersonal, to distant (moral) concerns. The more distant a concern becomes, the higher the complexity of the steps that need to be taken to deal with said concern, i.e. to go from an object/event and its appraisal to an action tendency.

While appraisal theories have primarily described emotions about immediate and interpersonal concerns (Roseman, Spindel, & Jose, 1990; C. A. Smith & Ellsworth, 1985), I argue that emotions in politics are situated between interpersonal to the most distant, i.e. moral concerns. This makes emotional processes in politics significantly more complex and abstract than emotions in the personal domain. Thus, I argue that the applicability of a core assumption of appraisal theories – that emotions are related to distinct appraisal profiles – needs to be (re-)evaluated in the political domain. This leads us to the first empirical question that this dissertation aims to answer:

RQ1: Are emotions in politics related to distinct appraisal profiles of political issues and events?

While public debate often portrays emotional voters as inferior to rational, calculating voters, emotions can have a positive impact when they direct our attention to where it is needed and mobilize us to take action on political issues we care about (Marcus, 2010). Ultimately, emotions help us to appropriately respond to an event. Anxiety directs our attention to the threat (Albertson & Gadarian, 2015), anger and disgust help us to keep political actors accountable for moral transgressions (Bakker, Schumacher, & Homan, 2020). However, the positive impact of emotions is limited to those who respond emotionally to politics, and experience an appropriate emotion. Picture an electorate that responds with sadness, instead of anger, to corruption. Their lack of an appropriate emotional response will keep them from dealing appropriately with the problem at hand. Thus, it becomes important to know first, who gets emotional about politics and second, who can translate specific appraisals of political issues and events into appropriate emotional responses.

Past work has identified political sophistication as one of the core predictors of experiencing emotions in response to politics (Miller, 2011). Sophistication, a level of being interested in, knowing about and understanding politics is thus seen as prerequisite for (emotionally) engaged citizenship. However, this argumentation depends on the mechanisms that link political sophistication and emotional engagement, and the component(s) of sophistication (interest, knowledge, confidence-in-knowledge) that predict emotional responses to politics. Thus, the second empirical question of this dissertation examines who gets emotional about politics and through which mechanism:

RQ2: What is the relationship between political sophistication and emotional responses to politics?

To answer the two core research questions of this dissertation, I will first define emotions through the Component Process Model (Scherer & Moors, 2019), which provides the core theoretical framework throughout this dissertation. I then outline the four empirical chapters, which aim to answer the questions above and summarize their key findings. The Introduction of this dissertation is followed by four empirical chapters, which use several original survey experiments and data from the American National Election Study to provide insights into the role of appraisals in shaping discrete emotional responses to politics. The empirical chapters consist of two parts: Chapters 2 and 3 seek to answer RQ1, while Chapters 4 and 5 focus on RQ2. I conclude by reflecting on the key findings of the dissertation and discuss key theoretical and empirical implications for future studies of emotions in politics.

1.1 Defining 'Emotions' - The Component Process Model

Notoriously, in 1984, Fehr and Russell wrote: "Everyone knows what an emotion is, until one is asked to give a definition. Then it seems, no one knows" (Fehr & Russell, 1984, p.464). The challenge to define emotions was further elaborated on by Scherer. He claims that while usually we have a thing, an object or phenomenon, and debate what to call it, in "emotion psychology, we have the opposite problem. We have a name, 'emotion', but disagree about the thing. What is an emotion?" (Scherer, 2022, p.155). What does not help in this debate is that the words 'emotion' and 'feeling' are used daily for many things, from moods, to physical states (feeling tired), and interpersonal relationships (having feelings for somebody), to personality characteristics (describing people's characters as happy or anxious), and attitudes or evaluations (feeling disgusted by a disliked policy).

To distinguish emotions from these other mental states, we need a clear definition of what constitutes an emotion (for a recent discussion on the distinction of emotions – as *episodes of experience* – from affective dispositions, mood, or affect see Schiller et al., 2022). Definitions of emotions, starting with that of William James in 1884, have usually included a stimulus and a response. Emotions are seen as something that happens between the two, helping us to deal with the stimulus. Most if not all definitions also recognize a physiological and a cognitive part of emotions. However, which comes first, or which is more important, differs by definition and theory of emotion (Scherer, 2022).

Broadly, three theoretical traditions have emerged over the past decades: Basic or evolutionary emotion theories usually focus on a small number of basic emotions (often 6). They are elicited automatically and set off an innate affect program, consisting of typical behaviors and facial expressions with an evolutionary adaptive purpose (Ekman & Cordaro, 2011; Tooby & Cosmides, 2015). Appraisal theories focus on a broader range of discrete emotions that are considered to result from a range of evaluative judgments of events (Scherer & Moors, 2019; C. A. Smith & Ellsworth, 1985). Constructivist theories propose that we constantly survey our bodily affect and construct an emotion by assigning a subjective label to a physiological state. Emotions in constructivist theories are often represented in a two-dimensional valence (negative to positive) x arousal (low arousal to high arousal) space (Barrett, 2017; Barrett & Russell, 2014).

The Component Process Model (CPM) is an effort to consolidate these traditions (see Figure 1), arguing that the different approaches to emotions have much more in common than what separates them (Scherer, 2022). Above all, they each acknowledge that "emotions 1) consist of an episodic process in response to a perceived event or situation of major significance, 2) which is characterised by recursive causal effects (forward and backwards) between several components that include the evaluation of the event in terms of its significance for the goals and values of the individual, 3) creating physiological reactions, motor expressions, and action tendencies and 4) that this process is partially accessible to consciousness, resulting in feelings that 5) can be categorised and subsequently labelled by the individual in terms of its subjective conceptual structure" (p. 164,, see also Scherer & Moors,

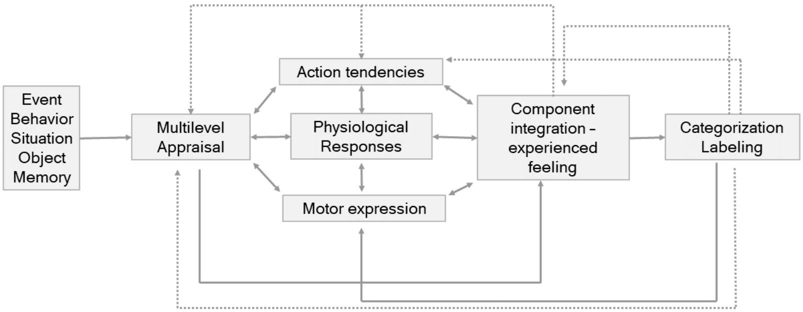

Figure 1. The dynamic architecture of the Component Process Model (Scherer, 2022). Dotted lines represent weak effects, solid lines represent strong effects, and double arrowheads indicate recursive effects.

2019). The different theoretical accounts of emotions differ primarily in how they understand the relationship between the components of an emotion episode and the relative importance they ascribe to the different components. While for instance evolutionary accounts focus more on physiological and motor responses, appraisal theories view the evaluative process as central in an emotion episode, and constructivist theories focus on the labeling of the emotional experience.

Instead of focusing on one specific component of an emotional episode, the CPM tries to provide a framework that combines the different components and theorizes about the relationships between them. It defines an emotion as "an episode of interrelated, synchronized changes in the states of all or most of the five organismic subsystems in response to the evaluation of an external or internal stimulus event as relevant to major concerns of the organism" (Scherer, 2005, p.697). Figure 1 shows the full model as outlined in Scherer (2022). The core components are multilevel appraisals, i.e., conscious and subconscious evaluations of an object or event, which lead to and are influenced by physiological responses, action tendencies and motor expressions.[1] These three components then affect the experienced feeling, which affects the labeling of the emotion episode. Most of these relationships are bidirectional and most components that seem to come "later" in the process feed back into "earlier" components, although these feedback loops are generally assumed to have weaker effects.

Despite the integration of all components, the CPM is part of the a larger family of appraisal theories (Frijda, 1987; Lazarus, 1991; Lerner & Keltner, 2000; C. A. Smith & Ellsworth, 1985), as it considers appraisals central in an emotion episode and sees appraisals as the decisive factor in the elicitation of distinct emotions. So, what exactly are appraisals?

Appraisals describe the detection and evaluation of an event's significance for one's well-being (Moors, Ellsworth, Scherer, & Frijda, 2013, p. 120). When we appraise an event or a situation, we consider how it helps or obstructs our needs, attachments, values, goals and beliefs. We constantly monitor and evaluate our surroundings, which shapes our emotions and prepares us for action. The appraisal process usually starts with appraisals of relevance and goal congruence, which are according to Scherer (2022) are the most central appraisal dimensions. The event must first matter to us for us before we quickly appraise whether it is goal congruent or goal incongruent, i.e. positive or negative.

While there is some disagreement about which secondary appraisals follow, most theories include the following three: certainty, agency (who or what is the event caused by), and coping potential or control (Moors et al., 2013, p. 120). Others also consider appraisals of novelty, expectancy, urgency, intentionality, legitimacy, or fairness, and/or norm compatibility. Appraisals are made sequentially and new information can change appraisals and the experienced emotion (Scherer & Moors, 2019; Scherer, Schorr, & Johnstone, 2001). With each recursive cycle, i.e., each appraisal that is made, the emotion episode becomes more nuanced and more complex (Moors et al., 2013).

From the earliest test of appraisal theories, scholars have tried to establish relationships between specific appraisal profiles, or core appraisal themes, and distinct

[1]Throughout this dissertation, I usually simply refer to them as appraisals, as I do not empirically distinguish between the different levels – conscious and subconscious – at which politics appraised.

emotions (C. A. Smith & Ellsworth, 1985). It has become widely accepted in appraisal theories that anger is related to the appraisals of goal incongruence, high certainty about the causes and consequences of an event, high control or felt power to deal with an event and an appraisal of the responsibility of others. Some add intentionality of the responsible agent as a necessary appraisal for anger (Petersen, 2010). Guilt can be distinguished from anger in its responsibility appraisal, when it is not someone else but oneself who is considered responsible. In many ways, anxiety stands in opposition to anger, as it is characterized by appraisals of low certainty about causes and consequences and low control to deal with an event. Similarly, among the positive emotions, enthusiasm is related to appraisals of high control and certainty, while hope is related to low certainty (Scherer et al., 2001; C. A. Smith & Ellsworth, 1985).

When appraisal theorists say that appraisals cause emotions, they mean that appraisals – in most but not all cases – mediate between the stimulus and the emotion (Moors, 2013). Appraisal theorists "accept that the influence of appraisal on other components is fed back to the appraisal component (i.e., recurrence) where a new appraisal starts (i.e., reappraisal)", seeing appraisals not as a necessary but a "typical cause, accepting marginal instances of emotions that are not caused by appraisal" (Moors, 2013, p.134).

Appraisals are subjective and are made at both conscious and subconscious processing levels. Scherer and Moors (2019) provide an example for the subjectivity of the appraisal process by asking readers to imagine that they overhear two of their friends talking badly about them. How would they feel? 3,000 working adults were asked this question in different countries. Over 40% said they would feel angry, 24% contempt. But others said they would react very differently: with good humor (14%), sadness (38%), fear or worry (6%) or shame and guilt (6%). What distinguishes a person who feels anger from one who feels sadness? Appraisal theories argue that they have made different appraisals of the situation. Feeling that one has agency to change the situation in their favor makes anger a more likely response. The same situation can however lead to sadness or even fear in another person who feels powerless, or shame and guilt in somebody with a tendency to find the fault for unpleasant situations in themselves. Nonetheless, the emotions experienced in response to a certain situation are not random, as this example also illustrates. Anger and contempt, both part of the same emotion family, have similar appraisal profiles and are by far the most common emotional responses to this situation. One could think of many other examples where, despite some individual-level variation in appraisals and emotional responses, we can expect a distinct emotion.

1.2 Studying Emotions in Politics and their Components

During a first upswing of emotion research in political science in the late 90s and early 2000s, the field had its own theory of emotions, Affective Intelligence Theory (Marcus, Neuman, & MacKuen, 2000). Since then, and perhaps because Affective Intelligence Theory only recognized three emotions – anxiety, enthusiasm, and later aversion/anger – political psychologists have started to borrow more general theoretical models from psychology, in particular appraisal theories.[2] Applying appraisal theory to politics has helped us understand how emotions function in politics. Some of these findings have been replicated several times across the years. Anger, for instance, has been shown repeatedly to increase political participation (Valentino et al., 2011; C. Weber, 2013) and to decrease deliberation across party lines (MacKuen et al., 2010; Webster et al., 2022), while anxiety stimulates information seeking (Albertson & Gadarian, 2015; Valentino et al., 2008).

Appraisal theories have provided a framework for studying emotions in political science through three distinct approaches, namely (1) the integral observational approach, the (2) integral experimental approach, and (3) the incidental approach.

Integral emotions are emotions that are directly related to the primary event or task that is studied. For instance, a study of integral anxiety might ask: what are the effects of feeling anxious about terrorism on attitudes towards military action to fight terrorism (Huddy et al., 2007)? We can study integral emotions in two ways. First, an observational approach simply measures both emotion and outcome and controls for possible confounders. This has been done cross-sectionally (e.g. Petersen, 2010; Valentino et al., 2011; Vasilopoulou & Wagner, 2020), and in

[2]This applies to the main basic discrete emotions, anger, anxiety, enthusiasm, pride, hope, etc. Some specific emotions, such as disgust, especially pathogen disgust, are primarily viewed through an evolutionary lens. (e.g. Aarøe, Petersen, & Arceneaux, 2017; Inbar & Pizarro, 2016)

panel studies (Rico, Guinjoan, & Anduiza, 2017; Rudolph, Gangl, & Stevens, 2000; Vasilopoulos, 2018; Wagner, 2014).

The advantage of this approach is that it studies emotions as they occur naturally. However, this approach usually only measures the emotion label, and the associated action tendency. A large part of the emotion model shown in Figure 1 remains unobserved. Thus, this approach always suffers from problems of endogeneity (Ladd & Lenz, 2008, 2011), as we have no grasp of the feedback loop between action tendencies, behaviors and appraisals and most of the observed relationships are bi-directional. While we often assume that appraisals are – at least partial – causes of distinct emotions, this has rarely been tested. We observe emotion, appraisals and action tendencies but we often do not know which one came first.

The second approach, the experimental integral approach to emotions, tries to deal with the endogeneity problem of observational studies either through integral emotion induction tasks (Valentino et al., 2011, 2008), or by manipulating specific appraisals (Kühne, Weber, & Sommer, 2015). Hypotheses within this approach are often limited to a very specific selected case, such as populism (Hameleers, Bos, & de Vreese, 2017) or manipulate only a single appraisal dimension, such as group identity (E. W. Groenendyk & Banks, 2014), message congruence (Bakker, Schumacher, & Rooduijn, 2021; Suhay & Erisen, 2018), or responsibility attribution (Hameleers et al., 2017; Kim, 2016; Kühne et al., 2015). There are few studies that have manipulated or measured several appraisals to study how they shape emotions in politics.

Kang and Capella (2008), for example, showed that appraisals of novelty and unpleasantness increase fear, while appraisals of low norm compatibility increase anger. Against their expectations, coping potential was neither related to fear, nor anger. However, the authors do not try to manipulate distinct emotions but rather show positively or negatively valenced ads and subsequently measure the elicited appraisals and emotions. To give another example, Chadwick (2015), has designed hope appeals containing distinct message appraisals. The results showed that message appraisals of goal congruence and possibility (conceptually similar to certainty appraisals) increase subjective feelings of hope (Chadwick, 2015). Finally, Feldman and Hart (2016) showed that efficacy messages, closely related conceptually to appraisals of coping potential, decreased fear of climate change, although only among liberals.

The third approach uses incidental emotions to isolate causal effects of emotions. Incidental emotions are emotions that are unrelated to the outcome that is studied. The action tendencies carry over to the appraisal of other stimuli (Lerner & Keltner, 2000, 2001). For instance, people in an angry state, a high control emotion, tend to be more risk-taking, and tend to show approach behaviors (Lerner & Keltner, 2000). Incidental affect has been used to study political outcomes in the form of images (Erisen, Lodge, & Taber, 2014), emotion recall tasks (Banks & Valentino, 2012; Parker & Isbell, 2010), movie clips (Renshon, Lee, & Tingley, 2015), or “impossible tasks” that induce anger (Ambroziak, Safra, & Tsakiris, 2022).

All three approaches rely on two core assumptions. The first assumption is that appraisals of emotions in politics work similarly in the political domain as in the personal domain. This means that we can use appraisal theory to make predictions about which political events elicit which emotion, and among whom, and that emotions predict specific action tendencies related to their core appraisal profiles.

The second, and related, assumption is that there are meaningful differences between someone reporting that they are anxious and another reporting that they are angry. In practice, emotions with distinct appraisal profiles – anxiety and anger, or anger and disgust – are often highly correlated (Rhodes-Purdy, Navarre, & Utych, 2020) and experimental manipulations often affect more than one emotion (e.g. Aarøe, 2011; Brader, Valentino, & Suhay, 2008; Valentino et al., 2008; C. Weber, 2013; Weeks, 2015; Wisneski, Hanson, & Morgan, 2020).

Following this assumption, the integral emotion induction approach trusts that emotions have the same meanings for different people, i.e. that people have uniform appraisal profiles that drive effects across individuals. However, appraisals are subjective: different people might not talk about the same underlying appraisals when they say they are angry.

Certain individual-level differences, such as political sophistication might help us make “better”, i.e., more informed and consistent appraisals. Yet, we know too little about how distinct appraisal profiles are related to emotions, if there are universal patterns, and which individual-level differences explain convergence with or divergence from such universal patterns.

Relying on these assumptions has allowed work in the past to focus primarily on two components of the emotion process - the feeling component and the emotion's action tendencies - while largely skipping the underlying appraisals that differentiate an emotion. With the exception of the integral-experimental approach, which does consider the appraisals that differentiate distinct emotions but often focuses on a small subset of appraisals, these approaches have usually considered appraisals a given.

This is problematic because appraisals are considered the key parameter that differentiates distinct emotions in appraisal theories. Whether appraisal theories are a useful lens through which we should study emotions in political science depends on the extent to which its core tenets are true in the political domain.

1.3 Overview of the Dissertation

This dissertation sets out to contribute to our understanding of emotions in politics by examining the appraisal component from two perspectives. The first part focuses on the appraisal profiles of discrete emotions in politics with a focus on the cognitive and affective dimensions at the heart of discrete emotions. In the second part, I investigate individual differences, specifically political sophistication and its components, which affect how people make appraisals about politics (see Figure 2). By addressing these questions, this dissertation provides new insights into the nature and determinants of emotional responses to political events, thereby filling a critical gap in the existing literature on emotions in politics.

In the first empirical chapter of this dissertation, ***Affective Modeling of Emotion Labels in Politics***, I focus on subjective appraisal profiles linked to discrete emotions in politics. For this study, which I conducted together with Gijs Schumacher and Matthijs Rooduijn, we rely on a large sample (N=1,241) of U.S. citizens who report an emotional experience that is either related to politics or to their personal lives. We then contrast the distinct emotion profiles in each domain and use a machine-learning algorithm to predict emotion labels based on their appraisal profiles. The chapter's main contribution lies in testing the two core assumptions laid out above by investigating whether distinct emotions are related to distinct appraisal profiles in the political and the nonpolitical domains. We find stark differences in how appraisals and emotions are linked in the political versus the nonpolitical domains. In the nonpolitical domain, we can clearly distinguish emotions based on their appraisal profiles, which are largely in line with our theoretical predictions. However, in politics, negative emotions look strikingly similar to each other. Anger, anxiety, despair, and guilt are all related to appraisals that we would theoretically link to anger responses. While we can predict joy and despair with high accuracy in a nonpolitical setting, in a political setting, we can best predict joy and anger, but the overall model performance in the political domain is low.

While the second chapter examines differences in subjective appraisals between the political and nonpolitical domains, the third chapter focuses on the causal role of appraisals in emotional appeals. This chapter centers around one of the core differences between emotions in the political and nonpolitical realms, namely that events are mediated and appraisals can be provided to people through political communication. Past work has shown that emotional appeals can contain specific appraisals of, for instance, certainty and coping potential (De Castella & McGarty, 2011; De Castella, McGarty, & Musgrove, 2009; Zerback & Wirz, 2021) and that such appeals elicit emotions in a predictable way (Zerback & Wirz, 2021). But research on appraisals as emotional appeals remains scarce. Thus, in the third chapter, ***Using message appraisals to elicit anger and anxiety responses to political issues***, I present a study, co-authored with Gijs Schumacher, which proposes appraisals as emotional<¥ appeals. In two-preregistered survey experiments conducted in the Netherlands ($N_1 = 1,842$ and $N_2 = 1,325$), I test whether message appraisals of certainty, control, and responsibility lead to anger and anxiety responses to various political issues. This chapter also provides a framework for studying integral emotions while considering multiple appraisals at once. Our results confirm that participants report more anger when responsibility is clear. Anxiety is not elicited by distinct message appraisals. Rather, it seems to be a response to appraisals of political issues in which responsibility is ambiguous.

It should be noted here that Chapter 3 is not informed by Chapter 2 but vice versa. While Chapter 3 systematically tests how we can use appraisal theory for integral emotion manipulation, its results, and its null-results specifically, were the core motivation to look deeper into the content of emotions in politics.

The fourth and fifth chapters focus on individual differences to respond to message appraisals and to make specific appraisals that lead to more intense emotional responses to politics. In both chapters, I investigate political sophistication as a core determinant of emotional involvement in politics (Miller, 2011). In Chapter 4, ***Relevance, Consistence and Resistance. What explains the link between political sophistication and emotional responses to politics?***, I test three preregistered mechanisms, based on prominent theories of information processing (Zaller et al., 1992) and the sophistication-emotion link (Brader, 2006) to explain how political sophisticates respond to message appraisals, compared to non-sophisticates. I use the data collected for the previous chapter and test whether the effects of message appraisals on distinct emotions are moderated by levels of political sophistication. In addition, I use open-ended questions of responsibility appraisals and measures of subjective certainty and control to assess people's subjective appraisals of the same political issues, which I link to political sophistication. I find that political sophisticates appraise politics as more relevant to their goals, and are more likely to have thought about responsible actors prior to an experiment. However, their appraisal-emotion links are not more consistent with theoretical expectations than those of non-sophisticates.

Exploratory analyses of the data presented in Chapter 4 have shown that political interest primarily drove the effects of political sophistication. This motivated the main idea of Chapter 5, which separately and more thoroughly investigates the effects of the different components of sophistication.

In Chapter 5, **Disentangling the Sophistication-Emotion Link: Political Interest and Confidence-in-Knowledge drive Emotions in Politics**, which I co-authored with Gijs Schumacher and Matthijs Rooduijn, we argue for a conceptual decomposition of political sophistication in political interest, confidence-in-knowledge and factual knowledge. In consideration of the subjectivity of the appraisal process, we argue that appraisals do not need to be factually correct. Instead, we expect political interest to be related to experiencing strong emotions in

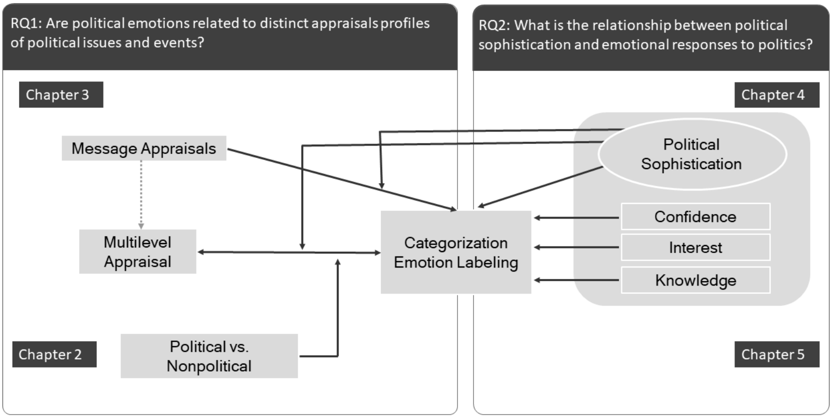

Figure 2. Overview of the four empirical chapters within the component process model (shown in simplified terms).

response to politics through higher appraisal of goal relevance. Additionally, we expect that people who are more confident make less ambiguous appraisals and therefore experience stronger emotions. We use three waves of the American National Election Study (2012-2020) and two preregistered experiments conducted in the Netherlands (N= 1,991) and in the U.S. (N=1,250), that manipulate confidence-in-knowledge through question difficulty. We show that interest and confidence are positively related to emotion self-reports. Political knowledge is unrelated to it or suppresses self-reported emotional responses to politics. We show that confidence has a causal effect on emotion self-reports. If people are less confident, they report lower levels of anger and anxiety. These results call into question the view that emotions are an expression of informed citizenship. Our findings demonstrate the necessity to disentangle the different components of political sophistication when studying emotions in politics and other political outcomes.

1.4 Conducting Social Science Research during COVID-19

It goes without saying that this work has been impacted by the global COVID-19 pandemic. The first data collection (Study 1 in Chapter 3) was scheduled exactly when the pandemic reached Europe in March 2020. We collected data in June 2020. Study 2 was conducted a year later in May 2021. The next data collection was not until another year later in summer 2022. Arguably by then COVID-19 had moved to the backdrop of not only the public's minds but also social science research. Nonetheless, doing social science research during the COVID-19 pandemic provided several challenges. I want to focus on two.

The first challenge concerns the type of research we could do, in terms of both location and design. Perhaps the main challenge for many researchers was data collection, particularly if their research relied on in-person contact. At the onset of the pandemic, the first data collection (Chapter 3) was already planned to be online and I kept it that way for the remainder of the dissertation. But the circumstances required us to rethink our measures and research design several times. This mostly affected the first study we conducted, as is described in more detail in its methodology section (Chapter 3). To summarize, during the first data collection in 2020, we added a measure for fear of COVID-19. Unsurprisingly, those with high levels of fear of COVID-19 also reported higher levels of fear generally but fear of COVID-19 did not change how people responded to our stimulus. Thus, in the second data collection (Study 2, Chapter 3), we dropped this measure. Moreover, the COVID-19 situation had calmed down, and the Dutch vaccination program had started, so we were less concerned that anxiety in relation to COVID-19 would affect our results.

However, we did have to change our experimental stimulus according to the ongoing pandemic development twice. Months before the pandemic broke out in December 2019, we had pretested stimuli for the first study. One set of stimuli concerned a polio and measles outbreak due to decreasing vaccination rates in the Netherlands. Clearly, in summer 2020 this could have stirred up a lot of anxiety related to COVID-19 but not to the issue at hand amongst participants. Thus, we decided to drop it and replace it with COVID-19 as one of the five issues, we studied. We chose this approach for two reasons. First, the issue was impossible to avoid at the time, attempts to do so would have failed, and second we would not have been able to say much about how the context affected our study. The rollout of the vaccination program in the Netherlands in 2021 prompted us to adapt the stimulus material we had used in the previous study.

The second challenge concerns the generalizability of research conducted during COVID-19. The Netherlands is likely a convenient place to have done social science research at the start of the pandemic. Compared to many other European countries, COVID-19 measures were moderate and the public was less affected by the pandemic than in many comparable countries. A 2020 Eurobarometer survey shows that the Dutch ranked second best in terms of how the COVID-19 measures had affected them (European Parliament, 2021). 70% said they were easy to cope with or even an improvement to their daily lives. Moreover, Dutch people were not too concerned that their economy would not recover after the pandemic. Only 3% thought it would never recover (EU average was 7%) and 25% thought it would recover in 2021 (EU average 17%).

Research has since shown that work conducted during the pandemic generalizes beyond it. Replicating 12 pre-pandemic studies in 33 replications, Peyton, Huber, and Coppock (2022) have shown that studies replicate in terms of the direction of the effects and significance. However, effect sizes during the pandemic are generally smaller, perhaps due to inattentiveness in online samples. In Chapter 3, although this was not the focus of the study, we find that people appraise and form emotions about COVID-19 in very similar ways as they do with other issues. We can thus be quite confident that the findings are generalizable beyond the pandemic context.

2 Affective Modeling of Emotion Labels in Politics

Abstract

We regularly ask participants how they feel about politics: angry, anxious, hopeful? Yet, we know fairly little about which considerations go into these answers, or which topics people think of when reporting general emotions about politics. In this chapter, we investigate the cognitive roots of political emotions by applying Scherer's Component Process Model and testing whether emotion labels are predicted by different appraisals in the political versus nonpolitical domains. We ask participants to recall and briefly describe an intense emotional event that is either related to politics or to their personal/professional lives. We then use a computational approach (Israel & Schönbrodt, 2019) to model distinct emotion labels based on 18 self-reported cognitive appraisals.

In the nonpolitical domain, we can clearly distinguish emotions based on their appraisal profiles, and appraisal profiles are largely in line with our theoretical predictions. However, in politics, negative emotions look strikingly similar in appraisal profiles. Anger, anxiety, despair, and guilt are all related to appraisal profiles that we would theoretically link to anger responses. While we can predict joy and despair with high accuracy in a nonpolitical setting, in a political setting, we can best predict joy and anger. The overall model performance in politics is low. The political and nonpolitical models differ in both the relationships between appraisals and emotions and their overall performance.

Emotion research in political science has relied on a core assumption: that emotions in politics work similarly as in the personal sphere. Over the last two decades, work that has applied psychological theories of emotions to politics has contributed – among other things – two important ideas: (1) emotions are not irrational, but rather they can be rational and justified responses to the environment (Marcus, 2010); and (2) anger and anxiety are distinct emotions with different effects on political behavior (Albertson & Gadarian, 2015; Valentino et al., 2011, 2008). In this chapter, we challenge these ideas. First, to determine whether emotions are justified responses to the environment, emotion labels must be systematically linked to a unique set of appraisals of the situation. Second, for anger and anxiety to be meaningfully different in the political domain, they should also be linked to different appraisals of the environment. While psychologists have extensively tested these core premises of appraisal theory (Israel & Schönbrodt, 2019; Roseman et al., 1990; Scherer & Meuleman, 2013; C. A. Smith & Ellsworth, 1985), emotion research in political science has engaged very little with the appraisals that predict distinct emotions. By testing whether emotion labels in politics are related to distinct appraisals of political events, we also question the core assumption that emotions work similarly in politics as they do in the personal sphere.

Early work in emotion research in political science outlined its own theory of emotions in politics: Affective Intelligence Theory (Marcus et al., 2000). This foundational approach primarily focused on enthusiasm, anxiety and anger and identified the novelty/familiarity of a stimulus or issue as the core appraisal that distinguishes the two emotions. More recently, other approaches have become prominent in political psychology.

Most importantly, appraisal theories (Lazarus, 1991; C. A. Smith & Ellsworth, 1985) have enabled scholars to broaden the range of studied emotions, including more complex emotions like guilt, shame, disgust, and contempt (Redlawsk & Mattes, 2022). These theories have also expanded the scope of appraisals beyond novelty/familiarity to, for instance, power/control (Rico, Guinjoan, & Anduiza, 2020; Valentino et al., 2011; Valentino, Gregorowicz, & Groenendyk, 2009), intentionality (Petersen, 2010), and blame attribution (Kühne et al., 2015)).

Yet, appraisal theories were originally developed and validated to study emotions in personal, rather than political, contexts. Social psychologists have examined how appraisals lead to emotions in social contexts, such as when group identities are made salient (Mackie & Smith, 2018; E. R. Smith & Mackie, 2016). Besides that, we usually assume that the way in which appraisals shape emotions in a political context is the same as in a personal context.

There are several reasons why we might expect that the process through which appraisals elicit distinct emotions works quite differently in the political compared to the nonpolitical domain. We argue that appraising political events and situations differs fundamentally from how we think about appraisal processes in the personal realm. Emotions in politics are directed at distant targets, which makes the emotion process more complex and abstract (Schiller et al., 2022). In addition, certain appraisals might be more relevant or more difficult to make in politics than in the personal domain. Politics (1) might be primarily about responsibility (Iyengar, 1994), (2) is often not immediately experienced but mediated by elites, and (3) is complex and often murky, leading people to use heuristics to make sense of it (Arceneaux & Stein, 2006).

To test the domain differences in appraisals processes, we rely on the Component Process Model (Scherer, 2022), a model of emotions that links a wide range of appraisals to distinct emotions. Empirically, we try to predict the basic emotion families based on appraisal profiles (see also Scherer & Meuleman, 2013). Following Israel and Schönbrodt (2019), we use a genetic *Differential Evolution* optimization algorithm suited for classification problems using high-dimensional data. We preregistered a simple hypothesis on OSF: that the model would perform better on nonpolitical data than on political data. Apart from this simple expectation, our approach was largely inductive, as we had little prior knowledge about the distribution of emotions or the appraisal prototypes within each emotion.

We find that appraisals and emotions do not link as well in the political domain as they do in the personal domain. We find that negative political emotions – anger, anxiety, despair, and guilt – are not distinguishable based on their appraisal profiles. Moreover, the model to predict emotion labels performs worse along all metrics when predicting political emotions than when predicting nonpolitical emotions. This calls into question the two core assumptions mentioned at the beginning of this introduction and suggests that we need to rethink how we theorize about appraisals, emotions, and the outcomes to which they have been linked in the domain of politics.

Methodologically, we argue that measuring key appraisals alongside emotion labels can provide important insights into the content of emotions. Emotions are multi-componential, and should be studied as such, particularly when theorizing about their behavioral consequences. An emotion's action tendency, which is assumed to be related to the underlying appraisals, can be better understood by analyzing the specific appraisals related to the emotional response.

2.1 Appraisals in the Component Process Model

Emotion theorists generally agree that emotions are elicited in response to our environment and serve to help us deal with situations and events. In other words, they agree that "emotions 1) consist of an episodic process in response to a perceived event or situation of major significance, 2) which is characterised by recursive causal effects (forward and backwards) between several components that include the evaluation of the event in terms of its significance for the goals and values of the individual, 3) creating physiological reactions, motor expressions, and action tendencies and 4) that this process is partially accessible to consciousness, resulting in feelings that 5) can be categorised and subsequently labelled by the individual in terms of its subjective conceptual structure" (Scherer, 2022, p.164). Scherer calls these ingredients the components of an emotion episode. While their relative importance differs by theoretical approach, they are present to some extent in all major theoretical accounts (Scherer, 2022; Scherer & Moors, 2019). In this chapter we focus on the first, second and last component: the situations and events that cause emotions, the evaluations that determine which emotion the event produces, and the categorization or labelling of the emotion episode. Particularly, we will contrast how these components play out in the political domain as opposed to the personal domain.

The appraisal of an event describes the process of detecting and evaluating its significance for one's well-being or the degree to which it helps or obstructs one's concerns (needs, attachments, values, goals and beliefs) (Moors et al., 2013). While most emotion theories grant a role to evaluative judgments in the emotion process, appraisal theories make them a central building block of an emotion episode. Appraisal theories argue that people constantly monitor and evaluate their surroundings to form emotions and prepare for action.

One commonality of all appraisal theories are appraisals of relevance and goal congruence. Relevance, according to Scherer, is the most central appraisal dimension (Scherer, 2022). A situation, such as a political event, must matter to us to invest in subsequent appraisals and emotional experience. Subsequently, we determine if an event helps or obstructs our goals, or put differently whether it is positive or negative. Then, a number of secondary appraisals are made. Although different appraisal theories disagree on the exact nature of these secondary appraisals, at least three of them can be found in most approaches: certainty, agency (who or what is the event caused by), and coping potential or control (Moors et al., 2013, p. 120). Other theories also include appraisals of novelty, expectancy, urgency, intentionality, legitimacy, or fairness, and/or norm compatibility.

Appraisals are made sequentially (Scherer et al., 2001, ch.5). As new information becomes available, the emotion we experience can change. Generally, the more appraisals are made, the more nuanced the emotional episode, and an emotional episode becomes more complex with each recursive cycle (Moors et al., 2013). Action tendencies and physiological responses may also feed back into appraisals. As a consequence, the emotions we measure through self-reports are the products of often very complex appraisal sequences, where all components of the emotion process model sequentially influence each other, consciously or unconsciously. In this chapter, we follow Scherer (2013) in considering a wide range of appraisals instead of limiting ourselves to a few appraisals that we select a priori.

Based on these appraisals individuals experience a certain emotion, which comes with a typical appraisal profile (Scherer & Moors, 2019). To give an example: appraisals of responsibility attribution, together with appraisals of high individual control and high certainty produce anger. If another person in the same situation attributes responsibility to themselves, they experience guilt. If people appraise the same situation differently, they also experience different emotions (Siemer, Mauss,

& Gross, 2007).

Following the Component Process Model appraisals are followed by physiological responses, motor expressions and action tendencies. The latter, also sometimes referred to as appraisal tendencies, describe “the preparation of action appropriate for dealing with or adapting to these events both mentally, in the form of states of action readiness or action tendencies, and physically, in the form of physiological responses”(Scherer & Moors, 2019, p.721). Most work in political science has focused on the (political) action tendencies of emotions, asking question such as: how does anger affect political participation (Valentino et al., 2011, 2009; C. Weber, 2013)? How do anger and anxiety about terrorism affect support for military action (Huddy et al., 2007)? Does anger drive partisan social division (Kim, 2016; MacKuen et al., 2010)?

Theoretically, appraisals come before an emotion label, but in practice it is not possible to establish a causal ordering in an observational study. An emotion episode unfolds quickly and is short-lived. Thus, when people report their emotions and appraisals after the fact, action tendencies have already fed into the self-reported appraisals through a feedback loop. Establishing a causal ordering of the components of an emotion episode is not the goal of this chapter. Rather, we aim to test a much more fundamental assumption of appraisal theory: can political emotions be differentiated and predicted by their distinct appraisal profiles?

Appraisal profiles are unique combinations of several appraisal dimensions, although not all appraisal dimensions are relevant in every distinct emotion’s appraisal profile. Scherer and Meuleman (2013) identify 25 distinct appraisals.[3]

Our expectations for the appraisal profiles are derived from Scherer and Meuleman (2013) and Scherer et al. (2001) and are shown in Table 1.

[3] Un/pleasantness, Suddeness, Predictability, Familiarity / Novelty, Goal / Need importance, Moral acceptability, Norm violation, Agency: chance, Agency: self, Intentionality: self, Image compatibility, Agency: other, Intentionality: other, Consequences: known, Consequences: expectedness, Consequences: near future, Consequences: far future, Goal conduciveness, Goal obstructiveness, Injustice, Coping, Urgency, Power, Adjustment.

2.2 Politics as a Separate Emotional Domain?

Appraisal theories have become one of the key frameworks through which political psychologists have studied emotions. Applying appraisal theory to politics has significantly fostered our understanding of how emotions function in politics. Anger, for instance, has been shown repeatedly to increase political participation (Valentino et al., 2011; C. Weber, 2013) and to decrease deliberation across party lines (MacKuen et al., 2010; Webster et al., 2022), while anxiety stimulates information seeking (Albertson & Gadarian, 2015; Valentino et al., 2008).

Appraisal theories have provided a framework for studying emotions in political science through three distinct approaches, namely (1) the integral observational approach, the (2) integral experimental approach, and (3) the incidental approach.

Integral emotions are emotions that are directly related to the primary event or task that is being studied. We can study integral emotions in two ways. First, an observational approach simply measures both emotion and outcome and controls for possible confounders. This has been done cross-sectionally (e.g. Petersen, 2010; Valentino et al., 2011; Vasilopoulou & Wagner, 2020), and in panel studies (Rico et al., 2017; Rudolph et al., 2000; Vasilopoulos, 2018; Wagner, 2014).

The strength of this approach is that it studies emotions directed at a specific political target and as they occur naturally. However, this approach usually only measures the emotion label, and the associated action tendency. As it is observational, this approach always suffers from problems of endogeneity (Ladd & Lenz, 2008, 2011), as we have no grasp of the feedback loops between action tendencies, behaviors and appraisals. Moreover, isolating the effect of emotions on behaviors, depends on whether we include the correct controls. If we fail to do so, we run the risk of building our knowledge on spurious relationships. Isolating the effects of discrete emotions is therefore a particularly tricky task, as we know little about the causes of and relationships between emotions (see for instance Jost, 2019).

The second approach to emotions, the experimental integral approach to emotions, tries to deal with the endogeneity problem of observational studies either through integral emotion induction tasks (Valentino et al., 2011, 2008), or by manipulating specific appraisals (Chadwick, 2015; Kühne et al., 2015). Hypotheses within this approach are often limited to a very specific selected case, such as populism (Hameleers et al., 2017) or manipulate only a single appraisal dimension, such as group identity (E. W. Groenendyk & Banks, 2014), message congruence (Bakker et al., 2021; Suhay & Erisen, 2018), or responsibility attribution (Hameleers et al., 2017; Kim, 2016; Kühne et al., 2015). However, there are some studies that have manipulated or measured several appraisals to study how they shape emotions in politics (e.g. Chadwick, 2015; Kang & Cappella, 2008)

The final approach uses incidental emotion induction to isolate the causal effect of emotions on behaviors. Incidental emotions are emotions that are unrelated to the outcome that is studied. The action tendencies carry over to the appraisal of other stimuli (Lerner & Keltner, 2000, 2001). For instance, people in an angry state, a high control emotion, tend to be more risk-taking, and tend to show approach behaviors (Lerner & Keltner, 2000). Incidental affect has been used to study political outcomes in the form of images (Erisen et al., 2014), emotion recall tasks (Banks & Valentino, 2012; Parker & Isbell, 2010), movie clips (Renshon et al., 2015), or "impossible tasks" that induce anger (Ambroziak et al., 2022)

Appraisal Check	ANGER	ANXIETY	DESPAIR	GUILT	JOY
Goal Relevance	medium	medium/high	high	high	high
Novelty					
Suddenness	open	medium	medium	low	medium
Familiarity	low	low	low	open	low
Predictability	low/medium	low	low	open	low
Pleasantness	low	low	open	open	high
Implication					
Cause: Other	high	medium	medium	low	low/open
Cause: Self	low	low	low	high	high
Intentionality	high	open	low	high	open/high
Cause: Chance	low	medium	high	low	low
Goal Conduciveness	low	low	low	low	high
Goal Obstruction	high	high	high	high	(very)low
Urgency	medium	high	medium	medium/high	low
Coping Potential					
Control	high	open	low	open	open
Power	medium	very low	very low	open	open
Adjustment	high	medium/low	low	medium	high
Normative Sign.					
Moral acceptability	low	open	open	low	open/high
Norm violation	high	open	open	high	open/low
Unjust consequences	medium/high	open	open	medium	low

Table 1: Theoretical predictions of appraisal profiles of five emotion families, based on Scherer and Meuleman 2013 (Table 1 supplementary material) and Scherer 2001. Open means an appraisal check is not relevant for a specific appraisal profile. The last column shows our final prediction for the anger emotion family.

These approaches rely on two core assumptions. The first assumption is that appraisals in emotions in politics work similarly in the political domain as in the personal domain. This means that we can use appraisal theory to make predictions about which political events elicit which emotion, and among whom, and that emotions predict specific action tendencies related to their core appraisal profiles. Moreover, this assumption leads to the idea that we can use nonpolitical emotion induction tasks, study their effects and generalize the findings to emotions in politics.

The second, and related, assumption is that there are meaningful differences between someone reporting that they are anxious and someone else reporting that they are angry. In practice, emotions with distinct appraisal profiles – anxiety and anger, or anger and disgust – are often highly correlated (Rhodes-Purdy et al., 2020) and experimental manipulations often affect more than one emotion (e.g. Aarøe, 2011; Brader et al., 2008; Valentino et al., 2008; C. Weber, 2013; Weeks, 2015; Wisneski et al., 2020). As a result, the integral emotion induction approach trusts that emotions have the same meanings for different people, i.e. that people have uniform appraisal profiles that drive effects across individuals.

While appraisal theories appear like a set of stringent rules where certain appraisals predict distinct emotions, it is important to understand that they do leave room for culture or domain differences (Ellsworth, 2013; Moors et al., 2013). Psychologists have mainly studied geographical and language differences finding that appraisal theories can predict emotions across several languages and cultures (Fontaine, Scherer, Roesch, & Ellsworth, 2007). Here, we argue that politics constitutes a realm that might be fundamentally different from the personal realm. There are several reasons for this.

Schiller et al. (2022) argue that emotions are always directed at a specific concern. Further, they describe emotions as allostatic. They help us to regulate and deal with concerns at different levels. Conceptually, these concerns are similar to what Frijda (1987) has called an emotion's action tendencies. They distinguish different levels at which such allostatic concerns take place, from immediate (internal, physiological), interpersonal, to distant (moral) concerns. The more distant a concern becomes, the higher the complexity of steps that need to be taken to deal with it, i.e., to go from object to action tendency. In contrast to emotions in the nonpolitical domain, which usually deal with immediate and interpersonal concerns, emotions in politics deal with more distal concerns. They are therefore situated between interpersonal and moral concerns, which makes them significantly more abstract and complex than the nonpolitical emotions that are usually discussed in psychological theories of emotions. In what follows, I discuss three specific reasons why emotions in politics are more complex than emotions in the nonpolitical domain.

First, appraisals in politics are always subject to debate. Most prominently, politics is inherently about responsibility and accountability (Iyengar, 1994). Who is responsible for any political event, good or bad, retrospective or prospective, is at the core of most political debates. Debates around climate change often revolve around appraisals of certainty (what do we know and how sure can we be?) and control (what can we do, as individuals, as collective?). The ambiguity of these appraisals might lead people to rely on just the most salient appraisals, i.e. appraisals of responsibility.

Second, and linking back to political emotions as distant allostatic concerns, appraisal theory was developed based on the appraisal of immediate situations, i.e. situations that people personally and directly experienced. The experience of politics, however, is often mediated, by news media, or discussion partners. This may mean that how we appraise a political problem is different from a personal issue.

Feeling an urgency to act, for instance, is important in light of a directly threatening situation but arguably much less important when we read about events that happened the past day in the news. Of course one could think of instances where politics becomes very immediately felt and intrudes personal lives, e.g. unemployment or poverty. But for the person making these appraisals to see such situations as political usually requires an additional step which links the event to a broader political and societal context.

Third, in politics, we frequently lack full information. We do not know the intentions of political actors and the exact spheres of responsibility, and can only assume the control different political actors have over a situation. Thus, people use various heuristics, such as party cues (Arceneaux & Stein, 2006), to navigate complex political events. It is therefore debatable to what extent people make differentiated appraisals about politics at all, or whether when they report political emotions, they merely repeat politicians' emotion cues.

This list of arguments why political emotions are different from emotions in the personal sphere is not exhaustive. Yet, it gives ample reason for broadly re-testing appraisal theories in the political context. Existing research has studied appraisals as causes of distinct emotions, has focused on only a few appraisals at a time and has usually manipulated appraisals rather than studying them as they occur in real-life (Kühne et al., 2015; Valentino et al., 2009). Following the Component Process Model, which suggests that we should look at the full appraisal profiles, we take a more comprehensive approach to political emotions by testing their appraisal profiles composed of 18 different appraisals.

2.3 Methodology: A Computational Approach to Modeling Emotions

To link appraisals and emotions, we will use an adapted version of the Geneva Emotion Analyst (GEA) task (Scherer & Meuleman, 2013). This task asks participants to recall an emotional event and write a short description of it. Afterwards, they are asked to label the emotion they felt and to appraise the event by answering a series of questions.[4] Scherer and Meuleman (2013) used GEA to investigate the match between emotions and theoretically expected levels of appraisals. In a follow-up study, Israel and Schönbrodt (2019) suggested a refined computational approach to derive the co-occurrence of appraisals and emotion labels and the importance of specific appraisals in predicting emotion labels. To analyze the differences between the nonpolitical and political domains we follow this latter approach by Israel and Schönbrodt (2019).

In sum, the goal of this chapter is to evaluate the similarities and differences between emotions in the political and nonpolitical domains. Using the Geneva Emotion Analyst (GEA) task, we will answer the research question by contrasting (1) the frequencies of each emotion label, (2) the co-occurrence of appraisals

[4]GEA is a follow-up from the Geneva Expert System on Emotions (GENESE). The latter is a similar task, but asks appraisals first and emotion labels second.

and emotion labels (i.e. the appraisal profiles), (3) the importance of appraisals to predict emotion labels in both domains and (4) the overall performances of models predicting emotion labels based on 18 appraisals in the political versus nonpolitical domain.

Task Procedure

Our research design closely follows Scherer and Meuleman (2013) and Israel and Schönbrodt (2019) but with one important difference: we include a political and a nonpolitical condition. The wording of the instructions and questions is almost identical to the original study. In the political condition, respondents saw the following text: "*Please recall a moment* ***related to politics*** *when you experienced an intense emotion, either positive or negative, as a consequence of an event. It might have been brought about by you, by someone else, or by natural causes. The only important thing is that it has something to do with politics (for instance: a discussion about politics you recently had, a politician, a specific political event or topic, etc.). Don't think for too long. Take the first strong emotion-producing event that came to your mind after reading my request and put yourself back into that situation, trying to recall the details of the eliciting events as clearly as possible.*"

The domain in the nonpolitical condition is the following: "*Please recall a moment in time when you experienced an intense emotion in your* ***personal or professional life****, either positive or negative, as a consequence of an event. It might have been brought about by you, by someone else, or by natural causes. Don't think for too long. Take the first strong emotion-producing event that came to your mind after reading my request and put yourself back into that situation, trying to recall the details of the eliciting events as clearly as possible.*

Next, respondents were asked to describe the event in as much detail as possible using an open text box: "*Please describe the event/situation as detailed and objectively as possible using the text box below. Everything you write is confidential. Don't worry about any typos. Please take your time to think and write about the event. You will have to write a minimum of 20 characters to continue.*"

On the next screen, respondents indicated the emotion that best describes how they felt in the situation selecting from a list of 15 emotions: Sadness, Joy, Anger, Anxiety, Surprise, Fear, Irritation, Shame, Guilt, Disgust, Pleasure, Despair, Pride, Contempt, Rage.[5] The emotion labels were presented in random order. Last, we presented an option to select: "None of these correspond to how I felt in the moment".

After respondents had reported the emotion label, they were asked to make more detailed appraisals of the emotion episode. The measures for all appraisal checks are based on the measures used by Scherer and Meuleman (2013) and the latest GEA version. We measured the extent to which an appraisal was present during the emotion episode or a description of the event that elicited the emotion episode using a scale ranging from "1 = not at all" through "3 = moderately" to "5 = extremely".

Table 2 and 3 show all appraisal checks and their question wordings.

Sample

We recruited an online sample of 1241 respondents through *Prolific*. The sample consisted of 49 percent men, 50 percent women and 1 percent identifying as non-binary. The sample had a mean age of 43.73 (SD = 15.57). In terms of education 43 percent had a College or Bachelor degree, 15.4 percent a Graduate Level Degree, 3.3 percent only primary education, 38 percent secondary education, and 0.2 percent without formal education. In sum, the sample had representative characteristics. Treatment randomization worked as intended with 637 participants in the nonpolitical domain and 592 participants in the political domain.

Measures

To construct our measures of interest we first took the following preprocessing steps. Following Israel and Schönbrodt (2019), we scaled all appraisal scores to range from 0 to 1. *Doesn't apply* responses were recoded to *Missing*. We then assigned the fifteen emotions to five emotion families: anger (anger, irritation, rage, contempt, disgust), anxiety (fear, anxiety), despair (despair, sadness), guilt (guilt, shame) and joy (joy, pleasure, pride, surprise). The reduction of emotions into broader emotion families also followed Israel and Schönbrodt (2019). Their com-

[5]The original study included the same measures except for surprise and disgust.

putational model was capable of predicting emotion families, but underperformed in predicting emotions. In contrast to Israel and Schönbrodt (2019) we distinguished 5 emotion families by differentiating between despair and anxiety. We did this because of the substantive interest in anxiety in political psychology.[6]

After preprocessing, we first calculated the frequencies of the emotion families in both domains. Then we calculated the appraisal profiles as the mean level of each appraisal per given emotion label. To evaluate the importance of each appraisal dimension in predicting the emotion family, we ran the emotion prediction model as described by Israel and Schönbrodt (2019). We distinguished four steps.

First, we split the samples (political and nonpolitical, respectively) in two random samples, a training and a test set. In the training set we oversampled some emotions, so that each emotion label is represented equally.

Second, we calculated the mean of each appraisal per emotion label in the training data. These means are called prototypes and they are different to the appraisal profiles presented above, which were calculated based on the full domain samples. To conduct an intial test of whether our model compares to the Israel and Schönbrodt (2019) model, we first calculated the prototypes for each emotion (not emotion family) and the correlation between our prototypes and the Israel and Schönbrodt (2019) prototypes. Thus, for each correlation, we had 12 data points, one for each emotion that was in both our data set and the Israel and Schönbrodt (2019) data set. Table A1 shows the correlations per appraisal dimension. Overall, the appraisal prototypes correlate highly with those reported in the original study. The prototypes for the five emotion families, which we used as input for our prediction models, are shown in the Appendix, Tables A2 and A3.

[6]We deviated in two other ways. (1) We did not aggregate appraisal dimensions. The only dimensions that correlate strongly are goal conduciveness and goal construction but combining them does not decrease dimensionality significantly. (2) The study included measures on action tendencies, e.g. a wish to withdraw or attack. As we were theoretically interested in the appraisal and not the action tendencies, we did not include them.

Appraisal	Question
Goal Relevance	Could the event have important consequences for you?
Novelty	
Suddeness	Did the event happen suddenly and abruptly?
Predictability	Could you have predicted the occurrence of the event?
Familiarity / Novelty	Were you familiar with this type of event?
Pleasantness	How would you evaluate this type of event in general, independent of your specific needs and desires in the situation you reported above?
Implications	
Cause: chance	Cause: Chance, special circumstances, or natural forces?
Cause: other	Cause: The behavior of one or more other person(s)?
Cause: self	Cause: Your own behavior?
Intentionality	Was the event caused intentionally (by you or others)?
Goal conduciveness	At the time of experiencing the emotion, did you think that real or potential consequences of the event… did or would bring about positive, desirable outcomes for you (e.g., helping you to reach a goal, giving pleasure, or terminating an unpleasant situation)?
Goal obstructiveness	At the time of experiencing the emotion, did you think that real or potential consequences of the event… did or would bring about negative, undesirable outcomes for you (e.g., preventing you from reaching a goal or satisfying a need, resulting in bodily harm, or producing unpleasant feelings)?
Urgency	After you had a good idea of what the probable consequences of the event would be, did you think that it was urgent to act immediately?

Table 2: The 18 Appraisal Checks used as input to our models.

Appraisal	Question
Coping Potential	
Coping	At the time of experiencing the emotion, did you think that real or potential consequences of the event could have been or could still be avoided or modified by appropriate human action?
Power	After you had a good idea of what the probable consequences of the event would be, did you think that you had the power to control the consequences?
Adjustment	After you had a good idea of what the probable consequences of the event would be, did you think that you were unable to deal with the consequences that could not possibly be avoided or modified?
Normative Significance	
Moral acceptability	Were the actions that produced the event morally or ethically acceptable?
Norm violation	Were the actions that produced the event morally unacceptable or violated social norms?
Injustice	At the time of experiencing the emotion, did you think that real or potential consequences of the event were or would be unjust or unfair?

Table 3: The 18 Appraisal Checks used as input to our models (continued).

Table 4: Correlation of prototypes with Israel and Schönbrodt 2019 prototypes.

Appraisal	Political	Nonpolitical
suddenness	0.82**	0.9***
familiarity	0.28	0.53
predictability	0.64*	0.69*
pleasantness	0.99***	0.99***
goal	0.48	0.36
chance	-0.3	0.67*
intention	-0.13	0.69*
urgency	0.41	0.33
coping	0.73**	0.9***
power	0.36	0.35
adjust	0.53	0.95***
goal.pos	0.82**	0.95***
moral	0.81**	0.93***
norm	0.9***	0.82***

Third, we used the prototypes to calculate weights for each appraisals dimension. Weights can be interpreted as the importance these appraisals have in distinguishing the emotions from each other, while the prototypes can be interpreted as the positions of the five emotions in a multi-dimensional space. The weights were produced as follows. The model takes the 18 appraisal dimensions of the balanced training set as input vector, and calculates the sum of squared differences between the input vector and the 5 emotion prototypes (means of each appraisal per emotion family in the unbalanced training set).

We used the Differential Evolution (DE) algorithm, which is a genetic algorithm suited for multidimensional classification tasks (Storn & Price, 1997). The model assigns weights to each appraisal dimension, i.e. their importance in predicting the emotion families and converges at a solution that minimizes the distance scores between an input vector and the prototypes. Other model parameters in the DEoptim function (from the DEoptim R package) were set in accordance with Israel and Schönbrodt (2019). We ran the optimization procedure ten times across different random seeds. Its output was thus a 10 by 18 appraisals-weights matrix.

In this chapter, we report the weights with the best out-of-sample performance. The ten remaining parameter matrices were used to calculate the variance across the ten solutions to assess the reliability of the appraisal weights. If the ten random seeds produced a similar solutions, the variance across models would be small and we can conclude that the model has high reliability.

Fourth, to validate our models, we report the overall accuracy (proportion of correct prediction by total cases) and precision scores per emotion families (proportion of correct positive predictions by all positive predictions, true and false positives).

We discuss the results as follows. First, we describe and contrast the frequencies of the five emotion families in the nonpolitical and political domains. Second, we contrast the appraisal profiles of each emotion family in both domains. Theoretical predictions are derived from Scherer et al. (2001) and Scherer and Meuleman (2013). We focus specifically on the appraisal dimensions that should help us distinguish between two distinct emotions and test whether they do so in each domain. We then proceed to the computational modeling of emotions. Thus, third, we contrast the importance of each appraisal dimension per domain by comparing the weights assigned to each appraisal dimension in the optimization procedure. The weights in the two models tell us something about the relative importance of the appraisals. It is possible that even if we do not find strong differences in appraisal profiles, single dimensions, such as moral considerations, determine discrete emotions in politics. Such a pattern could be uncovered using the model weights.

Finally, we present the model diagnostics. Here, we test a simple hypothesis, namely that the model performs better in the nonpolitical than the political domain. To assess model performance, we report overall accuracy of the models, precision, recall and F1 scores per emotion class.

2.4 Results

First, which emotions did respondents select? There were substantial differences in which emotions respondents selected depending on which domain they were assigned to. Figure 3 shows the proportions of selected emotions per domain grouped by emotion family.

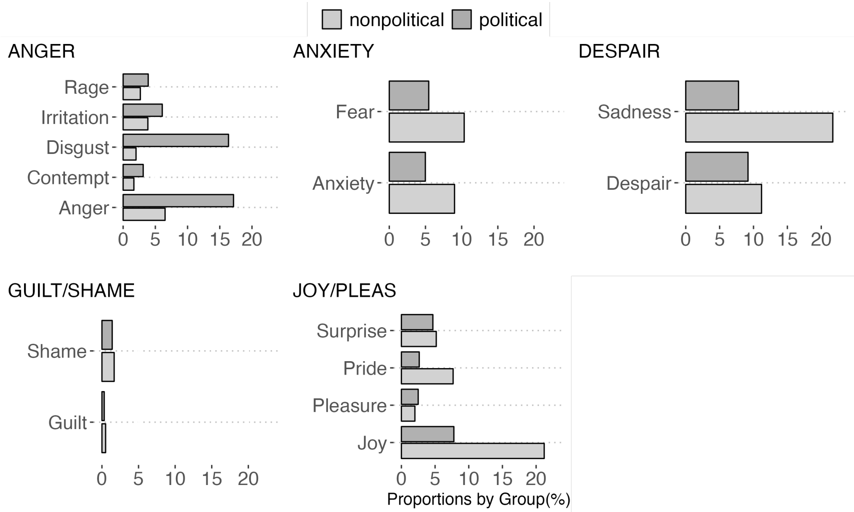

Figure 3. Selected emotions based on domain

Most notably, anger and disgust were the most frequently selected emotions in the political domain but rarely selected in the nonpolitical domain. In fact, all emotions that are part of the broader anger family were selected more frequently in the political domain than in the nonpolitical domain. For the other emotion families, the opposite pattern emerges. Emotions belonging to the anxiety, despair and joy families were selected often in the nonpolitical domain but less frequently in the political domain. Guilt and shame were selected rarely in either domain.

Next, we take a look at the targets of emotions, or the issues and situations that elicited an emotion. We asked participants to pick one of five (nonpolitical domain) or a multiple of eight (political domain) categories that best described the event[7]. This question was asked after the appraisal tasks had been completed. Figure 4 shows the proportions of targets in the political domain. A moment during a political campaign, a politician or candidate, a political issue and current domestic affairs

[7]The difference in choice options, single choice or multiple choices was due to a survey programming error. Ideally in the nonpolitical domain, participants would have been able to select multiple categories too but as the nonpolitical descriptions were much broader, we assume that participants were still able to meaningfully assign the events/situations to one of them.

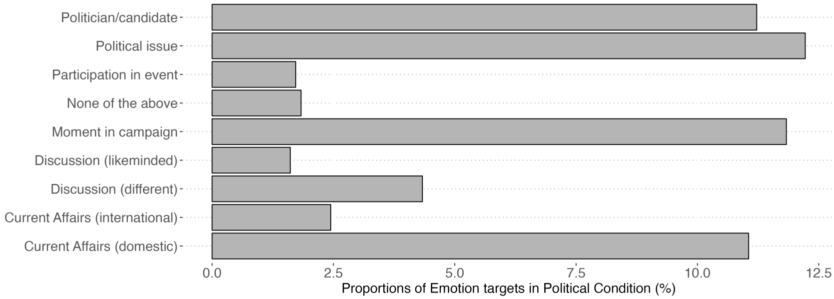

Figure 4. Emotion Targets in political domain

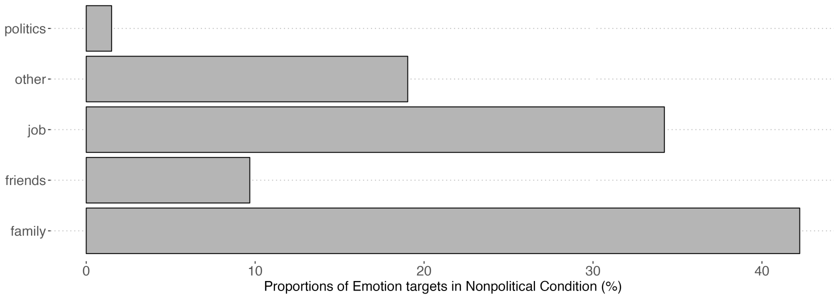

Figure 5. Emotion Targets in nonpolitical domain

were the most frequently selected categories. A moment during the campaign was most frequently selected together with other categories, with something a candidate had said (66 times), a political issue (50 times), or current affairs in domestic politics (49 times). The single most frequent combination was that of political issue and current affairs in domestic politics, which were selected together 97 times.

In the nonpolitical domain, family and respondents' jobs were named most frequently as descriptions of the emotion episode. Only 9 respondents in the nonpolitical domain described an event that was related to politics.

Appraisal Profiles in the Political and Nonpolitical Domains

We begin the discussion of our findings with the appraisal profiles of each emotion per domain. Appraisal profiles are the mean values of the 18 appraisals by emotion and domain of the full samples per domain. The appraisal profiles tell us which appraisals people have made per emotion, on average. We investigate whether we can distinguish the different emotion families based on their appraisal profiles in the political and nonpolitical domains. We focus on the distinction between anger and the other negative emotions but present the results for all tests in the online supplementary material (Figures B3–B5).

Figures 6-8 contain three pieces of core information: (1) the means, with 95% confidence intervals, of each appraisal dimension per domain (political and nonpolitical) and emotion, (2) the theoretical predictions based on Scherer et al. (2001) and Scherer and Meuleman (2013), and (3) the results of T-tests comparing the mean appraisal scores of the two emotions (corrected for multiple hypothesis testing).

Given the breadth of information included in Figure 6, we discuss a few key findings. Based on Scherer's theoretical predictions, we expect anger and anxiety to differ along 11 appraisal dimensions. In our sample, they differ along 8 of the expected dimensions in the nonpolitical domain. We do not find differences between anger and anxiety in terms of urgency appraisals (although mean urgency appraisal related to anxiety is higher than anger but the difference is not statistically significant), power and adjustment. The other appraisal dimensions differ as expected and in the expected direction. Anxiety is related to higher appraisals of goal relevance (M=0.85) than anger (M=0.75), moral acceptability (Anxiety: M=0.37, Anger: M=0.24) and chance as cause of the event (Anxiety: M=0.52, Anger: M=0.22). Anger, on the other hand, is related to higher appraisals of other behavior as cause (Anxiety: M=0.5, Anger: M=0.84), intentionality (Anxiety: M=0.34, Anger: M=0.64), control (Anxiety: M=0.5, Anger:M= 0.71), norm violations (Anxiety: M=0.35, Anger: M=0.71) and unjust outcomes (Anxiety: M=0.54, Anger: M=0.79).

Anger in the political domain follows the predicted pattern: moderate goal relevance (M=0.60) and suddenness(M=0.49), low pleasantness (M=0.12) and high goal obstruction (M=0.66), other responsibility (M=0.84), intentionality (M=0.73), control (M=0.72), and low moral acceptability (M=0.19), high norm violation (M=0.68) with unjust consequences (M=0.71). But anxiety largely follows the same appraisal pattern as anger, as indicated by the similarities in appraisal dimension means in Figure 6. In politics anxiety and anger are hardly distinguishable and only significantly differ in terms of one dimension: moral acceptability, which is lower for anger than anxiety. The other ten appraisal dimensions along which anger and anxiety should be differentiated do not differ. These null findings are striking especially in comparison to the nonpolitical domain. A few of them are particularly noteworthy. First, in politics, people report anxiety in response to events with highly unjust outcomes (M=0.64). Just like anger, political anxiety is related to appraisals of the responsibility of others (M=0.77), caused intentionally (M=0.71), and violated social norms (M=64). Based on these appraisal profiles, it appears essentially impossible to distinguish anger and anxiety based on the reported appraisal profiles in the political domain. In the nonpolitical domain, they can be clearly distinguished and the pattern closely follows the theoretical predictions laid out by the Component Process Model.

Next, we look at the appraisal profiles of anger and despair. For anger and despair, we would expect different appraisals on 11 dimensions. In the nonpolitical domain, we find statistically significant differences for nine of these dimensions. We do not find any differences for goal relevance (situations eliciting both emotions are appraised as high in goal relevance), predictability (although here, the predicted difference by Scherer is also small, from low-medium for anger to low for despair), and adjustment. Overall, anger and despair in the nonpolitical domain can be clearly distinguished and have distinct appraisal profiles.

In the political domain, we do not find distinguishable appraisal profiles. Anger and despair only differ in terms of goal obstruction (note that we do not theoretically predict a difference here) and goal relevance. The difference in goal relevance is, as predicted, higher for despair than for anger. Overall, however, the two emotions in the political domain are similar. Despair, like anxiety, looks much more like anger in terms of the appraisal profile. People reported feeling despair in politics even when a situation was intentionally caused by others, involved norm violations, had

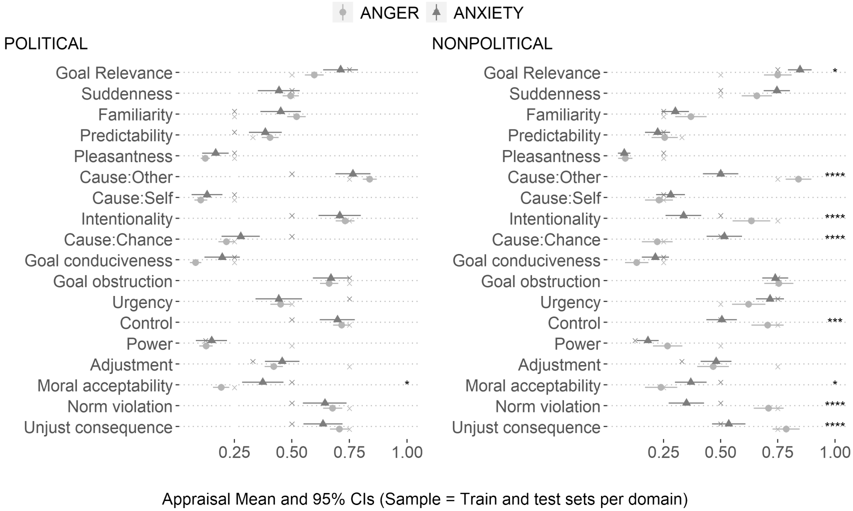

Figure 6. Appraisal profiles of anger and anxiety by domain (political vs. nonpolitical). Scherer's theoretical predictions are marked with an x (low = .25, medium/open = 0.5, high = .75) - see also Table 1. On the right side, we show the significance level of T-tests between the two emotions per domain correcting for multiple hypotheses testing using the Benjamini–Hochberg procedure.

unjust outcomes, and was not caused by chance.

Finally, we discuss the differences between anger and guilt's appraisal profiles, which are shown in Figure 8. We would expect anger and guilt to differ along ten dimensions but certainly the most striking difference should be in terms of the cause of the event. Guilt (and shame) should be related to appraisals of self-responsibility, while anger is related to appraisals of responsibility of others. In the nonpolitical realm, we find two differences that we do not theoretically expect (urgency and unjust consequences). The difference in the core differentiating dimension, whether the event was caused by one's own behavior or not, is statistically significant. Other differences are difficult to assess given the small number of guilt and shame responses in the nonpolitical domain. Strikingly, however, guilt and shame in the political domain are not related to appraisals of self-responsibility. In fact, the opposite is true: They are related to appraisals of others being responsible. In the

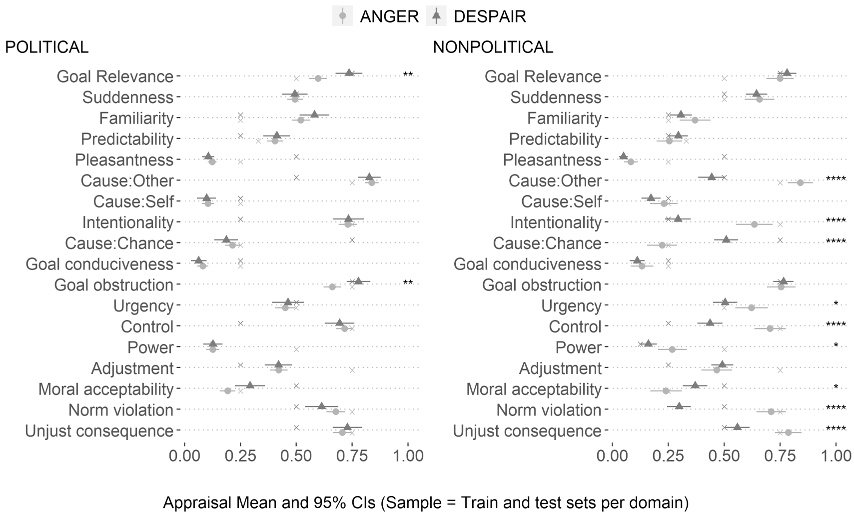

Figure 7. Appraisal profiles of anger and despair by domain (political vs. nonpolitical). Scherer's theoretical predictions are marked with an x (low = .25, medium/open = 0.5, high = .75) - see also Table 1. On the right side, we show the significance level of T-tests between the two emotions per domain correcting for multiple hypotheses testing using the Benjamini–Hochberg procedure.

political domain, guilt and anger differ on none of the appraisal dimensions. This strongly suggests that in politics people feel ashamed and guilty on behalf of others, likely a social group they identify with (E. R. Smith & Mackie, 2016), rather than for something they have done themselves.

The Relative Importance of Appraisals per Domain

Table 5 shows the weights for both nonpolitical and political models with the highest out of sample prediction. These weights are the outcomes of the optimization procedure described above and were ultimately used for our predictions of emotion labels. Weights can range from 0 to 10. We use two measures to contrast the political and nonpolitical domains. First, we look at the weights of each appraisal. A higher weight indicates a higher importance of that appraisal check in predicting the discrete emotion labels. Second, we look at the variance of weights across ten

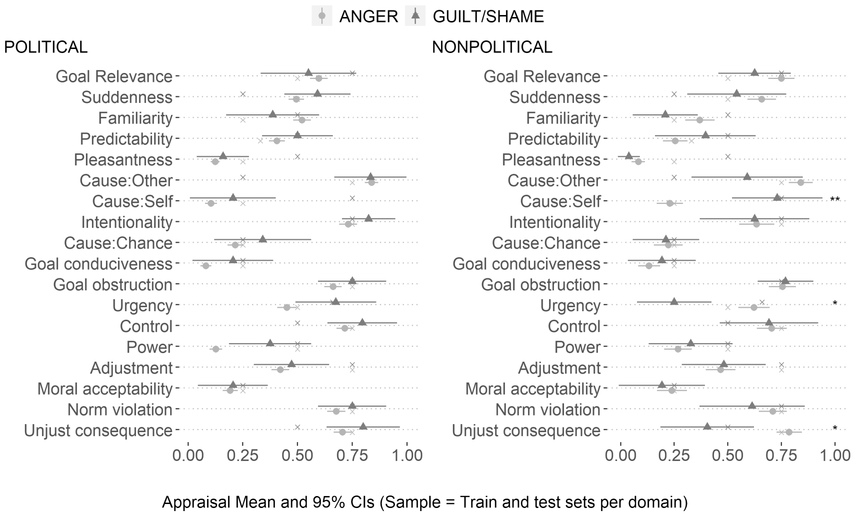

Figure 8. Appraisal profiles of anger and guilt by domain (political vs. nonpolitical). Scherer's theoretical predictions are marked with an x (low = .25, medium/open = 0.5, high = .75) - see also Table 1. On the right side, we show the significance level of T-tests between the two emotions per domain correcting for multiple hypotheses testing using the Benjamini–Hochberg procedure.

random seeds for the optimization algorithm. A higher variance is an indication of the lower reliability of the model.

The third column of Table 5 shows the differences in weights between the two domains. Values above 0 indicate that an appraisal check carries more importance in predicting nonpolitical emotions than political emotions, while values below 0 indicate a higher importance in the political domain.

The fourth column shows the differences in standard deviations of the nonpolitical weights. We first calculate the standard deviations per appraisal dimension across the ten iterations of the optimization procedure and then divide the difference between the final political and nonpolitical weights by the standard deviation of that appraisal dimension. We consider a difference between the two domains substantive if the political weight is either 2SDs larger or smaller than the nonpolitical weight.

The five most important appraisal checks in the nonpolitical domain are goal relevance, familiarity, goal obstruction, power, and urgency. In the political domain, the most important appraisal checks are goal relevance, goal conduciveness, predictabtility, moral acceptability, and pleasantness. Hence, in both domains, goal relevance is the most important appraisal dimension. This is in line with Scherer's (2001) Component Process Model, which grants a central role to this primary appraisal.

When it comes to secondary appraisals, however, there are substantial differences between the domains. We find the largest differences in familiarity, urgency and power. All three have high predictive weights in the nonpolitical model but not in the political model. The difference in weight of the power appraisal is in line with the appraisal profiles shown above. While power helped distinguish anger from anxiety or despair in the nonpolitical domain it did not do so in the political domain. In the political domain, power is generally lower than in the personal domain. Urgency is less important when events are mediated and are not happening as the emotion occurs.

At the bottom of Table 5 is predictability, which is important in the political domain but less so in the nonpolitical domain. To a lesser extent, we find differences in terms of control, and intentionality (both being more important in nonpolitical model), as well as goal conduciveness, other-responsibility, and suddenness (all three being more important in the political domain).

Next, we look at the variance in weights across the ten iterations of the optimization procedure, i.e. the reliability of our two models. The nonpolitical appraisal weights have variances between 0.435 and 4.647, the highest variance is found for the weights of power appraisals. Variances of the political appraisal weights range from 0.511 to 5.384, the highest being the weights for intentionality (var = 5.384) and control (var = 5.199). The variances for the political weights are overall slightly higher than those of the nonpolitical weights but the difference is negligible.

So while there are substantial differences in the relative importance of certain appraisals in the two domains, the models do not differ substantially in terms of their reliability, suggesting that the differences in weights we find is not random but indicates true differences in the importance of these appraisals in predicting

Table 5: Weights for 18 Appraisals with best out of sample prediction.

Appraisal	Political	Nonpolitical	Diff	SDsDiff
Power	1.15	8.3	7.15	3.31
Familiarity	3.42	8.7	5.28	4.80
Urgency	3.11	7.97	4.86	4.34
Intentionality	0.89	3.46	2.57	2.16
Goal obstruction	5.96	8.44	2.48	1.92
Norm violation	3.1	4.96	1.86	1.71
Control	1.95	3.7	1.75	2.36
Pleasantness	6.7	8.1	1.40	2.12
Cause:Chance	1.48	2.13	0.65	0.47
Goal Relevance	9.71	9.47	-0.24	-0.32
Cause:Self	3.81	3.05	-0.76	-0.87
Moral acceptability	6.71	5.34	-1.37	-0.95
Unjust consequence	6.52	4.7	-1.82	-1.46
Adjustment	6.13	4.07	-2.06	-1.03
Cause:Other	4.64	2.41	-2.23	-2.28
Suddenness	4.54	0.59	-3.95	-2.19
Goal conduciveness	9.1	4.72	-4.38	-2.81
Predictability	7.76	3.33	-4.43	-3.99

emotion labels.

In the final step, we evaluate the full model performances. We do this using several indices. Fist, we report overall model accuracy. Then, we discuss in more detail the precision, recall and F1 scores of each emotion class per model. As accuracy scores are not well suited to assess model predictions of unbalanced datasets, we focus on F1 scores to assess differences in model performance. Israel and Schönbrodt (2019) found an overall accuracy – proportion of correctly predicted cases by all cases – of 76.9% in their best performing model. Our nonpolitical model (M1) has an overall accuracy of 63.7%. The original study by Israel and Schönbrodt (2019) has a slightly higher accuracy. However, they allowed respondents to select two emotions and counted matches if either of the reported emotion matched their prediction, while we asked respondents to select only one emotion. Second, we included five emotion families, classifying anxiety and despair as distinct emotion families (see also Table 1 with theoretical predictions). Our approach is therefore significantly more conservative. Moreover, as accuracy is not the best measure to evaluate models predicting unbalanced data, we will mostly focus on class-wise precision, recall and F1 scores, which are presented below.

The nonpolitical model (M1) was best able to predict joy/pleasure with a precision (the proportion of true positives in all identified cases) of 95.9%, recall (the proportion of true positives by the sum of true positives and false negatives) of 91.7%, and an F1 score (the harmonic mean of precision and recall) of .93. Accuracy in the political model (M2) is significantly lower at only 45.8%. It is still better than chance, given that we predict five emotion classes but this is mostly driven by high scores of joy/pleasure (precision = 79.3%, recall = 77.2%, F1 = .76) and anger (precision = 74.10%). However, anger has low recall ad F1 scores. Overall, the political model performs worse than the nonpolitical model along all emotion classes.

The most frequent misclassification were cases classified as despair, although respondents had reported anger (77% of despair false positives were actually anger), and guilt (70.1% of guilt false positives were reported as anger), as well as anxiety (48% of false positives were self-reports of anger). As already indicated by the prototypes, the negative emotions in politics look too similar to be meaningfully distinguished by their appraisal profiles.

Despair and anxiety were selected much less frequently in the political domain than in the nonpolitical domain. Once the samples had been split into training and test data, the number of cases that could be used to train our political model was substantially reduced meaning that a few responses could affect the overall model performance. The nonpolitical domain contained significantly more despair and anxiety responses. Thus, to see if the distribution of emotions in the training set affected our results, we try to predict the political emotions based on the nonpolitical prototypes and weights. Additionally, this shows what happens when our assumptions are derived form a nonpolitical context and are applied to predict emotions in politics.

The resulting model (M3), predicting political emotions using weights derived from nonpolitical prototypes and the training set, shows an overall accuracy of 52.8%. While this overall accuracy is slightly better than that of the political model

(M2), it is still significantly worse than the nonpolitical model predicting nonpolitical emotions (M1). All precision scores of this model, with the exception of joy/pleasure, are lower than in the political model. Recall of anger and guilt/shame are higher than in the political model, but precision of guilt and recall scores of anxiety and despair are extremely low. It therefore does not show a substantive improvement over the political model (M2).

Table 6: Precision and Recall of three models

	Nonpolitical (M1)			Political (M2)			Mixed Model (M3)		
	Precision	Recall	F1	Precision	Recall	F1	Precision	Recall	F1
ANGER	0.42	0.56	0.48	0.72	0.36	0.48	0.59	0.70	0.64
ANXIETY	0.45	0.52	0.48	0.23	0.21	0.22	0.44	0.12	0.19
DESPAIR	0.72	0.44	0.55	0.30	0.53	0.38	0.19	0.09	0.12
GUILT/SHAME	0.17	0.57	0.26	0.11	0.80	0.19	0.03	0.20	0.05
JOY/PLEAS	0.94	0.92	0.93	0.75	0.77	0.76	0.83	0.77	0.80

Exploratory Analysis

Finally, we explore what individual-level characteristics might predict how well we can classify emotions. As the test set is limited (299 observations in the political sample), we run simple T-tests instead of a full multivariate analysis. Above, we have outlined three reasons why emotions in politics are different from politics in the personal domain: (1) Politics is at its core about certain appraisals, such as blame attribution (Iyengar, 1994); (2) Politics is always mediated and not experienced directly; and (3) Politics is complex and people use heuristics to navigate it effectively. We explore four individual-level traits that are each related to these explanations: Political knowledge, political interest, internal efficacy and party identification. These tests are exploratory. We did not preregister any hypotheses and in some cases do not have strong theoretical expectations.

Political knowledge might help people make appraisals. If this is true, people whose emotions were correctly predicted should on average have higher political knowledge. Indeed, respondents that reported the same emotion that we predicted based on the appraisals had on average higher levels of political knowledge but the difference is not statistically significant ($t=-1.29$, $p=0.2$). Political interest could be related to our predictions in two ways: those high in political interest might make appraisals more often and know more about politics, increasing the likelihood of their emotions being predicted correctly. At the same time, they might be more likely to pick up emotion cues that tell them how they should feel but do not provide them with information about all appraisals. On average, participants who reported emotions in line with our model prediction had lower political interest ($t=2.08$, $p<0.05$). This means that politically interested participants more often have a mismatch between the appraisals they report and the emotion label they choose.

We have outlined above that internal efficacy might influence appraisals of coping potential and power but it could do so in both ways. In our sample, we find no difference in terms of internal efficacy ($t=0.86$, $p=0.4$). The relationship might be quadratic with only those with moderate levels of efficacy making control appraisals based on specific situations.

Finally, people with high levels of party identification are more likely to think of issues in terms of this group. Thus, we might suspect that people whose emotion

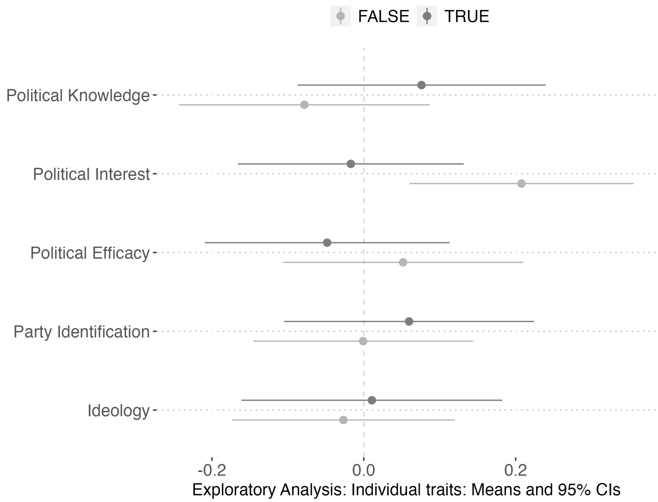

Figure 9. Exploratory Analysis: T-tests between individual level characteristics and predictions (correct = TRUE, or incorrect = FALSE) of our models predicting emotion labels.

was correctly predicted have, on average, lower levels of party identification. However, we find no differences between those with weaker or stronger party identification ($t = -0.45$, $p=0.65$), nor between those with more liberal or more conservative ideologies ($t=-0.32$, p-value $= 0.75$).

2.5 Discussion and Conclusion

Appraisal theories are one of the key frameworks through which we understand emotions in politics. Work on political emotions has relied on the core assumptions that emotions in politics work similarly as in the personal sphere – that they have similar appraisal profiles and action tendencies, and thus that we can use appraisal theory to make theoretical predictions about emotions in politics. Applying appraisal theory to politics has brought forward two key ideas (1) emotions are not irrational, but rather a response to our political environment; and (2) the discrete emotions anger and anxiety are distinct emotions with different effects on political behavior (Albertson & Gadarian, 2015; Valentino et al., 2011, 2008). However, this key assumption, that emotions work similarly in politics as in the personal domain, has not been systematically tested. In this chapter, we outline several reasons why the process of emotion elicitation differs in the political versus the nonpolitical domain. Empirically, we tested the two assumptions above by contrasting emotions, and their appraisal profiles and weights, in these two domains. We did this in two steps.

In the first part of the chapter, we assessed differences in appraisal profiles: the appraisals related to a distinct emotion. The Component Process Model provides clear hypotheses for which appraisal dimensions should help us distinguish between discrete emotions. We largely confirm these expectations in the nonpolitical sample but not in the political sample. One of the most striking findings of this chapter is that anger can not be distinguished from anxiety, despair or even guilt in terms of its appraisals. Anxiety is related to higher appraisals of moral acceptability of an event but apart from that, anger and anxiety appraisal profiles are largely identical. Despair is related to higher levels of goal relevance and goal obstruction, but otherwise also looks more like theoretical anger than theoretical despair. Guilt and shame do not differ from anger along any appraisal dimensions, suggesting that when people report guilt or shame in politics, they mean group-based but not individual guilt and shame.

This finding poses several questions for future research. Which other appraisals or individual characteristics determine whether people report anger or anxiety, when the underlying appraisals are not distinguishable? Can we expect the outcomes of political emotions to differ if the underlying appraisals are the same? Increasingly, scholars are looking at the differences between emotion self-reports and physiological responses to politics to move beyond studying how people themselves interpret and report their emotional state (Bakker et al., 2021; Karl, 2021). Similarly, an appraisal approach to emotions should distinguish between reported emotions and the underlying appraisal profiles and consider situations in which the two do not match and lead to contrasting behaviors. Should we, for instance, expect participants who report an anger appraisal profile but label their emotion as anxiety to show behaviors in line with anger's or anxiety's action tendencies? While appraisal theories suggest the former, other theories of emotions that put more emphasis on the individual interpretation, i.e. labelling of an emotion, would argue for the latter (Barrett & Russell, 2014). The answer to this question will tell us a lot about which political behaviors we can or cannot deduce from a person's self-reported emotion label.

In the second part of this chapter, we conceptually replicated past work that uses a computational approach to predict emotion labels. The second core finding of our study is that the model performs worse when predicting emotion labels in politics, both because the prototypes do not distinguish well between the different negative emotion families and because the relative predictive importance (weights) of the appraisals differ. This prompts the question to what extent appraisal theories can be applied to politics.

The most pronounced difference lies in appraisals of power and control, and their weights in predicting emotion labels. While power and control are central appraisals in appraisal theory, our findings suggest that they are not useful appraisals in politics: they neither help us distinguish emotions based on their appraisal profiles, nor play an important role in predicting emotions labels. Some existing work suggests that appraisals of power and control are perhaps better captured by stable feelings of political efficacy (Rico et al., 2020) or group identification (E. W. Groenendyk & Banks, 2014; Phoenix, 2019). Our exploratory analysis shows that we are neither more nor less likely to misclassify the emotions of people with higher political efficacy. This particular finding leaves ample room for future research into under which circumstances and at which level, individual or collective, power and control appraisals matter and take place.

Overall, this chapter has questioned the applicability of appraisal theory in politics. Past work has, if it tried to establish a causal link between emotions and political behaviors, relied largely on incidental emotions. Such emotions are deliberately unrelated to politics. However, the findings presented here suggest that political and nonpolitical emotions might differ substantially in their underlying appraisals. While incidental emotion manipulations are very well suited to isolate the effects of emotions, we suggest that future work should complement these findings by experimentally studying integral emotions (emotions related to a specific event stimulus) and emotions as they naturally occur. As this chapter has shown, naturally occurring emotions are much murkier, complicated by the political context, than clean experimental manipulations. However, studying them systematically will tell us a great deal about how emotions operate in the real world and will ultimately help the generalizability of established findings in the political emotions literature. Moreover, this chapter has shown that appraisals and emotion labels in politics do not always align. When studying integral emotions, future work should complement measures of emotion labels with measures of specific appraisals. Similar to work that complements emotion labels with the physiological component of an emotion episode (Bakker et al., 2021; Karl, 2021), work operating within the framework of appraisal theories should explicitly test its assumptions about the appraisals underlying an emotion label.

3 Using Message Appraisals to Elicit Anger and Anxiety Responses to Political Issues: Two Preregistered Experiments

Abstract

Emotions are powerful tools to influence voters. Politicians thus appeal to emotions strategically. However, our understanding of what constitutes an emotional appeal is still largely limited to the use of specific emotion words and emotionally charged stimuli. Following appraisal theories, we extend the notion of emotional appeals and use different message appraisals of existing political issues. We vary the certainty of the problem, the control we have over it, and the clarity of responsibility. Theoretically, these *message appraisals* should elicit different levels of anger or anxiety. We test this in two well-powered preregistered survey experiments. Our results confirm that participants report more anger when responsibility is clear and, in one study, when certainty is high. Anxiety is not elicited by distinct message appraisals. Rather, it seems to be a response to appraisals of political issues in which responsibility is ambiguous. The theoretical framework we introduce in this chapter is extendable to various other discrete emotions, such as hope, sadness and guilt.

Emotions influence political attitudes and behavior. Anger and anxiety mobilize (Brady, Wills, Jost, Tucker, & Van Bavel, 2017; Valentino et al., 2011; C. Weber, 2013) and persuade (Arceneaux, 2012; Coan, Merolla, Zechmeister, & Zizumbo-Colunga, 2019; Gadarian & Albertson, 2014; Lecheler, Schuck, & de Vreese, 2013; Valentino et al., 2008; Weeks, 2015) and relate to distinct political attitudes (Huddy et al., 2007; Petersen, 2010; Vasilopoulou & Wagner, 2020). Politicians therefore strategically appeal to citizens' emotions through what are termed emotional (or emotion) appeals (Brader, 2006; Crabtree, Golder, Gschwend, & Indriđason, 2020; Lipsitz, 2018; Ridout & Searles, 2011). Past work has largely conceptualized emotional appeals, as appeals containing emotion words, such as "exciting", "thrilling", "offensive", and "unacceptable" (Brady, Wills, Burkart, Jost, & Van Bavel, 2019; Jones, Hoffman, & Young, 2013; Lecheler et al., 2013; Stapleton & Dawkins, 2021; Widmann, 2021), or emotionally charged concepts, such as disease or food contamination, (Clifford & Jerit, 2018), or drug use and gun violence (C. Weber, 2013).

But the conceptual definition of what an emotional appeal can be is much broader: Brader (2006) defines such an appeal as "any communication that is intended to elicit an emotional response from some or all who receive it" (p. 69).

Thus, in this chapter, we take a different approach. Informed by appraisal theories of emotion, we argue that not only emotion words elicit emotions but that elite rhetoric can elicit emotions in more subtle ways, by offering to voters distinct evaluations of a political topic.

The roots of this claim lie in psychology, particularly appraisal theories (Lerner & Keltner, 2000; C. A. Smith & Ellsworth, 1985). They suggest that emotions are a result of distinct appraisals of our environment and serve to respond to it (Lerner & Keltner, 2000; C. A. Smith & Ellsworth, 1985). Messages about political issues contain similar appraisals of the environment. We call these *message appraisals*. These message appraisals can be seen as part of the larger container concept of emotional appeals. Following appraisal theories, we hypothesize that specific message appraisals elicit specific discrete emotions.

We focus on message appraisals that predict anger or anxiety, respectively. These two emotions are prevalent in political discourse, as the media generally focus more on negative than positive news (Lengauer, Esser, & Berganza, 2012) and more specifically are biased towards expressions of fear and anger in their reporting (Soroka, Young, & Balmas, 2015). Moreover, people pay more attention to and respond more strongly to negative than positive news (Soroka, Fournier, & Nir, 2019). It is thus reasonable to assume that people's experience of politics is heavily influenced by fear and anger eliciting information.

In the next section, we will argue that distinct message appraisals are linked to distinct emotions. The theoretical framework and the findings presented in this chapter are important for our understanding of what constitutes an emotional appeal beyond emotionally charged words and of how people form emotions in response to complex political issues.

3.1 Using Appraisal Theories as Message Appraisals in Emotional Appeals

There are several theoretical approaches that link appraisals to emotions. (Lerner & Keltner, 2000; Moors et al., 2013; Scherer, 2022; C. A. Smith & Ellsworth, 1985). They are linked by the notion that emotions are related to distinct appraisals of one's environment and differ primarily in terms of the exact appraisal dimensions they focus on (for an overview, see Moors et al., 2013).

Which appraisal dimensions are central is debated and differs by appraisal theory (Moors et al., 2013). However, several core dimensions appear in most theories and have become widely accepted: certainty, control or coping potential, and responsibility or agency (Moors et al., 2013, p.121).

People appraise situations quickly and sequentially update these appraisals as situations unfold and more information becomes available. Each emotion is characterized by a unique combination of appraisals on all or a subset of these five cognitive dimensions. The appraisals along these defining dimensions make up an emotion's core appraisal theme. If the appraisal of a situation changes, the experienced emotion changes. The more appraisals are made the more nuanced an emotion episode becomes (Scherer & Moors, 2019).

Anger is evoked if a situation is appraised as certain, under human control and somebody (other than oneself) can be identified as responsible. Thus, anger's core appraisal theme is constituted by appraisals of high certainty, high control and responsibility attribution. Anxiety's core appraisal theme consists of an appraisal of low certainty and low control. *Certainty* describes the degree to which future events are unpredictable and incomprehensible (Lerner & Keltner, 2000, 479) versus predictable and comprehensible. *Individual control* describes the degree to which a situation is considered to be brought about by situational agency versus individual agency. Certainty and control are the dimensions by which anger differs from anxiety. If we find future events unpredictable and incomprehensible and/or a situation is beyond our individual control, we are likely to experience anxiety. Finally, *responsibility* describes the extent to which someone or something is perceived as responsible for an unpleasant situation. Considering somebody else responsible for a negative event fosters anger. Responsibility is not part of the core appraisal theme of anxiety, as one can be anxious both in the absence and presence of a responsible actor.

Once elicited, emotions direct cognition by activating cognitive predispositions to appraise future events in line with the appraisals that elicited the emotion. Someone in a state of anger – a high certainty, control and responsibility emotion – is more likely to appraise a future event as certain (Lerner & Keltner, 2000), tends to rely more on heuristics (Parker & Isbell, 2010), and is less likely to seek out more information about an issue (Valentino et al., 2008). Angry people are more likely to take risks (Lerner & Keltner, 2001), associated with the appraisal of high control over a situation, and are more likely to support punishing actions (Petersen, 2010) and military intervention (Huddy et al., 2007). People in a state of anxiety are more open to persuasion (Albertson & Gadarian, 2015; Nai, Schemeil, & Marie, 2017) and counteract the uncertainty that comes with anxiety by seeking out more information (Albertson & Gadarian, 2015; Valentino et al., 2008). Thus the relationship between subjective appraisals and self-reported emotions is bidirectional, as the sequential evaluation of events again constantly influences our emotional states and vice versa.

Most of the existing work has focused on the consequences of distinct emotions, manipulating them through music, visual or specific verbal stimuli (for an overview see Albertson & Gadarian, 2016), or has studied how specific forms of communication, such as populist communication, elicits specific emotions (see for instance Hameleers et al., 2017; Widmann, 2021; Wirz et al., 2018). Here, we are trying to conceive a framework for emotional appeals that can be applied to any political issue and any discrete emotions with a unique appraisal profile (see Figure 10 for a conceptual overview of our approach).

Figure 10. Theoretical model of the relationship between message appraisals, and self-reported emotions and appraisals of certainty, control and responsibility.

emotional appeals can be understood as any communication that elicits an emotion (Brader, 2006), or "as attempts to elicit, or make salient, object-related emotions" (Rosselli, Skelly, & Mackie, 1995, p.165). Past work on emotional appeals has mostly focused on outwardly emotional stimuli, such as proportions of emotionally charged words in political texts (see for instance Brady et al., 2017; Crabtree et al., 2020; Lipsitz, 2018; Ridout & Searles, 2011; Widmann, 2021), with some exceptions.

Initial evidence suggests that certainty (Chadwick, 2015), efficacy, i.e. control (Feldman & Hart, 2016), goal obstruction and norm compatibility (Kang & Cappella, 2008) appraisals in messages affect fear and anger responses to politics. Moreover, there is some evidence that political actors use appraisals in their social media communication and that these appraisals are related, as theoretically expected, to emotional reactions (Zerback & Wirz, 2021). In line with cognitive appraisal theory, which predicts that emotions are not just the result of individual appraisals but of an interplay of multiple appraisals, or a so-called appraisal theme, we will test the effects of all three appraisals at the same time. In the following section, we briefly lay out our theoretical model and expectations.

Our innovation lies in formulating a framework that takes into account several appraisal dimensions at once to test whether message appraisals indeed play a causal role in the emergence of emotional responses to politics, as appraisal theories of emotions have long argued (Scherer & Moors, 2019; Scherer et al., 2001).

Expectations

Following cognitive appraisal theory, we hypothesize that message appraisals that express high certainty about the causes and consequences of a problem increase levels of anger compared to messages that express low certainty (H1a). Moreover, message appraisals of high human control elicit higher levels of anger than message appraisals of low human control (H1b). Finally, message appraisals expressing high responsibility generate higher levels of anger than low responsibility message appraisals (H1c).

According to appraisal theories, specific combinations, also referred to as core appraisal themes, elicit an emotion, rather than individual appraisals (Scherer & Moors, 2019; C. A. Smith & Ellsworth, 1985). Thus, we can formulate the more specific hypothesis that messages cause the highest levels of anger when they describe high certainty, high human control and clear responsibility appraisals (H2). With our setup we can test the joint effect of the different appraisals, but also identify which one is most important in the political context.

Message appraisals that express low certainty are expected to produce higher levels of anxiety than high certainty appraisals (H3a). Message appraisals of high situational, i.e., low human control, will elicit higher levels of anxiety than message appraisals of high human control (H3b). Again, we add the hypothesis that messages will cause the highest levels of anxiety if they express appraisals of both low human control and low certainty (H4).

The hypotheses above focus on *message appraisals*, i.e. the appraisals expressed in an emotional appeal. However, the same information can be appraised differently by different people. Thus, in Study 2, we also measured people's own appraisals of political issues. This allows us to test whether the effects of individual appraisals are similar to the effects of message appraisals. Individual appraisals are measured after self-reported emotions. Here, we diverge from the experimental logic, which means that we cannot make causal claims about the sequential ordering of appraisals and emotions. The fact that the two influence each other simultaneously is a central feature of appraisal theories (Lerner & Keltner, 2000; Scherer, 2009). While in the first part of this chapter, we study how exogenous message appraisals influence discrete emotions, here we are interested in which appraisals co-occur with distinct emotions, an approach commonly used in emotion research to study emotions' distinct appraisal profiles (Scherer & Moors, 2019; C. A. Smith & Ellsworth, 1985).

We hypothesize that anger is related to subjective appraisals of high certainty, high control and high responsibility (H5) and that anxiety is related to subjective appraisals of low certainty and low control (H6).

We test our hypotheses in two preregistered and well-powered online survey experiments conducted in June 2020 (Study 1, preregistration: `https://www.osf.io/q8kgc/?view_only=95b294727fca4ec68c4ac0b9305f5c91`) and May 2021 (Study 2, preregistration: `https://osf.io/d7rjq/?view_only=2a9c593229964049932ce007ae8fdd60`). Both studies use a 2*2*2 factorial design with five experimental rounds. In each round, participants were exposed to an information sheet that randomly manipulates certainty (low vs. high), control (low vs. high) and responsibility (present or not) after which we measured their self-reported emotions.

3.2 Study 1

Study 1 tests H1 - H4 and was conducted in the Netherlands in June 2020. The study was preregistered at the Open Science Framework and approved by the Ethical Review Board of the University of Amsterdam.

Participants completed a survey of several background variables (political interest and preferences, political knowledge and fear of COVID-19).[8] We included two attention checks at the start of the study (Berinsky, Margolis, & Sances, 2014). Only participants who passed were redirected to the experiment, which consisted of five experimental rounds, each round addressing a different political issue, in fully randomized order: "COVID-19", "painkillers" (rising painkiller addiction in the Netherlands), "pesticides" (contamination of Dutch rivers with pesticides), "refugees" (risk of a next refugee crisis as violence in the Middle East is re-surging)

[8]The full survey – in Dutch and English – and stimulus material can be found here: `https://www.osf.io/q9e2z/?view_only=549a14ed0c424f55bb5d5f7ffc75be43`. The full url to the pre-registration is https://osf.io/q9e2z/?view$_{o}nly = 1d80ae3ed3af4b95a298b9a73aa67195$.

and "vaccinations" (risk of spread of measles and polio due to decreasing vaccination rates). Finally, participants reported their emotional response(s) and were debriefed.

First, to avoid pre-treatment effects (Slothuus, 2016), i.e., that participants having stable emotional responses that are merely re-activated by being presented the issue but not a result of our manipulations, we selected largely low-salience issues. Second, whether emotional appeals are accepted and elicit the respective emotion might depend on whether the position in the message is congruent with a person's prior attitudes (see also Suhay & Erisen, 2018). We therefore selected issues that are neither clearly ideologically left nor right, and have not been politicized: the early Dutch response to COVID-19, painkiller addiction in the Netherlands, pesticide pollution of Dutch rivers and declining vaccination rates. At the time of data collection, Dutch political parties had not taken clear stances on these issues. The exception is the refugees issue (i.e. EU asylum policy) which has been on the political agenda for several years. We included this issue to have some variation in the extent to which our topics in the experiments have been on the political agenda (Druckman, Peterson, & Slothuus, 2013).

The stimuli were presented as information sheets, in which we manipulated the appraisal dimensions certainty, control and responsibility, starting with a title and a base sentence which was held constant across conditions. The vaccination title and base sentence, for instance, read: "Vaccination rates are decreasing further [Title]. Recent health reports show a drastic reduction in the number of vaccinations [Base sentence]." This was followed by the three manipulations, which were each introduced by a question: "What are the consequences?" [certainty] "Is this preventable?" [control], and "Who is responsible?"[responsibility]. High certainty statements emphasized the causal link between cause and consequence while a low certainty statement emphasized that the consequences were unclear. In the vaccination issue, for instance, the high certainty statement reads: "According to experts, this has led to a doubling of measles and polio cases in the past year." The low certainty statement reads: "According to experts, it is still unclear whether this is related to the increased number of measles and polio cases in the past year." Control statements concerned the preventability of the problem to evoke appraisals of human or situational control over the issue. The high control statement for the vaccination issue reads: “An epidemic is easy to prevent as long as people are vaccinated, this is important when people travel. Diseases from abroad can be imported.” while the low control statement reads: “Preventing an epidemic is becoming increasingly difficult because people travel a lot and contract diseases abroad.” Responsibility statements either provided a responsible actor, or a general statement without a specific actor, for instance: “Responsible are the reckless parents who do not vaccinate their children.”, or: “The worldwide decline in vaccinations is a problem for everyone. Everyone depends on each other.”

We pretested all statements twice in the fall of 2019 and in early 2020 using convenience student samples ($N_1 = 48$, each statement rated around 10 times; $N_2 = 31$, each statement rated around 15 times), and adapted statements if necessary to ensure that they discriminated along the relevant appraisal dimensions. We included questions that clearly mark the appraisal dimension after the first round of pre-testing (i.e. ”What are the consequences?”, ”Was this preventable?”, ”Who is responsible?”, see Appendix Tables A15 - A18) When the coronavirus (COVID-19) and government response to it became the predominant social and political issue in spring 2020, just before our planned data collection, we added a COVID-19 treatment as an experimental round. Hence, the COVID-19 statements were written after the pretests were conducted.

Measures

Dependent Variables: As anger and anxiety are often elicited simultaneously, we use the PANAS-M measure introduced and validated by Rhodes-Purdy et al. (2020). It is particularly useful to distinguish between discrete emotions. We included two items for anger (angry, hostile), two items for anxiety (afraid, anxious), and three items for general negative affect (distressed, upset and ashamed). Respondents select these emotions from a list of negative emotions (anger items, anxiety items and items for general negative affect). For each emotion participants select, they are asked to report the intensity with which they felt this emotion using sliders (from 0 – Barely – to 100 – Extremely) that were presented horizontally with the slider at the midpoint as the starting position. A respondent’s anger score is the mean of their reported scores on the “angry” and “hostile” emotion sliders. A respondent’s anxiety score is the mean of their reported scores on the “afraid” and “worried” emotion sliders. Anger and anxiety scales were standardized across respondents within issues. Thus, a one-point increase on the anger scale means an increase by one standard deviation of the anger scores within that issue.

Table 7: Mean and standard error (in parentheses) of anger and anxiety per issue.

Study	N	Issue	Anger	Anxiety
Study 1	1,842	COVID-19	9.97 (0.66)	37.88 (1.01)
		Pesticide Contamination	13.36 (0.71)	27.49 (0.83)
		Painkiller Addiction	7.94 (0.56)	21.44 (0.71)
		Refugees	14.12 (0.75)	22.28 (0.79)
		Vaccination Rates	20.69 (0.85)	25.63 (0.81)
	9,210	Pooled	13.21 (0.32)	26.94 (0.38)
Study 2	1,325	Antibiotics	4.41 (0.34)	11.59 (0.45)
		COVID-19	4.75 (0.37)	14.72 (0.53)
		Pesticide Contamination	6.06 (0.39)	12.12 (0.46)
		Painkiller Addiction	3.79 (0.31)	9.78 (0.41)
		Refugees	6.7 (0.43)	10.32 (0.43)
	13,115	Pooled	5.27 (0.12)	12.06 (0.15)

As control variables, we measured political ideology (11-point scale), and level of education (highest successfully completed level of education, in five categories with lower secondary school as the reference category). We operationalized political engagement as the mean of political interest (measured on a 4-point scale) and knowledge (sum of correct answers on five knowledge questions), which were both scaled to range from 0 to 1. As the experiment was conducted in spring 2020, we controlled for fear of COVID-19 using the validated 7-item Fear of COVID-19 scale (Ahorsu et al., 2022).

Sample

Based on an a priori power analysis, assuming a small treatment effect of b=0.2, we aimed for a sample of N=1800 to reach a power of 0.88 in a one-tailed test

Table 8: Demographics Study 1 - 2

Study	Variable	Percent	Mean	SD
Study 1	Age		47.47	16.78
	Political Engagement		0.59	0.19
	Men	49.84		
	Women	50.16		
	HAVO, VWO, or HBS	14.17		
	HBO	30.56		
	MBO	26.22		
	No degree	0.33		
	University	16.67		
	VMBO, LBO, MULO, ULO, or MAVO	12.05		
Study 2	Age		52.36	14.26
	Political Engagement		0.52	0.18
	Men	41.06		
	Women	58.94		
	HAVO, VWO, or HBS	12.83		
	HBO	30.94		
	MBO	28		
	No degree	0.30		
	University	12.91		
	VMBO, LBO, MULO, ULO, or MAVO	15.02		

(the power analysis is presented and described in the pre-registration). In total, a sample of 4,127 participants was recruited by Dynata from their online panel. After excluding respondents who failed the attention check, we arrived at a sample size of 1,842. The final incidence rate of the survey was 45% after the exclusion of "screeners", and the implementation of quotas on age and gender. The sample is largely representative of the Dutch population in terms of age and gender, and it is diverse in respect to educational background (see Table 8).

Estimation Technique

To test H1a-H1c, we include certainty, control and responsibility as separate independent variables and anger as the dependent variable, adding the controls described above plus issue and order fixed effects. Certainty, control, and responsibility are coded 1 if high, and 0 if low (present or not present in the case of responsibility). To test H2 we created a dummy variable for a complete anger appeal that is coded 1 if all three experimental conditions are set to 1 (high certainty, control and responsibility), and 0 in all other conditions.

To test H3a-H3c we follow the same procedure with anxiety as the dependent variable. For H4 we create a dummy variable for a complete anxiety appeal which takes on a value of 1 if the participants received the low control and low responsibility treatment, and 0 if not.

3.3 Results I: Do Message Appraisals Elicit Anger and Anxiety?

Figure 11 shows OLS coefficients of the effect of each appraisal dimension, and of the anger appeal as a whole, on anger responses. The results are presented per issue and for the pooled sample. Certainty has a positive effect in 4 issues and the pooled sample, but it is not statistically significant. Control has no effect on anger in the pooled sample, and per issue the direction of the effect varies. Responsibility has a positive and statistically significant effect in all cases (b=0.20, p<.001 in the pooled sample), except for the refugees issues b=0.043, p=.19). Again with the exception of the refugees issue, the anger appeal has a positive and statistically significant effect (b=0.17, p <.001 in the pooled sample).

In sum, we find evidence for Hypotheses 1c (responsibility) and 2 (anger appeal), while we can reject Hypothesis 1b (control). There is some indication for a positive effect of certainty on anger (H1a) but if it were detectable in a larger sample, the effect size would be very small. It is not the case that anger is highest when the full appraisal theme is present (H2). Rather, the effect seems to be driven largely by the manipulation of responsibility appraisals.

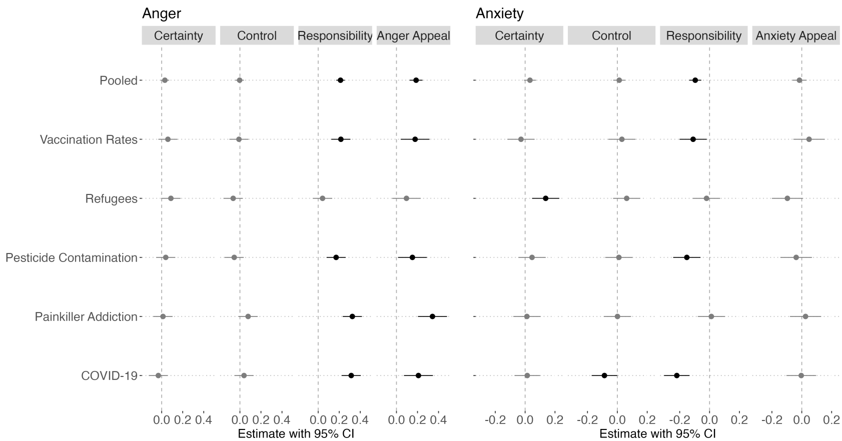

Figure 11. Standardized regression coefficients of certainty, control, and responsibility message appraisals on reported levels of anger and anxiety. The full regression output can be found in the Appendix, Tables A4 to A7.

Contrary to our preregistered expectations, we find no evidence that certainty or control negatively affect anxiety responses. Only for the COVID-19 issue is anxiety, as hypothesized, higher in the low control condition ($b=0.1$, $p<.001$). For the refugees issue, certainty even has a positive effect on anxiety ($b=0.13$, $p=.03$). The anxiety appeal does not have the hypothesized positive effect ($b=-0.03$, $p=.14$). In sum, we reject all our hypotheses (3a-3c and 4) regarding anxiety.

We preregistered to control for responsibility in the analyses of anxiety. Theoretically, responsibility attributions should not influence anxiety. We find, however, a fairly consistent negative effect of responsibility on anxiety (the coefficient is negative and statistically significant in three experimental rounds, as well as in the pooled analysis). In our pooled model, we find that anxiety is on average 0.10 standard deviations lower in the high responsibility condition than in the low responsibility conditions (right panel of Figure 11).

3.4 Study 2

In our second study, we replicated Study 1 using the same measures and estimation technique. We re-conceptualize control as prospective control (future agency), rather than retrospective control (preventability). Moreover, we measured individual appraisals to test whether self-reported anger and anxiety are related to individuals' self reported appraisals of certainty, control, and responsibility.

Methods and Materials

We initially conceived of control as the degree of preventability (retrospective control). However, control can also be conceptualized as prospective power over an event (Scherer & Moors, 2019; P. K. Smith & Bargh, 2008). To test whether our null findings in regards to control are due to our specific conceptualization of it, our manipulations of human control in the second study emphasize prospective rather than retrospective control. Specifically, texts on low control stress resemblances to natural disasters, arguably some of the least controllable events, while manipulations of high control explicitly emphasize human impact. Moreover, manipulations will stress the (lack of) collective power of groups.

Additionally, as the COVID-19 pandemic progressed, public vaccination rates became one of the most salient issues globally. Thus, we added a statement on vaccinations to our adapted COVID-19 stimulus and replaced the vaccination issue with an issue on antibiotics in groundwater. The full stimulus material can be found in Appendix, Tables A20-A24.

Sample

Based on a power analysis for the independent effects of the three appraisals, expecting a small effect size (b=0.2), we collected a sample of 1,200 participants to reach a power of .95. 1,325 respondents were recruited by Dynata from their online panel and successfully passed the attention check (for sample demographics see Table 8).

3.5 Results II: Do Message Appraisals Elicit Anger and Anxiety?

The left panel of Figure 12 present the effects of the three appraisals on anger in the second study. For certainty, we report an overall positive effect in the pooled sample, which is – contrary to Study 1 – also statistically significant (b=0.07, p=0.001). Additionally, we find a positive (b=0.14) and statistically significant effect of certainty for the issue of antibiotics ($p < .001$) and the painkillers (p=.02) issues.

The replication results for the effect of control even tilt towards the negative (pooled sample b=-0.05, p=.01), particularly in the refugees and pesticides issues (b=-0.13, p=.02, and b=0.1, p=.05). We can safely reject the hypothesized positive effect of control on anger (H1b).

The effect of responsibility is somewhat weaker than in Study 1, but still positive and statistically significant (pooled sample, b= 0.08, $p < .001$). This strengthens the evidence of a positive effect of responsibility on anger (H1c). Our conclusion regarding the effect of the anger appeal is similar. It is weaker, but still positive and statistically significant (b=0.07, p=.04).

The right side of Figure 12 presents the anxiety results of Study 2. The positive effect of certainty on anxiety found in Study 1 for the refugees issue could not be replicated but now a positive effect emerges for the painkillers issue. Only for the COVID-19 issue, do we find the hypothesized negative effect of certainty, i.e., when low certainty is emphasized in an emotional appeal, anxiety increases. However, overall, there is no clear pattern regarding the relationship between certainty appeals and anxiety. Based on both studies, we can firmly reject the hypothesized negative effects of control and certainty on anxiety, and the positive effect of the anxiety appeal on anxiety. Again, we find a negative effect of responsibility on anxiety. We will reflect on this finding in the discussion section.

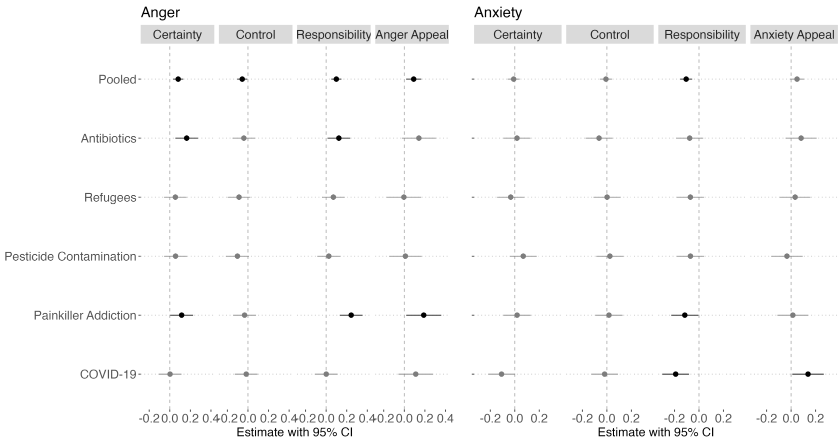

Figure 12. Standardized regression coefficients of certainty, control, and responsibility message appraisals on reported levels of anger and anxiety. The full regression output can be found in the Appendix, Tables A8 to A11.

3.6 Results III: Are Emotions Related to Self-reported Appraisals?

To test whether anger and anxiety also elicit the corresponding post-stimulus appraisals people make, we included individual-level appraisals of certainty, control and responsibility after our emotion measures in the last round. Depending on which issue was shown last, we asked participants to report their appraisals. We expect that self-reported appraisals of certainty, control and responsibility are higher when people report higher levels of anger (H5). Moreover, we expect that low certainty and low control appraisals are related to higher levels of self-reported anxiety (H6). For all three measures, we adapted the appraisal items by C. A. Smith and Ellsworth (1985). We asked participants to indicate the extent to which they agreed or disagreed (5-point scale) with the following statements: *I have a good understanding of the consequences of the issue* (Certainty); *Circumstances beyond anyone's control are influencing the issue* (Control); *I or people like me have no control to influence this issue* (Control); *It is clear who is responsible for this issue* (Responsibility). For control, we reversed the items and calculated the mean.

In the first model in Figure 13, we show the relationships between the two emo-

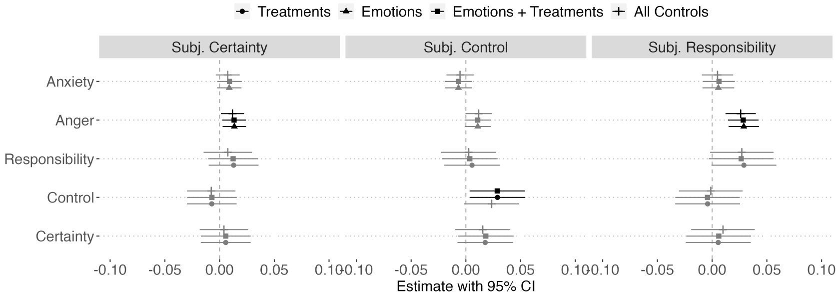

Figure 13. Relationship between self-reported appraisals of certainty (left), control (middle) and responsibility (right) and anger and anxiety, respectively controlling for trait anger, trait anxiety, age, gender, education, ideology, political sophistication, issue and experimental manipulations.

tions, anger and anxiety and the subjective appraisals. In the second model, we show the effects of manipulated message appraisals on subjective appraisals. The third model combines both and the fourth model additionally includes controls for gender, age, level of education, ideology, political sophistication and issue-level fixed effects. Moreover, to rule out that appraisals and emotions are both driven by general tendencies to appraise situations in a specific way, thus experiencing specific emotions, we control for participants' trait anger and trait anxiety. The full models can be found in the Appendix, Tables A12-A14).

As expected, anger is related to higher levels of self-reported certainty (b=0.011, p <0.05 in the full model with controls), control (b=0.011, p<0.1) and responsibility appraisals (b=0.026, p<0.001). Anxiety is not related to any of the three dimensions, substantiating our earlier findings that anxiety cannot be predicted by a particular appraisal profile.

The certainty manipulation does not affect participants' own appraisals of certainty. However, although it did not affect levels of anger earlier, the control manipulation increases subjective appraisals of control (b=0.029, p<0.0.5). Once we control for demographics, this effect shrinks and is only significant at the 0.1 level (b=0.023, p<0.1).

Finally, high responsibility message appraisals increase subjective appraisals of responsibility (b=0.027), although only at a significance level of $p<0.1$.

3.7 Discussion and Conclusion

The goal of this chapter was to test a claim that has been made by emotion theorists for decades: that appraisals affect discrete emotions. Specifically, we tested how characteristics of emotional appeals, i.e. message appraisals cause anger and anxiety. We developed a framework that applies appraisal theories of emotions to emotional appeals set in the context of political issues. We tested this claim in two preregistered and well-powered studies, each with 5 individual rounds. In line with our preregistered hypotheses, we find that high responsibility (H1c) and to a lesser extent high certainty (H1a) cause anger. Contrary to our expectations, control has no effect on anger (H1b). Regarding anxiety, we reject all our preregistered hypotheses: people do report high levels of anxiety, but our experimental treatments do not explain variation in anxiety.

Some of these null findings might be the result of our research design. Independently manipulating three dimensions in one study is difficult. In multiple instances, one appraisal manipulation was also perceived by our pre-test participants to manipulate another dimension. However, there are several reasons why it is unlikely that our null-findings are due to this shortcoming. First, we included five issues and tested our hypotheses on two representative samples. Across issues and studies, together with the pooled results in 12 tests, we find consistent results. Second, if more than one appraisal dimension is affected by a manipulation, the directions are always uniform. For instance, in the painkiller issue in Study 1, the high certainty statement seems to also express high control and responsibility. Moreover, the high control statement appears to also express higher certainty than the low control statement. However, if certainty and control had an effect on anger, if anything, we would see reinforcing effects of these message appraisals. This is not what we found, as the effect of the anger appeal (all dimensions are high, b=.342) is not substantially larger than the effect of responsibility alone (b=.325). Finally, we can look at instances where the message appraisals only affected one dimension. As an example, we direct readers to the vaccination issue in Study 1. None of the manipulations affected any other appraisal dimension, according to our pre-test. Nonetheless, the results are perfectly in line with our conclusion.

The effect sizes in the two studies might not appear to be very large. However, three things are important to consider. First, our data is positively skewed with many responses at 0 (no anger/anxiety selected). Fitting a linear model is therefore a conservative test. Moreover, our experiments only expose participants to the respective treatments once and the stimuli are short, just a few brief statements. With single exposure to appeals and minimal manipulations, we can only expect very small effect sizes (Lecheler, Keer, Schuck, & Hänggli, 2015). A recent meta-analysis of framing effects in politics, (Amsalem & Zoizner, 2022) has shown that media frames have an average effect of d=0.1 on negative emotions. [9] Our effect for responsibility is twice that size (and statistically significant). In light of a minimal manipulation of appraisals and the single exposure design, the effects found in Study 1 and 2 are in fact quite substantial. We would expect repeated exposure to have quite significant effects on people's emotions over time.

Following recent calls in the social sciences (Lewis Jr, 2020), our hypotheses, design, and analysis strategy were preregistered. We confirmed some of our hypotheses but some of our findings were contrary to what we preregistered. Knowing when our framework does not work is as important as knowing when it does (Franco, Malhotra, & Simonovits, 2014). In the following paragraphs, we discuss the expected and unexpected findings.

The findings presented in this chapter suggest that responsibility attribution, and on a smaller scale certainty, play a role in eliciting anger. However, we found no effect of human control on anger (H1b). Appraisals of control may be more difficult to manipulate. There could be two reasons for this. First, theoretically, control can be conceptualized as retrospective (Study 1) or prospective (Study 2). Particularly in the former case, there is conceptual overlap with responsibility attribution, which also signals a degree of control (Scherer & Moors, 2019). As argued above, we do not think that our null findings regarding control are due to this this conceptual overlap. If they were, we would see reinforcing effects of control and responsibility.

[9] This effect has been adjusted for publication bias. The average effect size unadjusted for publication bias is quite a bit larger at d=0.4.

Perhaps appraisals of control are more contingent on stable feelings of (political) efficacy and therefore less easily manipulated. This would be in line with work by Valentino et al. (2009) who have shown that stable levels of internal efficacy prior to a campaign, which they argue capture appraisals of individual control, predict anger and participation in the elections that follow.

Concerning subjective appraisals, we found that the appraisals people make about issues are related to the emotions they experience. How well we think we understand an issue (certainty), the agency we feel to change something about it (control) and whether we know who is responsible (responsibility) is related to how we feel about this issue. However, it appears to be difficult to experimentally manipulate these subjective appraisals. We found indications, albeit not clear evidence, that control and responsibility message appraisals influence people's subjective appraisals of political issues. The limited predictive power of the appraisal manipulations and subjective appraisals might simply be due to the fact that people have limited conscious access to their subjective appraisals.

In this chapter, we have applied appraisal theory to study of emotional appeals in the political realm. It has allowed us to theorize about how emotional appeals, even when they do not contain emotional stimuli themselves can influence emotional responses to political issues. We have been able to show that appraisals matter for emotions in response to politics. As a consequence, we argue that we should design emotional appeals beyond emotion words or emotionally charged stimuli and consider more subtle ways in which citizens encounter emotion-eliciting messages. We argue that emotions are reflected in and a result of nuanced characteristics in political information.

The framework we have developed in this chapter can easily be extended to other discrete emotions, such as hope (Chadwick, 2015), and enthusiasm, which are equally as powerful emotions for politics and social movements, as anger and anxiety are (Collins & Block, 2020; Jasper, 2018; Kosmidis & Theocharis, 2020).

4 Relevance, Consistence and Resistance. What Explains the Link between Political Sophistication and Emotional Responses to Politics?

Abstract

Research shows that political sophisticates tend to get more emotional about politics. This chapter first reinvestigates this claim and, second, tests three mechanisms that theoretically link political sophistication and emotions in response to politics, based on three prominent theories of information processing. Following Scherer's Component Process Model of emotions, I test whether sophisticates simply care more about politics: the Relevance Hypothesis, originally formulated by Brader (2006). Next, I test the Resistance Hypothesis: Do sophisticates resist manipulations of their emotional responses? Finally, I propose that sophisticates' networks of appraisals and emotions are more consistent, the Consistence Hypothesis. I test these three hypotheses using data collected in the Netherlands in 2020 and 2021, which includes a direct manipulation of certainty, control and responsibility appraisals of six political issues and measures the subjective appraisals of five of them. I reject the Consistence Hypothesis but find evidence for the Relevance Hypothesis and indications for the Resistance Hypothesis. Together, this suggests that political sophistication is likely linked to emotions through higher appraisals of goal relevance and through cognitive appraisals of certainty, control and responsibility of political issues. The expectations tested in this chapter were pre-registered on the Open Science Framework.

Who has strong emotional responses to politics? Political sophistication is often mentioned as a predictor and a moderator of emotional responses (Brader, 2006; Miller, 2011). Yet, how and in what direction political sophistication predicts or moderates emotional responses is not theoretically settled and evidence has been mixed. Theoretically, arguments can be made for both viewpoints: the sophisticated and emotionally engaged citizen, or emotions as a symptom of being uninformed. As direct predictor of emotions, political sophistication has been argued to generally increase emotional responses to politics (Brader, 2006; Jones et al., 2013; Miller, 2011). To have strong feelings about politics, you need to know about politics, and regularly read about it. People who never learn about political developments, who do not read the news and do not discuss politics with anyone both know and feel less about politics.

As a moderator of the effects of emotions on behavior or the effectiveness of emotional appeals, existing work has produced mixed findings. Some work demonstrates that emotional stimuli have stronger effects on political sophisticates than non-sophisticates. Brader (2006) argues that emotional appeals are more effective among sophisticates, as they generally find politics more important. Similarly, Rudolph et al. (2000) show that anxiety drives campaign involvement but only among highly efficacious citizens.

But the reverse might also be true. Gibson, Claassen, and Barceló (2020), for instance, find that intolerance is related to feelings of anger but only for people with low levels of sophistication. Karl (2021) finds that non-sophisticates respond with both high arousal and high self-reported anger to partisan incongruent ads and with low arousal but high self-reported anger to partisan congruent ads. In a similar study, looking at both physiological responses and self-reported emotions, Bakker et al. (2021) do not find that political sophisticates have stronger physiological responses to political stimuli. So while emotions and political sophistication appear to be linked, what is the exact mechanism that connects the two? I propose three different mechanisms. Are political sophisticates more emotional because they care more about politics and pay closer attention to political stimuli (*Relevance Hypothesis*)? Are their networks of cognitive appraisals of political issues and emotions more consistent than those of non-sophisticates (*Consistence Hypothesis,* Luskin, 1990)? Or are the beliefs and feelings held by sophisticates too rigid, resisting experimental manipulations of emotions (*Resistance Hypothesis,* Zaller et al., 1992)?

Solving this question is important, as we know that emotions drive essential political behaviors, such as political participation, or information processing. Emotions help us direct attention (Albertson & Gadarian, 2015), form political attitudes (Huddy et al., 2007) and mobilize around a cause we care about (Valentino et al., 2011; Valentino, Wayne, & Oceno, 2018). Emotions are not a barrier to engaged and informed citizenship but can be an important component of it.

Thus, in many ways, for people to be emotionally engaged in politics is desirable and knowing how political sophistication can lead to emotional responses to politics is important for how we view the interplay of the two in fostering not just informed but engaged citizenship. In this chapter, I discuss and test three theoretical mechanisms for the link between political sophistication and emotions.

The data for these tests come from two studies that experimentally manipulated appraisals of political issues. In information sheets presented to participants, we manipulated appraisals of certainty, control and responsibility, which – based on appraisal theories of emotions – we expected to affect levels of self-reported anger and anxiety. In the second study, we also measured subjective appraisals of these political issues. We expected these subjective appraisals to be systematically related to anger and anxiety, respectively. For both – manipulated and subjective appraisals – we expected that high certainty, high control and high responsibility are related to higher levels of self-reported anger and low certainty and low control related to higher levels of anxiety. The theoretical basis for these assumptions is discussed in the following section. I use these datasets to test how political sophistication is linked to emotions by assessing the link between sophistication and self-reported emotions controlling for experimentally manipulated appraisals. Further, I test how political sophistication moderates the effectiveness of experimental manipulations of appraisals. Both are tests of the Relevance Hypothesis. Testing how political sophistication moderates the effectiveness of emotional appeals additionally tests an alternative hypothesis, the Resistance Hypothesis, which is based on the assumption of a curvilinear information processing model suggested by Zaller et al. (1992): Do sophisticates *resist* experimental manipulations of appraisals? I also test the Resistance Hypothesis using a unique measure of responsibility attribution, which asked respondents to name who they personally thought was responsible for a political issue. Finally, I investigate how subjective appraisals are linked to emotions and whether these relationships are moderated by political sophistication. I use subjective appraisals to test the Consistence Hypothesis: Are sophisticates' appraisal-emotion links stronger and more consistent than those of non-sophisticates?

4.1 Refining the Sophistication-Emotion Link

The Component Process Model of Emotions

I conceptualize emotions through the lens of the Component Process Model proposed by Scherer (2005, 2022). This approach is part of a broader family of appraisal theories, which see emotions, at least partly, as outcomes of evaluative judgments, i.e., appraisals (C. A. Smith & Ellsworth, 1985). In political communication, a lot of work has approached emotions from a perspective of cognitive appraisal theory showing that distinct emotions, such as anger, compared to other discrete emotions like anxiety, have distinct consequences for political behavior (e.g. E. Groenendyk, 2016; Valentino et al., 2011, 2018; Wagner, 2014).

The CPM views an emotion as "an episode of interrelated, synchronized changes in the states of all or most of the five organismic subsystems in response to the evaluation of an external or internal stimulus event as relevant to major concerns of the organism" (Scherer & Moors, 2019, p.697). The five organismic subsystems are 1) cognitive (appraisal of objects or events), 2) neurophysiological (bodily symptoms, physiology), 3) motivational (action tendencies), 4) motor expressive (facial and vocal expression of emotions), and 5) subjective (conscious experience of the emotion, i.e., feeling).

In contrast to the CPM, a basic or discrete approach usually focuses on 6 basic emotions that are elicited automatically without much cognitive processing and are universal across all people. Constructionist theories of emotion on the other hand, focus on how emotions and their verbal labels are socially constructed and thus neither universal across cultures, nor across individuals (Feldman & Hart, 2016). The Component Process Model's strength, compared to these other approaches, is that it tries to consolidate the different components of an emotion: cognitive, neurophysiological, motivational, motor expressive and subjective. While we usually have to focus on a subset of these systems, they are all part of one emotional episode, which co-occur and influence each other. Thus, changes in each subsystem are indicative of changes in the whole emotion episode.

Here, I focus on the first and last components: the appraisals that underlie an emotion episode and the conscious feeling component, which are the labels that people use to describe their emotion episode. The Component Process Model posits that emotions are elicited by a sequence of evaluations, or appraisals, of a stimulus or event. These sequential appraisals happen quickly, and can be both implicit/unconscious and conscious.

Appraisals are always subjective. That means that one person might appraise the same situation differently than another person. As a consequence, they will experience a different emotion. This does not mean that the link between appraisals and discrete emotions is not systematic. Rather, if two people make the same appraisals, we can expect them to experience the same emotion (Scherer & Moors, 2019). Which appraisal dimensions matter and define distinct emotion episodes is still debated. Different appraisal theories have identified different appraisal dimensions (Moors et al., 2013). However, there is consensus on several core appraisal dimensions that come into play in most appraisal theories. These appraisal dimensions, or variables, are: goal relevance, goal congruence, certainty, control (sometimes also referred to as coping potential), and agency (also referred to as cause or responsibility) (Moors et al., 2013, p.121). Other appraisal variables that appear in some theories but not in others are novelty, pleasantness, or norm compatibility (a more detailed discussion of the similarities and differences between appraisal theories can be found in Moors et al. (2013)). An appraisal process often starts with novelty: a stimulus is detected and attention is directed towards it. Then a basic appraisal of good or bad, or goal congruence, is made. As more appraisals are made sequentially, the emotional episode becomes more fine-grained, and the conscious feeling more specific.

According to Scherer, the most central appraisal is that of *relevance*. The emotion-eliciting event must matter to the observer. A tree blocking a road might cause frustration but only if I had intended to take that road in the first place. At the same time emotions can serve as a signal of an event's relevance (Scherer, 2005, p.701). To illustrate, imagine spotting an angry face in a crowd. You may not notice it if not directed at you, but the moment you catch the angry expression, it becomes relevant to you personally, perhaps eliciting fear, or anger, depending on your relationship with the person. At the same time, spotting the angry face can startle you and direct your full attention toward it, even before you have had the chance to make any cognitive appraisals.

After one has established that an event is relevant, more detailed appraisals are made. These appraisal checks happen in a sequential fashion. As more appraisal judgments are made, emotion episodes can increase or decrease in intensity, or change to a state of mixed emotions, or a different emotion. Each emotion is characterized by a prototypical appraisal profile. While there are individual-level differences that affect which appraisal judgments lead to which emotion, at large, emotions can be predicted by a unique combination of appraisals (Israel & Schönbrodt, 2019; Scherer & Meuleman, 2013). Here, we focus on three appraisal dimensions, certainty, control, and responsibility. They are expected to predict anger and anxiety, two emotions that influence political behavior (Albertson & Gadarian, 2015; Valentino et al., 2011, 2008). Additionally, these three dimensions are a common theme in most appraisal theories (Lerner & Keltner, 2001; Moors et al., 2013; Roseman et al., 1990; C. A. Smith & Ellsworth, 1985). Certainty refers to our understanding of the causes and consequences of an event stimulus. Anger is related to appraisals of high certainty, while anxiety is related to appraisals of low certainty. This means that incomprehensible events are more likely to elicit anxiety. At the same time, people who feel anxious are motivated to alleviate their anxiety by searching information about the cause of their anxiety (Albertson & Gadarian, 2015). Control, or coping potential, describes how well we feel equipped to deal with a threat, or an event. If an event is beyond our control, we are likely to experience fear or anxiety but if we feel that we have power over the event, we will likely experience anger. Finally, responsibility or agency distinguishes anger from guilt. If we feel responsible for an event, we are likely to experience guilt, but if we deem someone else responsible, anger becomes the more likely emotional response. In politics, as I will argue in the following parts, one core factor that determines how we appraise a political issue is political sophistication.

The Relevance, Resistance, and Consistence Hypotheses

First, what exactly is political sophistication and why should it be related to emotions at all? Sophistication is often operationalized as merely encyclopedic knowledge about politics and political processes. According to Luskin (1990), political sophistication is more than that. Rather, he describes sophistication as a network of cognitive and affective ties of political beliefs. Political sophisticates have denser, broader, and more complex cognitive networks. The reason is that they have thought about more political objects (candidates, issues, etc.), and they have done so more often and more thoroughly making connections between objects stronger and increasing the number of nodes, i.e., the complexity of their cognitive networks. Political sophistication according to this view involves cognitive considerations as much as affect, i.e., negative and positive affective ties with political concepts, such as candidates or policies. Political sophistication is an outcome of, as well as a predictor, of caring about politics. It has been shown that political sophisticates are more emotionally invested in political results (Blais & Galais, 2016; K. A. Dolan & Holbrook, 2001). What goes on in politics matters more to them than to non-sophisticates. As a result, they generally report higher emotional responses to political issues and candidates (Miller, 2011).

Moreover, political sophisticates' behavior is more likely to be affected by emotional appeals than that of non-sophisticates (Brader, 2006). Both in the "real" world and in experimental settings, political sophisticates are more likely to pay attention to political events or stimuli. According to the Component Process Model, the appraisal of goal relevance should predict the intensity of an emotion episode. Thus, they should report stronger emotions overall and manipulations of emotions should have stronger effects among sophisticates than among non-sophisticates. Following Brader (2006), I call this the ***Relevance Hypothesis***.

I test this hypothesis in two ways. I consider it supported if political sophisticates overall report higher levels of emotions in response to political issues, controlling for the experimental manipulations of appraisals. Second, I test if experimental manipulations of appraisals, here manipulations of certainty, control and responsibility appraisals, have stronger effects on emotions among respondents with higher levels of political sophistication.

H1a: Political sophisticates report higher levels of anger and anxiety than non sophisticates.

H1b: The effects of certainty, control and responsibility manipulations on anger and anxiety are stronger among political sophisticates than among non-sophisticates.

Next, I consider a competing hypothesis, which I call the ***Resistance Hypothesis***. I again draw on the Component Process Model, as well as Zaller's (1992) model of political learning. Zaller's model is perhaps the most prominent theoretical account about how citizens process political information. It suggests that the adoption of political cues is curvilinear, as a function of political sophistication. Low sophisticates lack interest in political stimuli, or prior knowledge that would help them to quickly make sense of new political information. High sophisticates, however, pay attention to politics in their daily lives, which means that they are more likely to be pre-treated (Slothuus, 2016) and have rigid affective cognitive structures (Izard, 1984; Nabi, 2003; Taber & Lodge, 2006) – which include previously made appraisals. Their affective and cognitive ties are fixed, stored as stable nodes in their long-term memory. Supporting this view, Miller (2011) finds that sophisticates report their emotions faster than non-sophisticates and they are less likely to change their response before submitting it. Miller (2011) interprets this as evidence that for sophisticates, reporting emotions is a simple recall task of stable, chronic emotions. In addition, Gomez and Wilson (2008) have shown that sophisticates are better at assigning responsibility during political crises. According to these findings and Zaller's model, we would expect that political sophisticates are most likely to *resist* experimental manipulations of appraisals. However, those with moderate levels of political sophistication respond most strongly to our experimental stimulus. They are interested enough to be somewhat emotionally invested. Their prior knowledge helps them to integrate new information into an existing network of cognitive and affective ties, but these ties are not too rigid to respond to experimental manipulation. Thus, the Resistance Hypothesis reads as follows.

H2a: The effects of experimental manipulations of appraisals on anger and *anxiety are larger for those with moderate levels of political sophistication than for those with low or high levels of political sophistication.*

Following findings by Gomez and Wilson (2008), I use the attribution of responsibility for a political problem as a second test for the Resistance Hypothesis. Here, I test whether it is true that political sophisticates are pre-treated and have made appraisals prior to the experiment. This test of the Resistance Hypothesis, however, seems to depart from Zaller's curvilinear model as it expects a linear relationship: the higher one's political sophistication, the more likely it is that they have made prior appraisals. But the two are compatible, as Zaller expects that those on the low spectrum of sophistication lack the ability and interest to integrate new information but resistance only happens at the upper end of political sophistication.

The unique data collected for this study allows me to test this aspect of the Resistance Hypothesis. In the second study presented here, I asked respondents to write whom they thought was responsible for a certain political issue. I can use this variable to test if political sophisticates (1) are more likely to name a responsible actor even if they were not provided one in the experimental treatment, i.e., were assigned the low responsibility treatment, and (2) if that actor is more likely to diverge from that named in the treatment, if they were in the high responsibility treatment.

H2b. Political sophisticates are more likely to assign responsibility to a political actor.

H2c. Political sophisticates are more likely to assign responsibility to a political actor that differs from that shown in the stimulus material.

Finally, I propose that political sophisticates' cognitive affective networks are more consistent than those of non-sophisticates, the ***Consistence Hypothesis***. I test this by studying respondents' subjective appraisals (in contrast with my test of the Relevance Hypothesis, which focused on manipulated appraisals) and their relationship with distinct emotions. This approach follows a recommendation by Luskin (1987) to study political sophistication as the connectedness, or simply correlation, of different cognitive and affective ties. A higher correlation, according to Luskin (Luskin, 1987) is indicative of higher political sophistication, i.e closer and more stable nodes.

Following the expectations laid out by appraisal theories of emotion, I first test, whether subjective appraisals of certainty, control, and responsibility are indeed systematically related to experiences of anger and anxiety. I expect the following relationships:

H3a: Higher levels of subjective (self-reported) certainty, control and responsibility appraisals are related to higher levels of self-reported anger.

H3b: Lower levels of subjective (self-reported) certainty, control and responsibility appraisals are related to higher levels of self-reported fear.

Second, I expect that for political sophisticates, ties (correlations) between emotions and appraisals are stronger, as they have thought more carefully and more often about these and similar issues.

H3c: The correlations between subjective (self-reported) appraisals and emotions, as laid out in H3a and H3b, are higher among those with higher levels of political sophistication.

Table 9: Overview of the three main hypotheses and their tests.

Hypothesis	Test	IV	DV	Study
Relevance	Political sophisticates report higher levels of anger and anxiety than non-sophisticates (H1a)	PS (cont.)*	anger, anxiety	1, 2
	The effects of certainty, control and responsibility manipulations are stronger among political sophisticates than among non-sophisticates (H1b).	PS(cont.)*MA	anger, anxiety	1, 2
Resistance	The effects of experimental manipulations of appraisals on anger and anxiety are larger for those with moderate levels of political sophistication than for those with low or high levels of political sophistication (H2a).	PS(cat.)*MA	anger, anxiety	1, 2
	Political sophisticates are more likely to name a responsible actor (H2b).	PS (cont.)	subj. responsibility attribution	2
	Political sophisticates are more likely to name a responsible actor that differs from that in the responsibility treatment (H2c).	PS (cont.)	subj. responsibility attribution	2
Consistence	Higher levels of self-reported certainty, control and responsibility appraisals are related to higher levels of self-reported anger (H3a).	SA	anger	2
	Lower levels of self-reported certainty, control and responsibility appraisals are related to higher levels of self-reported anxiety (H3b).	SA	anxiety	2
	The relationships between appraisals and emotions, as laid out in H3a and H3b, are higher among those with higher levels of political sophistication (H3c).	PS(cont.)*SA	anger, anxiety	2

*PS = political sophistication, MA = manipulated appraisals, SA = subjective appraisals,
cont. = continuous predictor, cat. = categorical with three levels (low, moderate, and high).

4.2 Data and Measures

Data for this study comes from two studies conducted in 2020 and 2021 to test appraisal theories in the context of political emotional appeals (see Chapter 3 of this dissertation). In those studies, we tested how experimental manipulations of appraisals of certainty, control and responsibility influence distinct emotional responses to politics. We exposed participants to information-sheets that varied in their appraisal of five political issues. The pre-registrations for these studies including all stimulus material can be found on OSF.[10] All hypotheses, with the exception of H1b, were pre-registered[11]. H1b was added later as a second test of the Relevance Hypothesis but closely follows the theoretical reasoning of the pre-registered hypotheses. Data for both studies were collected by Dynata in the Netherlands in 2020 and 2021. The samples consist of 1842 and 2623 respondents.

The stimuli presented certainty, control (both retrospective and prospective), and responsibility appraisals regarding five political issues. It can be found in the Appendix. The five issues were COVID-19, painkiller addiction, pesticide pollution, vaccination rates, and refugees (for the full stimuli see Tables A15-A18). In Study 2, the COVID-19 issue was adapted to the current developments in the Netherlands at the time, and we switched the vaccination issue for an issue about antibiotic resistance as a result of livestock farming (for the full stimuli, see Tables A20 - A24).

After reading a brief information sheet about the issue that contained the manipulated appraisals, we asked participants to label their emotional response. This was repeated five times – once for each issue – in random order. In the second of the two studies, we added measures of subjective appraisals, asking respondents to what extent they *personally* felt a sense of certainty, control, and felt they knew who was responsible for the issue. For responsibility appraisals, we further added an open-ended text box. Respondents could name who they personally thought was responsible for the respective political problem. Subjective appraisal judgements were only asked after the last experimental round to avoid that participants recog-

[10] Study 1: https://www.osf.io/q8kgc/?view$_{o}nly = 95b294727fca4ec68c4ac0b9305f5c91$, Study 2: https://osf.io/z8unm/?view$_{o}nly = 17bf83010d2c4f189f968730012b9071$).

[11] PAP: https://osf.io/ef4xr/?view$_{o}nly = 50fd86a0b1f443a58e5dd8610335057c$

nizing the goal of the experiment. These subjective appraisals are not manipulation checks, as we emphasized that we were interested in what respondents personally thought and felt. Thus, we explicitly allowed and perhaps even encouraged them to give answers that differed from the experimental manipulation they had read just before.

The results of the original studies are reported in Chapter 3. In summary, we found a consistent effect of responsibility on anger. If a responsible actor is named in a stimulus, respondents are more likely to report that they feel angry about this issue. If responsibility is ambiguous, respondents tend to report higher levels of anxiety. We found some evidence that certainty appraisal manipulations increase anger but not anxiety.

Following past work in political psychology (Miller, 2011), I conceptualize political sophistication as an index of interest, and factual knowledge.

Interest is measured on a scale ranging from "very interested" (4) to "not interested at all" (1) and recoded to range from no interest (0) to very interested (1). Political knowledge is measured with the following items: (1) "Which party currently has the most seats in the [Dutch] Lower House?", (2) "Who is currently the President of France?", (3) "Who is currently the director of the International Monetary Fund (IMF)?", (4) "How many signatures does a citizens' initiative need to be be considered by the House of Representatives (Tweede Kamer)?", and (5) "What is the current political position of this person?" [Respondents see a photo of the Dutch Minister of Finance, Wopke Hoekstra]. The number of correct responses are counted and divided by 5 to create a scale from 0 to 1. Political sophistication is then operationalized as the mean of the standardized interest and knowledge scores.

Emotional responses were measured using the PANAS-M, proposed by Rhodes-Purdy et al. (2020). Respondents first chose the emotions they feel in response to five issues. Then, for each selected emotion, they reported its intensity on a slider ranging from 0 (Barely) to 100 (Extremely). I used two items for anger (angry, hostile), two items for anxiety (afraid, anxious), and three items for general negative affect (distressed, upset and ashamed). I then constructed additive scales for anger and anxiety, respectively. A respondent's emotion score is the sum of the two respective reported scores – "angry" and "hostile" for the anger index and "anxious" and "afraid" for the anxiety index. If no anger item is selected, or if respondents select one or two but indicate that they "barely" felt the respective emotion (select 0), respondents get an anger score of 0. If only one anger item is selected, respondents get that score. The anger and anxiety scales were standardized across all issues and respondents. Thus, a one-point increase on the anger scale means an increase by one standard deviation of the anger scores across all issues and respondents.

Afterwards and only in the last experimental round, we asked participants about their subjective appraisals of the situation. The battery consists of 5 statements and participants indicated their level of agreement with each on a 7-point scale from "Totally Agree" to "Totally Disagree". We measured certainty with the statement "I understand the consequences of this issue.", control with "This issue is influenced by circumstances that no one has control over." and "People like me have no way of improving this issue", and responsibility with the statement "It is clear who is responsible for this issue". For certainty and control, we calculate the mean scores on both items and standardize all three variables.

Finally, participants could indicate who they, personally, thought was responsible ("Who do you personally think is responsible for this matter? Name anyone that comes to mind and feel free to name multiple actors"). For this open question, I have coded the following variables. First, was a responsible actor named (1 if yes, 0 if no)? Does this actor deviate from the actor named in the treatment (0 if yes, 1 if no)?

These open-ended questions about responsibility attribution allow us to test possible pre-treatment among the highly sophisticated, whether they name a responsible actor at all, and whether they name the same actor that was shown to them in the treatment.

4.3 Results I: The Relevance Hypothesis

I expect that the politically sophisticated report higher levels of emotions in response to politics across experimental manipulations (H1a) and second, that experimental manipulations of appraisals have stronger effects among political sophisticates than non-sophisticates (H1b).

To test this, I first estimate two models with political sophistication as the main independent variable and self-reported anger and anxiety as respective outcomes. In the first test, I control for the experimental manipulations of appraisals of certainty, control and responsibility. Additionally, here and in all models that follow, I control for age, gender, level of education, ideology, the political issue and the order in which the issue was shown. Political sophistication, anger, and anxiety have been standardized. Coefficients thus show the increase in standardized anger and anxiety with each one-standard-deviation-increase in political sophistication.

We find evidence for the Relevance Hypothesis (see Table A25). Across both studies, the politically engaged report higher levels of anger and anxiety. In Study 1, an increase by one standard deviation on the sophistication scale leads to an increase of 0.028 ($p < 0.05$) standard deviations of self-reported anger. In Study 1, political sophistication has a standard deviation of 0.19, anger a standard deviation of 30.83 and anxiety a standard deviation of 36.43. Thus, in absolute terms, this means that if people's political sophistication increases by 0.19 on a scale ranging from 0 to 1, their levels of self-reported anger increase by 0.86 (on a scale from 0-100). In Study 2, self-reported anger is unrelated to political sophistication.

The results for anxiety are overall similar: in Study 1, a one point increase on the standardized sophistication scale leads to an increase of 0.036 ($p < 0.05$) standard deviations in reported anxiety, or an increase of 1.16 on the anxiety scale in absolute terms, for each increase of 0.19 in political sophistication. In Study 2, self-reported anxiety increases by 0.057 ($p < 0.001$) standard deviations, for each one-point increase in political sophistication, and an increase by 1.82 on the anxiety scale for each increase of 0.1 (equals 1 standard deviation in political sophistication in Study 2). I find evidence for Hypothesis 1: Overall, political sophisticates report higher levels of emotions in response to politics than non-sophisticates.

In the second test of the Relevance Hypothesis, I test whether political sophisticates react more strongly to experimental political stimuli.

Figure 14 shows the marginal effect of the certainty, control and responsibility manipulations (from left to right), moderated by political sophistication. It is noteworthy that the interaction between responsibility manipulations and political

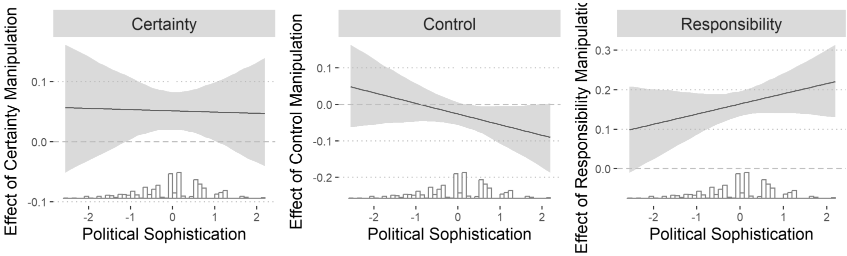

Figure 14. Marginal effects of experimental manipulations of appraisals on self-reported anger (standardized), conditional on levels of political sophistication (standardized).

sophistication on levels of anger is in a positive direction. Although this relationship fails to reach conventional levels of statistical significance (p = 0.22), it could indicate that the effect of responsibility manipulations on anger is primarily driven by respondents with high levels of political sophistication. For non-sophisticates, the effect of manipulated responsibility appraisals is only half as strong and not statistically significant from zero. For high sophisticates, the high control manipulation might even have a negative effect. The full results are shown in Table A26. As the results do not differ per study, both studies are presented together. None of the interactions between political sophistication and the experimental manipulations of appraisals are statistically significant.

Figure 15 shows the same analysis with anxiety as the dependent variable. Across levels of sophistication, the effects remain stable and non-distinguishable from zero. The same is true for responsibility manipulations. Across different levels of political sophistication, manipulated responsibility appraisals decrease levels of anxiety. Again, the full results can be found in Table A26.

These results do not support the Relevance Hypothesis. They suggest that political sophisticates overall care more about political issues but this does not necessarily mean that they respond more strongly to experimental stimuli, or at least not indirect manipulations of emotions, as I have used them in this chapter. An alternative explanation is that the moderation of appraisal manipulations by political sophistication is not linear but that it is actually those with moderate levels of po-

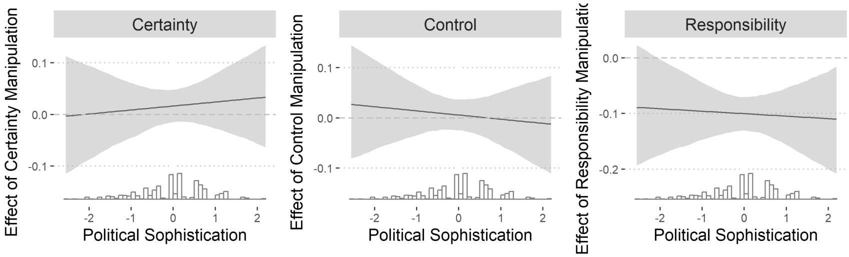

Figure 15. Marginal effects of experimental manipulations of appraisals on self-reported anxiety (standardized) conditional on levels of political sophistication (standardized).

litical sophistication that respond most strongly to experimental manipulations of appraisals. I will test this in the next section under the Resistance Hypothesis.

4.4 Results II: The Resistance Hypothesis

The next hypothesis, the Resistance Hypothesis, which draws strongly on Zaller's model of political learning, suggests a nonlinear relationship between political sophistication and experimental manipulations of appraisals in predicting emotions. Namely, I expect that the effects of appraisal manipulations are strongest among the moderately sophisticated. Low sophisticates do not care much about politics and likely do not read stimulus material well. High sophisticates are likely pre-treated and difficult to manipulate; they either already have strong emotional ties with an issue regardless of manipulation, and/or their appraisals of issues are too rigid to be manipulated.

I test this hypothesis in several ways. First, I test how respondents react to the experimental manipulations of appraisals depending on their level of sophistication. Here, I split the sample into three groups based on their level of sophistication: in low, moderate and high. Figure 16 shows differences in coefficients between the sophistication groups, i.e., the interaction effects. In the top row, we see the difference between the effect of the certainty manipulation among the moderately sophisticated and among the low sophisticated. The second row shows the difference in coefficients between the moderately and high sophisticates, and the bottom row differences between low and high sophisticates. The advantage of presenting the interaction effects in this way, is that we can show all group contrasts, while the regression output will only show us comparisons with the base category. None of the interaction effects significantly differ from 0. Thus, we reject the Resistance Hypothesis concerning anger.

Similarly, Figure 17 shows no clear pattern for the interaction between manipulated appraisals and political sophistication with anxiety, which is further evidence that we should reject the Resistance Hypothesis. The full models can be found in Table A27.

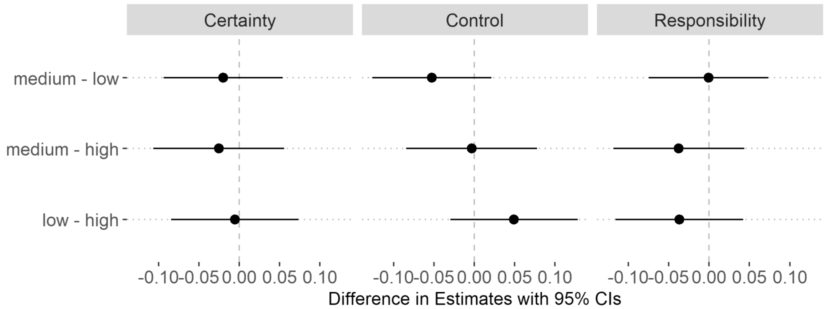

Figure 16. Interaction effects of manipulations of certainty, control and responsibility appraisals and political sophistication (categorical) on self-reported levels of anger. The coefficients show the differences in coefficients in the sophistication categories.

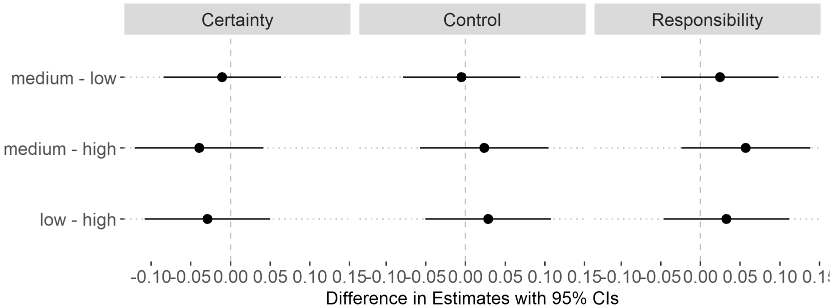

Figure 17. Interaction effects of manipulations of certainty, control and responsibility appraisals and political sophistication (categorical) on self-reported levels of anxiety. The coefficients show the differences in coefficients in the sophistication categories.

To test H2b and H2c, further tests of the Resistance Hypothesis, I use open ended questions, which allowed respondents to write who they personally thought was responsible for a political issue at the end of Study 2. I used this measure to test if respondents with higher political sophistication are more likely to have prior beliefs about responsibility attribution. First, I coded whether they named somebody at all. Respondents' answers varied widely, from clearly political actors such as "the government", "Rutte" [the Dutch Prime Minister], "the European Union", to more obscure actors, such as "God", "us people", or "internet messages". Overall, 73% of respondents named a responsible actor, and only 27 % left the space empty, or responded with "no idea", "I don't know" or similar.

I then coded whether respondents named the same actor that was named in the experimental treatment. I was particularly interested in the knowledge that respondents had prior to or despite the treatment. Thus, I split the sample into those that saw a responsibility treatment and those that did not.

The instructions emphasized that respondents should think about whom they personally thought was responsible but, of course, it is possible that some respondents saw this as an attention check. This might motivate those who are less engaged in the experiment to give a valid answer and it might motivate people to give a "correct" answer, thus repeating the responsible actor from the experimental manipulation. As I am particularly interested in resistance to the manipulations, i.e., when people name an actor that differs from what they saw in the treatment, the results presented here are conservative estimates.

The left side of Figure 18 shows the results of a logistic regression modelling the likelihood of naming an actor and naming the *correct* actor, i.e., the actor that was also named in responsibility manipulation as a function of political sophistication (see also Tables A28-A30). If sophisticates are more likely to resist persuasion by experimental manipulation of appraisals, we would expect them to name an actor more often and for that actor to differ from that in the treatment more often than among non-sophisticates. However, it turns out that political sophisticates are both more likely to name a responsible actor and more likely to name the same actor as in the treatment (see Figure 18). With each increase by one standard deviation in political sophistication, the likelihood of naming an actor increases by 35%, and the likelihood of naming the *correct* actor increases by 56% (Tables A28-A30 in the Appendix show both point estimates and odds ratios of these models). First, we can see naming an actor as a form of engagement with the experiment. This is what we would expect from political sophisticates. However, it is surprising that they are not more likely to name a different actor than in the treatment. Here, it helps to look at the results split by experimental conditions. Once I split the sample into those that saw a high responsibility appraisal (middle panel), and those that saw a low responsibility manipulation (right panel), we see that the pooled results are driven primarily by sophisticates in the low responsibility condition. When the treatment does not mention a responsible actor, political sophisticates are nonetheless likely to independently name someone who can be held responsible. In the high responsibility manipulation, I tried to assign blame in a way that would be convincing to many people. The actors blamed, might in many instances be the obvious and intuitive choice. It is thus reasonable that political sophisticates, thinking about responsibility attribution independently, would simply by chance or through logical reasoning name the same responsible actor that I provided to participants in the high responsibility condition.

In summary, I did not find much evidence for the Resistance Hypothesis, but I found support for the proposition that sophisticates have made emotional appraisals prior to any experimental study (Miller, 2011) or that they find it easier to come up with possible actors to blame on the spot.

It is possible that some responsibility treatments would only be successful among political sophisticates (Relevance Hypothesis) but that the low treatment does not work, as sophisticates have strong preconceptions about who is responsible. This could easily lead us to the conclusion that high and low sophisticates respond similarly to experimental manipulations of emotions but the reasons for it are different.

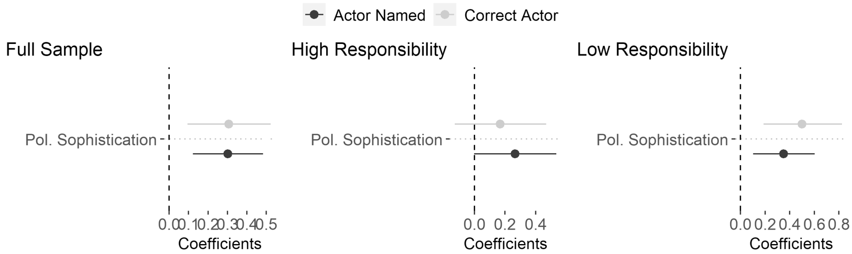

Figure 18. Logistic regression results showing the effects of political sophistication on naming a responsible actor. *Correct Actor* refers to naming the same actor that was shown in the experimental stimulus. Odds ratios and the full models are shown in Tables A28- A30.

4.5 Results III: The Consistence Hypothesis

Finally, I expected that appraisals are systematically related to distinct emotions and that these relationships would be stronger for political sophisticates, as suggested by Luskin (1987) who views political sophistication not only as knowledge but also the network of affective and cognitive ties. I test this by focusing on subjective appraisals and their relationship with distinct emotions. Participants were asked to report their subjective appraisals about the last of five issues they saw in Study 2.

In all models, I control for basic demographics, issue dummies, ideology, as well as the experimental manipulation participants saw earlier.

Figure 19 provides mixed evidence for H3a (anger) and H3b (anxiety). As expected, subjective, i.e., self-reported appraisals of certainty (b = 0.054, p = 0.08), control (b = 0.069, p <0.05) and higher appraisals of responsibility are linked to higher levels of anger (b = 0.112, p < 0.001). Hypothesis 3b must thus be rejected entirely, while Hypothesis 3a is confirmed (full models can be found in Table A31)

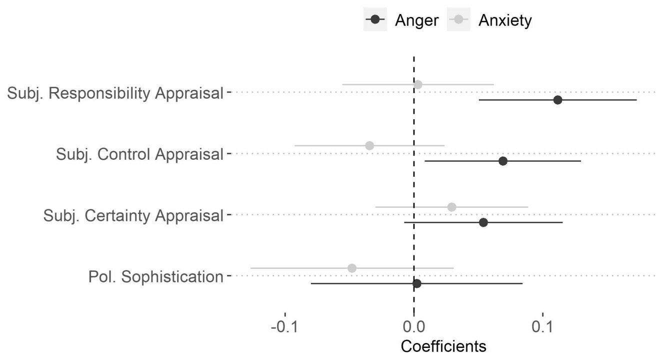

Figure 19. Relationship between subjective appraisals and self-reported anger and anxiety.

The Consistence Hypothesis, however, is primarily concerned with whether these relationships are conditional on levels of sophistication. I proposed that the relationships between appraisals and emotions would be stronger for respondents with higher levels of political sophistication. The full results are shown in Table A32.

Figure 20 shows the marginal effect of subjective certainty, control and responsibility appraisals on anger, by levels of political sophistication. The interaction between sophistication and the subjective appraisals of certainty is not statistically significant (b = 0.068, p = 0.081) but points in the expected direction. There are no

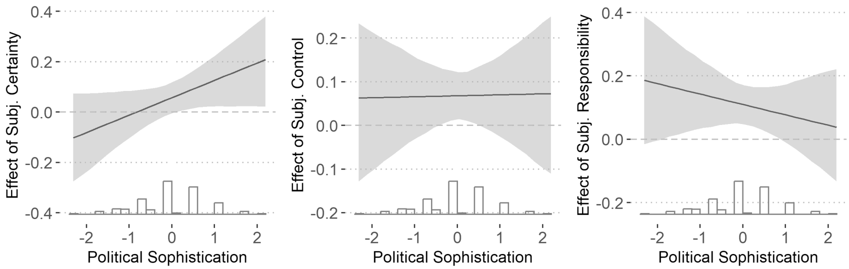

Figure 20. Marginal effects of certainty, control and responsibility appraisals on anger as a function of political sophistication.

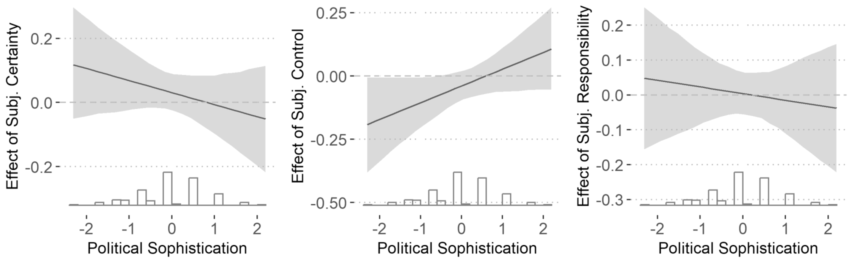

Figure 21. Marginal effects of certainty, control and responsibility appraisals on anxiety as a function political sophistication.

significant interaction effects between subjective appraisals of control and responsibility with political sophistication.

Similarly, for anxiety, the interaction pattern points in the expected direction for certainty and responsibility but neither are statistically significant. The interaction between subjective control appraisals and political sophistication however, points in the opposite direction than expected (b = 0.066, p = 0.086). Among low-sophisticates, high subjective control appraisals lead to lower levels of anxiety. This is in line with the predictions made by appraisal theories. However, among high sophisticates, the effect becomes positive. Their anxiety increases as their appraisals of subjective control increases.

4.6 Discussion and Conclusion

Are politically sophisticates more emotional than non-sophisticates? Yes. I successfully replicated past findings that political sophisticates overall report higher levels of emotional responses to politics (Miller, 2011). When it comes to why, the answer becomes much more complicated.

In this chapter, I proposed and tested three explanations for the link between political sophistication and emotions. First, I tested the Relevance Hypothesis, which posits that as sophisticates appraise political events and issues as relevant to themselves, they experience more intense emotions in response to politics. This hypothesis was supported. I additionally tested whether they pay closer attention to political experimental stimuli. We would expect that political sophisticates find experimental stimuli about politics more interesting, reading it more carefully and finding it easier to translate new information into emotions. However, we did not find a linear interaction between the experimental manipulations of appraisals and political sophistication on either anger or anxiety. While it does seem that the effect of manipulations of responsibility appraisals is driven primarily by political sophisticates, the interaction effect falls short of statistical significance. Moreover, the interactions of political sophistication with control appraisal manipulations points in the opposite direction than we would expect. High control appraisal manipulations seem to have a negative effect on anger among high sophisticates.

Next, following Zaller's curvilinear model of political learning, I proposed that the interaction might in fact not be linear. Rather, it is equally as reasonable to assume that the moderately sophisticated should respond most strongly to the experimental manipulations. The reason is simple: low sophisticates do not care enough to read the stimulus carefully and think about it, which is a necessity to turning appraisals into emotions. The high sophisticates, on the other hand, care but have thought about these issues before. Their appraisals are fixed and stored as nodes in long-term memory. This leaves the moderates as the group in which we should see the strongest results. This is not the case. Although Zaller's model of political learning is one of the most prominent theories in political communication, we found no evidence for it in this chapter. Either it simply does not extend to emotional appeals as I have studied them here, or it needs reevaluation.

I put the Resistance Hypothesis to a second test using an open ended answer to who respondents personally thought was responsible for a political issue. Here, I showed that sophisticates actually do think about these issues more. When respondents were in the low responsibility condition, i.e., when they did not see a treatment that explicitly blamed a responsible actor, sophisticates were more likely to blame a political actor anyways. Often, this was the same actor that was blamed in the high responsibility treatment. As we created these treatments to be believable and plausible to many, we can conclude that sophisticates do not just blame anyone but make reasonable responsibility appraisals. This is good news, sophisticates do engage with studies about politics, they are more likely to name an actor when asked, and they hold meaningful attitudes about political issues, i.e., they name the same actor, which we a priori have found reasonable to blame, as responsible, even when they do not see a high responsibility treatment.

Finally, I tested whether political sophisticates are more consistent in their appraisal-emotion patterns. I found evidence that subjective responsibility and control appraisals are related to higher levels of anger. When it comes to the interactions, all but one are in the expected direction. I found no concise evidence that sophisticates have more consistent appraisal-emotion networks. Future work could test this hypothesis differently, with a larger number of appraisals and larger number of emotional and attitudinal objects.

Before concluding, a note on measurement of political sophistication: political sophistication is frequently viewed as simply encyclopedic knowledge of political actors and processes, i.e., as knowing basic political facts and being able to recall them at the right time (Lupia, 1994). Whether quiz-like questions can correctly capture people's knowledge and understanding of politics is subject to debate. Respondents of online research easily and quickly google answers to political knowledge questions (Jensen & Thomsen, 2014). Researchers can discourage this by explicitly asking respondents not to use outside sources (Berinsky, Huber, & Lenz, 2012; Clifford & Jerit, 2016) or try to make cheating more difficult by using image-based questions (e.g. asking respondents to identify a person in a picture, see Munzert and Selb 2017). However, cheating always remains an issue when measuring political knowledge. On top of this, commonly used knowledge questions have been shown to increase gender (K. Dolan & Hansen, 2020; Kraft & Dolan, 2022) and racial (Pérez, 2015) biases in political knowledge measures. In this chapter, I have taken a broader conceptual approach by including political interest as well as knowledge questions, but the challenge remains. Addressing how and whether we can measure political knowledge without introducing biases, is beyond the scope of this chapter and adding political interest might be an imperfect solution, even if it is one that is adopted widely in the literature.

Political interest and knowledge, although widely assumed to be part of the same latent construct, are often only weakly correlated. This chapter has provided first insights into the relationship between broadly defined political sophistication and emotions but future work should consider carefully the different components related to sophistication, knowledge, interest and confidence-in-knowledge (a component of political sophistication that is increasingly studied in work on political misinformation – see for instance Jerit & Zhao, 2020; Lee & Matsuo, 2018), and how they might or might not be related to emotional responses to politics.

To conclude, in this chapter, I have proposed several steps that could help us understand how political sophistication and emotional engagement are linked. Most importantly, I have proposed and tested three explanations that could explain their link. Beyond that, this is one of few studies that study the link between emotions and specific appraisals. Studying emotions and their appraisal profiles tells us something about how evaluative judgments are related to distinct emotions and although much of political science research on emotions relies on appraisal theories, its fundamental premises are rarely put to the test. The interaction of subjective appraisals and political sophistication in predicting anger and anxiety offers some validity to this approach. As we would expect, the associations between subjective appraisals and anger get stronger as respondents' political sophistication increases. The same is true for anxiety, with the exception of subjective control appraisals. Finally, this approach also helps us better understand political sophistication as a network of cognitive and affective ties, rather than just encyclopedic knowledge.

So, returning to the main question of this chapter: relevance, resistance or consistence - which explains the link between political sophistication and emotional responses to politics? We have found convincing evidence for the Relevance Hypothesis. Overall, sophisticates report stronger emotional responses to politics than non-sophisticates. This does not mean, that they always pay closer attention to experimental stimuli, but the combined findings presented above suggest that they do pay more attention to politics in their everyday lives. When we asked them to name responsible actors, sophisticates were more likely to do so and often the actor they named was the same we showed in the high responsibility treatment. This suggests that they do not assign responsibility randomly but carefully think about the issues and the actors involved. We found little evidence for the Consistence Hypothesis. As this analysis contains two innovations, testing the appraisal-emotion link and its moderation by political sophistication, more research is needed. Testing the Relevance Hypothesis using observational data will always suffer from issues of endogeneity. As laid out in the introduction, as much as sophistication might increase emotions, emotions guide political learning and attention. Combining these findings with tests of the Consistence Hypothesis, however, provides a deeper understanding of how knowing about politics might be related to having feelings about politics by ways of cognitive appraisals.

5 Disentangling the Sophistication-Emotion Link: Political Interest and Confidence-in-Knowledge drive Political Emotions

Abstract

Why do some people report strong emotional responses to politics and others do not? Past work has suggested that political knowledge leads to emotional engagement, as knowledgeable citizens have stronger cognitive and affective ties with political objects. In this chapter, we argue that a core dimension of political sophistication is often overlooked: confidence-in-knowledge, which is highly related to political interest but not to actual knowledge. We argue and show empirically in three waves of the ANES and two preregistered studies (conducted in the Netherlands and the U.S.) that not knowledge but political interest and confidence in one's knowledge predict the intensity of emotional responses to politics. We test the causal link between confidence and emotions using an experimental confidence manipulation and find a direct effect on anger and anxiety, and a mediated effect via post-treatment confidence on anger, anxiety, pride and hope. If people are less confident, they report lower levels of emotions about politics. These results put into question the view that emotions are an expression of informed citizenship by showing that interest and confidence drive emotional responses to politics, while knowledge is unrelated to or suppresses the intensity of self-reported emotions. Moreover, our findings demonstrate the necessity of disentangling the different components of political sophistication when studying political emotions and other political outcomes.

Political sophisticates tend to be more emotional about politics than nonsophisticates (Brader, 2006; Miller, 2011; Taber & Lodge, 2006; C. Weber, 2013). While folk wisdom has long distinguished between reasonable non-emotional voters and unreasonable emotional voters, in political science the positive link between sophistication and emotions has become widely accepted. Expressing feelings in response to politics is now considered an important component of engaged and informed citizenship (Bas & Grabe, 2015; Brader, 2006; Miller, 2011).

Research studying the link between political sophistication and emotions has operationalized the former primarily as political knowledge, political interest, and attention to news, or as a composite index of all or a subset of these three (e.g. Miller, 2011). Approaches vary in which of these elements are emphasized in theory and in measurement. A problem that Luskin identified decades ago persists to date: "[M]ost sophistication research skips rapidly past definition. Most chapters barely outline the variable [...]. Clearly, we all think we are talking about the same thing. But are we?" (Luskin, 1987, p.857).

A key study investigating the sophistication-emotion link shows that sophisticates are more likely to report feeling anger, fear, hope, and pride about policies and candidates (Miller, 2011). Arguably the reason is that sophisticates care more about politics (Brader, 2006) and political outcomes (K. A. Dolan & Holbrook, 2001), and spend more time thinking about politics and appraising issues and candidates. This shapes opinions (Taber & Lodge, 2006), but also appropriate emotional responses (Miller, 2011). This approach thus considers emotions as reasonable responses to political developments, and views people's emotions as reflections of how they perceive politics. Ultimately, emotions help citizens to generate appropriate courses of action in response to political events (Marcus et al., 2000).

In this strand of literature, political sophistication is understood as either political knowledge (Carpini & Keeter, 1996), or, more broadly, as consisting of several elements, such as interest, knowledge and attention (Luskin, 1990). Work that followed and extended the sophistication-emotion link proposed by Miller (2011) has been inconsistent in conceptualizing and operationalizing political sophistication by using measures of interest and knowledge separately (Nai et al., 2017), or knowledge items only (Bakker et al., 2021; Gibson et al., 2020; Karl, 2021; Lamprianou

& Ellinas, 2019; Vegetti & Mancosu, 2020). This makes it difficult to integrate different theories and empirical findings regarding the sophistication-emotion link. It is therefore crucial to identify more closely which of the specific element(s) of sophistication cause(s) people to report more emotions. We therefore disentangle some of the key components of political sophistication here.

In this chapter, we argue that although political knowledge is now widely considered the core component of sophistication (Carpini & Keeter, 1996; Clifford & Jerit, 2016; Jerit & Zhao, 2020), it is the wrong trait to look at when trying to understand the link with political emotions. We offer a third approach to the sophistication-emotion link that is broad because it considers various different components of sophistication, but narrow because it urges us to theorize about each component individually. We argue that in order to understand the relationship between political sophistication and emotions, we need to be more precise in theorizing about the key components of sophistication: political interest, knowledge and, additionally confidence-in-knowledge.

The importance of confidence-in-knowledge as an independent dimension of political sophistication has been stressed by work on political misinformation (Jerit & Zhao, 2020; Kuklinski, Quirk, Jerit, Schwieder, & Rich, 2000). We propose that confidence-in-knowledge is a more relevant factor than actual knowledge when it comes to the study of political emotions. The reason is that the appraisals that lead to emotions do not need to be factually correct. People simply need to be confident in their appraisals.

Empirically, we first extend Miller's work that has shown that political sophistication increases the likelihood of feeling emotional about politics (Miller, 2011). We use three waves from the American National Election Study (2012-2020), which we complement with two preregistered studies.

We first show that political knowledge has no consistent effect on emotions whereas political interest mostly has a positive effect on a range of emotions. Second, we demonstrate that the effects of confidence-in-knowledge and political interest on emotions are very similar. Both are consistently positively related to emotional responses to politics. Third, we establish a causal relationship between confidence-in-knowledge and emotional responses to politics by using a preregistered experimental manipulation of confidence-in-knowledge using knowledge question difficulty.

These findings challenge the dominant view that sophistication leads to emotions through learning and evaluations of the political environment. Rather than a corollary of information and knowledge, emotions should be conceived of as a product of general interest in politics and feeling confident in one's knowledge about it.

5.1 Conceptualizing Political Sophistication

Although political sophistication has received ample scholarly attention over the past decades, the literature has not settled on a single definition. We distinguish two main approaches to political sophistication. The first is a narrow approach that follows Carpini and Keeter (1996) and sees political knowledge as the core component of political sophistication. Research following this approach often focuses on how we can improve measures of knowledge (Vidigal, n.d.), avoid gender biases (K. Dolan & Hansen, 2020; Kraft & Dolan, 2022) and racial biases (Pérez, 2015) in knowledge questions and discourage cheating (Clifford & Jerit, 2016; Style & Jerit, 2020). The term political sophistication, in this work, has largely been replaced by the more specific term political knowledge, or political awareness.

A second, broader, approach follows Luskin (1990) who defines political sophistication as "political belief systems", describing "the extent to which a person's cognitions of some stimulus domain are both highly *differentiated* (roughly, numerous and wide-ranging) and highly *integrated* (organized or constrained). [...] Political sophistication is political cognitive complexity [and] political expertise" (p.332). According to this view, its components are both factual political knowledge and ideology, i.e. the integration of knowledge in political beliefs. Its predictors are opportunity (occupation, parental interest in politics, exposure to political news), ability (intelligence) and motivation (occupation, political interest).

Past work on the sophistication-emotion link suffers from a discrepancy between how it has been theorized and how it has been studied. The theoretical link between sophistication and emotions follows the narrow approach focusing mostly on political knowledge. Past studies on the sophistication-emotion link have argued that people who know more about politics will also feel more strongly about politics (Brader, 2006; Gibson et al., 2020; Lamprianou & Ellinas, 2019; Vegetti & Mancosu, 2020). The core idea is that the more one knows about politics, the more one will reason and make appraisals about it, leading to stronger emotional ties with political objects.

However, when operationalizing political sophistication, Miller (2011) takes a broader approach, studying sophistication as an index of both knowledge and interest. Taking a broader approach to political sophistication allowed Miller (2011) to be less specific about which component of a broader sophistication concept should elicit emotions.

Recent work on political misinformation has directed our focus toward another component of sophistication: confidence-in-knowledge (Lee & Matsuo, 2018; Thomas, Bulevich, & Dubois, 2012). Increasingly, measures of confidence, although under the label of certainty-in-knowledge, are making their way into measures of political knowledge (Graham, 2022; Vidigal & Jerit, 2022).

Especially if we try to explain what drives emotional responses to politics – though this might be true for other outcomes, as well– political interest and confidence-in-knowledge, we aruge, are the relevant components to study. In the next sections we describe in more detail why we expect interest and confidence-in-knowledge, but not factual knowledge, to increase emotional responses to politics. We also discuss in more detail what confidence-in-knowledge is and what we know about its behavioral outcomes and relationships with other components of political sophistication.

Directing our focus towards confidence-in-knowledge as a core component of sophistication is consistent with Luskin's (1987) view of political sophistication. He states: "The 'sophistication' in political sophistication has nothing to do with acuity. Its opposite is not naiveté or false consciousness but sheer ignorance. [...] Sophistication is a matter of how much and how a person thinks about politics, not what" (p.864).

5.2 The Sophistication-Emotion Link: Interest, not Knowledge

We start this discussion by introducing appraisal theories, which have strongly influenced political psychology work on emotions. Appraisal theories assume that emotions are a response to evaluations of our environment (Moors et al., 2013). A situation is appraised along a set of core appraisal dimensions. Each emotion is considered to be a result of a unique combination of appraisals (Scherer & Meuleman, 2013; Scherer et al., 2001; C. A. Smith & Ellsworth, 1985). For instance, anger is evoked in response to a negative event that is caused by a specific actor. Moreover, to feel anger we need to feel a sense of control over a situation: that the situation could have been prevented or that we have the power to change it. If we change one appraisal dimension, a different emotion is expected. For example, if in the previously sketched situation we feel responsible ourselves, we are likely to experience guilt instead of anger. Anxiety is a more diffuse emotional state. It is characterized by low certainty and low control. We feel anxious when we are unsure about what caused an event, and when we feel little control over a situation. Positive emotions work similarly. If we feel responsible for a positive event, we are likely to feel proud. Feeling positive about a future event that we have little control over and are not certain will occur, leads to hope (Scherer & Meuleman, 2013; C. A. Smith & Ellsworth, 1985).

In appraisal theories the assessment of goal relevance is essential. If a stimulus is seen as irrelevant to one's goals, it is unlikely that it will elicit any emotional response. Brader (2006) links goal appraisal with political sophistication in his 'Relevancy Hypothesis': political sophisticates pay more attention to politics, learn more about it and simultaneously are more invested in political outcomes (K. A. Dolan & Holbrook, 2001). A bill that goes against one's political preferences, for instance, will elicit stronger negative emotions among sophisticates than non-sophisticates. By definition, sophisticates are more likely to be aware of the event in the first place and better able to understand its political consequences. According to this reasoning, higher political sophistication is linked to stronger emotional responses to politics through higher appraisals of goal relevance. Brader (2006) does not specify which component of sophistication is at work in this process.

Miller (2011) describes the link between political sophistication and emotions as follows: Political sophisticates pay more attention to politics and make appraisals more frequently and about a wider range of issues. These appraisals are stored in long-term memory in a cognitive-affective structure consisting of knowledge about political objects and affective ties with these objects (Lodge & Taber, 2005). When sophisticates are asked how they feel about a given political issue, they find it easier to recall these emotions than non-sophisticates (Miller, 2011). As a result, the emotional responses to various political events should generally be expected to be more intense among political sophisticates than among non-sophisticates.

Political knowledge may help us incorporate complex new information (Rhee & Cappella, 1997; Zaller et al., 1992) but this does not mean that people who are more knowledgeable absorb all new information. Rather, knowledge helps us incorporate information that is relevant as much as it helps us dismiss information that is *not* relevant. Whether political knowledge leads to higher or lower goal relevance appraisals among highly knowledgeable people will depend on several other factors, such as prior attitudes and beliefs (Taber & Lodge, 2006) or the credibility of information (Vegetti & Mancosu, 2020). In fact, Price, David, Goldthorpe, Roth, and Cappella (2006) find a small negative relationship between subjective issue importance of health care issues and issue-specific knowledge about it, suggesting that just because people know a lot about an issue does not necessarily mean they give it more importance. Similarly, Vidigal and Jerit (2022) find that once misinformed about an issue, people who find the issue important are less likely to correct their misinformation. Thus, issue importance and knowledge can be negatively related.

Moreover, secondary appraisals of responsibility, certainty, or control are always subjective and therefore do not have to be based on factual information (Scherer & Moors, 2019). What is important is that people are interested enough in politics to make any appraisals at all, and less so whether these appraisals are based on correct factual knowledge. In other words: it is possible that someone has strong affective ties that are based on entirely incorrect factual information (Weeks, 2015).

Thus, we expect that political knowledge is not related to emotional responses to politics. The positive effect of sophistication on emotions that Miller (2011) reports should be produced by the interest component of sophistication.

Political interest itself contains cognitive and affective components. Prior (2018, p.14) calls situational interest a “feeling of curiosity and discovery”. It can be triggered by positive emotions, the prospect of a reward of engaging with political content, or by anxiety (Albertson & Gadarian, 2015; Valentino et al., 2011). Silvia (2008) sees situational interest itself as an emotion that is elicited by appraisals of novelty and coping potential. Connelly (2011) adds goal relevance to this model and shows that it is in fact the strongest predictor of situational interest in academic texts. Dispositional interest is a more stable trait that develops through sustained situational interest. It involves more cognition. People with high dispositional interest tend to find politics more important, more fun and tend to enjoy giving their attention to complex political issues (Prior, 2018, ch. 2). Political interest, thus is different from political knowledge, which often but not necessarily is a result of political interest. It is possible to know a lot about politics without being too interested, as much as one can be interested without having a good understanding of political processes. Throughout the literature, political interest and knowledge have been found to have a weak to moderate correlation (Arceneaux, Johnson, & Maes, 2012; Bakker et al., 2021; Nai et al., 2017). In the ANES data presented in this chapter, the correlation is approximately 0.3. In our two original samples, the correlation does not exceed 0.2.

Past work has shown that people with higher political interest tend to feel a stronger duty to vote (Blais & Galais, 2016). Political interest is also related to public concern about issues such as the environment, peace, the economy or immigration (Prior, 2018, ch.14).

To be interested in something, we need to think it is important to us personally, or to values we hold. Politically interested people are more likely to encounter political stimuli and more likely to perceive political stimuli as goal relevant. Brader’s *Relevance Hypothesis* is therefore linked much more clearly to political interest than knowledge. This leads us to the following hypotheses:

H1: Factual knowledge about politics is unrelated to experiencing emotional responses to politics.

H2: Political interest is positively related to experiencing emotional responses to politics.

5.3 The Sophistication-Emotion Link: Confidence, not Knowledge

Recent work on political sophistication and political misinformation has highlighted another dimension of political sophistication, namely confidence-in-knowledge (Lee & Matsuo, 2018). If people are confident in their knowledge it does not necessarily mean that they know more about politics than people who perceive themselves as less knowledgeable. Rather, political knowledge and confidence-in-knowledge are independent dimensions with a weak correlation (Alba & Hutchinson, 2000; Carlson, Vincent, Hardesty, & Bearden, 2009). Confidence-in-knowledge also has different antecedents than political knowledge does (Lee & Matsuo, 2018; Thomas et al., 2012). Education, for example, predicts higher levels of knowledge but not confidence-in-knowledge (Lee & Matsuo, 2018). Moreover, the two concepts have different consequences. People who are confident in their knowledge about politics are more engaged in politics (Lee & Matsuo, 2018; Schäfer, 2020), report more extreme political attitudes (Fernbach, Rogers, Fox, & Sloman, 2013) and are less consensus-oriented (Light, Fernbach, Rabb, Geana, & Sloman, 2022).

Confidence-in-knowledge is closely related to internal political efficacy, which refers to the confidence in one's skills to participate in politics. Kaid, McKinney, and Tedesco (2007) has also called confidence-in-knowledge "political information efficacy". Both concepts probe people's confidence in understanding the political system and political developments. Yet internal political efficacy focuses also on people's confidence in their own ability to play an active part in politics (see also M. Weber & Koehler, 2017). This latter aspect is not part of confidence-in-knowledge, which only concerns confidence in one's knowledge about politics.

Prior (2018) identifies confidence-in-knowledge, although under the label of "self-efficacy" as a key prerequisite of political interest: "We tend to find things more interesting that we understand (or believe we could understand)" (p.356). This is in line with Silvia (2008)'s model of interest, which considers novelty and coping potential the main appraisals driving interest. To be interested requires that something is in principle comprehensible, and that we feel that we have the skills and knowledge to deal with it (Silvia, 2008, p.58). Thus, confidence, interest and knowledge are related, although studying if and under which circumstances confidence leads to interest or interest leads to knowledge is not the focus of this chapter.

We theorize that confidence-in-knowledge relates to the experience of emotional responses to politics in two ways. First, if one is confident about their knowledge of politics, we expect that person to more rapidly and consistently produce appraisals of a political stimulus. Confident people will be less hesitant and therefore more likely to place the new stimulus in a broader context, producing, for instance, a causal chain of events, a responsible actor, and possible future scenarios. Gomez and Wilson (2008) show that politically knowledgeable people are better at *correctly* assigning responsibility. However, incorrectly placed blame attribution can just as well elicit anger, as long as the person believes they are right. If one is confident about how to appraise a stimulus on dimensions such as responsibility, certainty and control, appraisal theories predict clear emotional responses such as anger, hope, pride, etc. Again, none of the appraisals need to be factually true, and therefore confidence and knowledge are distinct concepts. People that lack confidence may not be able to confidently place the stimulus in a single broader context, and therefore may be ambiguous in how they appraise a situation. For example, they may not confidently single out one actor as responsible, but rather believe that there are multiple equally plausible options. If one is ambiguous about how to appraise a stimulus, appraisal theories do not predict a clear emotional response. In sum, the ambiguity of appraisals of low confidence people likely produce weaker emotional responses.

Second, confidence may also generally produce appraisals of high certainty and high control. Confident people are more likely to assess the circumstances around the stimulus as highly certain and very much under control than people who are not confident. A similar point has been made by Valentino et al. (2009), who argue that highly efficacious citizens feel a higher sense of control and certainty and thus higher levels of anger. Although this argument concerns internal efficacy rather than confidence-in-knowledge, the discussed mechanism is very similar. Highly confident people may even be more likely to point towards a responsible actor. This line of reasoning implies that confidence-in-knowledge is linked to specific emotions, namely those which emerge from appraisals of high certainty and high control: anger or pride.

The difference between these two theoretical approaches is that the first assumes that confidence-in-knowledge will lead to stronger emotions, generally. Appraisals can be made in any direction, for instance low or high certainty, but among people with high confidence, this is done with less ambiguity. The second approach assumes that people with high confidence-in-knowledge have a general tendency to appraise different events in a certain way, i.e. to make high certainty and high control appraisals more frequently. The result would be that they are more likely to experience specific emotions (anger, pride). We did not preregister any emotion-specific hypotheses but rather expect that confidence-in-knowledge will generally increase the intensity of emotional responses.

H3: Confidence-in-knowledge is positively related to the intensity of self-reported emotions.

We expect confidence-in-knowledge to be highly correlated with political interest. In fact, some research shows that manipulating confidence increases political interest (Bishop, 1987; Lasorsa, 2009). We also expect the two concepts to have a similar effect on the experience of emotional responses to politics. Yet, theoretically we should still make a distinction between the two concepts. We have argued how political interest affects emotions via a relatively general route, activating appraisals through goal relevance. Confidence-in-knowledge, on the other hand, follows a more specific route through secondary appraisals, such as certainty, control and responsibility. Importantly, these appraisals do not have to be based on factually correct information and the effect of confidence-in-knowledge should be independent of the effect, or lack thereof of factual political knowledge. It is plausible that as much as interest and confidence affect emotions, specific emotions also have an impact on interest (Albertson & Gadarian, 2015; Marcus et al., 2000) and confidence (Rico et al., 2020). Therefore, only experimentally manipulating confidence allows us to make any claims about the causal ordering of sophistication and emotions. We use question difficulty, a simple confidence manipulation, to test whether confidence has a causal effect on self-reported emotions.

This approach is informed by self-perception theory, which argues that survey context influences people's confidence and self-perceptions of their political engagement (Bem, 1972; Bishop, 1987). Specifically, self-perception theory argues that answering difficult knowledge questions can unsettle people's understanding of their own political competence and interest. This has consequences for subsequent survey responses in which respondents are asked to report information that is not directly available to them but requires a level of introspection. In such cases, respondents observe their behavior, almost like an outside observer, to answer the questions that follow.

In a survey context, this means that they consider how they have answered previous questions. This has been previously tested to see how the placement of knowledge questions (Bishop, 1987; Lasorsa, 2009), measures of political participation, or feeling thermometers (Robison, 2015) affects subsequent self-reported political interest. If people are asked a range of political knowledge questions prior to reporting their political interest, they report lower interest than if they report interest first. The theorized mechanism is this: if respondents struggled to answer some of the knowledge questions, they will question how interested in politics they really are. As a consequence, they will report lower levels of political interest. Similarly, if respondents report prior political participation before answering a political interest item, they will use these responses to inform their response to the interest item (Robison, 2015). On average, then, respondents report lower interest compared to when they simply report their interest without reflecting on their behavior beforehand. What is manipulated here, according to Prior (2018, p.341), is "a subjective sense of being able to understand and influence politics". Thus, while this might also have consequences on self-reports of political interest, we argue that it is primarily a manipulation of confidence-in-knowledge.

These studies are mainly concerned with survey context effects, or the effects of asking knowledge questions before the interest (or participation) items, or asking about interest before knowledge. We deviate from this approach as knowledge questions inevitably bring up a range of political issues that could themselves elicit emotional responses. Therefore, we experimentally manipulate knowledge question difficulty but keep the question content stable across the two conditions. We expect that individuals who answer easier questions will have more confidence in their knowledge, whereas those who are exposed to more difficult questions will be less confident.

H4: Respondents in the easy condition, compared to the difficult condition, report higher confidence in political knowledge.

H5: Respondents in the easy condition, compared to the difficult condition, report higher levels of self-reported emotional responses to politics. [12]

5.4 Methods

Evidence for our hypotheses comes from three separate sources: (1) a reanalysis of the three most recent waves of the ANES (Hypotheses 1 and 2, Hypothesis 3 tested in the 2020 wave), (2) a pre-registered original study conducted in the Netherlands via Dynata in summer 2022 (H1-H5), and (3) a pre-registered original study conducted via Prolific in the United States in the fall of 2022 (H1-H5). They will each be discussed in this section, before we present the results of all three data sources together below. Each results section contains an overview table of the measures across the five samples.

American National Election Study 2012 - 2020

We start with a conceptual replication of the core findings presented by Miller (2011) using three recent waves of the American National Election Study 2012-2020. The reason to include these three waves is based on a recent change in the emotions question in the ANES in 2020 when instead of emotions concerning the two presidential candidates, respondents were asked to report how they felt about how things were going in the country at the time (we used a similar measure in our original study).

To increase the validity of our findings and test whether our effects also apply to more specific emotion questions, we add two ANES waves with the old emotion

[12]Hypothesis 4 and 5 were pre-registered in the reverse order. We additionally pre-registered to measure decreases in confidence through response time, expecting that easy questions would decrease response time to post-treatment confidence measures and emotions questions. We did not find any effects for response time.

items. In 2012 and 2016, emotion items were asked in reference to presidential candidates. In 2012, these were Barack Obama, as the Democratic candidate, and Mitt Romney as the Republican candidate. In 2016, the candidates were Hillary Clinton and Donald Trump. Following Miller (2011), we pool observations concerning the two candidates in each year and control for candidate party and policy differences. We construct a measure for policy differences as the means of the absolute differences between self-placement and candidate placement on various policy items. When placing themselves on the ideological scale (in all waves) from left to right, or on specific political issues (only used as control in the 2012 and 2016 waves), respondents could indicate that they had not thought about this enough to answer the question. While this could be interpreted as missing values, which would lead to exclusion of these respondents from our models, such a response is likely systematically related to confidence, interest and knowledge. Thus, we impute a value of 4, i.e. the center of the scale, for these responses. Otherwise, we would risk systematically biasing our sample.

We use standard errors clustered at the respondent level to account for repeated measurement. In 2020, the emotions question did not concern a specific candidate or issue. Thus, we cannot control for policy differences and cannot account for who people thought of when reporting their emotions. However, in all models, we control for ideological self-placement, partisan identification (from 1 strong Democrat to 7 strong Republican), age, education, race/ethnicity, and income.

Finally, in 2020, a confidence measure for 6 political beliefs was added to the ANES. This measure was designed to study misinformation, i.e. to detect participants who are confident in false beliefs, or not very confident despite their beliefs being correct (Graham, 2022). Respondents were given two statements, such as: “Russia tried to interfere in the 2016 presidential election”, and “Russia did not try to interfere in the 2016 presidential election”. They then indicated which one they thought was more likely to be true and how confident they were about that on a 5-point scale. For our confidence measure, we only use the second step, i.e. the confidence items across the six beliefs. We create a measure as the mean across the six items, which we standardize (for more information on the individual items and the distribution of the measure, see Figure B8 in the online appendix). The analysis of the ANES confidence measure was not pre-registered as we became aware that this measure was included after pre-registration.

Dutch Sample (Dynata)

Data for the Dutch sample was collected in October and November 2022 by Dynata. A total of 2579 participants were recruited to obtain a sample of 2010 participants. We asked respondents to pledge not to cheat (Clifford & Jerit, 2016) and included a simple attention check. Participants had to listen to a soundbite and select the word that was said in the soundbite. 98% of participant passed this check. After excluding all participants with missing values on the key variables, we obtain a sample of 1991 respondents that consists of 49.8% men and 50.2% women, and a mean age of 54.2.

Before exposing participants to either easy or difficult knowledge questions, we measured participants' political interest, baseline confidence in knowledge, and factual knowledge. We use these variables to test H1 and H2.

We measured confidence in knowledge with the following two items, which were taken and slightly adapted from the scale for perceived knowledge proposed by Flynn and Goldsmith (1999): 1. "Among my circle of friends, I'm one of the 'experts' on politics"; and 2. "Compared to most other people, I know less about politics" (reverse coded). Participants were asked to indicate on a 5-point scale the extent to which they agreed or disagreed with the two statements. The two items are significantly but not highly correlated (Peason's r = 0.36, p <0.001, $\alpha = 0.53$). We nonetheless combined them to an index for confidence (mean = 2.81, sd = 0.82).

Next, we measured baseline factual knowledge using four moderately easy knowledge questions: 1. "Ordering the political parties below from ideological left to right, which of the orders would you say is correct?"; 2. "Who is currently president of France?"; 3. "What year did the Netherlands join the European Economic Community, which would later become the EU?" 4. "What is the current position of Hugo de Jonge?". To calculate an index of political knowledge, we created the sum of correct answers, and divided by 4 to obtain a scale ranging from 0 to 1. On average, participants answered 2.77 questions correctly. As Figure 22 shows, two of the questions were very easy (top row), while two were really moderately easy.

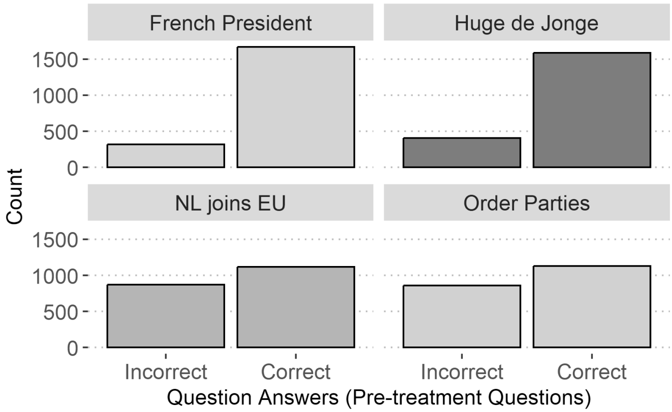

Figure 22. Dutch Sample (Dynata): Distribution of correct answers on the common knowledge questions (pre-treatment).

We will reflect on the implications of this in the discussion.

Additionally, we measured political interest ("Are you very, rather, or not at all interested in politics?", 7-point scale, mean = 4.41, sd = 1.62), ideology on a 7-point scale (mean = 4.20, sd = 1.42), age, gender, education and internal efficacy. Internal efficacy is measured on a 5-point scale with the following two items, which are combined to an index ($\alpha = 0.64$, mean = 3.01, sd = 0.84). 1. "I am well capable of playing an active role in politics", and 2. "I have a clear picture of the most important political issues in our country". These measures are deliberately different from other commonly used measures of internal efficacy, such as the one used in the American National Election Study: "Sometimes, politics and government seem so complicated that a person like me can't really understand what's going on.", as this measure would have strongly overlapped with our measure of confidence-in-knowledge. All measures were then standardized so that a one-point increase equals an increase by one standard deviation on the respective predictor variable. We measured emotional responses with the following item: "Thinking about politics, have you recently felt any of the emotions below and with what intensity did you feel that emotion?" Four emotions (anger, fear, enthusiasm, hope) were presented in random order and participants indicated the intensity with which they had felt the emotion on a 7-point scale ranging from “Not at all” to “Very strongly”. All measures were standardized.

U.S. Sample (Prolific)

For the second original data source, a sample of 1163 participants was collected in December 2022 by Prolific in the United States. Again, we included two attention checks (Berinsky et al., 2014), each with a warning if respondents failed once, and excluded those who did not pass after receiving the warning. The final sample consisted of 47.2% men and 51.5% women. 1.3% of respondents identified as non-binary. We randomly imputed male or female gender for these respondents as the group was too small to estimate a separate gender effect. The sample consisted of 30.78% Independents, 48.07% Democrats, and 21.15% Republicans. When Independents were asked whether they leaned one way or another and were recoded according to their leanings, overall 12.3% identified as not leaning either side. The sample mean age was 45.45 years.

We again measured pre-treatment confidence in knowledge but added two items to the pre-treatment confidence scale: “I know a lot about current affairs and political issues”, and “When it comes to current affairs and political issues, I am quite knowledgeable”. We combined the four items to an index (Cronbach’s alpha = 0.91, mean = 4.42, sd = 1.39).

We measured factual knowledge using four questions, which each have three answer categories (1. “For how many years is a United States Senator elected - that is, how many years are there in one full term of office for a U.S. Senator?” 2. “On which of the following does the U.S. federal government currently spend the least?” 3. “What is the current unemployment rate in this country?” 4. “How much of a majority is required for the US Senate and U.S. House to override a presidential veto?”). The questions, especially the first and last, were quite easy. On average, respondents answered 2.14 questions correctly (see Figure 23). The means score is comparable to the first study.

Political interest was measured in the same way as in Study 2 but on a 5-point scale (mean = 3.52, sd = 1.01), and ideology on a 10-point scale from extremely liberal (0) to extremely conservative (10). The U.S. sample leaned somewhat more

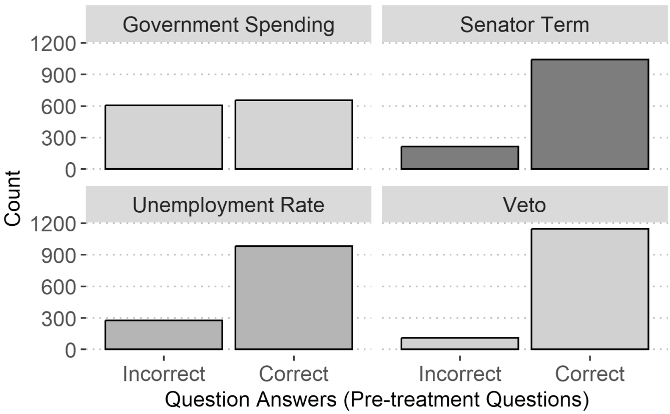

Figure 23. U.S. Sample (Prolific): Distribution of correct answers on the common knowledge questions (pre-treatment).

towards liberal than conservative (mean = 3.99, sd = 2.87). The efficacy items were identical to those in Dutch sample (mean = 4.76, sd = 1.27).

Finally, we measured emotions using the question: "Thinking about how things are going in the country these days, to what extent do you feel: hopeful, outraged, angry/ happy, proud, irritated, or nervous?" The emotion labels were presented in random order and respondents answered on a 5-point scale from *not at all* to *extremely*. We combined the three anger-related items (Cronbach's alpha = 0.90), two fear items (Cronbach's alpha = 0.90) and three positive items (Cronbach's alpha = 0.87). All measures were standardized.

Experimental Manipulation of Confidence

In both original studies, we manipulated confidence by randomly exposing participants to easy or difficult knowledge questions. This allowed us to keep the question content stable across the two conditions and ensured that specific issues raised by the questions did not elicit emotions. The easy condition was similar to commonly used knowledge questions, they were straightforward, multiple-choice questions about political institutions, processes, or current affairs. We used two methods to make questions more difficult. We either switched from closed multiple choice questions to open-ended questions (Bullock & Rader, 2022; Mondak, 2001), or made questions more difficult by slightly changing their content. In the Dutch sample of the Dutch Sample (Dynata), this was done, for instance, by asking who has the *most* seats in the Dutch parliament (easy condition), instead of who has the *second most* seats (difficult condition). Instead of asking who is currently vice president of the United States, we asked who was vice president during Barack Obama's first term. In the U.S. sample, we asked in the easy condition who was never prime minister of the UK (correct answer: Angela Merkel), whereas in the difficult condition, we asked who was currently prime minister of the UK (correct answer: Rishi Sunak - he had only been prime minister for a few weeks at that point). Importantly, these questions did not vary substantially in their content so it is unlikely that they would elicit different associations and emotions. The easy and difficult knowledge items are shown in the Figure B12 and B14 in the Appendix. All question wordings can be found in Tables A44 and A45. Note that in Study 2 we decreased the number of questions slightly to avoid that respondents' confidence, after answering too many questions would be dampened even in the easy condition.

5.5 Results

H1-H2: Interest, not Knowledge, is Associated with Emotional Responses to Politics

Before turning to the tests of H1 and H2, let us assess the relationships between the core variables. Generally, the correlations between political interest and political knowledge are positive but low: r = 0.25 in the 2012 ANES data, 0.26 in 2016, and 0.29 in 2020; 0.18 in our Dutch sample; and 0.15 in our U.S. (Prolific) sample (all relationships are statistically significant at $p < 0.001$). Confidence-in-knowledge, however, strongly correlates with political interest (ANES 2020: r = 0.35, $p<0.001$, Dutch sample: r = 0.67, $p<0.001$, U.S. sample: r = 0.77, $p<0.001$). Perhaps not surprisingly, people's confidence in knowledge only weakly correlates with their actual knowledge (r = 0.19 in the Dutch and r = 0.18 in the U.S. sample, $p<0.001$). The correlation between confidence and knowledge is slightly stronger (r=0.24) in

Table 10: Overview of Tests of Hypothesis 1.

Sample	IV = Political Knowledge	DV = Emotion Self-Reports
ANES 2012 (U.S.)	4 Knowledge Questions: 1. Maximum terms president, 2. Budget deficit, 3. Senator term length, 4. Medicare.	"Has [candidate] because of the kind of person he is or because of something he has done, ever made you feel angry/ afraid/ hopeful/ proud?" IF YES: "How often?" [5-point scale]
ANES 2016 (U.S.)	4 Knowledge Questions: 1. Senator term length, 2. Federal gov. spending, 3. Most seats in the House of Representatives, 4. Most seats in the U.S. Senate	"Has [candidate] because of the kind of person (s)he is or because of something (s)he has done, ever made you feel angry/ afraid/ hopeful/ proud/ disgusted?" IF YES: "How often?" [5-point scale]
ANES 2020 (U.S.)	4 Knowledge Questions: 1. Senator term length, 2. Federal gov. spending, 3. Most seats in the House of Representatives, 4. Most seats in the U.S. Senate	"How angry/ irritated/ outraged/ afraid/ worried/ nervous/ proud/ happy/ hopeful do you feel about how things are going in the country?" IF YES: "How often?" [4-point scale, emotions clustered in 4 emotion families]
Dutch (Dynata)	4 Knowledge Questions: 1. Ordering of Dutch parties by ideology, 2. Who is president of France?, 3. Date Dutch EU membership, 4. Political function of Hugo de Jonge	"Thinking about politics, have you recently felt any of the emotions below and with what intensity did you feel that emotion? Anger/ fear/ enthusiasm/ hope" [7-point scale]
U.S. (Prolific)	4 Knowledge Questions: 1. Senator term length, 2. Federal gov. spending, 3. Current unemployment rate, 4. Required majority to override presidential veto	"Thinking about how things are going in the country these days, to what extent do you feel angry/ irritated/ outraged/ afraid/ nervous/ proud/ happy/ hopeful " [5-point scale]

the ANES 2020 data but it is still the lowest correlation of the three (see also Figures B7, B9, and B10 in the online Appendix).

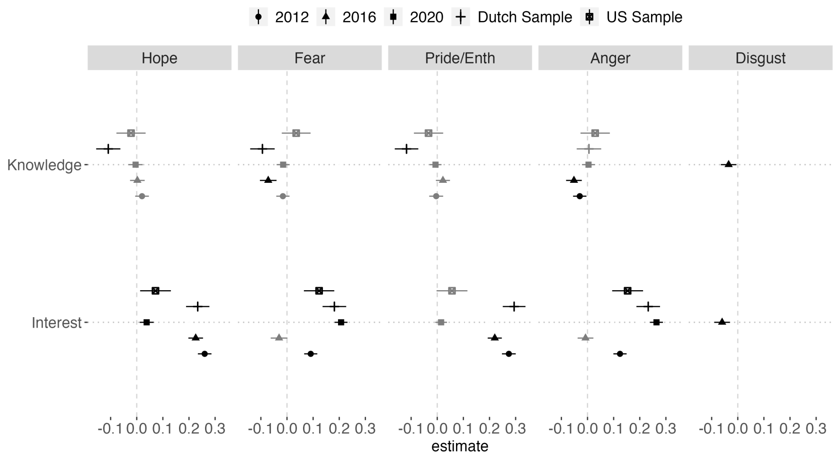

Figure 24. The effects of political knowledge and interest on five emotions across five samples. The symbols are the point estimates of the effects of knowledge and interest using OLS regressions. The lines represent the 95% confidence intervals of these effects. Black estimates are statistically significant at a level of p <0.05. Shapes represent the five samples (ANES 2012, N = 10075; ANES 2016, N = 7500; ANES 2020, N = 7160; Dutch sample, N = 1975; U.S. sample, N = 1250. Sample sizes vary slightly by model). Each panel represents a separate dependent variable. In all models we control for gender, age, education, and ideology. Other controls are added depending on data availability and context. They are described in the text and can be found in the full models in the appendix.

Figure 24 shows our tests of H1 and H2, disentangling the effects of political interest and knowledge in five samples. From left to right, it shows the five emotion categories (note that disgust was only included once in the ANES survey in 2016). Political knowledge is, for the most part, unrelated to self-reported emotional responses to politics. Political knowledge is significantly related to hope in one of the five samples (Dutch sample: b = -0.11, p <0.001), to lower fear/anxiety in two of the five samples (ANES 2016: b = -0.07, p <0.001, Dutch sample: b = -0.1, p <0.001), to lower anger in two ANES samples (2012: b= -0.03, p <0.01, 2016: b

= -0.05, p <0.01), to lower enthusiasm in the Dutch sample (b =-0.118, p<0.001) and to lower disgust in the 2016 ANES sample (b = -0.35, p <0.05). In conclusion, 7 out of 21 coefficients are negative and statistically significant, while the rest are non-distinguishable from zero. We conclude that, as past work has suggested, there is no positive relationship between political knowledge and emotional responses to politics. We also cannot conclude that there is a consistent negative relationship between the two. Rather, our analyses of five samples across political contexts and time suggest that political knowledge is not systematically related to emotional responses to politics.

Next, we turn to political interest as a predictor of emotional responses to politics (see also Figure 24). Political interest is positively related to feeling hope in all five samples (ANES 2012: b = 0.26, p <0.001, ANES 2016: b = 0.23, p <0.001; ANES 2020: b = 0.04, p <0.01; Dutch sample: b = 0.233, p <0.001; U.S sample: b = 0.072, p <0.05). It is positively related to experiencing fear in all but one sample (the 2016 ANES sample: b = -0.030, p = 0.062), and to pride (enthusiasm in the Dutch sample). Only in the 2020 ANES and the U.S. samples is the relationship not statistically significant. Political interest is positively related to anger in all samples, except the 2016 ANES sample. In 2016, political interest negatively predicted feeling disgusted (b = -0.06, p <0.001). We find the expected positive relationship between political interest and emotional responses to politics in 16 out of 21 tests, across emotions, samples and across time. We accept both H1 and H2, concerning the lack of a relationship between political knowledge and emotions on the one hand, and the positive relationship between political interest and emotional responses to politics on the other. However, which emotions are related to political interest might be context-dependent – both across time and geographical context. We reflect on this in the discussion section.

In the previous section, we argued why political knowledge is not necessary for people to experience emotional responses to politics. The findings presented here show empirical proof for this claim. Rather than factual knowledge, political interest drives emotions. In the following section of this chapter, we add confidence-in-knowledge, which, we have argued above, might be another driving factor in the sophistication-emotion link.

H3: Confidence, not Knowledge Drives Emotional Responses to Politics.

We present our results with different model specifications. Because interest and confidence are highly related and we expect similar effects, we first add confidence to the model but do not control for interest. We then add interest in the full models, which can be found in the Appendix. When we speak of confidence-in-knowledge in this section, we always refer to the pre-treatment confidence measure. The post-treatment measure is discussed in the next section.

As expected, confidence-in-knowledge significantly and positively predicts self-reported emotions (see Tables A39 and A42). In the Dutch sample, with each increase by one standard deviation, which corresponds to an absolute increase of 0.83 points on the non-standardized scale, anger increases by 0.181, anxiety increases by 0.125, pride by 0.189 and hope by 0.118 standard deviations. All relationships are statistically significant at $p < 0.001$. In the U.S. sample, confidence is related to anger ($b = 0.17$, $p < 0.001$) and anxiety ($b = 0.11$, $p < 0.001$) but not the positive emotions. This is further confirmed by the 2020 wave of the ANES, which includes a measure of confidence in six factual beliefs. A closer description of this measure can be found in the online Appendix, Figures B7 and B8. The results are in line with the results from our U.S. sample. Confidence is positively related to anger ($b = 0.217$, $p < 0.001$), anxiety ($b = 0.157$, $p < 0.001$), but is negatively – thought weakly – related to pride ($b = -0.034$, $p < 0.001$). We accept Hypothesis 3, as we find a consistent relationship between confidence-in-knowledge and self-reported emotions. However, as with interest, the relationship might be context-dependent, as we find an effect of confidence-in-knowledge on pride and hope in the Dutch sample but not in the two U.S. samples.

The effect of confidence-in-knowledge disappears once we control for political interest and internal efficacy in the Dutch and U.S. samples (see Tables A40 and A43), but is is robust to the inclusion of political interest and internal political efficacy in the 2020 ANES wave (see Table A37). It is possible that the effect of confidence is mediated by efficacy and interest. Naturally, feeling more confident about one's knowledge will make one more confident in one's ability to shape politics and to be aware of the most important political issues (efficacy). As past work has shown, decreased confidence can also decrease self-reports of political interest

(Bishop, 1987; Lasorsa, 2009). We did not expect a mediation and thus measured interest before the confidence measure. This makes our data ill-suited to formally test a mediated effect. [13]

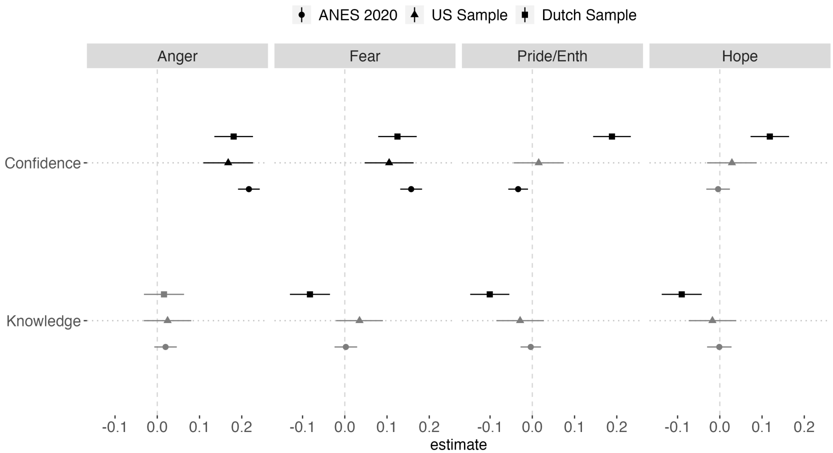

Figure 25. The effects of political knowledge and confidence-in-knowledge on four emotions across three samples. The symbols are the point estimates of the effects of knowledge and confidence using OLS regressions. The lines represent the 95% confidence intervals of these effects. Black estimates are statistically significant at a level of $p < 0.05$. Shapes represent the five samples (ANES 2020, N = 6283, Dutch Sample, N = 1980, U.S. Sample, N = 1250). Each panel represents a separate dependent variable. In all models we control for gender, age, education, and ideology. Other controls are added depending on data availability and context. They are described in the text and can be found in the full models in the appendix.

H4-H5 The Causal Effect of Sophistication on Emotions.

We present two tests for H4 and H5. First, we test whether the treatment affected post-treatment confidence. Then, we test whether the treatment affected

[13]It is possible that the effects are driven by self-enhancing response styles (Clifford & Jerit, 2016; Style & Jerit, 2020). Style and Jerit (2020) argue that we can catch self-enhancers through a catch-question that was included in the 2020 ANES wave. 188 participats are identified as self-enhancers. The measure is unrelated to the confidence, interest or knowledge measures. Adding it as control, does not change the results.

Table 11: Overview of Tests of Hypothesis 3.

Sample	IV = Confidence-in-Knowledge	DV = Emotion Self-Reports
ANES 2020 (US)	“Which of these two statements do you think is most likely to be true?” see Figure B8 THEN: “How confident are you about that?”	“How angry/ irritated/ outraged/ afraid/ worried/ nervous/ proud/ happy/ hopeful do you feel about how things are going in the country?” IF YES: “How often?” [4-point scale, emotions clustered in 4 emotion families]
Dutch (Dynata)	“Among my circle of friends, I’m one of the “experts” on politics.”, “Compared to most other people, I know less about politics.” [5-point scale]	”Thinking about politics, have you recently felt any of the emotions below and with what intensity did you feel that emotion? Anger/ fear/ enthusiasm/ hope” [7-point scale]
U.S. (Prolific)	“Among my circle of friends, I’m one of the “experts” on politics.”, “Compared to most other people, I know less about politics.”, “I know a lot about current affairs and political issues.”, “ When it comes to current affairs and political issues, I am quite knowledgeable.” [5-point scale]	”Thinking about how things are going in the country these days, to what extent do you feel angry/ irritated/ outraged/ afraid/ nervous/ proud/ happy/ hopeful ” [5-point scale]

Table 12: Overview of Tests of Hypothesis 4.

Sample	IV = Experimental Manipulation of Confidence	DV = Confidence Post-Treatment
Dutch (Dynata)	Question Difficulty, see Table A44	"In general, would you say that you know a lot or a little about politics?" [7-point scale]
U.S. (Prolific)	Question Difficulty, see Table A45	"In general, would you say that you know a lot or a little about politics?" [7-point scale]

Table 13: Overview of Tests of Hypothesis 5.

Sample	IV = Experimental Manipulation of Confidence	DV = Confidence Post-Treatment
Dutch (Dynata)	Question Difficulty, see Table A44	"Thinking about politics, have you recently felt any of the emotions below and with what intensity did you feel that emotion? Anger/ fear/ enthusiasm/ hope" [7-point scale]
U.S. (Prolific)	Question Difficulty, see Table A45	"Thinking about how things are going in the country these days, to what extent do you feel angry/ irritated/ outraged/ afraid/ nervous/ proud/ happy/ hopeful " [5-point scale]

self-reported emotional responses. Finally, we present a mediation analysis for both samples. However, in the Dutch sample, we measured post-treatment confidence after the emotions, making it ill-suited to test a mediation. We therefore ask readers to interpret these analyses cautiously.

To assess whether the manipulation itself was successful, we first compare test results in the easy versus the difficult conditions. In the Dutch sample, out of eight treatment questions, respondents answered on average 70% (5.6 questions) of the questions correctly in the easy conditions, but only 35% (2.8 questions) in the difficult condition. In the U.S. sample, we did not code two open-ended questions because they did not have a clear correct or incorrect answer. Out of the remaining six questions, in the easy condition respondents correctly answered 80% (4.8 questions), on average, compared to only 42% (2.5 questions) in the difficult condition. We show the individual knowledge items by treatment group in the Appendix. While there is some variation in difficulty across items, for each item fewer people answered the difficult questions correctly than in the easy condition.

Moreover, our post-treatment confidence measure ("In general, would you say you know a great deal or rather little about politics?"), measured on a 7-point scale, allows us to test whether our experimental manipulation affects levels of confidence. In the Dutch sample, mean confidence after the easy treatment was 3.94 and significantly lower ($p < 0.001$, $t = -4.6974$, $df = 1994.2$) after the difficult treatment with a mean of 3.61. The same is true in the U.S. sample. In the easy condition, people on average reported a confidence of 4.28 on a 7-point scale. In the difficult condition, post-treatment confidence was significantly lower at 3.94 ($p < 0.001$). In Study 2, we also directly asked respondents how difficult they found the questions on a 5-point scale. In the easy condition, reported difficulty was significantly lower (mean = 2.75) than in the difficult condition (mean = 3.55, $p < 0.001$).

The effects are robust to the full model specification. On average, participants in the easy treatment group reported higher confidence post-treatment (Dutch sample: $b = 0.18$, $p < 0.001$, U.S. sample: $b = 0.29$, $p < 0.001$). These effects hold when we control for pre-treatment confidence (see Tables A46 and A47 in the appendix).

We now turn to the results of our experimental manipulation of confidence on self-reported emotions. We first conduct one-sided T-tests for each emotion (non-standardized for easier interpretation), comparing means in the two treatment groups. In the Dutch sample, in the easy condition participants on average reported higher anger levels (mean = 4.71) compared to the difficult condition (mean =4.56, t = -1.9054, df = 1956.4, p <0.05). Anxiety levels in the easy condition were also on average higher (mean = 3.6) than in the difficult condition (mean = 3.45, t = -1.8923, df = 1975, p <0.05). Levels of hope and enthusiasm did not differ between conditions. In a second step, we specify a full model that includes the same predictors and covariates as the model for H1 and H2 (see Tables A48 and A49). Adding the covariates does not change the treatment effects. Controlling for factual knowledge, pre-treatment confidence, political interest, gender, age, ideology and education, participants in the easy condition as a whole reported higher anger (b = .083, p = 0.06) and anxiety (b = .078, p = 0.08.

We further explicitly test a mediation of the treatment effect on the four emotions by post-treatment confidence. The mediation is implied in H4 and H5, that our treatment affects confidence and directly, or indirectly, self-reports of emotions. The mediation analysis is exploratory, it was not pre-registered, but we include the same control variables as in the previous models and estimate a simple causal mediation model (Tingley, Yamamoto, Hirose, Keele, & Imai, 2014). The mediate function included in the *mediation R package* conducts a mediation analysis based on bootstrapping 1000 random samples and re-estimating the model to obtain more robust estimates. Overall, we find a significant causal mediation effect in all models, even where we did not find a direct effect of the treatment on the emotion, i.e. on hope and enthusiasm. The mediation models of the Dutch sample are presented in the online supplementary material (Figure B15). The Dutch study was conducted before the U.S. study and was not designed to test a mediation as we measured confidence after the emotions. Therefore, its results should be interpreted with caution. We find that when people are presented with easier knowledge questions, they report higher confidence post-treatment. This leads to higher reporting of anger with an average causal mediation effect of 0.045, which is statistically significant (p <0.001). The average direct effect (effect of treatment when confidence is held constant) is not significant, suggesting that the treatment does not have an independent effect on anger but affects anger through confidence. For anxiety, the average causal mediation effect is 0.055 and statistically significant ($p < 0.001$). For enthusiasm and hope, we did not find a total effect but we find a causal mediation by confidence. If confidence is held constant, the treatment has no effect on enthusiasm and hope. But if the treatment is mediated by confidence, it affects self-reported levels in these emotions ($p < 0.001$).

We replicate these findings in the U.S. sample. First, in one-sided T-tests, we find that anger is indeed lower in the difficult treatment (low confidence treatment). Mean anger (as the index of three anger-related emotion items) is 2.75 in the difficult treatment and 2.86 in the easy treatment ($p < 0.05$). When we specify the full model, the easy experimental condition increases self-reported anger by 0.104 ($p = 0.062$). We were not able to replicate the effect of our treatment on anxiety but the effect of our treatment on anger is similar in both studies, both in terms of effect size and level of significance.

Finally, we also estimate the mediation models for the U.S. sample (see Figure 26). Note that in contrast with the Dutch sample here we have measured confidence prior to the emotions, making the U.S. sample suitable for a mediation analysis. Confidence mediates the effect of the treatment on the four emotions in all cases, except for anxiety (top right panel). The average direct effect of the treatment on the emotions is not statistically significant in any of the four mediation models but the average causal mediation effect is statistically significant for anger ($p<0.001$), hope ($p<0.1$), and pride ($p<0.01$. In other words: people presented with easier knowledge questions report higher confidence, and, as a result, more anger, hope, and pride. The changes in felt emotions are the direct result of the increased confidence, and only indirectly of the manipulation itself.

5.6 Discussion and Conclusion

Using five surveys from two different contexts, we demonstrate that confidence-in-knowledge (H3-5) and political interest (H2) coincide with more emotions about politics, whereas political knowledge does not (H1). The findings suggest that it is important to disentangle the concept of political sophistication and to more carefully examine its core components. Building on appraisal theories of emotions, we

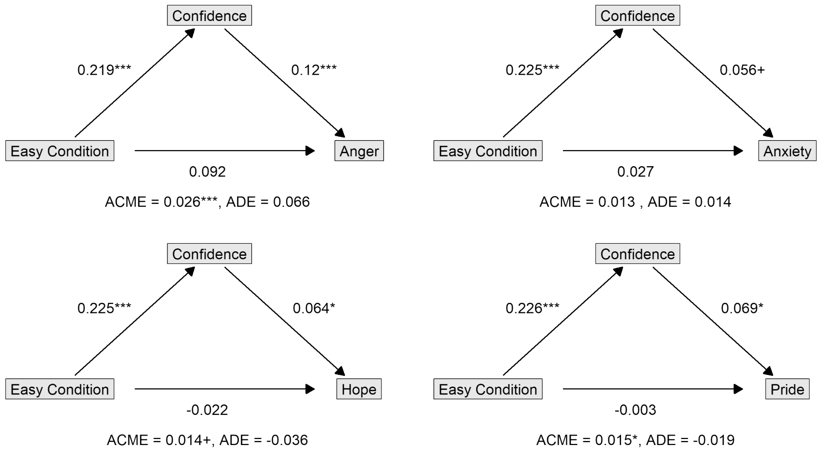

Figure 26. Effect of treatment on anger, anxiety, pride, and hope mediated by confidence (post-treatment), controlling for political knowledge, gender, age, education, and ideology. Sample: U.S. sample (Prolific), N = 1250.

have more closely identified confidence-in-knowledge and political interest as the driving forces in the sophistication-emotion link.

Our theory is that political interest leads to emotions through higher appraisals of goal relevance, and confidence-in-knowledge leads to emotions through secondary appraisals. People with high confidence in their understanding of politics are more certain of their appraisals. Their emotions are therefore less ambiguous and we expected that they report any emotion with higher intensity. Our findings are in line with this interpretation.

We have also suggested a second possible theoretical link between confidence and emotions, via appraisals of certainty and control. These appraisals are most likely related to feelings of confidence (Valentino et al., 2009). People with high confidence might have a general tendency to appraise events with high certainty and high control. In this view, we would expect that confidence-in-knowledge is primarily related to emotions that are elicited by high certainty and high control appraisals: anger and pride. However, we do not find that the relationship between confidence and emotions is stronger for these emotions. In the ANES 2020 sample, confidence is even negatively related to pride.

We identified two more relevant issues. First, we have discussed different theoretical mechanisms that link interest and confidence-in-knowledge to emotions. Yet, in practice it is difficult to disentangle them. For example, interest and confidence are correlated to the point that one may consider them indicators of a single latent variable. We advise against this, as the correlations between interest and confidence vary substantively, and, moreover, at a theoretical level interest and confidence are distinct concepts. Second, and more problematically, it is possible that confidence influences political interest (see Prior, 2018, ch.14). This presupposes a complex mediation model that our research design cannot test.

The second issue concerns the conditions under which political interest and confidence-in-knowledge are related to emotions in politics. The results show variation across time and context. For instance, confidence is related to positive emotions in the Dutch sample but not in the U.S. samples. On average, however, interest and confidence both lead to reporting stronger emotions. Further research should study what contextual factors predict which specific emotions are related to political interest and confidence across time and context. Two potential candidates are the salience of specific political issues and elite-cue taking. Testing these mechanisms is beyond the scope of this chapter but they illustrate that more work is required to understand how political sophistication and its components shape emotional responses to politics.

Our findings come with clear recommendations for future work studying the link between political sophistication and emotions, and beyond.

First, we need more precise theories that link political sophistication and its components to political outcomes. Using appraisal theories we have provided theoretical arguments linking three core components of sophistication – confidence, interest and knowledge – to emotional responses to politics.

Empirically, we have shown the necessity of disentangling the components of political sophistication. Failing to do so would lead to different conclusions concerning the sophistication-emotion link.

Second, we have established confidence-in-knowledge as a core component of political sophistication. While work on political misinformation has stressed the importance of confidence-in-knowledge, it is rarely measured outside of that field. We have demonstrated the benefits of doing so in the field of emotions research but we urge future work in other fields to study confidence-in-knowledge in addition to more conventional measures of sophistication, such as interest or knowledge.

Recent work has argued that emotions are not expressions of ignorance but results of interest and knowledge, and thus expressions of good and informed citizenship (Miller, 2011). In this chapter, we have challenged this view. We have argued and demonstrated that knowledge about politics does not lead to stronger emotional engagement. Rather, political interest and confidence-in-knowledge lead to more intense emotional responses to politics. The findings presented in this chapter thus suggest that emotions are neither expressions of good nor bad citizenship. Rather, they require us to look deeper into what produces political emotions: the issues and events that elicit emotions, the appraisals that underlie them, and the individual differences and dispositions that shape them.

6 Discussion and Conclusion

This dissertation has been guided by two core questions: 1. Are political emotions related to distinct appraisal profiles of political issues and events?, and 2. Who gets emotional about politics and through which mechanisms? In the following two sections, I provide answers to each of these questions based on the findings provided in Chapters 2-5. In each section, I will briefly summarize the key results of the two corresponding chapters before discussing their implications and directions for future research.

6.1 Are Political Emotions Predicted by Distinct Appraisal Profiles of Political Issues and Events?

In Chapter 2, we tested a core assumption of appraisal theory in political psychology: that emotions in politics work similarly as in the personal sphere and have distinct appraisal profiles and action tendencies, and as a consequence that we can use nonpolitical incidental emotions to study the behavioral outcomes of political emotions.

Together with my co-authors, I tested this by contrasting emotions and their appraisal profiles in the political and nonpolitical domains. Appraisal profiles distinguished clearly between distinct emotions, largely in line with predictions of the Component Process Model, in the nonpolitical realm but not in the political domain. One of the most striking findings of Chapter 2 is that, in the realm of politics, anger can not be distinguished from anxiety or despair in terms of its appraisals. Anxiety is related to higher appraisals of moral acceptability of an event but apart from that, anger and anxiety appraisal profiles are largely identical. Despair is related to higher levels of goal relevance and goal obstruction, but otherwise also looks more like what we would expect from anger's appraisal profile.

In the second part of Chapter 2, we used a computational approach to predict emotion labels. The second core finding is that the model performs worse when predicting emotion labels in the political domain compared to the nonpolitical domain. The most pronounced difference between the political and nonpolitical model lies in appraisals of power and control. While power and control are central appraisals in appraisal theory, our findings suggest that in the political domain they neither help us distinguish emotions based on their appraisal profiles, nor play an important role in predicting emotions labels.

In the third chapter, I tested a second claim often made in appraisal theory: that appraisals, at least in-part, causally affect discrete emotions (Moors, 2013). While Chapter 2 focused on subjective appraisals, Chapter 3 considered the possibility that appraisals are conveyed through emotional appeals. I call these appraisals *message appraisals*, conceptualized as distinct characteristics of emotional appeals, and tested how they affect self-reported levels of anger and anxiety. I tested this in two preregistered studies, each with 5 individual rounds concerning different political issues. In line with the preregistered hypotheses, I found that high responsibility in emotional appeals causes anger. Contrary to prior expectations, certainty and control have no effect on anger. Regarding anxiety, all preregistered hypotheses were rejected: people do report high levels of anxiety, but our experimental treatments do not explain different levels of anxiety.

Both chapters aimed to test the applicability of appraisal theory, as a theory of emotion elicitation, in the political domain. The goal was to answer the first key question of this dissertation: Are political emotions related to distinct appraisal profiles of political issues and events? Together, the two chapters cast doubt on whether appraisal theory, as it is used in nonpolitical settings can explain emotions in the political domain. In the following three sections I summarize several key findings in more detail and discuss their implications for future work on appraisals in politics. I start with a reflection on the contradicting findings about the role of responsibility in Chapter 2 and 3, followed by a reflection on the role of control appraisals in politics. I conclude by arguing that we should measure emotions as multi-componential, rather than focusing on the emotion label alone.

The Role of Responsibility in Appraisals of Politics

Responsibility, or blame attribution, is certainly the most extensively studied appraisal in political science. The study presented in Chapter 3, which was conducted about two years before Chapter 2 was written, seemed to confirm a core finding of past work: responsibility is what differentiates anger from anxiety, in politics and beyond. When responsibility is high, people experience anger, while when it is ambiguous, they are more likely to feel anxious (Kühne et al., 2015; Petersen, 2010; Wagner, 2014).

However, the follow-up work presented in Chapter 2, which studied appraisals in an observational manner, cast doubt on the ecological validity of these findings. Chapter 2 shows that people rarely make low responsibility appraisals. People report more anger about politics than any other emotion, but even if they report anxiety, despair, or guilt, they identify the cause for that negative emotion in someone else – that is, they attribute responsibility. As a consequence, in observational data, we cannot differentiate anger from anxiety, or any of the other negative emotions by responsibility appraisals.

While this contradicts past findings on the role of responsibility, it is not in conflict with appraisal theories, which assume that we can feel anxious regardless of responsibility appraisals, as long as we feel low control or power in relation to whoever is causing a threat to our goals or well-being. The first explanation for these findings is therefore that the determining factor is the appraisal of control. We did not find any effects of control appraisals on distinct emotions but there are multiple ways in which we can and should keep studying it in the future. In the following section, I reflect on the role and conceptualization of control, as an appraisal that can be seen in relation to a specific event, as a stable trait, and on the individual or collective level.

Control Appraisals: Event-based, Individual or Collective?

The findings in both Chapter 2 and Chapter 3 have shown that control appraisals do not have the same importance in politics as they do in the nonpolitical realm. But this finding might rather be a reflection of how control functions differently in the political domain.

Control appraisal can be made at different levels. Scherer and Moors (2019) distinguish between two types of control: situational and general.[14] Situational

[14]Note that this is not the same situational control that Lerner and Keltner (2000) speak of. They see situational control as a lack of human agency.

control refers to an appraisal of a specific event, such as low control during a natural disaster. In interpersonal situations, situational, event-based, control appraisals are made in relation to another person, where one has more power than the other.

The second type of control appraisal is general control. Here, control is conceptualized as a more stable trait that develops through repeated appraisal of control over a life-time. The two are related in that general control tends to influence situational control appraisals, but as Scherer and Moors (2019) argue, they can come apart. For instance, someone might be generally good at maths but unable to solve a specific math problem (Scherer & Moors, 2019, p.726). In politics, general control might be best captured by internal political efficacy, which has been used in the emotion literature as a proxy for control appraisals (Rico et al., 2020). Yet, it is unlikely that all control appraisals are captured by efficacy. In fact, in the 2012 ANES data, where efficacy was included in the same wave as the emotion items, internal efficacy has no effect on anger but on hope and pride (see Table A33).

For work on emotions in politics and their consequences, it is important to disentangle general from situational control. We should not necessarily expect *any* sense of control to lead to approach action tendencies in *any* situation. Rather, in each situation, people evaluate the expected utility of engaging with a stimulus (Moors, Boddez, & De Houwer, 2017; Scherer & Moors, 2019). We might get angry about corruption, because we think that political protest can discourage it, but anxious about climate change, because we feel little power to do anything about it. The level of felt control is situational, i.e., issue-specific.

However, general control, which is closely related to political efficacy, is independent of specific issues and describes a broader appraisal of one's political power (Rico et al., 2020; Valentino et al., 2009). For general control, i.e. political efficacy, to lead to anger and ultimately political mobilization, it has to translate into situational control. Anger will only lead to political action, if a person (also) feels high situational control, not necessarily because of their internal political efficacy. Future work should try to understand under which circumstances general control transforms into situational control, or why sometimes even a sense of low efficacy, i.e. low control, can lead to anger (Magni, 2017).

Studies in both Chapter 2 and Chapter 3 conceptualize control as a situational appraisal and at the level of the individual (although Study 2 of Chapter 3 also included message appraisals of collective power). This is how appraisal theory has traditionally viewed it, and how it is measured and understood in the Component Process Model. However, this conceptualization of control does not seem well-suited to understand appraisal processes in politics.

The second conceptual question concerns the distinction between individual vs. collective levels of control appraisals (Mackie & Smith, 2018; E. R. Smith & Mackie, 2016). When we consider how much power we have in politics, we can think about ourselves as individuals or as part of a larger group (E. W. Groenendyk & Banks, 2014; Phoenix, 2019). Then the question becomes: how much power do *people like me* have?

Collective emotions have been studied in politics (see for instance E. W. Groenendyk & Banks, 2014; Mackie & Smith, 2018; Phoenix, 2019). E. W. Groenendyk and Banks (2014) manipulate the extent to which people make an appraisal as a group or as an individual. Undoubtedly, this is a smart experimental design that allows us to test differences in individual and group-based appraisals. However, this dissertation suggests that appraisals in politics are fundamentally different from appraisals in the nonpolitical domain and one of the key differences lies in control appraisals, which have been primarily suggested to be related to collective power. Future work should therefore consider the possibility that some appraisals in politics happen *only* at the group-level. Control is the first and strongest candidate. Other appraisals, such as responsibility appraisals which happen through a partisan-lens (Arceneaux & Stein, 2006; Malhotra & Kuo, 2008) or responsibility appraisals which lead to group-based guilt (Doosje, Branscombe, Spears, & Manstead, 2006), follow closely. The appraisals that should be studied at both individual and group-levels are therefore not limited to control appraisals.

Emotion as a Multi-componential Process

Chapter 2, in particular, has shown what we can gain from measuring different components of an emotion process, in this case: appraisal and emotion label. Recall that the Component Process Model conceptualizes the emotion process as consisting of multiple components: appraisals, motor expressions, physiological response, action tendencies, experienced feeling, and labeling of an emotion. A growing body of emotion research in political science is studying the physiological and motor expression components of emotions (Bakker et al., 2020, 2021; Homan, Schumacher, & Bakker, 2022; Karl, 2021; Schumacher, Rooduijn, & Bakker, 2022). However, the appraisal component has so far received little systematic attention. This is not just a matter of a more comprehensive conceptualization of what an emotion is, or a question of better measurement, but it should be used to help us understand the mechanisms through which emotions affect political behavior. This is especially important when the different components, appraisal and emotion label, of an emotion do not align.

Future work should pay particular attention to the distinct effects of the different components of an emotion, e.g., physiological (see also Bakker et al., 2021; Karl, 2021), appraisal and labeling. In appraisal theory, action tendencies are assumed to be the result of underlying appraisals. Social constructionist theories of emotions, on the other hand, ascribe a more important role to the categorization, i.e., labeling of an emotion in predicting subsequent behavior (Barrett & Russell, 2014). This dissertation has shown that component misalignment is more frequent in politics than outside of it. Integrating different views on emotions, and measuring and theorizing carefully about several of its components is therefore especially important if we want to understand emotions in the political domain.

6.2 What is the Relationship between Political Sophistication and Emotional Responses to Politics?

The second part of the dissertation aimed to uncover who gets emotional and why. In Chapter 4 and Chapter 5, I studied if and how political sophistication and its components drive emotional responses to politics. The focus on political sophistication was informed by past work that has identified it as a core predictor of emotions in politics (Brader, 2006; Miller, 2011). Whether and how sophistication, and which of its components, is linked to emotions is also important for how we normatively view emotions in the political realm: in opposition to or as part of informed citizenship.

Understanding the Sophistication-Emotion Link

In Chapter 4, I proposed and tested three possible mechanisms that link sophistication and emotion. First, the Relevance Hypothesis holds that political sophisticates find politics more relevant, pay more attention to it and, as a consequence, experience stronger emotions generally, and in response to experimental manipulations. Second, the Resistance Hypothesis, informed by Zaller et al. (1992) argues that high sophisticates are pre-treated and it is therefore hard to experimentally manipulate their attitudes. Low sophisticates, on the other hand, have limited prior knowledge that could help them make sense of novel stimuli. Therefore, the moderately sophisticated should have the strongest responses to experimental manipulations of emotions. Finally, the Consistence Hypothesis views emotions as part of a larger cognitive-affective structure where high sophisticates will have more consistent networks, i.e., their subjective appraisal profiles are more tightly linked with distinct emotions. In Chapter 4, I found convincing evidence for the Relevance Hypothesis. Overall, sophisticates report stronger emotional responses to politics than non sophisticates. This does not mean that they pay closer attention to experimental stimuli, but it suggests that they do pay more attention to politics in their everyday lives. When asked to name responsible actors, sophisticates were more likely to do so and often the actor they named was the same we showed in the high responsibility treatment. This suggests that they do not assign responsibility randomly but carefully think about the issues and the actors involved. I found little evidence for the Resistance or Consistence Hypotheses. Overall, we might conclude from these results that it is true what Miller (2011) has argued: that emotions are, in fact, reflections of informed and engaged citizenship. However, Chapter 5, which was motivated by an unexpected exploratory finding – that the effects were driven mainly by interest, not knowledge – casts doubt on this conclusion.

In Chapter 5, I refined my approach to the relationship between political sophistication and emotions by splitting sophistication into its components: knowledge, interest, and confidence-in-knowledge. We argue that political interest leads to emotions because people with higher interest simply find politics more important, i.e. through higher appraisals of goal relevance, and that confidence-in-knowledge leads to emotions through secondary appraisals. People with high confidence in their understanding of politics make less ambiguous appraisals and feel more certain about their emotions. As a result, we expect them to report any emotion with higher intensity. We test these expectations in several observational studies and by manipulating confidence-in-knowledge. The findings demonstrate that confidence-in-knowledge and political interest are related to more intense emotions about politics. Political knowledge, on the other hand, is unrelated, and sometimes even negatively related to the intensity of self-reported emotions. These findings have two key implications for both the study of political sophistication and emotions in politics.

The findings presented in this final chapter show that to really understand how political sophistication is linked to emotions, we need to conceptually disentangle its core components. Political interest is related to stronger emotions, which is in line with the Relevance Hypothesis specified in Chapter 4. However, the patterns are not entirely uniform. Rather, there is substantial variance in terms of the emotions that political interest positively predicts across time and contexts. Trying to explain this variation will help us to understand which mechanisms link political interest and emotions. Future work should try to understand the mechanisms that link political interest and emotions, such as cue-taking, salience of political issues, higher goal relevance and higher exposure to politics, but also cultural norms of emotion expression that might differ across time and social context and within societies.

Recently, work in political science has paid close attention to political knowledge and how to measure it in an unbiased way (K. Dolan & Hansen, 2020; Jerit & Zhao, 2020; Kraft & Dolan, 2022; Pérez, 2015; Style & Jerit, 2020). Recent efforts to understand political misinformation have added confidence-in-knowledge as an important dimension of political sophistication (Graham, 2022). A core problem of measuring knowledge is that people's knowledge and their confidence-in-knowledge are not necessarily related (Lee & Matsuo, 2018). Although this has not been tested, people with high confidence-in-knowledge might be more likely to cheat on knowledge questions, because they are so-called self-enhancing responders (Style & Jerit, 2020). Thus, disentangling knowledge and confidence-in-knowledge is an intricate task. In Chapter 5, I propose a simple manipulation of confidence-in-knowledge and demonstrated how it can help us understand the effects of different components of political sophistication.

Finally, I want to return to the core question of the sophistication-emotion link: are sophisticates more emotional and should we see emotions as a good thing, if they are driven by sophistication? The answer is significantly more complicated. While it is true that sophisticates have stronger emotional responses to politics, this is only true if we conceptualize and operationalize it as an index of several components. However, if emotions were a product of informed citizenship, we would expect that sophisticates make more consistent appraisals, and that the sophistication-emotion relationship would be driven only by political knowledge, not interest or confidence. However, this is not the case.

In Chapter 4, we do not find evidence for the Consistence Hypothesis. Sophisticates report stronger emotions, but these emotions are not more in line with specific appraisal profiles. Moreover, recall that in Chapter 2, we conducted an exploratory analysis looking at how well we could predict the emotions of different groups. We found no differences for any of the variables (knowledge, efficacy, party identification, ideology), except for political interest. Political interest was, on average, higher among those participants, whose emotions were misclassified. This is striking because together, these results suggest that while politically interested people report higher emotions, they are less likely to be in line with specific appraisal profiles.

Furthermore, once we conceptually disentangle political sophistication, in Chapter 5, we find that political knowledge is unrelated, and sometimes even negatively related to self-reported emotions. Thus, the argument that emotions are in fact part of informed citizenship was not supported by the studies presented in this dissertation.

In sum, Chapters 4 and 5 have shed some light on the relationship between political sophistication and emotions by conceptually replicating existing findings and by generating new theories and insights that link interest and confidence-in-knowledge with emotions. Further, these findings have left us with some open questions and pathways for future research, particularly concerning differences in these relationships across contexts and time.

6.3 Reflections on the Limitations of this Dissertation

Several limitations and questions that were beyond the scope of this dissertation have already been discussed in the previous sections. I also want to reflect briefly on a few more fundamental limitations of this dissertation. I start with a reflection on the term that I have used throughout this dissertation: *emotions in politics*. What really is political and what is not, is a much broader question than I can address here. It can be argued that the personal is political and that politics can feel incredibly personal, especially when it is emotional. When I spoke of politics throughout this dissertation, I understood it primarily in a narrow sense, as events and issues that relate to politicians, candidates, and political institutions. In Chapter 3, I took a broader perspective, as some issues are less directly linked to political actors. The issue about EU refugee policy is the most clearly political, and the results differ from the rest but it is also the most salient issue and one that has been on the media agenda for years. My research design does not allow me to test if the more or less political character of issues is the decisive difference between them and some people might generally disagree with the distinction between political and nonpolitical drawn in this dissertation. However, in Chapter 2, I find that most descriptions of events fit neatly into the political answer categories provided. It therefore appears that this is also how the majority of respondents understand the term when asked about their feelings in regards to politics. I expect that future work can gain important insight by explicitly addressing this issue by, for instance, by manipulating the extent to which the same issue is presented as political, or not.

The question whether appraisals play a causal role in the emotional process is not settled (Clore & Ortony, 2013; Moors, 2013). In Chapter 3, I have tried to test the causal role of message appraisals in emotional appeals but only found consistent effects for responsibility. As discussed in Chapter 3, manipulating appraisals independently is difficult, and despite multiple rounds of pretests I had to accept that some message appraisals might also affect a second appraisal. However, the findings in Chapter 2 suggest that the two appraisals that did not predict anxiety and anger responses – certainty and control – do not play the role in politics that appraisal theory suggests. I recommend that future work first establishes the relationship between certain emotions and subjective appraisals in observational work, before continuing the endeavor to investigate the causal role of appraisals in emotional appeals. The shortcomings of Chapter 3 also affect Chapter 4, which is based on the same data. Thus, it should be noted that the conclusions regarding the sophistication-link, and in particularly its null findings concerning varying effect strengths of the manipulations by levels of sophistication, only apply to this conceptualization of an emotional appeal. Emotional appeals take on many forms, from verbal, to visual, to auditory (Albertson & Gadarian, 2016). Whether political sophisticates respond differently to different types of emotional appeals remains an open question.

A final broader limitation is that this dissertation has not been able to study group-level appraisals, despite arguing their importance in politics at several junctures. The main focus of the dissertation was to establish which appraisals do or do not matter on the individual level. The importance of group-level appraisals became evident to me throughout conducting the studies of this dissertation. They have provided important insights into which appraisals matter in the personal but not the political realm. Informed by these findings, I hope that future work will test whether these appraisals are made at a different level. E. W. Groenendyk and Banks (2014), for instance, have shown that we can manipulate whether people make control appraisals as individuals or as groups. This approach should be extended to further appraisals.

6.4 Concluding Remarks

Public debates about the use of emotions have a strong negative undertone. Emotions are often seen in opposition to and inferior to reasoned considerations. This view, however, ignores that we are wired as emotional beings. Emotions and reason cannot be separated. Rather, psychological theories of emotions argue that distinct emotions are the outcomes of specific combinations of appraisals and help us navigate complex situations through action tendencies. Thus, at the outset of this dissertation, I argued that emotions can be justified responses to a given environment as long as they follow predictable patterns. Caring more about politics and having a better understanding of political issues is then expected to increase emotional responses to politics and emotions can be viewed as a component of informed citizenship. These are two core premises of appraisal theories of emotions in political science.

The problem with this is that appraisal theory has been developed for and validated in the nonpolitical realm where emotions are largely predicted by distinct appraisal profiles. Politics is more abstract and complex and the appraisal process is therefore more complicated. This dissertation has provided a number of key findings about the link between (1) appraisals and distinct emotional responses to politics, and (2) the link between political sophistication and emotions. First, emotions in politics cannot be predicted by distinct appraisal profiles. Second, political sophistication increases emotional responses to politics. However, this relationship is not explained by better knowledge of politics but by interest in politics and confidence-in-knowledge.

The two core assumptions of appraisal theory are therefore not confirmed by the studies presented in this dissertation. I have suggested several ways in which we can improve the theoretical model to understand emotions in politics. However, we should also consider the possibility that theories of emotions cannot truly capture emotions in politics. Rather, there might be such a thing as *political emotions*, i.e. emotions that follow their own patterns and need their own theory.

Finally, what do these findings mean for the normative question posed at the start of this dissertation? Are emotions in politics reasonable, meaning theoretically predictable responses to political events and therefore justified?

Appraisal theory has stark limitations in predicting distinct emotional responses to politics. Ironically, anger, the emotion that people are usually most concerned about, is the only negative emotion that can be theoretically predicted by its appraisal profile. It appears that emotions that are often seen as more harmless, such as anxiety and despair, are more irrational if we strictly apply appraisal theories as the justification criterion. Still, I do not conclude from the findings presented in the previous chapters that any particular emotion is irrational or unjustified, or that people simply follow political elites' emotional appeals. Rather, I argue that appraisal theory might not be the best framework to study *political emotions*.

We frequently talk about emotions in politics but this dissertation has highlighted their complexity and the limitations of our current understanding. It is often not clear what people mean when they say that they experience a specific emotion, both because people likely experience a mix of emotions, and because unlike in the personal domain, emotions in politics do not necessarily conform to clear rules. By studying how people understand and express their emotions we can begin to better understand how people make sense of and respond to political events. We can for instance, better grasp why Dutch farmers are angry, or why climate change evokes anxiety instead of anger, and why it is challenging for both individuals and researchers to distinguish between the two.

References

Aarøe, L. (2011). Investigating frame strength: The case of episodic and thematic frames. *Political communication*, *28*(2), 207–226.

Aarøe, L., Petersen, M. B., & Arceneaux, K. (2017). The behavioral immune system shapes political intuitions: Why and how individual differences in disgust sensitivity underlie opposition to immigration. *American Political Science Review*, *111*(2), 277–294.

Ahorsu, D. K., Lin, C.-Y., Imani, V., Saffari, M., Griffiths, M. D., & Pakpour, A. H. (2022). The fear of covid-19 scale: Development and initial validation. *International Journal of Mental Health and Addiction*, *20*, 1537—1545.

Alba, J. W., & Hutchinson, J. W. (2000). Knowledge calibration: What consumers know and what they think they know. *Journal of consumer research*, *27*(2), 123–156.

Albertson, B., & Gadarian, S. K. (2015). *Anxious politics: Democratic citizenship in a threatening world*. Cambridge University Press.

Albertson, B., & Gadarian, S. K. (2016). Did that scare you? Tips on creating emotion in experimental subjects. *Political Analysis*, *24*(4), 485–491.

Ambroziak, K. B., Safra, L., & Tsakiris, M. (2022). Non-political anger shifts political preferences towards stronger leaders. *Scientific Reports*, *12*(1), 11766.

Amsalem, E., & Zoizner, A. (2022). Real, but limited: A meta-analytic assessment of framing effects in the political domain. *British Journal of Political Science*, *21*(1), 221–237.

Arceneaux, K. (2012). Cognitive biases and the strength of political arguments. *American Journal of Political Science*, *56*(2), 271–285.

Arceneaux, K., Johnson, M., & Maes, H. H. (2012). The genetic basis of political sophistication. *Twin Research and Human Genetics*, *15*(1), 34–41.

Arceneaux, K., & Stein, R. M. (2006). Who is held responsible when disaster strikes? The Attribution of Responsibility for a natural disaster in an urban election. *Journal of Urban Affairs*, *28*(1), 43–53.

Bakker, B. N., Schumacher, G., & Homan, M. D. (2020). Yikes! are we disgusted by politicians? *Politics and the Life Sciences*, *39*(2), 135–153.

Bakker, B. N., Schumacher, G., & Rooduijn, M. (2021). Hot politics? affective responses to political rhetoric. *American Political Science Review*, *115*(1), 150–164.

Banks, A. J., & Valentino, N. A. (2012). Emotional substrates of white racial attitudes. *American Journal of Political Science*, *56*(2), 286–297.

Barrett, L. F. (2017). *How emotions are made: The secret life of the brain*. Pan Macmillan.

Barrett, L. F., & Russell, J. A. (2014). *The psychological construction of emotion*. Guilford Publications.

Bas, O., & Grabe, M. E. (2015). Emotion-provoking personalization of news: Informing citizens and closing the knowledge gap? *Communication Research*, *42*(2), 159–185.

Bem, D. J. (1972). Self-perception theory. In *Advances in experimental social psychology* (Vol. 6, pp. 1–62). Elsevier.

Berinsky, A. J., Huber, G. A., & Lenz, G. S. (2012). Evaluating online labor markets for experimental research: Amazon. com's mechanical turk. *Political analysis*, *20*(3), 351–368.

Berinsky, A. J., Margolis, M. F., & Sances, M. W. (2014). Separating the shirkers from the workers? making sure respondents pay attention on self-administered surveys. *American Journal of Political Science*, *58*(3), 739–753.

Bishop, G. F. (1987). Context effects on self-perceptions of interest in government and public affairs. In *Social information processing and survey methodology* (pp. 179–199). Springer.

Blais, A., & Galais, C. (2016). Measuring the civic duty to vote: A proposal. *Electoral Studies*, *41*, 60–69.

Brader, T. (2006). *Campaigning for hearts and minds: how political ads use emotion to sway the electorate.* Chicago: University of Chicago Press.

Brader, T., Valentino, N. A., & Suhay, E. (2008). What Triggers Public Opposition Immigration? Anxiety, Group Cues, and Immigration Threat. *American Journal of Political Science*, *52*(4), 959–978.

Brady, W. J., Wills, J. A., Burkart, D., Jost, J. T., & Van Bavel, J. J. (2019). An ideological asymmetry in the diffusion of moralized content on social media among political leaders. *Journal of Experimental Psychology: General*, *148*(10), 1802.

Brady, W. J., Wills, J. A., Jost, J. T., Tucker, J. A., & Van Bavel, J. J. (2017). Emotion shapes the diffusion of moralized content in social networks. *Proceedings of the National Academy of Sciences*, *114*(28), 7313–7318.

Bullock, J. G., & Rader, K. (2022). Response options and the measurement of political knowledge. *British Journal of Political Science*, *52*(3), 1418–1427.

Carlson, J. P., Vincent, L. H., Hardesty, D. M., & Bearden, W. O. (2009). Objective and subjective knowledge relationships: A quantitative analysis of consumer research findings. *Journal of Consumer Research*, *35*(5), 864–876.

Carpini, M. X. D., & Keeter, S. (1996). *What americans know about politics and why it matters*. Yale University Press.

Chadwick, A. E. (2015). Toward a theory of persuasive hope: Effects of cognitive appraisals, hope appeals, and hope in the context of climate change. *Health communication*, *30*(6), 598–611.

Chrisafis, A. (2023, March 28). Students' role in french protests shows depth of anger towards macron. *The Guardian*. Retrieved from `https://www.theguardian.com/world/2023/mar/28/french-student-protests-anti-macron-anger-pensions`

Clifford, S., & Jerit, J. (2016). Cheating on political knowledge questions in online surveys: An assessment of the problem and solutions. *Public Opinion Quarterly*, *80*(4), 858–887.

Clifford, S., & Jerit, J. (2018). Disgust, anxiety, and political learning in the face of threat. *American Journal of Political Science*, *62*(2), 266–279.

Clore, G. L., & Ortony, A. (2013). Psychological construction in the occ model of emotion. *Emotion Review*, *5*(4), 335–343.

Coan, T. G., Merolla, J. L., Zechmeister, E. J., & Zizumbo-Colunga, D. (2019). Emotional responses shape the substance of information seeking under conditions of threat. *Political Research Quarterly*, 1065912920949320.

Collins, J., & Block, R. (2020). Fired up, ready to go: The impact of age, campaign enthusiasm, and civic duty on african american voting. *Political Behavior*, *42*(1), 107–142.

Connelly, D. A. (2011). Applying silvia's model of interest to academic text: Is there a third appraisal? *Learning and Individual Differences*, *21*(5), 624–628.

Crabtree, C., Golder, M., Gschwend, T., & Indriđason, I. H. (2020). It is not only what you say, it is also how you say it: The strategic use of campaign sentiment. *The Journal of Politics*, *82*(3), 1044–1060.

Damasio, A. R. (1994). Descartes' error: Emotion, rationality and the human brain. *New York: Putnam*, *352*.

De Castella, K., & McGarty, C. (2011). Two leaders, two wars: a psychological analysis of fear and anger content in political rhetoric about terrorism. *Analyses of social issues and public policy*, *11*(1), 180–200.

De Castella, K., McGarty, C., & Musgrove, L. (2009). Fear appeals in political rhetoric about terrorism: An analysis of speeches by australian prime minister howard. *Political Psychology*, *30*(1), 1–26.

Dolan, K., & Hansen, M. A. (2020). The variable nature of the gender gap in political knowledge. *Journal of Women, Politics & Policy*, *41*(2), 127–143.

Dolan, K. A., & Holbrook, T. M. (2001). Knowing versus caring: The role of affect and cognition in political perceptions. *Political Psychology*, *22*(1), 27–44.

Doosje, B. E., Branscombe, N. R., Spears, R., & Manstead, A. S. (2006). Antecedents and consequences of group-based guilt: The effects of ingroup identification. *Group processes & intergroup relations*, *9*(3), 325–338.

Druckman, J. N., Peterson, E., & Slothuus, R. (2013). How elite partisan polarization affects public opinion formation. *American Political Science Review*, 57–79.

Ekman, P., & Cordaro, D. (2011). What is meant by calling emotions basic. *Emotion review*, *3*(4), 364–370.

Ellsworth, P. C. (2013). Appraisal theory: Old and new questions. *Emotion Review*, *5*(2), 125–131.

Erisen, C., Lodge, M., & Taber, C. S. (2014). Affective contagion in effortful political thinking. *Political Psychology*, *35*(2), 187–206.

European Parliament, P. O. M. U., Directorate-General for Communication. (2021).

European parliament covid-19 survey – round 3. GESIS Data Archive, Cologne. ZA7738 Data file Version 1.0.0, https://doi.org/10.4232/1.13710. doi: 10.4232/1.13710

Fehr, B., & Russell, J. A. (1984). Concept of emotion viewed from a prototype perspective. *Journal of experimental psychology: General*, *113*(3), 464.

Feldman, L., & Hart, P. S. (2016). Using political efficacy messages to increase climate activism: The mediating role of emotions. *Science Communication*, *38*(1), 99–127.

Fernbach, P. M., Rogers, T., Fox, C. R., & Sloman, S. A. (2013). Political extremism is supported by an illusion of understanding. *Psychological science*, *24*(6), 939–946.

Flynn, L. R., & Goldsmith, R. E. (1999). A short, reliable measure of subjective knowledge. *Journal of business research*, *46*(1), 57–66.

Fontaine, J. R., Scherer, K. R., Roesch, E. B., & Ellsworth, P. C. (2007). The world of emotions is not two-dimensional. *Psychological science*, *18*(12), 1050–1057.

Franco, A., Malhotra, N., & Simonovits, G. (2014). Publication bias in the social sciences: Unlocking the file drawer. *Science*, *345*(6203), 1502–1505.

Frijda, N. H. (1987). Emotion, cognitive structure, and action tendency. *Cognition and emotion*, *1*(2), 115–143.

Gadarian, S. K., & Albertson, B. (2014). Anxiety, immigration, and the search for information. *Political Psychology*, *35*(2), 133–164.

Gibson, J., Claassen, C., & Barceló, J. (2020). Deplorables: Emotions, political sophistication, and political intolerance. *American Politics Research*, *48*(2), 252–262.

Gomez, B. T., & Wilson, J. M. (2008). Political sophistication and attributions of blame in the wake of hurricane katrina. *Publius: The Journal of Federalism*, *38*(4), 633–650.

Graham, M. H. (2022). Measuring misperceptions? *American Political Science Review*, 1–23.

Groenendyk, E. (2016). The anxious and ambivalent partisan: The effect of incidental anxiety on partisan motivated recall and ambivalence. *Public opinion* *quarterly*, *80*(2), 460–479.

Groenendyk, E. W., & Banks, A. J. (2014). Emotional rescue: How affect helps partisans overcome collective action problems. *Political Psychology*, *35*(3), 359–378.

Habermas, J. (1991). *The structural transformation of the public sphere: An inquiry into a category of bourgeois society*. MIT press.

Hameleers, M., Bos, L., & de Vreese, C. H. (2017). “they did it”: The effects of emotionalized blame attribution in populist communication. *Communication Research*, *44*(6), 870–900.

Homan, M. D., Schumacher, G., & Bakker, B. N. (2022). Facing emotional politicians: Do emotional displays of politicians evoke mimicry and emotional contagion? *Emotion*.

Huddy, L., Feldman, S., & Cassese, E. (2007). On the distinct political effects of anxiety and anger. *The affect effect: Dynamics of emotion in political thinking and behavior*, 202–230.

Inbar, Y., & Pizarro, D. (2016). Disgust sensitivity, political conservatism, and voting. *Social Psychological and Personality Science*, *10*(6), 365–374.

Israel, L. S. F., & Schönbrodt, F. D. (2019). Emotion prediction with weighted appraisal models-validating a psychological theory of affect. *IEEE Transactions on Affective Computing*.

Iyengar, S. (1994). *Is anyone responsible?: How television frames political issues*. University of Chicago Press.

Izard, C. E. (1984). Emotion-cognition relationships and human development. *Emotions, cognition, and behavior*, 17–37.

Jasper, J. M. (2018). *The emotions of protest*. University of Chicago Press.

Jensen, C., & Thomsen, J. P. F. (2014). Self-reported cheating in web surveys on political knowledge. *Quality & Quantity*, *48*(6), 3343–3354.

Jerit, J., & Zhao, Y. (2020). Political misinformation. *Annual Review of Political Science*, *23*(1), 77–94.

Jones, P. E., Hoffman, L. H., & Young, D. G. (2013). Online emotional appeals and political participation: The effect of candidate affect on mass behavior. *New Media & Society*, *15*(7), 1132–1150.

Jost, J. T. (2019). Anger and authoritarianism mediate the effects of fear on support for the far right—what vasilopoulos et al.(2019) really found. *Political Psychology*, *40*(4), 705–711.

Kaid, L. L., McKinney, M. S., & Tedesco, J. C. (2007). Introduction: Political information efficacy and young voters. *American Behavioral Scientist*, *50*(9), 1093–1111.

Kang, Y., & Cappella, J. N. (2008). Emotional reactions to and perceived effectiveness of media messages: Appraisal and message sensation value. *Western Journal of Communication*, *72*(1), 40–61.

Karl, K. L. (2021). Motivating participation through political ads: Comparing the effects of physiology and self-reported emotion. *Political Behavior*, *43*(2), 687–710.

Kim, N. (2016). Beyond rationality: The role of anger and information in deliberation. *Communication Research*, *43*(1), 3–24.

Kosmidis, S., & Theocharis, Y. (2020). Can social media incivility induce enthusiasm? evidence from survey experiments. *Public Opinion Quarterly*, *84*(S1), 284–308.

Kraft, P. W., & Dolan, K. (2022). Asking the right questions: A framework for developing gender-balanced political knowledge batteries. *Political Research Quarterly*, 10659129221092473.

Kühne, R., Weber, P., & Sommer, K. (2015). Beyond cognitive framing processes: Anger mediates the effects of responsibility framing on the preference for punitive measures. *Journal of Communication*, *65*(2), 259–279.

Kuklinski, J. H., Quirk, P. J., Jerit, J., Schwieder, D., & Rich, R. F. (2000). Misinformation and the currency of democratic citizenship. *The Journal of Politics*, *62*(3), 790–816.

Ladd, J. M., & Lenz, G. S. (2008). Reassessing the role of anxiety in vote choice. *Political Psychology*, *29*(2), 275–296.

Ladd, J. M., & Lenz, G. S. (2011). Does anxiety improve voters' decision making? *Political Psychology*, *32*(2), 347–361.

Lamprianou, I., & Ellinas, A. A. (2019). Emotion, sophistication and political behavior: Evidence from a laboratory experiment. *Political Psychology*, *40*(4), 859–876.

Lasorsa, D. L. (2009). Political interest, political knowledge, and evaluations of political news sources: Their interplay in producing context effects. *Journalism & Mass Communication Quarterly*, *86*(3), 533–544.

Lazarus, R. S. (1991). *Emotion and adaptation*. Oxford University Press.

Lecheler, S., Keer, M., Schuck, A. R., & Hänggli, R. (2015). The effects of repetitive news framing on political opinions over time. *Communication Monographs*, *82*(3), 339–358.

Lecheler, S., Schuck, A. R., & de Vreese, C. H. (2013). Dealing with feelings: Positive and negative discrete emotions as mediators of news framing effects. *Communications*, *38*(2), 189–209.

Lee, S., & Matsuo, A. (2018). Decomposing political knowledge: What is confidence in knowledge and why it matters. *Electoral Studies*, *51*, 1–13.

Lengauer, G., Esser, F., & Berganza, R. (2012). Negativity in political news: A review of concepts, operationalizations and key findings. *Journalism*, *13*(2), 179–202.

Lerner, J. S., & Keltner, D. (2000). Beyond valence: Toward a model of emotion-specific influences on judgement and choice. *Cognition and Emotion*, *14*(4), 473–493.

Lerner, J. S., & Keltner, D. (2001). Fear, anger, and risk. *Journal of personality and social psychology*, *81*(1), 146.

Lewis Jr, N. A. (2020). Open communication science: A primer on why and some recommendations for how. *Communication Methods and Measures*, *14*(2), 71–82.

Light, N., Fernbach, P. M., Rabb, N., Geana, M. V., & Sloman, S. A. (2022). Knowledge overconfidence is associated with anti-consensus views on controversial scientific issues. *Science advances*, *8*(29), eabo0038.

Lipsitz, K. (2018). Playing with emotions: The effect of moral appeals in elite rhetoric. *Political Behavior*, *40*(1), 57–78.

Lodge, M., & Taber, C. S. (2005). The automaticity of affect for political leaders, groups, and issues: An experimental test of the hot cognition hypothesis. *Political Psychology*, *26*(3), 455–482.

Lupia, A. (1994). Shortcuts versus encyclopedias: Information and voting behavior in california insurance reform elections. *American Political Science Review*, *88*(1), 63–76.

Luskin, R. C. (1987). Measuring political sophistication. *American journal of political science*, 856–899.

Luskin, R. C. (1990). Explaining political sophistication. *Political Behavior*, *12*(4), 331–361.

Mackie, D. M., & Smith, E. R. (2018). Intergroup emotions theory: Production, regulation, and modification of group-based emotions. In *Advances in experimental social psychology* (Vol. 58, pp. 1–69). Elsevier.

MacKuen, M., Wolak, J., Keele, L., & Marcus, G. E. (2010). Civic engagements: Resolute partisanship or reflective deliberation. *American Journal of Political Science*, *54*(2), 440–458.

Magni, G. (2017). It's the emotions, stupid! anger about the economic crisis, low political efficacy, and support for populist parties. *Electoral Studies*, *50*, 91–102.

Malhotra, N., & Kuo, A. G. (2008). Attributing blame: The public's response to hurricane katrina. *The Journal of Politics*, *70*(1), 120–135.

Marcus, G. E. (2010). *Sentimental citizen: Emotion in democratic politics*. Penn State Press.

Marcus, G. E., Neuman, W. R., & MacKuen, M. (2000). *Affective intelligence and political judgment*. University of Chicago Press.

Miller, P. R. (2011). The emotional citizen: Emotion as a function of political sophistication. *Political psychology*, *32*(4), 575–600.

Mondak, J. J. (2001). Developing valid knowledge scales. *American Journal of Political Science*, 224–238.

Moors, A. (2013). On the causal role of appraisal in emotion. *Emotion Review*, *5*(2), 132–140.

Moors, A., Boddez, Y., & De Houwer, J. (2017). The power of goal-directed processes in the causation of emotional and other actions. *Emotion Review*, *9*(4), 310–318.

Moors, A., Ellsworth, P. C., Scherer, K. R., & Frijda, N. H. (2013). Appraisal theories of emotion: State of the art and future development. *Emotion Review*, *5*(2), 119–124.

Munzert, S., & Selb, P. (2017). Measuring political knowledge in web-based surveys: An experimental validation of visual versus verbal instruments. *Social Science Computer Review*, *35*(2), 167–183.

Nabi, R. L. (2003). Exploring the framing effects of emotion: Do discrete emotions differentially influence information accessibility, information seeking, and policy preference? *Communication Research*, *30*(2), 224–247.

Nai, A., Schemeil, Y., & Marie, J.-L. (2017). Anxiety, sophistication, and resistance to persuasion: Evidence from a quasi-experimental survey on global climate change. *Political Psychology*, *38*(1), 137–156.

Nussbaum, M. C. (2013). *Political emotions*. Harvard University Press.

Parker, M. T., & Isbell, L. M. (2010). How i vote depends on how i feel: The differential impact of anger and fear on political information processing. *Psychological Science*, *21*(4), 548–550.

Pérez, E. O. (2015). Mind the gap: Why large group deficits in political knowledge emerge—and what to do about them. *Political Behavior*, *37*(4), 933–954.

Petersen, M. B. (2010). Distinct emotions, distinct domains: Anger, anxiety and perceptions of intentionality. *The Journal of Politics*, *72*(2), 357–365.

Peyton, K., Huber, G. A., & Coppock, A. (2022). The generalizability of online experiments conducted during the covid-19 pandemic. *Journal of Experimental Political Science*, *9*(3), 379–394.

Phoenix, D. L. (2019). *The anger gap: How race shapes emotion in politics*. Cambridge University Press.

Popper, K. (1945/2012). *The open society and its enemies*. Routledge.

Price, V., David, C., Goldthorpe, B., Roth, M. M., & Cappella, J. N. (2006). Locating the issue public: The multi-dimensional nature of engagement with health care reform. *Political Behavior*, *28*(1), 33–63.

Prior, M. (2018). *Hooked: How politics captures people's interest*. Cambridge University Press.

Rannard, G. (2022, November 5). Cop27: Climate anxiety is rising - it might be a good thing. *BBC News*. Retrieved from `https://www.bbc.com/`

news/science-environment-63516055

Redlawsk, D. P., & Mattes, K. (2022). 9 emotions and politics. *The Cambridge Handbook of Political Psychology*, 139.

Renshon, J., Lee, J. J., & Tingley, D. (2015). Physiological arousal and political beliefs. *Political Psychology*, *36*(5), 569–585.

Rhee, J. W., & Cappella, J. N. (1997). The role of political sophistication in learning from news: Measuring schema development. *Communication Research*, *24*(3), 197–233.

Rhodes-Purdy, M., Navarre, R., & Utych, S. M. (2020). Measuring simultaneous emotions: Existing problems and a new way forward. *Journal of Experimental Political Science*, 1–14.

Rico, G., Guinjoan, M., & Anduiza, E. (2017). The emotional underpinnings of populism: How anger and fear affect populist attitudes. *Swiss Political Science Review*, *23*(4), 444–461.

Rico, G., Guinjoan, M., & Anduiza, E. (2020). Empowered and enraged: Political efficacy, anger and support for populism in europe. *European Journal of Political Research*, *59*(4), 797–816.

Ridout, T. N., & Searles, K. (2011). It's My Campaign I'll Cry if I Want to: How and When Campaigns Use Emotional Appeals. *Political Psychology*, *32*(3), 439–458.

Robison, J. (2015). Gaps in political interest: Following public affairs in surveys from gallup, pew, and the anes. *International Journal of Public Opinion Research*, *27*(3), 406–416.

Roseman, I. J., Spindel, M. S., & Jose, P. E. (1990). Appraisals of emotion-eliciting events: Testing a theory of discrete emotions. *Journal of personality and social psychology*, *59*(5), 899.

Rosselli, F., Skelly, J. J., & Mackie, D. M. (1995). Processing rational and emotional messages: The cognitive and affective mediation of persuasion. *Journal of experimental social psychology*, *31*(2), 163–190.

Rudolph, T. J., Gangl, A., & Stevens, D. (2000). The effects of efficacy and emotions on campaign involvement. *The Journal of Politics*, *62*(4), 1189–1197.

Schaart, E. (2019, October 16). Angry dutch farmers swarm the hague to protest green rules. *Politico*. Retrieved from `https://www.politico.eu/article/angry-dutch-farmers-swarm-the-hague-to-protest-green-rules`

Schäfer, S. (2020). Illusion of knowledge through facebook news? effects of snack news in a news feed on perceived knowledge, attitude strength, and willingness for discussions. *Computers in human behavior*, *103*, 1–12.

Scherer, K. R. (2005). What are emotions? and how can they be measured? *Social science information*, *44*(4), 695–729.

Scherer, K. R. (2009). The dynamic architecture of emotion: Evidence for the component process model. *Cognition and emotion*, *23*(7), 1307–1351.

Scherer, K. R. (2022). Theory convergence in emotion science is timely and realistic. *Cognition and Emotion*, *36*(2), 154–170.

Scherer, K. R., & Meuleman, B. (2013). Human emotion experiences can be predicted on theoretical grounds: Evidence from verbal labeling. *PloS one*, *8*(3), e58166.

Scherer, K. R., & Moors, A. (2019). The emotion process: Event appraisal and component differentiation. *Annual Review of Psychology*, *70*, 719–745.

Scherer, K. R., Schorr, A., & Johnstone, T. (2001). *Appraisal processes in emotion: Theory, methods, research*. Oxford University Press.

Schiller, D., Alessandra, N., Alia-Klein, N., Becker, S., Cromwell, H. C., Dolcos, F., ... others (2022). The human affectome.

Schumacher, G., Rooduijn, M., & Bakker, B. N. (2022). Hot populism? affective responses to antiestablishment rhetoric. *Political Psychology*, *43*(5), 851–871.

Siemer, M., Mauss, I., & Gross, J. J. (2007). Same situation–different emotions: how appraisals shape our emotions. *Emotion*, *7*(3), 592.

Silvia, P. J. (2008). Interest—the curious emotion. *Current directions in psychological science*, *17*(1), 57–60.

Slothuus, R. (2016). Assessing the influence of political parties on public opinion: The challenge from pretreatment effects. *Political Communication*, *33*(2), 302–327.

Smith, C. A., & Ellsworth, P. C. (1985). Patterns of cognitive appraisal in emotion. *Journal of personality and social psychology*, *48*(4), 813-838.

Smith, E. R., & Mackie, D. M. (2016). Group-level emotions. *Current Opinion in Psychology*, *11*, 15–19.

Smith, P. K., & Bargh, J. A. (2008). Nonconscious effects of power on basic approach and avoidance tendencies. *Social cognition*, *26*(1), 1–24.

Soroka, S., Fournier, P., & Nir, L. (2019). Cross-national evidence of a negativity bias in psychophysiological reactions to news. *Proceedings of the National Academy of Sciences*, *116*(38), 18888–18892.

Soroka, S., Young, L., & Balmas, M. (2015). Bad news or mad news? sentiment scoring of negativity, fear, and anger in news content. *The ANNALS of the American Academy of Political and Social Science*, *659*(1), 108–121.

Srinivasan, A. (2018). The aptness of anger. *Journal of Political Philosophy*, *26*(2), 123–144.

Stapleton, C. E., & Dawkins, R. (2021). Catching my anger: How political elites create angrier citizens. *Political Research Quarterly*, 10659129211026972.

Storn, R., & Price, K. (1997). Differential evolution-a simple and efficient heuristic for global optimization over continuous spaces. *Journal of global optimization*, *11*(4), 341.

Style, H., & Jerit, J. (2020). Does it matter if respondents look up answers to political knowledge questions? *Public Opinion Quarterly*, *84*(3), 760–775.

Suhay, E., & Erisen, C. (2018). The role of anger in the biased assimilation of political information. *Political Psychology*, *39*(4), 793–810.

Taber, C. S., & Lodge, M. (2006). Motivated skepticism in the evaluation of political beliefs. *American journal of political science*, *50*(3), 755–769.

Thomas, A. K., Bulevich, J. B., & Dubois, S. J. (2012). An analysis of the determinants of the feeling of knowing. *Consciousness and cognition*, *21*(4), 1681–1694.

Tingley, D., Yamamoto, T., Hirose, K., Keele, L., & Imai, K. (2014). Mediation: R package for causal mediation analysis.

Tooby, J., & Cosmides, L. (2015). Conceptual foundations of evolutionary psychology. In D. Buss (Ed.), *The handbook of evolutionary psychology* (pp. 5–67).

Hoboken, NJ: John Wiley Sons.

Valentino, N. A., Brader, T., Groenendyk, E. W., Gregorowicz, K., & Hutchings, V. L. (2011). Election night's alright for fighting: The role of emotions in political participation. *Journal of Politics*, *73*(1), 156–170.

Valentino, N. A., Gregorowicz, K., & Groenendyk, E. W. (2009). Efficacy, emotions and the habit of participation. *Political Behavior*, *31*(3), 307–330.

Valentino, N. A., Hutchings, V. L., & Banks, A. J. (2008). Is a Worried Citizen a Good Citizen? Emotions, Political Information Seeking, and Learning via the Internet. *Political Psychology*, *29*(2).

Valentino, N. A., Wayne, C., & Oceno, M. (2018). Mobilizing sexism: The interaction of emotion and gender attitudes in the 2016 us presidential election. *Public Opinion Quarterly*, *82*(S1), 799–821.

Vasilopoulos, P. (2018). Terrorist events, emotional reactions, and political participation: The 2015 paris attacks. *West European Politics*, *41*(1), 102–127.

Vasilopoulou, S., & Wagner, M. (2020). Emotions and domestic vote choice. *Journal of Elections, Public Opinion and Parties*, 1–20.

Vegetti, F., & Mancosu, M. (2020). The impact of political sophistication and motivated reasoning on misinformation. *Political Communication*, *37*(5), 678–695.

Vidigal, R. (n.d.). Measuring certainty in political knowledge. *Working Paper*. Retrieved from `https://robertvidigal.com/wp-content/uploads/2021/10/VIDIGAL_MEASUREMENT_final-with-appendix.pdf`

Vidigal, R., & Jerit, J. (2022). Issue importance and the correction of misinformation. *Political Communication*, *39*(6), 715–736.

Wagner, M. (2014). Fear and anger in great britain: Blame assignment and emotional reactions to the financial crisis. *Political Behavior*, *36*(3), 683–703.

Weber, C. (2013). Emotions, Campaigns, and Political Participation. *Political Research Quarterly*, *66*(2), 414–428.

Weber, M., & Koehler, C. (2017). Illusions of knowledge: Media exposure and citizens' perceived political competence. *International Journal of Communication*, *11*, 17.

Webster, S. W., Connors, E. C., & Sinclair, B. (2022). The social consequences of political anger. *The Journal of Politics*, *84*(3), 1292–1305.

Weeks, B. E. (2015). Emotions, partisanship, and misperceptions: How anger and anxiety moderate the effect of partisan bias on susceptibility to political misinformation. *Journal of communication*, *65*(4), 699–719.

Widmann, T. (2021). How emotional are populists really? factors explaining emotional appeals in the communication of political parties. *Political psychology*, *42*(1), 163–181.

Wingrove, J. (2022, May 12). Biden warns democrats of voter anger, anxiety over inflation. *Bloomberg*. Retrieved from `https://www.bloomberg.com/news/articles/2022-05-12/biden-warns-democrats-of-voter-anger-anxiety-over-inflation#xj4y7vzkg`

Wirz, D. S., Wettstein, M., Schulz, A., Müller, P., Schemer, C., Ernst, N., ... Wirth, W. (2018). The effects of right-wing populist communication on emotions and cognitions toward immigrants. *The International Journal of Press/Politics*, *23*(4), 496–516.

Wisneski, D. C., Hanson, B. E., & Morgan, G. S. (2020). The roles of disgust and harm perception in political attitude moralization. *Politics and the Life Sciences*, *39*(2), 215–227.

Zaller, J. R., et al. (1992). *The nature and origins of mass opinion*. Cambridge university press.

Zerback, T., & Wirz, D. (2021). Appraisal patterns as predictors of emotional expressions and shares on political social networking sites. *Studies in Communication Sciences*, *21*(1), 27–45.

7 Appendices

Chapter 2 Appendix

Deviations from the Pre-Analysis Plan

This study was pre-registerd on the Open Science Framework at:
https://osf.io/r2tcf/?view$_{o}nly = d3e4bb2c46064635b27679f603a9f41e$. We deviated from the pre-analysis plan in two ways. First, the appraisal checks included in the final surveyed differed slightly. We combined intentionality in one measure after the cause appraisal to improve survey flow. We further dropped four items on the predictability of consequences because their question wording was not clear and they had been dropped from the most recent vesion of the GEA (in Table 2 and 3 of the Pre-Analysis Plan these appraisals have the codes Consfelt, Consexp, Consearfu, and Cofarfu). Finally, we dropped an item on image compatibility (Consimag) because we argue that this appraisal is already captured by moral acceptability. These decisions were made after pre-registration, which has led to these small discrepancies with the pre-analysis plan. Moreover, in this paper, we primarily focused on the discussion of appraisal profiles and the computational models of the five emotion labels. We report the pre-registered multinomial logistic regression below.

Table A1: Correlation of Prototypes with Israel and Schönbrodt (2019) Prototypes.

Appraisal	Political	Nonpolitical
suddenness	0.82**	0.9***
familiarity	0.28	0.53
predictability	0.64*	0.69*
pleasantness	0.99***	0.99***
goal	0.48	0.36
chance	-0.3	0.67*
intention	-0.13	0.69*
urgency	0.41	0.33
coping	0.73**	0.9***
power	0.36	0.35
adjust	0.53	0.95***
goal.pos	0.82**	0.95***
moral	0.81**	0.93***
norm	0.9***	0.82***

Table A2: Prototypes used for input to nonpolitical model (M1).

	ANGER	ANXIETY	DESPAIR	GUILT/SHAME	JOY/PLEAS
pleasantness	0.08	0.09	0.05	0.04	0.87
suddenness	0.64	0.75	0.65	0.45	0.40
predictability	0.26	0.18	0.32	0.60	0.38
familiarity	0.39	0.26	0.30	0.10	0.40
goal	0.76	0.81	0.77	0.71	0.75
moral	0.26	0.38	0.34	0.25	0.86
norm	0.72	0.42	0.32	0.75	0.11
chance	0.15	0.48	0.49	0.25	0.30
ownbeh	0.20	0.28	0.18	0.62	0.65
othbeh	0.90	0.54	0.45	0.40	0.66
intention	0.73	0.40	0.29	0.46	0.75
goal.pos	0.11	0.26	0.12	0.17	0.83
goal.neg	0.73	0.69	0.78	0.83	0.08
unjust	0.75	0.54	0.57	0.29	0.09
coping	0.67	0.57	0.43	0.79	0.27
urgency	0.59	0.68	0.50	0.15	0.37
power	0.24	0.15	0.18	0.29	0.45
adjust	0.51	0.53	0.50	0.42	0.16

Prototypes for nonpolitical model (M1) and political model (M2)

Table A3: Prototypes used for input to political model (M2).

	ANGER	ANXIETY	DESPAIR	GUILT/SHAME	JOY/PLEAS
pleasantness	0.13	0.19	0.12	0.17	0.81
suddenness	0.45	0.48	0.52	0.62	0.37
predictability	0.40	0.35	0.40	0.50	0.45
familiarity	0.55	0.40	0.53	0.46	0.63
goal	0.61	0.76	0.75	0.60	0.69
moral	0.22	0.36	0.28	0.21	0.75
norm	0.67	0.63	0.63	0.70	0.23
chance	0.24	0.23	0.18	0.46	0.30
ownbeh	0.09	0.11	0.09	0.21	0.23
othbeh	0.83	0.76	0.84	0.80	0.76
intention	0.73	0.69	0.76	0.85	0.67
goal.pos	0.09	0.18	0.07	0.17	0.66
goal.neg	0.66	0.70	0.79	0.75	0.23
unjust	0.69	0.65	0.73	0.70	0.17
coping	0.70	0.66	0.72	0.79	0.37
urgency	0.44	0.43	0.51	0.62	0.32
power	0.13	0.16	0.12	0.42	0.19
adjust	0.43	0.43	0.43	0.42	0.19

Chapter 3 Appendix

Full Models Study 1

Table A4: Effects of certainty, control and responsibility manipulations on anger.

	COVID-19	Painkillers	Pesticides	Refugees	Vaccinations	Pooled
Intercept	-0.280+	-0.373*	-0.287+	-0.044	-0.375*	-0.266***
	(0.157)	(0.158)	(0.155)	(0.160)	(0.159)	(0.074)
Certainty	-0.032	0.013	0.039	0.088+	0.059	0.031
	(0.046)	(0.047)	(0.046)	(0.047)	(0.046)	(0.021)
Control	0.039	0.078+	-0.054	-0.064	-0.009	-0.003
	(0.046)	(0.047)	(0.046)	(0.047)	(0.046)	(0.021)
Responsibility	0.314***	0.325***	0.170***	0.041	0.216***	0.212***
	(0.046)	(0.046)	(0.046)	(0.047)	(0.046)	(0.021)
Age	-0.003+	0.001	-0.001	-0.004**	-0.006***	-0.003***
	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)	(0.001)
Gender(W)	0.088+	-0.009	0.034	-0.097+	0.029	0.005
	(0.051)	(0.051)	(0.051)	(0.051)	(0.051)	(0.023)
HAVO/VWO	0.006	-0.012	-0.107	-0.120	0.198*	-0.004
	(0.094)	(0.095)	(0.094)	(0.096)	(0.094)	(0.043)
HBO	-0.033	-0.027	-0.003	-0.102	0.046	-0.021
	(0.081)	(0.082)	(0.081)	(0.082)	(0.081)	(0.037)
MBO	-0.140+	0.040	0.006	-0.142+	0.129	-0.021
	(0.081)	(0.082)	(0.081)	(0.082)	(0.081)	(0.037)
No degree	-0.091	0.220*	0.259**	-0.299**	0.199*	0.058
	(0.093)	(0.094)	(0.093)	(0.094)	(0.093)	(0.042)
University	-0.161	-0.328	-0.457	-0.591	-0.202	-0.334+
	(0.410)	(0.412)	(0.407)	(0.413)	(0.408)	(0.184)
Ideology	0.038***	0.003	-0.044***	0.034**	0.001	0.007
	(0.010)	(0.011)	(0.010)	(0.011)	(0.010)	(0.005)
Pol. Soph.	-0.062	0.077	0.200	0.071	0.362**	0.121*
	(0.132)	(0.133)	(0.131)	(0.133)	(0.132)	(0.060)
COVID Fear	0.133	0.100	0.342**	0.268*	0.030	0.182***
	(0.116)	(0.117)	(0.116)	(0.117)	(0.116)	(0.052)
Num.Obs.	1822	1825	1820	1820	1822	9109
R2	0.045	0.037	0.053	0.028	0.050	0.021
F	4.729	4.414	5.650	5.579	5.922	
RMSE	0.98	0.99	0.98	0.99	0.98	0.99
Std.Errors	Robust	Robust	Robust	Robust	Robust	Clust: ID

Notes: + p <0.1, * p <0.05, ** p <0.01, *** p <0.001. Results for the five experimental rounds and the pooled sample. We control for issue and ordering fixed effects (not shown here).

Table A5: Effect of anger appeal on anger.

	COVID-19	Painkillers	Pesticides	Refugees	Vaccinations	Pooled
Intercept	-0.145	-0.225	-0.236	-0.014	-0.298+	-0.178*
	(0.152)	(0.153)	(0.150)	(0.155)	(0.153)	(0.072)
Anger Appeal	0.209**	0.342***	0.152*	0.095	0.177*	0.187***
	(0.070)	(0.070)	(0.070)	(0.069)	(0.070)	(0.031)
Age	-0.003+	0.001	-0.001	-0.005**	-0.006***	-0.003***
	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)	(0.001)
Gender(W)	0.087+	-0.014	0.033	-0.097+	0.036	0.006
	(0.051)	(0.051)	(0.050)	(0.051)	(0.050)	(0.023)
HAVO/VWO	-0.008	-0.001	-0.117	-0.134	0.201*	-0.008
	(0.094)	(0.094)	(0.093)	(0.094)	(0.093)	(0.042)
HBO	-0.052	-0.028	-0.001	-0.105	0.054	-0.023
	(0.081)	(0.081)	(0.080)	(0.081)	(0.081)	(0.036)
MBO	-0.147+	0.042	0.004	-0.149+	0.135+	-0.022
	(0.081)	(0.081)	(0.080)	(0.081)	(0.081)	(0.036)
No degree	-0.096	0.211*	0.256**	-0.316***	0.203*	0.052
	(0.093)	(0.093)	(0.092)	(0.093)	(0.092)	(0.042)
University	-0.107	-0.299	-0.410	-0.600	-0.213	-0.309+
	(0.412)	(0.413)	(0.406)	(0.411)	(0.408)	(0.184)
Ideology	0.039***	0.003	-0.042***	0.033**	0.001	0.007
	(0.010)	(0.010)	(0.010)	(0.010)	(0.010)	(0.005)
Pol. Soph.	-0.060	0.077	0.207	0.084	0.398**	0.137*
	(0.132)	(0.132)	(0.130)	(0.132)	(0.131)	(0.059)
COVID Fear	0.156	0.139	0.331**	0.261*	0.019	0.183***
	(0.116)	(0.116)	(0.115)	(0.116)	(0.115)	(0.052)
Num.Obs.	1841	1841	1841	1841	1841	9205
R2	0.024	0.022	0.046	0.025	0.040	0.013
F	2.533	3.513	6.830	7.962	5.211	
RMSE	0.99	0.99	0.98	0.99	0.98	0.99
Std.Errors	Robust	Robust	Robust	Robust	Robust	Clust: ID

Notes: + p <0.1, * p <0.05, ** p <0.01, *** p <0.001. Results for the five experimental rounds and the pooled sample. We control for issue and ordering fixed effects (not shown here).

Table A6: Effects of certainty, control and responsibility manipulations on anxiety.

	COVID-19	Painkillers	Pesticides	Refugees	Vaccinations	Pooled
Intercept	-0.358*	-0.257	-0.165	-0.108	-0.411**	-0.267***
	(0.147)	(0.158)	(0.156)	(0.159)	(0.159)	(0.073)
Certainty	0.014	0.012	0.046	0.138**	-0.028	0.032
	(0.044)	(0.046)	(0.047)	(0.046)	(0.047)	(0.021)
Control	-0.086*	0.001	0.010	0.062	0.030	0.013
	(0.044)	(0.046)	(0.047)	(0.046)	(0.046)	(0.021)
Responsibility	-0.219***	0.012	-0.152**	-0.020	-0.110*	-0.096***
	(0.044)	(0.046)	(0.047)	(0.046)	(0.046)	(0.021)
Age	-0.002	0.002	0.003*	-0.001	0.001	0.001
	(0.001)	(0.002)	(0.002)	(0.002)	(0.002)	(0.001)
Gender(W)	0.011	-0.026	0.017	-0.050	0.021	-0.005
	(0.048)	(0.051)	(0.051)	(0.051)	(0.051)	(0.023)
HAVO/VWO	-0.128	0.072	-0.165+	0.090	-0.080	-0.042
	(0.088)	(0.094)	(0.095)	(0.095)	(0.095)	(0.042)
HBO	-0.095	0.007	-0.113	0.025	-0.113	-0.060+
	(0.076)	(0.081)	(0.082)	(0.081)	(0.081)	(0.036)
MBO	-0.111	-0.156+	-0.079	0.040	-0.023	-0.072*
	(0.076)	(0.081)	(0.082)	(0.081)	(0.081)	(0.036)
No degree	-0.138	-0.057	-0.122	0.197*	0.072	-0.012
	(0.087)	(0.093)	(0.094)	(0.093)	(0.093)	(0.041)
University	0.195	0.527	0.434	0.890*	0.773+	0.549**
	(0.385)	(0.411)	(0.411)	(0.409)	(0.409)	(0.182)
Ideology	-0.004	-0.019+	-0.003	0.001	0.018+	-0.002
	(0.010)	(0.010)	(0.011)	(0.010)	(0.010)	(0.005)
Pol. Soph.	0.094	0.102	0.143	-0.064	0.144	0.092
	(0.124)	(0.132)	(0.133)	(0.132)	(0.132)	(0.059)
COVID Fear	1.745***	0.830***	0.558***	0.732***	0.768***	0.930***
	(0.109)	(0.116)	(0.117)	(0.116)	(0.116)	(0.052)
Num.Obs.	1822	1825	1820	1820	1822	9109
R2	0.152	0.040	0.032	0.042	0.040	0.042
F	14.316	4.098	3.497	3.699	3.993	
RMSE	0.92	0.98	0.99	0.98	0.98	0.98
Std.Errors	Robust	Robust	Robust	Robust	Robust	Clust: ID

Notes: + p <0.1, * p <0.05, ** p <0.01, *** p <0.001. Results for the five experimental rounds and the pooled sample. We control for issue and ordering fixed effects (not shown here).

Table A7: Effect of anxiety appeal on anxiety.

	COVID-19	Painkillers	Pesticides	Refugees	Vaccinations	Pooled
Intercept	-0.483***	-0.251	-0.198	0.021	-0.446**	-0.273***
	(0.144)	(0.152)	(0.152)	(0.154)	(0.154)	(0.071)
Anxiety Appeal	-0.004	0.025	-0.037	-0.096+	0.049	-0.015
	(0.051)	(0.053)	(0.054)	(0.053)	(0.054)	(0.024)
Age	-0.002	0.002	0.003+	-0.001	0.001	0.000
	(0.001)	(0.002)	(0.002)	(0.002)	(0.002)	(0.001)
Gender(W)	0.012	-0.029	0.022	-0.051	0.019	-0.006
	(0.048)	(0.050)	(0.051)	(0.050)	(0.051)	(0.022)
HAVO/VWO	-0.138	0.076	-0.166+	0.071	-0.097	-0.052
	(0.089)	(0.094)	(0.094)	(0.094)	(0.094)	(0.042)
HBO	-0.107	0.012	-0.115	0.025	-0.113	-0.062+
	(0.077)	(0.081)	(0.081)	(0.081)	(0.081)	(0.036)
MBO	-0.130+	-0.150+	-0.076	0.025	-0.032	-0.077*
	(0.076)	(0.081)	(0.081)	(0.081)	(0.081)	(0.036)
No degree	-0.159+	-0.058	-0.128	0.180+	0.061	-0.021
	(0.088)	(0.092)	(0.093)	(0.092)	(0.092)	(0.041)
University	0.128	0.538	0.392	0.882*	0.815*	0.544**
	(0.387)	(0.409)	(0.411)	(0.408)	(0.409)	(0.182)
Ideology	-0.005	-0.019+	-0.004	0.001	0.016	-0.003
	(0.010)	(0.010)	(0.010)	(0.010)	(0.010)	(0.005)
Pol. Soph.	0.135	0.109	0.153	-0.052	0.149	0.105+
	(0.124)	(0.131)	(0.132)	(0.131)	(0.131)	(0.058)
COVID Fear	1.713***	0.820***	0.560***	0.717***	0.761***	0.919***
	(0.109)	(0.115)	(0.116)	(0.115)	(0.116)	(0.051)
Num.Obs.	1841	1841	1841	1841	1841	9205
R2	0.136	0.039	0.026	0.038	0.036	0.039
F	14.112	4.614	3.301	3.798	4.052	
RMSE	0.93	0.98	0.99	0.98	0.98	0.98
Std.Errors	Robust	Robust	Robust	Robust	Robust	Clust: ID

Notes: + p <0.1, * p <0.05, ** p <0.01, *** p <0.001. Results for the five experimental rounds and the pooled sample. We control for issue and ordering fixed effects (not shown here).

Full Models Study 2

Table A8: Effects of certainty, control and responsibility manipulations on anger.

	COVID-19	Painkillers	Pesticides	Refugees	Antibiotics	Pooled
Intercept	0.485*	-0.221	0.020	-0.109	-0.490**	-0.080
	(0.193)	(0.193)	(0.196)	(0.194)	(0.189)	(0.090)
Certainty	0.003	0.115*	0.056	0.054	0.164**	0.082**
	(0.057)	(0.057)	(0.057)	(0.056)	(0.056)	(0.025)
Control	-0.017	-0.033	-0.102+	-0.087	-0.040	-0.056*
	(0.057)	(0.057)	(0.057)	(0.056)	(0.056)	(0.025)
Responsibility	0.001	0.243***	0.026	0.070	0.124*	0.099***
	(0.057)	(0.056)	(0.057)	(0.056)	(0.056)	(0.025)
Age	-0.006**	-0.001	0.000	-0.003	0.001	-0.002*
	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)	(0.001)
Gender(W)	-0.006	0.055	0.002	-0.018	0.018	0.010
	(0.060)	(0.059)	(0.059)	(0.059)	(0.059)	(0.026)
HAVO/VWO	-0.062	0.058	0.116	-0.118	0.118	0.018
	(0.111)	(0.111)	(0.111)	(0.110)	(0.110)	(0.049)
HBO	-0.156+	0.033	0.076	-0.091	0.096	-0.005
	(0.092)	(0.092)	(0.092)	(0.091)	(0.091)	(0.041)
MBO	-0.182*	0.063	0.051	-0.148	-0.005	-0.043
	(0.092)	(0.092)	(0.092)	(0.092)	(0.091)	(0.041)
No degree	-0.308**	-0.046	0.035	-0.243*	0.074	-0.094+
	(0.113)	(0.113)	(0.113)	(0.112)	(0.112)	(0.050)
University	-0.479	1.315*	-0.475	1.025*	1.612**	0.607**
	(0.510)	(0.510)	(0.512)	(0.508)	(0.509)	(0.228)
Ideology	0.015	-0.019	-0.044***	0.022+	0.000	-0.004
	(0.012)	(0.012)	(0.012)	(0.012)	(0.012)	(0.005)
Pol. Soph.	-0.250	0.150	0.218	0.245	0.195	0.124+
	(0.165)	(0.165)	(0.166)	(0.164)	(0.164)	(0.074)
Num.Obs.	1284	1282	1284	1286	1288	6424
R2	0.020	0.029	0.019	0.029	0.030	0.011
F	2.948	2.070	3.109	2.193	2.025	
RMSE	1.00	1.00	1.00	1.00	1.00	1.01
Std.Errors	Robust	Robust	Robust	Robust	Robust	Clust: ID

Notes: + p <0.1, * p <0.05, ** p <0.01, *** p <0.001. Results for the five experimental rounds and the pooled sample. We control for issue and ordering fixed effects (not shown here).

Table A9: Effect of anger appeal on anger.

	COVID-19	Painkillers	Pesticides	Refugees	Antibiotics	Pooled
Intercept	0.454*	-0.082	-0.011	-0.094	-0.391*	-0.031
	(0.182)	(0.184)	(0.184)	(0.184)	(0.182)	(0.085)
Anger Appeal	0.111	0.189*	0.011	-0.004	0.142+	0.091*
	(0.086)	(0.087)	(0.080)	(0.085)	(0.084)	(0.038)
Age	-0.006**	-0.001	0.000	-0.004+	0.001	-0.002*
	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)	(0.001)
Gender(W)	-0.013	0.048	-0.001	-0.028	0.007	0.002
	(0.058)	(0.058)	(0.058)	(0.058)	(0.058)	(0.026)
HAVO/VWO	-0.054	0.047	0.105	-0.116	0.127	0.016
	(0.107)	(0.108)	(0.108)	(0.107)	(0.107)	(0.048)
HBO	-0.141	0.027	0.080	-0.095	0.090	-0.008
	(0.089)	(0.089)	(0.089)	(0.089)	(0.089)	(0.040)
MBO	-0.165+	0.072	0.061	-0.152+	0.012	-0.037
	(0.089)	(0.089)	(0.089)	(0.089)	(0.089)	(0.040)
No degree	-0.287**	-0.030	0.046	-0.246*	0.096	-0.085+
	(0.109)	(0.110)	(0.110)	(0.109)	(0.109)	(0.049)
University	-0.439	1.370**	-0.423	1.025*	1.598**	0.640**
	(0.503)	(0.506)	(0.505)	(0.503)	(0.505)	(0.226)
Ideology	0.015	-0.017	-0.041***	0.024*	0.002	-0.003
	(0.012)	(0.012)	(0.012)	(0.012)	(0.012)	(0.005)
Pol. Soph.	-0.222	0.180	0.240	0.270+	0.214	0.145*
	(0.160)	(0.161)	(0.160)	(0.160)	(0.160)	(0.072)
Num.Obs.	1323	1323	1323	1323	1323	6615
R2	0.021	0.015	0.015	0.024	0.020	0.007
F	3.087	0.982	3.068	2.049	1.383	
RMSE	0.99	0.99	0.99	0.99	0.99	1.00
Std.Errors	Robust	Robust	Robust	Robust	Robust	Clust: ID

Notes: + p <0.1, * p <0.05, ** p <0.01, *** p <0.001. Results for the five experimental rounds and the pooled sample. We control for issue and ordering fixed effects (not shown here).

Table A10: Effects of certainty, control and responsibility manipulations on anxiety.

	COVID-19	Painkillers	Pesticides	Refugees	Antibiotics	Pooled
Certainty	-0.108+	0.019	0.069	-0.033	0.018	-0.009
	(0.056)	(0.057)	(0.056)	(0.057)	(0.056)	(0.025)
Control	-0.019	0.017	0.024	0.001	-0.064	-0.008
	(0.056)	(0.057)	(0.057)	(0.057)	(0.056)	(0.025)
Responsibility	-0.190***	-0.116*	-0.070	-0.070	-0.076	-0.105***
	(0.056)	(0.057)	(0.057)	(0.057)	(0.056)	(0.025)
Age	0.007***	0.000	0.004+	0.000	0.003	0.003**
	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)	(0.001)
Gender(W)	0.041	0.005	0.092	0.081	0.047	0.050+
	(0.059)	(0.060)	(0.059)	(0.059)	(0.059)	(0.026)
HAVO/VWO	0.037	-0.082	-0.007	0.114	-0.089	-0.001
	(0.109)	(0.111)	(0.110)	(0.110)	(0.110)	(0.049)
HBO	-0.016	-0.057	0.010	0.026	0.065	0.003
	(0.090)	(0.092)	(0.091)	(0.092)	(0.091)	(0.041)
MBO	-0.078	-0.220*	-0.025	0.001	-0.041	-0.068+
	(0.091)	(0.092)	(0.091)	(0.092)	(0.091)	(0.041)
No degree	-0.066	-0.206+	0.008	0.058	-0.152	-0.062
	(0.111)	(0.113)	(0.112)	(0.112)	(0.112)	(0.050)
University	0.841+	-0.740	0.816	-0.640	-0.150	-0.023
	(0.502)	(0.511)	(0.507)	(0.510)	(0.510)	(0.227)
Ideology	-0.020+	-0.008	-0.016	-0.012	-0.024*	-0.015**
	(0.012)	(0.012)	(0.012)	(0.012)	(0.012)	(0.005)
Pol. Soph.	0.218	0.254	0.472**	0.222	0.323*	0.299***
	(0.162)	(0.165)	(0.164)	(0.165)	(0.164)	(0.073)
Num.Obs.	1284	1282	1284	1286	1288	6424
R2	0.040	0.015	0.026	0.015	0.016	0.010
F	3.423	11.385	2.077	9.821	1.209	
RMSE	0.98	1.00	0.99	1.00	1.00	1.00
Std.Errors	Robust	Robust	Robust	Robust	Robust	Clust: ID

Notes: + p <0.1, * p <0.05, ** p <0.01, *** p <0.001. Results for the five experimental rounds and the pooled sample. We control for issue and ordering fixed effects (not shown here).

Table A11: Effect of anxiety appeal on anxiety.

	COVID-19	Painkillers	Pesticides	Refugees	Antibiotics	Pooled
Anxiety Appeal	0.139*	0.014	-0.034	0.033	0.082	0.049+
	(0.066)	(0.064)	(0.066)	(0.064)	(0.065)	(0.029)
Age	0.006**	-0.001	0.003	0.000	0.002	0.002*
	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)	(0.001)
Gender(W)	0.024	-0.008	0.089	0.070	0.026	0.037
	(0.058)	(0.058)	(0.058)	(0.058)	(0.058)	(0.026)
HAVO/VWO	0.057	-0.066	0.000	0.123	-0.084	0.008
	(0.107)	(0.108)	(0.107)	(0.108)	(0.108)	(0.048)
HBO	0.013	-0.054	0.019	0.030	0.062	0.011
	(0.088)	(0.089)	(0.089)	(0.089)	(0.089)	(0.040)
MBO	-0.050	-0.213*	-0.018	0.005	-0.029	-0.060
	(0.089)	(0.090)	(0.089)	(0.089)	(0.090)	(0.040)
No degree	-0.030	-0.185+	0.023	0.073	-0.136	-0.046
	(0.109)	(0.110)	(0.109)	(0.110)	(0.110)	(0.049)
University	0.849+	-0.751	0.869+	-0.595	-0.167	0.001
	(0.502)	(0.507)	(0.503)	(0.505)	(0.507)	(0.226)
Ideology	-0.016	-0.006	-0.013	-0.010	-0.023+	-0.013*
	(0.012)	(0.012)	(0.012)	(0.012)	(0.012)	(0.005)
Pol. Soph.	0.272+	0.256	0.472**	0.231	0.347*	0.317***
	(0.160)	(0.161)	(0.160)	(0.160)	(0.160)	(0.072)
Num.Obs.	1323	1323	1323	1323	1323	6615
R2	0.027	0.010	0.024	0.015	0.013	0.007
F	2.579	11.499	2.195	22.628	1.126	
RMSE	0.99	0.99	0.99	0.99	0.99	1.00
Std.Errors	Robust	Robust	Robust	Robust	Robust	Clust: ID

Notes: + p <0.1, * p <0.05, ** p <0.01, *** p <0.001. Results for the five experimental rounds and the pooled sample. We control for issue and ordering fixed effects (not shown here).

Table A12: Relationship between anger, anxiety, message appraisals and subjective (self-reported) appraisals of certainty.

	Emotions	Treatments	Emotions + Treatm.	All Controls
Intercept	0.788***	0.783***	0.783***	0.660***
	(0.006)	(0.012)	(0.012)	(0.049)
Anger	0.013*		0.013*	0.012*
	(0.005)		(0.005)	(0.005)
Anxiety	0.009		0.009	0.007
	(0.006)		(0.006)	(0.006)
Certainty		0.006	0.006	0.004
		(0.012)	(0.012)	(0.011)
Control		-0.007	-0.007	-0.008
		(0.012)	(0.012)	(0.011)
Responsibility		0.013	0.012	0.007
		(0.012)	(0.012)	(0.011)
Subj. Control				-0.037
				(0.025)
Subj. Responsibility				0.123***
				(0.022)
Trait Anger				-0.008
				(0.008)
Trait Anxiety				-0.010
				(0.007)
Age				0.001**
				(0.000)
Gender(W)				0.016
				(0.012)
HAVO/VWO/HBS				0.037+
				(0.022)
HBO				0.030
				(0.018)
MBO				0.027
				(0.018)
No degree				0.051*
				(0.022)
University				0.012
				(0.100)
Ideology				-0.005+
				(0.002)
Pol. Soph.				0.130***
				(0.033)
Num.Obs.	1253	1253	1253	1246
R2	0.006	0.001	0.007	0.089
F	3.803	0.605	1.865	5.463
RMSE	0.20	0.20	0.20	0.20

Notes: + p <0.1, * p <0.05, ** p <0.01, *** p <0.001.

Table A13: Relationship between anger, anxiety, message appraisals and subjective (self-reported) appraisals of control

	Emotions	Treatments	Emotions + Treatm.	All Controls
Intercept	0.450***	0.424***	0.424***	0.452***
	(0.006)	(0.013)	(0.013)	(0.058)
Anger	0.011+		0.011+	0.012+
	(0.006)		(0.006)	(0.006)
Anxiety	-0.007		-0.007	-0.005
	(0.006)		(0.006)	(0.006)
Certainty		0.018	0.018	0.015
		(0.013)	(0.013)	(0.013)
Control		0.029*	0.029*	0.023+
		(0.013)	(0.013)	(0.013)
Responsibility		0.006	0.004	0.003
		(0.013)	(0.013)	(0.013)
Subj. Certainty				-0.048
				(0.032)
Subj. Responsibility				-0.019
				(0.025)
Trait Anger				0.014
				(0.009)
Trait Anxiety				-0.009
				(0.008)
Age				0.000
				(0.000)
Gender(W)				0.023+
				(0.014)
HAVO/VWO/HBS				0.036
				(0.025)
HBO				0.016
				(0.021)
MBO				0.041+
				(0.021)
No degree				0.042+
				(0.026)
University				-0.092
				(0.114)
Ideology				-0.011***
				(0.003)
Pol. Soph.				0.088*
				(0.038)
Num.Obs.	1255	1255	1255	1246
R2	0.004	0.006	0.009	0.062
F	2.453	2.329	2.374	3.654
RMSE	0.23	0.23	0.23	0.22

Notes: + p <0.1, * p <0.05, ** p <0.01, *** p <0.001

Table A14: Relationship between anger, anxiety, message appraisals and subjective (self-reported) appraisals of responsibility.

	Emotions	Treatments	Emotions + Treatm.	All Controls
Intercept	0.564***	0.551***	0.551***	0.377***
	(0.008)	(0.015)	(0.015)	(0.068)
Anger	0.029***		0.028***	0.026***
	(0.007)		(0.007)	(0.007)
Anxiety	0.006		0.006	0.005
	(0.007)		(0.007)	(0.007)
Certainty		0.006	0.006	0.010
		(0.015)	(0.015)	(0.015)
Control		-0.004	-0.004	-0.001
		(0.015)	(0.015)	(0.015)
Responsibility		0.029+	0.027+	0.027+
		(0.015)	(0.015)	(0.015)
Subj. Certainty				0.211***
				(0.037)
Subj. Control				-0.025
				(0.033)
Trait Anger				0.004
				(0.010)
Trait Anxiety				-0.014
				(0.010)
Age				0.001*
				(0.001)
Gender(W)				-0.027+
				(0.016)
HAVO/VWO/HBS				-0.049+
				(0.029)
HBO				-0.045+
				(0.024)
MBO				-0.068**
				(0.024)
No degree				-0.036
				(0.029)
University				-0.082
				(0.131)
Ideology				0.000
				(0.003)
Pol. Soph.				0.125**
				(0.044)
Num.Obs.	1256	1256	1256	1246
R2	0.013	0.003	0.016	0.082
F	8.312	1.288	3.988	
RMSE	0.27	0.27	0.27	0.26

Notes: + p <0.1, * p <0.05, ** p <0.01, *** p <0.001.

Stimulus Material Study 1

Full Stimuli

Table A15 to A19 show the manipulations per issue. Recall that each statement is preceded by a title and a base sentence and introduced by a question. These questions are "What are the consequences?" for certainty, "Is this preventable?" for human control, and "Who is responsible?" for responsibility.

Table A15 shows the manipulations for the issue *coronavirus*. Statements are preceded by the title "Coronavirus in the Netherlands." and the base sentence "Since the outbreak, more than 40,000 infections have been confirmed and more than 5,000 people have died from the virus."

Table A15: Manipulations – Coronavirus-19 Study 1

Dimension	High	Low
Certainty	The coronavirus will certainly stay with us for a long time. Government experts foresee several new outbreaks before the virus is defeated.	Even government experts don't know how long the coronavirus will stay with us. It is uncertain how the number of infections will develop before the virus is defeated.
Control	For example, by forcing people to stay indoors as much as possible and keep them 1.5 meters apart, the Dutch government has control over the spread of the virus.	The corona virus does not stop at the border. Because every country has different rules and people continue to travel, the Dutch government has no control over the spread of the virus.
Responsibility	The government's late, lax and uninformed response has allowed the virus to spread at unprecedented speed and many people have unnecessarily fallen ill or even died.	In a pandemic, no one is responsible for spreading or containing the virus. Everyone depends on each other.

Table A16 shows the manipulations for the issue *painkillers*. The title is "Increase in painkiller addiction in the Netherlands.", the base sentence states: "A recent government report shows a sharp increase in addiction to painkillers in the Netherlands."

Table A16: Manipulations – Painkillers Study 1

Dimension	High	Low
Certainty	The increase in the prescription of strong painkillers has directly contributed to a rise in hospitalizations and deaths.	It is still unclear whether the increase in prescription painkillers has to do with the rise in hospitalizations and deaths.
Control	Hundreds of deaths could have been prevented if the public had been better informed about the risks of painkillers.	Difficult, because these highly addictive painkillers are increasingly being prescribed and an increasingly elderly population will need medical attention more often.
Responsibility	It is clear that the pharmaceutical industry, which continues to lobby for these pain killers, is responsible.	It is difficult to say, but it is clear that painkiller addiction is a major problem for our healthcare.

Table A17 shows the manipulations for the issue *pesticides*. The title is "Too many pesticides in the Dutch rivers.", the base sentence is "A recent study shows that the Dutch rivers contain high concentrations of pesticides."

Table A17: Manipulations – Pesticides Study 1

Dimension	High	Low
Certainty	Experts warn that these pesticides in our rivers are a threat to public health and nature.	Experts have no idea what the consequences for public health or nature will be.
Control	Much stricter regulations for the use of pesticides are necessary, especially in a country with an intensive agricultural sector.	Much stricter regulations for the use of pesticides are necessary. However, this is difficult in a country so heavily dependent on agriculture.
Responsibility	Most pesticides come from large-scale farms that oppose any form of regulation.	Pesticides are the main source of water pollution, which is why the KWR, the knowledge institute for drinking water, calls for immediate action to protect Dutch drinking water.

Table A18 shows the manipulations for the issue *refugees*. The title is "Syrians fleeing again" and the base sentence "The Syrian army has resumed the offensive against the rebels."

Table A18: Manipulations – Refugees Study 1

Dimension	High	Low
Certainty	It is inevitable that large groups of refugees will once again migrate to a poorly prepared Europe.	It is unclear whether refugees will migrate to Europe this time.
Control	The next crisis can be prevented if EU countries agree on an action plan.	As always, we have no control over how the situation will develop.
Responsibility	Ultimately, the international community has done nothing to solve the situation of Syrian refugees.	Ultimately, it is very difficult to decide who is responsible for Syrian refugees.

Table A19 shows the manipulations for the issue *vaccinations*. The title is "Vaccination rates are decreasing further.", the base sentence "Recent health reports show a drastic reduction in the number of vaccinations."

Table A19: Manipulations – Vaccinations Study 1

Dimension	High	Low
Certainty	According to experts, this has led to a doubling of measles and polio cases in the past year.	According to experts, it is still unclear whether this is related to the increased number of measles and polio cases in the past year.
Control	An epidemic is easy to prevent as long as people are vaccinated, this is important when people travel. Diseases from abroad can be imported.	Preventing an epidemic is becoming increasingly difficult because people travel a lot and contract diseases abroad.
Responsibility	Responsible are the reckless parents who do not vaccinate their children.	The worldwide decline in vaccinations is a problem for everyone. Everyone depends on each other.

Stimulus Material Study 2

Full Stimuli

Table A20 to A24 show the manipulations per issue in the second and third Study. Recall that each statement is preceded by a title and a base sentence.

Table A20 shows the manipulations for the issue *antibiotics*. Statements are preceded by the title "Concentration of antibiotics in drinking water too high" and the base sentence "A recent study shows that drinking water in the Netherlands contains concentrations of antibiotics that are too high".

Table A20: Manipulations - Antibiotics Study 2

Dimension	High	Low
Certainty	This has led to an alarming increase in drug-resistant microbes, which leads to up to 700,000 deaths on a global level every year.	It is unclear what the consequences are of this concentration of antibiotics. Some have suggested that antibiotics cause some health issues, or lead to drug resistant microbes.
Control	You can support legislation that reduces the use of antibiotics in humans and animals and regulates the disposal of antibiotics. Most Dutch people are in favor of this.	Many antibiotics are used to keep people and animals healthy. Reducing the use is therefore difficult. But most Dutch are not in favor of this.
Responsibility	Livestock farming uses antibiotics on a large scale. Livestock farmers are resisting attempts to regulate antibiotics.	Regulating the use of antibiotics in livestock farming has so far been difficult. There must be regulation, otherwise antibiotics will remain in the drinking water.

Table A21 shows the manipulations for the issue *COVID-19*. Statements are preceded by the title "Coronavirus in the Netherlands" and the base sentence "Since the outbreak, more than 1.4 million infections have been confirmed and about 17,000 people have died from the virus".

Table A21: Manipulations - COVID-19 Study 2

Dimension	High	Low
Certainty	Covid will not dissapear overnight, it will become part of our lives. Moreover, the economic, mental and health consequences of covid will stay with us for a long time.	Will Covid become part of our lives? Moreover, how long will we feel the economic, mental and health consequences of this crisis?
Control	New variants of the virus emerge unexpectedly. But everyone now knows what to do: keep your distance, face masks, stay at home and vaccinate.	We cannot contain new variants. After all, we have no control over the evolution of viruses.
Responsibility	The government's late, lax and uninformed response has allowed the virus to spread at an unprecedented rate and many people have become unnecessarily ill or even died.	In a pandemic, no one person is responsible for spreading or containing the virus. Everyone is dependent on each other. The last year has shown how difficult this can be.

Table A22 shows the manipulations for the issue *painkillers*. Statements are preceded by the title "Increase in painkiller addiction in the Netherlands" and the base sentence "A recent government report shows a strong increase in addiction to painkillers in the Netherlands". .

Table A22: Manipulations - Painkillers Study 2

Dimension	High	Low
Certainty	The increase in the prescription of strong painkillers has directly contributed to an increase in hospital admissions and deaths.	It is still unclear whether the increase in the prescription of painkillers is related to the increase in hospital admissions and deaths.
Control	Donate to information campaigns about the risks of painkillers or sign a petition for stricter regulation of these strong drugs. These initiatives can save hundreds of people every year.	People like you and me can't do much about this. You can sign petitions for stricter regulations or donate to information campaigns. But this has not helped in the past.
Responsibility	The pharmaceutical industry has lobbied heavily for these painkillers. That is why they are used more and more. Even in cases where other treatments are possible.	It is difficult to say who is responsible. But it is clear that addiction to painkillers is a major problem for our healthcare system that can no longer be ignored.

Table A23 shows the manipulations for the issue *pesticides*. Statements are preceded by the title "Too many pesticides in Dutch rivers" and the base sentence " A recent study shows that Dutch rivers contain high concentrations of pesticides".

Table A23: Manipulations - Pesticides Study 2

Dimension	High	Low
Certainty	Experts warn that these pesticides in our rivers pose a threat to public health and nature.	Experts have no idea yet what the consequences will be for public health or nature.
Control	With stricter regulation we can combat the pollution of our rivers. Many Dutch people consider pollution a problem and support stricter regulation.	It is a natural disaster that is difficult to control. Even with stricter regulation it becomes difficult to prevent pesticide pollution. Also, few people recognize the problem.
Responsibility	Environmental organizations have repeatedly demanded an immediate ban on pesticides. Nevertheless, the EU decided in 2017 to continue to allow the use of pesticides.	Environmental organizations have repeatedly demanded an immediate ban on pesticides. But it is unclear who is responsible for this.

Table A24 shows the manipulations for the issue *refugees*. Statements are preceded by the title "Migrants are fleeing again" and the base sentence "The Syrian army has resumed its offensive against the rebels".

Table A24: Manipulations - Refugees Study 2

Dimension	High	Low
Certainty	It is inevitable that large groups of refugees will once again move towards a poorly prepared Europe.	It is unclear how many refugees will move to an unprepared Europe this time.
Control	Ordinary citizens, like you and me, can support initiatives and participate in campaigns and demonstrations about this issue. Many people already do this.	Ordinary citizens, like you and me, can do little to make their voices heard. Many have already given up.
Responsibility	Ultimately, the EU Member States have done nothing for the past 5 years to solve this important problem.	The conflict and situation of the refugees is incredibly complex. It is unclear who is responsible.

Chapter 4 Appendix

Table A25: Hypothesis 1a. Political Sophistication increases levels of self-reported emotions.

	Anger S1	Anxiety S1	Anger S2	Anxiety S2
Pol. Sophistication	0.028*	0.036*	0.016	0.057***
	(0.014)	(0.014)	(0.017)	(0.017)
Responsbility Manipulation	0.212***	-0.095***	0.100***	-0.104***
	(0.021)	(0.021)	(0.025)	(0.025)
Certainty Manipulation	0.031	0.034	0.082**	-0.009
	(0.021)	(0.021)	(0.025)	(0.025)
Control Manipulation	-0.003	0.013	-0.056*	-0.009
	(0.021)	(0.021)	(0.025)	(0.025)
Age	-0.003***	0.002**		
	(0.001)	(0.001)		
Gender(female)	0.011	0.033	0.005	0.053*
	(0.023)	(0.023)	(0.027)	(0.026)
Education (HAVO,VWO)	-0.012	-0.091*	0.018	0.004
	(0.042)	(0.043)	(0.050)	(0.049)
Education (MBO)	-0.022	-0.074*	0.008	0.022
	(0.037)	(0.037)	(0.041)	(0.041)
Education (HBO)	-0.022	-0.087*	-0.022	-0.053
	(0.037)	(0.037)	(0.041)	(0.041)
Education (University)	0.057	-0.033	-0.070	-0.040
	(0.042)	(0.042)	(0.051)	(0.051)
Education (None)	-0.327+	0.585**	0.572*	-0.028
	(0.184)	(0.185)	(0.228)	(0.227)
Age 24-34			-0.138*	-0.069
			(0.054)	(0.054)
Age 34-44			-0.133*	0.008
			(0.056)	(0.056)
Age 44-54			-0.171***	-0.045
			(0.051)	(0.050)
Age 54-64			-0.094+	0.010
			(0.050)	(0.050)
Age over 65			-0.159**	0.111*
			(0.048)	(0.048)
Ideology	0.007	0.001	-0.004	-0.014**
	(0.005)	(0.005)	(0.005)	(0.005)
Num.Obs.	9109	9109	6424	6424
R2	0.019	0.007	0.013	0.012
F	8.924	3.247	3.406	3.198
RMSE	0.99	1.00	1.01	1.00

Notes: p <0.1, * p <0.05, ** p <0.01, *** p <0.001

Table A26: Hypothesis 1b. Effect of manipulated appraisals on anger and anxiety by levels of political sophistication.

	Anger	Anxiety
Pol. Sophistication	0.028	0.051*
	(0.021)	(0.021)
Responsbility Manipulation	0.165***	-0.100***
	(0.016)	(0.016)
Certainty Manipulation	0.051**	0.017
	(0.016)	(0.016)
Control Manipulation	-0.025	0.005
	(0.016)	(0.016)
Sophistication * Certainty Manipulation	-0.002	0.008
	(0.021)	(0.021)
Sophistication * Control Manipulation	-0.028	-0.008
	(0.021)	(0.021)
Sophistication * Responsibility Manipulation	0.025	-0.006
	(0.021)	(0.021)
Age	-0.002***	0.002***
	(0.001)	(0.001)
Gender(female)	0.007	0.040*
	(0.017)	(0.017)
Education (HAVO,VWO,HBS)	0.000	-0.052
	(0.032)	(0.032)
Education (MBO)	-0.015	-0.040
	(0.027)	(0.027)
Education (HBO)	-0.031	-0.075**
	(0.027)	(0.027)
Education (University)	0.002	-0.038
	(0.032)	(0.032)
Education (None)	0.058	0.352*
	(0.143)	(0.143)
Ideology	0.002	-0.006+
	(0.004)	(0.004)
Num.Obs.	15533	15533
R2	0.013	0.007
F	8.278	4.159
RMSE	1.00	1.00

Notes: p <0.1, * p <0.05, ** p <0.01, *** p <0.001

Table A27: Hypothesis 2. Effect of manipulated appraisals on anger and anxiety by levels of political sophistication (categorical).

	Anger	Anxiety
Responsbility Manipulation	0.154***	-0.075**
	(0.027)	(0.027)
Certainty Manipulation	0.036	0.002
	(0.027)	(0.027)
Control Manipulation	-0.047+	0.009
	(0.027)	(0.027)
Low Sophistication	-0.055	-0.061
	(0.038)	(0.038)
High Sophistication	0.008	0.043
	(0.042)	(0.042)
Certainty x Low Sophistication	0.020	0.011
	(0.038)	(0.038)
Certainty x High Sophistication	0.025	0.040
	(0.041)	(0.041)
Control x Low Sophistication	0.053	0.005
	(0.038)	(0.038)
Control x High Sophistication	0.003	-0.024
	(0.041)	(0.041)
Responsibility x Low Sophistication	0.001	-0.024
	(0.038)	(0.038)
Responsibility x High Sophistication	0.038	-0.057
	(0.041)	(0.041)
Age	-0.002***	0.002***
	(0.001)	(0.001)
Gender(female)	0.009	0.040*
	(0.017)	(0.017)
Education (HAVO,VWO,HBS)	0.000	-0.051
	(0.032)	(0.032)
Education (MBO)	-0.014	-0.038
	(0.027)	(0.027)
Education (HBO)	-0.030	-0.073**
	(0.027)	(0.027)
Education (University)	0.002	-0.035
	(0.032)	(0.032)
Education (None)	0.055	0.358*
	(0.144)	(0.143)
Ideology	0.002	-0.006
	(0.004)	(0.004)
Num.Obs.	15533	15533
R2	0.013	0.007
F	7.245	3.742
RMSE	1.00	1.00
Std.Errors	Clust: ID	Clust: ID

Notes: p <0.1, * p <0.05, ** p <0.01, *** p <0.001

Table A28: Hypothesis 2b. Relationship between political sophistication and naming a (correct) responsible actor.

	Actor Named	Odds Ratio	Correct Actor	Odds Ratio
Pol. Sophistication	0.302**	1.353**	0.307**	1.359**
	(0.092)	(0.125)	(0.109)	(0.148)
Responsbility Manipulation	0.238+	1.269+	0.218	1.243
	(0.136)	(0.172)	(0.153)	(0.191)
Certainty Manipulation	-0.194	0.823	0.112	1.119
	(0.136)	(0.112)	(0.154)	(0.173)
Control Manipulation	-0.019	0.982	-0.315*	0.730*
	(0.136)	(0.133)	(0.155)	(0.113)
Age	0.010*	1.010*	0.025***	1.026***
	(0.005)	(0.005)	(0.006)	(0.006)
Gender(female)	0.001	1.001	0.545***	1.725***
	(0.142)	(0.142)	(0.165)	(0.285)
Education (HAVO,VWO,HBS)	0.005	1.005	0.453	1.573
	(0.258)	(0.259)	(0.308)	(0.485)
Education (MBO)	0.347	1.414	0.006	1.006
	(0.221)	(0.313)	(0.261)	(0.262)
Education (HBO)	0.051	1.052	0.448+	1.565+
	(0.216)	(0.227)	(0.255)	(0.399)
Education (University)	0.031	1.032	0.348	1.416
	(0.263)	(0.271)	(0.315)	(0.446)
Education (None)	-0.004	0.996	0.813	2.255
	(1.182)	(1.177)	(1.352)	(3.050)
Ideology	0.003	1.003	-0.012	0.988
	(0.029)	(0.029)	(0.033)	(0.033)
Issue Covid-19	-0.405+	0.667+	1.161***	3.192***
	(0.207)	(0.138)	(0.244)	(0.778)
Issue Refugees	0.121	1.128	-0.373	0.689
	(0.220)	(0.248)	(0.271)	(0.186)
Issue Pesticides	0.092	1.096	0.122	1.130
	(0.214)	(0.235)	(0.249)	(0.282)
Issue Painkillers	0.078	1.081	0.743**	2.102**
	(0.221)	(0.239)	(0.242)	(0.509)
Num.Obs.	1268	1268	970	970
AIC	1381.4	1381.4	1067.0	1067.0
BIC	1468.9	1468.9	1149.9	1149.9
Log.Lik.	-673.713	-673.713	-516.490	-516.490
RMSE	0.42	0.42	0.42	0.42

Notes: p <0.1, * p <0.05, ** p <0.01, *** p <0.001

Table A29: Hypothesis 2b. Relationship between political sophistication and naming a (correct) responsible actor in high responsibility treatment.

	Actor Named	Odds Ratio	Correct Actor	Odds Ratio
Pol. Sophistication	0.265+	1.303+	0.169	1.184
	(0.137)	(0.178)	(0.152)	(0.180)
Certainty Manipulation	-0.164	0.848	-0.065	0.937
	(0.206)	(0.175)	(0.219)	(0.206)
Control Manipulation	-0.133	0.876	-0.433+	0.649+
	(0.207)	(0.181)	(0.221)	(0.143)
Age	0.015*	1.016*	0.035***	1.036***
	(0.007)	(0.007)	(0.009)	(0.009)
Gender(female)	0.082	1.085	0.403+	1.496+
	(0.212)	(0.230)	(0.233)	(0.349)
Education (HAVO,VWO)	0.267	1.305	0.944*	2.570*
	(0.385)	(0.503)	(0.453)	(1.165)
Education (MBO)	0.664+	1.943+	0.292	1.339
	(0.342)	(0.665)	(0.391)	(0.523)
Education (HBO)	0.225	1.253	0.884*	2.420*
	(0.322)	(0.403)	(0.385)	(0.931)
Education (University)	0.716+	2.046+	0.790+	2.203+
	(0.417)	(0.853)	(0.459)	(1.011)
Education (None)	-0.482	0.617	1.242	3.463
	(1.257)	(0.776)	(1.468)	(5.084)
Ideology	0.018	1.018	-0.077	0.926
	(0.044)	(0.045)	(0.047)	(0.044)
Issue Covid-19	-0.272	0.761	1.359***	3.892***
	(0.320)	(0.244)	(0.359)	(1.396)
Issue Refugees	0.281	1.325	0.198	1.219
	(0.347)	(0.459)	(0.380)	(0.463)
Issue Pesticides	-0.001	0.999	0.470	1.600
	(0.323)	(0.322)	(0.364)	(0.583)
Issue Painkillers	-0.084	0.919	1.056**	2.875**
	(0.326)	(0.299)	(0.354)	(1.019)
Num.Obs.	605	605	476	476
AIC	640.2	640.2	548.8	548.8
BIC	710.6	710.6	615.4	615.4
Log.Lik.	-304.080	-304.080	-258.391	-258.391
F	1.210	1.210	2.994	2.994
RMSE	0.40	0.40	0.43	0.43

Notes: p <0.1, * p <0.05, ** p <0.01, *** p <0.001

Table A30: Hypothesis 2b. Relationship between political sophistication and naming a (correct) responsible actor in low responsibility treatment.

	Actor Named	Odds Ratio	Correct Actor	Odds Ratio
Pol. Sophistication	0.351**	1.420**	0.501**	1.650**
	(0.128)	(0.181)	(0.162)	(0.267)
Certainty Manipulation	-0.276	0.759	0.302	1.353
	(0.185)	(0.141)	(0.225)	(0.304)
Control Manipulation	0.081	1.084	-0.281	0.755
	(0.183)	(0.198)	(0.224)	(0.169)
Age	0.006	1.006	0.016+	1.017+
	(0.007)	(0.007)	(0.009)	(0.009)
Gender(female)	-0.020	0.980	0.775**	2.171**
	(0.194)	(0.191)	(0.244)	(0.529)
Education (HAVO,VWO)	-0.137	0.872	0.014	1.014
	(0.352)	(0.307)	(0.436)	(0.443)
Education (MBO)	0.141	1.151	-0.167	0.846
	(0.294)	(0.338)	(0.358)	(0.303)
Education (HBO)	-0.041	0.960	0.094	1.099
	(0.293)	(0.281)	(0.350)	(0.384)
Education (University)	-0.459	0.632	0.020	1.020
	(0.351)	(0.222)	(0.457)	(0.467)
Ideology	-0.015	0.985	0.055	1.057
	(0.040)	(0.040)	(0.049)	(0.052)
Issue Covid-19	-0.463+	0.629+	1.037**	2.820**
	(0.276)	(0.174)	(0.339)	(0.955)
Issue Refugees	0.089	1.093	-1.023*	0.359*
	(0.289)	(0.316)	(0.412)	(0.148)
Issue Pesticides	0.250	1.284	-0.228	0.796
	(0.292)	(0.375)	(0.352)	(0.280)
Issue Painkillers	0.243	1.275	0.458	1.581
	(0.304)	(0.388)	(0.340)	(0.537)
Num.Obs.	663	663	494	494
AIC	760.8	760.8	530.1	530.1
BIC	832.7	832.7	597.3	597.3
Log.Lik.	-364.400	-364.400	-249.043	-249.043
RMSE	0.43	0.43	0.41	0.41

Notes: p <0.1, * p <0.05, ** p <0.01, *** p <0.001

Table A31: Hypothesis 3a and 3b. Relationship between self-reported appraisals and emotions.

	Anger	Anxiety
Pol. Sophistication	0.002	-0.048
	(0.042)	(0.040)
Responsbility Manipulation	0.100+	-0.114+
	(0.061)	(0.058)
Certainty Manipulation	-0.031	0.051
	(0.061)	(0.059)
Control Manipulation	-0.006	-0.002
	(0.061)	(0.058)
Certainty Self-Appraisal	0.054+	0.029
	(0.031)	(0.030)
Control Self-Appraisal	0.069*	-0.034
	(0.031)	(0.030)
Responsibility Self-Appraisal	0.112***	0.003
	(0.031)	(0.030)
Age	-0.002	0.003
	(0.002)	(0.002)
Gender(female)	0.036	0.014
	(0.064)	(0.061)
Education (HAVO,VWO,HBS)	0.165	0.137
	(0.118)	(0.114)
Education (MBO)	0.044	0.090
	(0.099)	(0.095)
Education (HBO)	0.106	-0.092
	(0.099)	(0.095)
Education (University)	0.015	0.016
	(0.121)	(0.116)
Education (None)	-0.337	0.299
	(0.539)	(0.518)
Ideology	0.024+	-0.015
	(0.013)	(0.013)
Num.Obs.	1246	1246
R2	0.028	0.021
RMSE	1.05	1.01

Notes: p <0.1, * p <0.05, ** p <0.01, *** p <0.001
Issue effects are omitted from this table.

Table A32: Hypothesis 3c. Relationship between self-reported appraisals and emotions moderated by political sophistication.

	Anger	Anxiety
Pol. Sophistication	0.005	-0.051
	(0.042)	(0.040)
Responsbility Manipulation	0.102+	-0.116*
	(0.061)	(0.058)
Certainty Manipulation	-0.028	0.050
	(0.061)	(0.058)
Control Manipulation	-0.003	0.002
	(0.061)	(0.059)
Certainty Self-Appraisal	0.057+	0.030
	(0.031)	(0.030)
Control Self-Appraisal	0.070*	-0.039
	(0.031)	(0.030)
Responsibility Self-Appraisal	0.112***	0.004
	(0.031)	(0.030)
Sophistication * Certainty	0.068+	-0.037
	(0.039)	(0.037)
Sophistication * Control	0.002	0.066+
	(0.040)	(0.038)
Sophistication * Responsibility	-0.033	-0.019
	(0.042)	(0.040)
Age	-0.002	0.003
	(0.002)	(0.002)
Gender(female)	0.040	0.008
	(0.064)	(0.061)
Education (HAVO,VWO,HBS)	0.174	0.144
	(0.119)	(0.114)
Education (MBO)	0.060	0.095
	(0.099)	(0.095)
Education (HBO)	0.119	-0.089
	(0.099)	(0.095)
Education (University)	0.015	0.012
	(0.121)	(0.116)
Education (None)	-0.355	0.264
	(0.539)	(0.518)
Ideology	0.024+	-0.015
	(0.013)	(0.013)
Num.Obs.	1246	1246
R2	0.031	0.025
RMSE	1.05	1.01

Notes: p <0.1, * p <0.05, ** p <0.01, *** p <0.001
Issue effects are omitted from this table.

Chapter 5 Appendix

Hypothesis 1: ANES 2012 - 2020

Table A34: ANES 2016. Effects of political knowledge and interest on anger, anxiety, pride, hope, and disgust.

	Hope	Fear	Pride	Anger	Disgust
Interest	0.226***	−0.030+	0.220***	−0.008	−0.060***
	(0.014)	(0.016)	(0.014)	(0.015)	(0.015)
Knowledge	0.002	−0.072***	0.022	−0.052***	−0.035*
	(0.014)	(0.016)	(0.014)	(0.015)	(0.015)
Policy Differences	−0.749***	0.853***	−0.690***	0.875***	0.955***
	(0.013)	(0.015)	(0.012)	(0.014)	(0.014)
Age	0.002*	0.002+	0.0008	−0.0006	0.0001
	(0.0008)	(0.0009)	(0.0008)	(0.0009)	(0.0009)
Gender (W)	0.007	0.113***	0.049+	0.147***	0.087**
	(0.026)	(0.030)	(0.025)	(0.028)	(0.028)
Race (White)	0.004	0.053	0.002	0.018	0.022
	(0.031)	(0.035)	(0.030)	(0.033)	(0.033)
Education (College)	0.069	−0.047	0.069+	0.015	0.032
	(0.044)	(0.050)	(0.042)	(0.047)	(0.047)
Education (Doctorate)	−0.165+	0.033	−0.010	0.030	−0.056
	(0.090)	(0.102)	(0.086)	(0.096)	(0.096)
Education (Professional)	−0.088	0.054	−0.087	0.159	0.032
	(0.091)	(0.103)	(0.087)	(0.097)	(0.097)
Education (Less than HS)	0.077	−0.042	0.110+	0.062	0.046
	(0.061)	(0.069)	(0.058)	(0.065)	(0.065)
Education (MA)	0.034	−0.009	−0.002	0.002	0.008
	(0.047)	(0.053)	(0.045)	(0.050)	(0.050)
Education (College, no degr.)	0.036	−0.016	0.003	0.055	0.038
	(0.039)	(0.045)	(0.038)	(0.042)	(0.042)
Income	−0.002	0.00004	−0.004*	0.001	−0.0002
	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)
Ideology	0.009	0.016	0.008	0.010	0.015
	(0.012)	(0.014)	(0.012)	(0.013)	(0.013)
PID Strength	−0.010	−0.012	−0.026***	−0.006	0.003
	(0.008)	(0.009)	(0.008)	(0.009)	(0.009)
Num.Obs.	7504	7498	7503	7500	7503
R2	0.322	0.320	0.311	0.355	0.402
RMSE	1.11	1.26	1.06	1.19	1.18
Std.Errors	Clust: ID	Clust: ID	Clust: ID	Clust: ID	Clust: ID

+ $p < 0.1$, * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Table A33: ANES 2012. Effects of political knowledge and interest on anger, anxiety, pride and hope.

	Hope	Fear	Pride	Anger
Interest	0.260***	0.091***	0.274***	0.124***
	(0.013)	(0.013)	(0.013)	(0.013)
Knowledge	0.020	−0.016	−0.004	−0.030*
	(0.013)	(0.013)	(0.014)	(0.013)
Efficacy	0.111***	0.008	0.117***	0.017
	(0.013)	(0.013)	(0.013)	(0.013)
Policy Differences	−0.723***	0.633***	−0.644***	0.721***
	(0.011)	(0.010)	(0.011)	(0.010)
Age	−0.0002	0.002***	0.001	0.0001
	(0.0007)	(0.0007)	(0.0007)	(0.0007)
Gender (W)	0.162***	0.072***	0.200***	0.072***
	(0.022)	(0.021)	(0.022)	(0.021)
Race (White)	−0.146***	0.087***	−0.220***	0.078**
	(0.025)	(0.024)	(0.025)	(0.024)
Education (College)	0.047	0.119**	−0.002	0.053
	(0.040)	(0.038)	(0.040)	(0.039)
Education (Doctorate)	0.075	0.110	0.037	0.104
	(0.087)	(0.084)	(0.088)	(0.084)
Education (Professional)	0.013	0.065	−0.020	0.114
	(0.089)	(0.086)	(0.090)	(0.087)
Education (MA)	0.027	0.014	−0.002	0.044
	(0.042)	(0.041)	(0.043)	(0.041)
Education (Other)	−0.003	0.081+	−0.006	0.103*
	(0.044)	(0.043)	(0.045)	(0.043)
Education (College, no degr.)	0.034	0.044	−0.009	0.041
	(0.034)	(0.033)	(0.034)	(0.033)
Income	0.003+	−0.001	0.003+	−0.0008
	(0.001)	(0.001)	(0.002)	(0.001)
Ideology	0.019*	−0.003	0.015	−0.025**
	(0.010)	(0.009)	(0.010)	(0.009)
PID Strength	−0.011+	0.014*	−0.050***	0.016*
	(0.007)	(0.006)	(0.007)	(0.006)
Candidate Party (R)	−0.584***	0.070***	−0.797***	0.054**
	(0.021)	(0.021)	(0.022)	(0.021)
Num.Obs.	10076	10075	10055	10080
R2	0.366	0.293	0.364	0.344
RMSE	1.07	1.03	1.08	1.04
Std.Errors	Clust: ID	Clust: ID	Clust: ID	Clust: ID

+ $p < 0.1$, * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Table A35: ANES 2020. Effects of political knowledge and interest on anger, anxiety, pride and hope.

	Hope	Fear	Anger	Pride
Interest	0.038**	0.207***	0.264***	0.015
	(0.014)	(0.013)	(0.013)	(0.011)
Knowledge	−0.004	−0.015	0.004	−0.007
	(0.014)	(0.013)	(0.013)	(0.012)
Age	0.0007	−0.001	−0.002**	0.002**
	(0.0008)	(0.0007)	(0.0007)	(0.0007)
Gender (W)	−0.099***	0.256***	0.137***	−0.048*
	(0.025)	(0.023)	(0.023)	(0.021)
Race (White)	−0.084**	0.057*	0.033	0.003
	(0.029)	(0.027)	(0.027)	(0.025)
Education (College)	0.095+	−0.110*	−0.039	0.042
	(0.052)	(0.047)	(0.047)	(0.043)
Education (Professional/PhD)	0.027	0.031	−0.013	−0.002
	(0.060)	(0.055)	(0.055)	(0.050)
Education (Academic)	−0.009	−0.061	0.069	−0.033
	(0.056)	(0.051)	(0.051)	(0.047)
Education (High School)	0.061	−0.050	−0.018	0.068*
	(0.041)	(0.038)	(0.038)	(0.034)
Education (Less than HS)	0.134*	−0.081	−0.050	0.116*
	(0.066)	(0.060)	(0.061)	(0.055)
Education (College, no degr.)	0.095*	−0.018	0.018	0.050
	(0.037)	(0.034)	(0.034)	(0.031)
Income	−0.002	0.00008	0.002	−0.003
	(0.002)	(0.002)	(0.002)	(0.002)
Ideology	0.0001	−0.0005	−0.001**	0.0002
	(0.0004)	(0.0004)	(0.0004)	(0.0003)
PID Strength	0.226***	−0.199***	−0.166***	0.230***
	(0.006)	(0.005)	(0.005)	(0.005)
Num.Obs.	7162	7165	7165	7159
R2	0.199	0.240	0.208	0.271
RMSE	1.04	0.95	0.95	0.87
Std.Errors	Robust	Robust	Robust	Robust

+ $p < 0.1$, * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Hypothesis 3: ANES 2020

Table A36: ANES 2020. Effects of political knowledge and confidence on anger, anxiety, pride and hope.

	Hope	Fear	Anger	Pride
Confidence	−0.004	0.157***	0.217***	−0.034**
	(0.014)	(0.013)	(0.013)	(0.012)
Knowledge	−0.001	0.003	0.020	−0.004
	(0.015)	(0.014)	(0.014)	(0.012)
Age	0.001+	0.002**	0.002*	0.002**
	(0.0008)	(0.0007)	(0.0007)	(0.0007)
Gender (W)	−0.100***	0.239***	0.115***	−0.059**
	(0.027)	(0.025)	(0.025)	(0.023)
Race (White)	−0.088**	0.062*	0.030	0.0003
	(0.031)	(0.029)	(0.029)	(0.026)
Education (College)	0.072	−0.073	−0.015	0.034
	(0.055)	(0.051)	(0.050)	(0.046)
Education (Professional/PhD)	0.056	0.016	−0.044	0.025
	(0.062)	(0.058)	(0.057)	(0.052)
Education (Academic)	−0.025	−0.062	0.057	−0.056
	(0.059)	(0.054)	(0.054)	(0.049)
Education (High School)	0.057	−0.048	−0.016	0.066+
	(0.044)	(0.041)	(0.041)	(0.037)
Education (Less than HS)	0.036	−0.052	0.019	0.049
	(0.072)	(0.067)	(0.067)	(0.060)
Education (College, no degr.)	0.074+	−0.001	0.027	0.029
	(0.039)	(0.036)	(0.036)	(0.033)
Income	−0.002	−0.0008	0.00004	−0.003
	(0.002)	(0.002)	(0.002)	(0.002)
Ideology	−0.0002	−0.0008*	−0.002***	−0.00001
	(0.0004)	(0.0004)	(0.0004)	(0.0004)
PID Strength	0.227***	−0.193***	−0.155***	0.227***
	(0.006)	(0.006)	(0.006)	(0.005)
Num.Obs.	6283	6286	6286	6285
R2	0.204	0.235	0.200	0.278
RMSE	1.03	0.95	0.95	0.86
Std.Errors	Robust	Robust	Robust	Robust

+ $p < 0.1$, * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Table A37: ANES 2020. Effects of political knowledge, confidence, and interest on anger, anxiety, pride and hope.

	Hope	Fear	Anger	Pride
Interest	0.046**	0.166***	0.202***	0.030*
	(0.015)	(0.014)	(0.014)	(0.013)
Confidence	−0.018	0.108***	0.158***	−0.044***
	(0.015)	(0.014)	(0.013)	(0.012)
Knowledge	−0.006	−0.017	−0.005	−0.007
	(0.015)	(0.014)	(0.013)	(0.012)
Efficacy	0.024+	0.057***	0.058***	0.028*
	(0.013)	(0.012)	(0.012)	(0.011)
Age	0.0006	−0.0007	−0.002*	0.001*
	(0.0008)	(0.0008)	(0.0008)	(0.0007)
Gender (W)	−0.092***	0.260***	0.140***	−0.054*
	(0.027)	(0.025)	(0.024)	(0.023)
Race (White)	−0.084**	0.073*	0.041	0.004
	(0.031)	(0.029)	(0.028)	(0.026)
Education (College)	0.065	−0.093+	−0.039	0.028
	(0.055)	(0.050)	(0.049)	(0.046)
Education (Professional/PhD)	0.058	0.020	−0.039	0.028
	(0.062)	(0.057)	(0.056)	(0.052)
Education (Academic)	−0.023	−0.054	0.066	−0.055
	(0.059)	(0.054)	(0.053)	(0.049)
Education (High School)	0.060	−0.035	0.001	0.067+
	(0.044)	(0.040)	(0.040)	(0.037)
Education (Less than HS)	0.040	−0.022	0.057	0.047
	(0.072)	(0.066)	(0.066)	(0.061)
Education (College, no degr.)	0.073+	−0.003	0.025	0.028
	(0.039)	(0.036)	(0.035)	(0.033)
Income	−0.002	−0.0002	0.0007	−0.002
	(0.002)	(0.002)	(0.002)	(0.002)
Ideology	−0.000 009	−0.0002	−0.0009*	0.000 08
	(0.0004)	(0.0004)	(0.0004)	(0.0004)
PID Strength	0.226***	−0.193***	−0.155***	0.226***
	(0.006)	(0.006)	(0.006)	(0.005)
Num.Obs.	6279	6282	6282	6281
R2	0.205	0.255	0.231	0.279
RMSE	1.03	0.94	0.93	0.86
Std.Errors	Robust	Robust	Robust	Robust

+ $p < 0.1$, * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Hypotheses 1 - 3 Study 1

Table A38: Study 1. Effects of knowledge and political interest on self-reported anger, anxiety, enthusiasm, and hope.

	Anger	Fear	Enthusiasm	Hope
Knowledge	0.005	−0.094***	−0.118***	−0.109***
	(0.024)	(0.024)	(0.023)	(0.024)
Interest	0.232***	0.181***	0.294***	0.233***
	(0.023)	(0.023)	(0.022)	(0.023)
Ideology	0.092***	0.093***	0.040+	0.071**
	(0.022)	(0.022)	(0.021)	(0.022)
Gender (W)	0.017	0.137**	−0.238***	−0.187***
	(0.046)	(0.046)	(0.045)	(0.046)
Age	0.002	−0.006***	−0.007***	−0.003+
	(0.001)	(0.001)	(0.001)	(0.001)
Education (Basisschool)	0.390	0.084	0.275	0.049
	(0.348)	(0.349)	(0.335)	(0.344)
Education (HAVE/VWO)	0.178	0.058	0.149	−0.072
	(0.287)	(0.287)	(0.276)	(0.283)
Education (HBO)	0.168	−0.016	0.251	0.033
	(0.284)	(0.284)	(0.273)	(0.280)
Education (MBO)	0.198	0.060	0.126	−0.090
	(0.283)	(0.283)	(0.272)	(0.280)
Education (VMBO)	0.238	0.170	0.138	−0.017
	(0.286)	(0.286)	(0.275)	(0.282)
Education (WO)	0.223	−0.081	0.239	0.134
	(0.289)	(0.289)	(0.278)	(0.285)
Num.Obs.	1977	1985	1982	1979
R2	0.066	0.068	0.138	0.093
F	12.569	13.003	28.673	18.355
RMSE	0.97	0.97	0.93	0.95

+ $p < 0.1$, * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Table A39: Study 1. Effects of knowledge and confidence-in-knowledge on self-reported anger, anxiety, enthusiasm, and hope.

	Anger	Fear	Enthusiasm	Hope
Knowledge	0.016	−0.082***	−0.101***	−0.090***
	(0.024)	(0.024)	(0.024)	(0.024)
Confidence	0.181***	0.125***	0.189***	0.118***
	(0.023)	(0.023)	(0.023)	(0.023)
Ideology	0.108***	0.106***	0.060**	0.089***
	(0.022)	(0.022)	(0.022)	(0.022)
Gender (W)	−0.005	0.113*	−0.278***	−0.234***
	(0.047)	(0.047)	(0.046)	(0.047)
Age	0.001	−0.006***	−0.007***	−0.003*
	(0.002)	(0.002)	(0.001)	(0.002)
Education (Basisschool)	0.401	0.075	0.179	0.034
	(0.355)	(0.355)	(0.347)	(0.354)
Education (HAVE/VWO)	0.260	0.120	0.249	0.0008
	(0.290)	(0.290)	(0.283)	(0.289)
Education (HBO)	0.227	0.029	0.329	0.092
	(0.287)	(0.287)	(0.280)	(0.286)
Education (MBO)	0.245	0.089	0.175	−0.066
	(0.286)	(0.286)	(0.279)	(0.285)
Education (VMBO)	0.298	0.210	0.197	0.016
	(0.289)	(0.289)	(0.282)	(0.288)
Education (WO)	0.289	−0.029	0.328	0.206
	(0.292)	(0.291)	(0.285)	(0.291)
Num.Obs.	1972	1980	1977	1974
R2	0.047	0.052	0.092	0.057
F	8.743	9.773	18.113	10.844
RMSE	0.98	0.98	0.95	0.97

+ $p < 0.1$, * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Table A40: Study 1. Effects of knowledge, confidence-in-knowledge, political interest and internal political efficacy on self-reported anger, anxiety, enthusiasm, and hope.

	Anger	Fear	Enthusiasm	Hope
Knowledge	0.009	−0.089***	−0.114***	−0.102***
	(0.024)	(0.024)	(0.023)	(0.024)
Efficacy	0.137***	0.068*	0.141***	0.151***
	(0.031)	(0.031)	(0.030)	(0.031)
Interest	0.161***	0.156***	0.251***	0.222***
	(0.031)	(0.032)	(0.030)	(0.031)
Confidence	−0.008	−0.017	−0.061+	−0.116***
	(0.033)	(0.033)	(0.032)	(0.032)
Ideology	0.080***	0.089***	0.026	0.057*
	(0.022)	(0.022)	(0.022)	(0.022)
Gender (W)	0.025	0.140**	−0.222***	−0.181***
	(0.047)	(0.047)	(0.045)	(0.046)
Age	0.002	−0.006***	−0.006***	−0.002
	(0.002)	(0.002)	(0.001)	(0.001)
Education (Basisschool)	0.385	0.055	0.165	−0.0007
	(0.352)	(0.354)	(0.339)	(0.348)
Education (HAVE/VWO)	0.163	0.040	0.107	−0.127
	(0.285)	(0.287)	(0.275)	(0.282)
Education (HBO)	0.123	−0.035	0.200	−0.029
	(0.282)	(0.284)	(0.272)	(0.279)
Education (MBO)	0.183	0.049	0.092	−0.143
	(0.281)	(0.283)	(0.271)	(0.278)
Education (VMBO)	0.231	0.156	0.100	−0.080
	(0.284)	(0.286)	(0.274)	(0.281)
Education (WO)	0.180	−0.114	0.181	0.068
	(0.287)	(0.289)	(0.277)	(0.284)
Num.Obs.	1949	1956	1953	1951
R2	0.079	0.071	0.148	0.107
F	12.682	11.399	25.986	
RMSE	0.96	0.96	0.92	0.95

+ $p < 0.1$, * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Hypotheses 1 - 3 Study 2

Table A41: Study 2. Effects of knowledge and political interest on self-reported anger, anxiety, hope and pride.

	Anger	Fear	Hope	Pride
Knowledge	0.029	0.035	−0.022	−0.033
	(0.029)	(0.028)	(0.028)	(0.029)
Interest	0.153***	0.123***	0.072*	0.057+
	(0.030)	(0.030)	(0.030)	(0.030)
Ideology	−0.090*	−0.109*	0.106*	0.135**
	(0.045)	(0.044)	(0.045)	(0.045)
Gender (W)	0.236***	0.437***	−0.143*	−0.165**
	(0.057)	(0.056)	(0.057)	(0.057)
Age	−0.003	−0.007***	0.003+	0.003
	(0.002)	(0.002)	(0.002)	(0.002)
Education (College/Graduate)	−0.200*	−0.101	0.213**	0.202**
	(0.078)	(0.076)	(0.077)	(0.077)
Education (Secondary)	0.060	0.042	−0.071	−0.135*
	(0.063)	(0.062)	(0.063)	(0.063)
Education (Primary)	0.192	0.226	0.156	0.087
	(0.175)	(0.173)	(0.175)	(0.176)
Education (No formal)	1.331	1.873+	−0.540	−1.049
	(0.982)	(0.967)	(0.981)	(0.984)
Num.Obs.	1243	1249	1249	1248
R2	0.051	0.079	0.052	0.044
F	6.001	9.606	6.204	5.208
RMSE	0.98	0.96	0.97	0.98

+ $p < 0.1$, * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Table A42: Study 2. Effects of knowledge and confidence-in-knowledge on self-reported anger, anxiety, hope and pride.

	Anger	Fear	Hope	Pride
Knowledge	0.024	0.035	−0.017	−0.029
	(0.029)	(0.028)	(0.029)	(0.029)
Confidence	0.168***	0.105***	0.029	0.015
	(0.030)	(0.030)	(0.030)	(0.030)
Ideology	−0.087+	−0.111*	0.102*	0.131**
	(0.045)	(0.044)	(0.045)	(0.045)
Gender (W)	0.267***	0.446***	−0.153**	−0.176**
	(0.058)	(0.057)	(0.058)	(0.058)
Age	−0.002	−0.006**	0.004*	0.004*
	(0.002)	(0.002)	(0.002)	(0.002)
Education (College/Graduate)	−0.207**	−0.106	0.211**	0.202**
	(0.077)	(0.076)	(0.077)	(0.077)
Education (Secondary)	0.055	0.035	−0.077	−0.139*
	(0.063)	(0.062)	(0.063)	(0.063)
Education (Primary)	0.185	0.209	0.137	0.071
	(0.175)	(0.173)	(0.175)	(0.176)
Education (No formal)	1.310	1.833+	−0.587	−1.089
	(0.980)	(0.970)	(0.982)	(0.984)
Num.Obs.	1244	1250	1250	1249
R2	0.055	0.074	0.049	0.042
F	6.529	9.048	5.769	4.921
RMSE	0.97	0.96	0.98	0.98

+ p < 0.1, * p < 0.05, ** p < 0.01, *** p < 0.001

Table A43: Study 2. Effects of knowledge, confidence-in-knowledge, political interest and internal political efficacy on self-reported anger, anxiety, hope and pride.

	Anger	Fear	Hope	Pride
Knowledge	0.022	0.033	−0.021	−0.032
	(0.029)	(0.028)	(0.028)	(0.029)
Efficacy	0.067+	0.005	0.113**	0.093*
	(0.038)	(0.038)	(0.038)	(0.038)
Interest	0.047	0.096*	0.091*	0.084+
	(0.045)	(0.044)	(0.045)	(0.045)
Confidence	0.093+	0.032	−0.113*	−0.109*
	(0.049)	(0.048)	(0.048)	(0.049)
Ideology	−0.082+	−0.107*	0.111*	0.139**
	(0.045)	(0.044)	(0.045)	(0.045)
Gender (W)	0.264***	0.439***	−0.160**	−0.181**
	(0.058)	(0.057)	(0.057)	(0.058)
Age	−0.003	−0.007***	0.004+	0.003+
	(0.002)	(0.002)	(0.002)	(0.002)
Education (College/Graduate)	−0.203**	−0.100	0.215**	0.204**
	(0.077)	(0.076)	(0.077)	(0.077)
Education (Secondary)	0.068	0.040	−0.063	−0.128*
	(0.063)	(0.063)	(0.063)	(0.063)
Education (Primary)	0.197	0.226	0.151	0.082
	(0.175)	(0.173)	(0.175)	(0.175)
Education (No formal)	1.228	1.865+	−0.727	−1.201
	(0.981)	(0.970)	(0.980)	(0.984)
Num.Obs.	1242	1248	1248	1247
R2	0.060	0.078	0.060	0.050
F	6.003	8.050	6.093	5.030
RMSE	0.97	0.96	0.97	0.97

+ p < 0.1, * p < 0.05, ** p < 0.01, *** p < 0.001

Experimental Manipulation Study 1

Table A44: Study 1: Question Difficulty Manipulations (translated from Dutch)

Easy	Difficult
Who is currently the party leader of the SP? a. Lilian Marijnissen b. Jan Marijnissen c. Wopke Hoekstra d. Geer Wilders	Who is currently the party leader of the SP? (Open Ended)
Who is currently the party leader of the PvdA? a. Attje Kuiken b. Lilian Marijnissen c. Lilian Ploumen d. Pieter Heerma	Who is currently the party leader of the PvdA? (Open Ended)
Which party currently has the most seats in the Second Chamber (Tweede Kamer)? a. D66 b. VVD c. PVV d. CDA	Which party currently has the **second most** [emphasized in survey] seats in the Second Chamber (Tweede Kamer)? a. D66 b. VVD c. PVV d. CDA
Which four parties are part of the current government? (select 4) a. VVD b. D66 c. CDA d. CU e. PVV f. SP g. PvdA h. Groenlinks i. Volt j. BBB	Which parties are part of the current government? (Open Ended)
Who is the current vice president of the United States? a. Hilary Clinton b. Kamala Harris c. Ron Klain d. Nancy Pelosi	Who was the vice president of the United States during Barack Obama's first term? a. Hilary Clinton b. Kamala Harris c. Joe Biden d. Nancy Pelosi
Who is the current president of the European Commission? a. Ursula von der Leyen b. Christine Lagarde c. Ban Ki Moon	Who is the current president of the European Commission? (Open ended)
Who is the current chancellor of Germany? a. Angela Merkel b. Olaf Scholz c. Robert Habeck d. Christian Lindner	Who is the current vice-chancellor of Germany? a. Annalena Baerbock b. Olaf Scholz c. Robert Habeck d. Christian Lindner
Which year did women get the right to vote in the Netherlands? a. 1885 b. 1919 c. 1945	Which year did women get the right to vote in the Netherlands? (Open ended)

Experimental Manipulation Study 2

Table A45: Study 2: Question Difficulty Manipulations

Easy	Difficult
What job or political office did Kamala Harris hold before she was the Vice President? a. Speaker of the House b. Vice President c. Senator d. Governor	What job or political office did Kamala Harris hold before she was the Vice President? (Open Ended)
After the midterm elections past week, who will have the majority in the next U.S. House of Representatives, which will be sworn in in January 2023? a. Democratic Party b. Republican Party	How many seats did the Republican party gain in the U.S. House of Representatives in the midterm elections? [enter number]
Which of these people was never Prime Minister of England? a. Theresa May b. Boris Johnson c. Angela Merkel	Who is the current Prime Minister of England? a. Theresa May b. **Rishi Sunak** c. Liz Truss d. Boris Johnson
What is the government position or office that John Roberts currently holds? a. US Senator b. Chief Justice of the Supreme Court c. Speaker of the House	What is the name of the current Chief Justice of the Supreme Court? (Open ended)
Nancy Pelosi will soon step down from her role as... a. Vice President b. Chief Justice of the Supreme Court c. Speaker of the House Democrats	Nancy Pelosi will soon step down as leader of the House Democrats. Who will replace her as Speaker of the House Democrats? a. Hakeem Jeffries b. Steny Hoyer c. Pete Aguilar d. Sheila Jackson Lee
How many Justices does the Supreme Court have? a. 3 b. 6 c. 9	Off the top of your head, how many Justices of the Supreme Court can you name? Please write down as many of their names as you can remember. (Open ended)
Off the top of your head, can you name a woman member of the U.S. Congress, either the House of Representatives or the Senate? (Open Ended)	Off the top of your head, can you name three women member of the U.S. Congress, either the House of Representatives or the Senate? (3 Open Ended Text Boxes)
Of the current members serving on the U.S. Supreme Court, do you happen to know how many are women? a. None b. 1 c. 4	Of the current members serving on the U.S. Supreme Court, do you happen to know how many are women? (Open Ended)

Hypothesis 4: Study 1

Table A46: Study 1. Effects of confidence manipulation and pre-treatment confidence on post-treatment confidence.

	Treatment	Treatm. + Confididence
Treatment Easy	0.176***	0.187***
	(0.041)	(0.032)
Confidence		0.611***
		(0.017)
Ideology	0.085***	0.076***
	(0.021)	(0.016)
Gender (W)	−0.527***	−0.276***
	(0.043)	(0.034)
Age	0.006***	0.004***
	(0.001)	(0.001)
Education (Basisschool)	−0.248	0.119
	(0.327)	(0.254)
Education (HAVE/VWO)	0.538*	0.607**
	(0.271)	(0.209)
Education (HBO)	0.651*	0.619**
	(0.268)	(0.207)
Education (MBO)	0.240	0.404+
	(0.267)	(0.206)
Education (VMBO)	0.123	0.402+
	(0.270)	(0.208)
Education (WO)	0.832**	0.735***
	(0.272)	(0.210)
Num.Obs.	1983	1978
R2	0.164	0.504
F	38.802	181.721
RMSE	0.91	0.70

+ $p < 0.1$, * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Hypothesis 4: Study 2

Table A47: Study 2. Effects of confidence manipulation and pre-treatment confidence on post-treatment confidence.

	Treatment	Treatm. + Confididence
Treatment Easy	0.228***	0.299***
	(0.052)	(0.033)
Confidence (Pre-Tr)		0.759***
		(0.017)
Ideology	−0.110***	−0.016
	(0.027)	(0.017)
Gender (W)	−0.433***	−0.098**
	(0.053)	(0.034)
Age	0.015***	0.005***
	(0.002)	(0.001)
Education (College/Graduate)	0.096	0.061
	(0.073)	(0.046)
Education (Secondary)	−0.210***	−0.124***
	(0.060)	(0.037)
Education (Primary)	−0.773***	−0.427***
	(0.164)	(0.104)
Education (No formal)	−0.773	−0.124
	(0.657)	(0.413)
Num.Obs.	1255	1255
R2	0.149	0.664
F	27.243	273.057
RMSE	0.92	0.58

+ $p < 0.1$, * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Hypothesis 5: Study 1

Table A48: Study 1. Effects of confidence manipulation and pre-treatment confidence on self-reported levels of anger, anxiety, enthusiasm, and hope.

	Anger	Anxiety	Enthusiasm	Hope
Treatment Easy	0.078+	0.075+	0.001	0.018
	(0.044)	(0.044)	(0.042)	(0.043)
Knowledge	0.004	−0.093***	−0.117***	−0.105***
	(0.024)	(0.024)	(0.023)	(0.024)
Interest	0.194***	0.168***	0.290***	0.262***
	(0.030)	(0.030)	(0.029)	(0.030)
Confidence	0.058+	0.018	0.004	−0.049+
	(0.030)	(0.030)	(0.029)	(0.030)
Ideology	0.093***	0.093***	0.039+	0.070**
	(0.022)	(0.022)	(0.021)	(0.022)
Gender (W)	0.028	0.142**	−0.235***	−0.194***
	(0.047)	(0.047)	(0.045)	(0.046)
Age	0.002	−0.006***	−0.007***	−0.003+
	(0.002)	(0.002)	(0.001)	(0.001)
Education (Basisschool)	0.436	0.107	0.194	0.053
	(0.352)	(0.352)	(0.339)	(0.347)
Education (HAVE/VWO)	0.206	0.074	0.151	−0.084
	(0.287)	(0.287)	(0.276)	(0.283)
Education (HBO)	0.192	−0.000006	0.253	0.027
	(0.284)	(0.285)	(0.273)	(0.281)
Education (MBO)	0.227	0.075	0.126	−0.106
	(0.283)	(0.284)	(0.273)	(0.280)
Education (VMBO)	0.277	0.193	0.140	−0.032
	(0.286)	(0.287)	(0.275)	(0.283)
Education (WO)	0.242	−0.068	0.240	0.129
	(0.289)	(0.289)	(0.278)	(0.285)
Num.Obs.	1972	1980	1977	1974
R2	0.068	0.068	0.137	0.094
F	11.068	11.064	23.914	15.609
RMSE	0.96	0.97	0.93	0.95

+ $p < 0.1$, * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Hypothesis 5: Study 2

Table A49: Study 2. Effects of confidence manipulation and pre-treatment confidence on self-reported levels of anger, anxiety, pride, and hope.

	Anger	Anxiety	Hope	Pride
Treatment Easy	0.103+	0.031	−0.027	−0.011
	(0.056)	(0.055)	(0.056)	(0.056)
Knowledge	0.022	0.033	−0.023	−0.037
	(0.029)	(0.028)	(0.029)	(0.029)
Interest	0.059	0.096*	0.116*	0.105*
	(0.045)	(0.044)	(0.045)	(0.045)
Confidence (Pre-Tr)	0.133**	0.044	−0.054	−0.061
	(0.045)	(0.044)	(0.045)	(0.045)
Ideology	0.013	−0.058*	−0.064*	0.040
	(0.028)	(0.028)	(0.029)	(0.028)
Gender (W)	0.263***	0.450***	−0.151**	−0.180**
	(0.058)	(0.057)	(0.058)	(0.058)
Age	−0.003	−0.007***	0.003+	0.003+
	(0.002)	(0.002)	(0.002)	(0.002)
Education (College/Graduate)	−0.202**	−0.100	0.217**	0.210**
	(0.077)	(0.076)	(0.078)	(0.077)
Education (Secondary)	0.059	0.044	−0.079	−0.143*
	(0.063)	(0.063)	(0.064)	(0.064)
Education (Primary)	0.240	0.240	0.091	0.064
	(0.175)	(0.173)	(0.177)	(0.176)
Education (No formal)	1.293	1.856+	−0.386	−0.975
	(0.981)	(0.969)	(0.990)	(0.985)
Num.Obs.	1243	1249	1249	1248
R2	0.054	0.077	0.035	0.043
F	5.892	8.559	3.765	4.584
RMSE	0.97	0.96	0.98	0.98

+ $p < 0.1$, * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

8 Acknowledgements

I'm not quite sure if getting your PhD is the end or the start of something, a finish line or a four-year long right of passage. If it's the start, then it has surely been a long driveway leading onto the even longer road that is academia. Luckily, long driveways usually come with beautiful gardens. Similarly, the past years have been quite a ride, but mostly a beautiful one! And while these gates close (the gates of long driveways, as you know, always close very slowly), it's probably a good moment to look back at the people in the garden who have inspired me along the way.

I want to start by thanking Tom van der Meer, Theresa Kuhn, Alessandro Nai, Dominique Wirz, and Vin Arcenaux for serving on my defense committee. I also want to thank Vin for having served as external reader on my first year paper many years ago and providing feedback on some of the earliest ideas. Generally, I am grateful for everyone who has provided feedback on my work at various stages, there are too many to list them all.

I want to thank Gijs, the one person without whom this dissertation wouldn't have happened or would have looked very different. Throughout these years, you've been supportive, yet critical, and, above all, sympathetic to my occasional stubbornness when I refused to see the value of your critiques. I've valued your honesty, sharp mind, and sometimes unconventional sense of humor. I've learnt a lot from you, and I hope you've learnt something from me too, besides where to get the best ice cream in Vienna, or how to write extremely long sentences.

Matthijs, you would have gotten an honorary mention as a standout colleague, known for always having a smile on your face, your friendly hallway banter and a willingness to engage with others' work in the most constructive and encouraging way. I am very happy that you eventually brought these qualities into my supervision team and helped me to genuinely enjoy wrapping up this dissertation!

I want to thank the whole Hot Politics Lab, its members and friends! I am grateful to have seen it grow from five of us in a windowless room discussing rough research ideas to a global community held together by Friday afternoon beers but most of all a love for research. Thanks to those who have been integral parts of it: Bert, Maaike, Diamantis, Mariken! A huge thank you to Amanda Friesen, who during and following her visit became a co-author, mentor, and friend. Thank you for filling all of these roles simultaneously, and for introducing me to the Indigo Girls!

Thank you to all of the great colleagues of the Challenges research group for your valuable feedback and support. Thank you to Theresa, Daphne, Wouter, Johan, Enzo, Eefje, Eelco and many more for lunch, coffee, or hallway chats and for providing a friendly and inspiring workplace.

Thank you to the wonderful Challenges PhDs for countless lunch and ping pong breaks, coffee trains, and Kaffeklatsches. Thank you to the many PhD students who visited us and brought a breeze of fresh air into B10. Especially Lennart, for inspiring me to take the stairs every once in a while. I might live a little bit longer and it's because of you. Thank you, Ugur, for our smoke breaks. I might live a little bit shorter because of you, but it was worth it! Christian, you never let me win at ping pong and although I'm a sore loser, there's few things in Amsterdam that I miss as much as our daily ping pong sessions. Philipp, thank you for the occasional night out to take our minds off of the stress of academia, to many more! And thank you both for serving as my paranymphs! Thanks to Ebe for having been a companion from the very start. To Sanne, and her family, for so generously taking me in when locked-down Amsterdam was quite a lonely place. Ellis, thank you for being my coffee walk partner and for becoming my first Dutch friend. One reason for continuing on this road is the prospect of countless more coffee walks with you all over the world!

And what about the house I departed from (pretty naive if you thought I was done with the driveway metaphor)? Thank you, Lara and Fer, for being my home in Amsterdam, I miss you and our little house every day! Thank you to my friends back home, in Berlin, Brussels, Frankfurt, and Kuwait, for being smart and kind and funny, for giving me plenty to miss when I was not with you, and plenty of distractions when I was. Thank you to my parents for supporting my studies and (not always humble) lifestyle of my twenties, for passing on some of your brains to me, and for getting me interested in politics in the first place.