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What Lies Beneath: Mediators of Public Support for International Economic Cooperation

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Abstract

The current public backlash against several trade agreements has triggered a vivid discourse about the impact of top-down communication of such initiatives on public opinion. Findings from previous work on the impact of issue frames provide distinct expectations about the influence of different types of messages on people's opinion. However, little is known about the mechanisms underlying the impact of message cues on opinion formation. In this article, we shed light on one potential mechanism that mediates issue framing effects: individuals' emotional reaction. By means of a survey-embedded experiment conducted in the United States and Germany, we expose respondents to different frames about the benefits and risks of the Transatlantic Trade and Investment Partnership agreement. The results show that frames have a significant effect on public opinion, but frames that emphasize losses seem more persuasive than frames promoting the gains from the Transatlantic Trade and Investment Partnership. Complementing our empirical investigation, with a causal mediation analysis we find that framing effects are indeed mediated by people's emotional responses to the frames.

Keywords

public opinion, framing, emotions, international trade, survey experiment, causal mediation analysis

Policymaking in liberal democracies largely hinges on popular backing, compelling policymakers to invest considerable efforts to gain public support for their policy proposals. Public opinion, communication, and political science scholars have spent considerable efforts on identifying factors that influence individuals' likelihood to support or oppose a

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certain policy plan or the arguments associated with it. These analyses focus predominantly on examining the influence of certain message types, that is, whether the information content is positive or negative, of technical or normative nature, the message's level of complexity or the medium through which the message is communicated. The majority of these studies find that "framing," understood as a communicator's selective presentation and interpretation of an issue or event, can have a sizable effect on citizens' opinions (e.g. Chong and Druckman, 2007; De Vreese and Lecheler, 2016; Druckman, 2004; Druckman and Lupia, 2000; Iyengar, 1991; Kinder, 2003; Mendelberg, 2001; Nelson et al., 1997a). However, while this research agenda has produced an impressive amount of empirical evidence of such so-called message or framing effects on public opinion, the question of *how* such relationships arise is understudied. In other words, when does a specific framing exert persuasive power and thus make citizens change their hearts and minds?

In this study, we examine citizens' information processing in the context of the public discourse surrounding the proposed trade agreement, the Transatlantic Trade and Investment Partnership (TTIP), between the United States and the European Union. To this end, we investigate how different frames about TTIP influence mass support for the trade deal and to what extent framing effects are mediated by individuals' emotional response to the frames. We argue that framing effects, that is, how persuasive the message content is to the message receiver, depends largely on the emotional reactions to the message content.

We test our arguments in two analytical steps with original data that we collected from a survey-embedded experiment in the United States and Germany. First, in the experiment, we randomly assigned respondents to different message frames about the benefits and risks of the TTIP agreement. Comparing respondents' support for TTIP before and after receiving either a positive or a negative frame allows us to identify the causal impact of the different frames on public opinion. Second, we use causal mediation analysis (CMA) (Imai et al., 2011) to uncover the extent to which message effects are mediated by changes in respondents' affective reactions to the information provided in the frame.

Two key findings emerge from our analysis. First, and in line with previous results from the framing literature, we find that both positive and negative frames have a consistent effect on people's opinion about TTIP. Specifically, negative information emphasizing the risks posed by a ratification of the TTIP agreement significantly reduces mass support for TTIP. Conversely, positive information highlighting the benefits of TTIP significantly increases public support for the agreement, yet not as strongly as negative information reduces support. Second, we find that these message effects operate through changes in respondents' mood levels. Our results indicate that the effect of the negative frame is mediated by an increase in negative emotion (annoyance) and a decrease in positive emotion (confidence).

Our study contributes to a better understanding of the extensive literature on the effect of elite frames on public support, which focuses on various policy areas ranging from redistribution, to trade policy, to military spending, to foreign aid policies, and so on. Although from a purely cognitive perspective positive and negative frames do not differ from each other, a consistent finding that emerges from existing research is that negative information has a larger impact on public opinion formation than positive information. Thus, going beyond studying the outcomes of different cues on public opinion, we test the mechanisms through which message frames affect opinion formation thereby probing one potential explanation for the negativity bias reported in previous research. Our findings suggest that negative frames derive some of their impact on public opinion from the emotional response they trigger.

Emotions and Framing Effects

Political issues are often complex and multifaceted and are therefore subject to communicators' interpretation of "what the controversy is about, the essence of the issue" (Gamson, 1992: 143). Hence, political debate and eventual resolution will typically depend on which interpretation dominates (Schattschneider, 1960). Framing studies usually are concerned with how people's opinions are affected by opposing ways of presenting, or framing, an issue or event. By emphasizing certain aspects of an issue or presenting it in a specific way, the media and/or other communicators, such as political parties, can influence or frame how audiences perceive the respective content (Scheufele and Tewksbury, 2007). Previous studies show that effective frames can shape opinions because they activate new or existing beliefs and feelings, increase the importance of certain considerations, and affect the way people evaluate issues (Chong and Druckman, 2007; Nelson et al., 1997b).

Scholars attribute these framing effects to the notion that people tend to use cognitive shortcuts or heuristics in processing information (Fiske and Taylor, 1991; Price and Tewksbury, 1997). Given limited cognitive capacities, individuals typically do not engage in an exhaustive search for all relevant information before passing a judgment or taking a decision. Instead, the search or retrieval process is usually cut short once individuals consider that enough relevant information has been gathered to render a judgment. Frames provide guidance by assigning relative importance to specific information (Nelson and Oxley, 1999). In other words, frames, by emphasizing a certain component of an issue, influence which considerations are most accessible and, as a result, will affect subsequent judgments and opinions (Shen and Edwards, 2005: 797).

Although there is broad consensus among scholars that framing works by altering the considerations individuals use in their evaluation of an issue, the processes mediating framing effects are understudied. In what follows, we first briefly review the framing literature and engage with existing studies on the role of affective responses in information processing. Building on this existing work, we then formulate our theoretical predictions about the impact of information frames on public support for international trade and how framing effects are mediated by emotions.

Framing Effects

Extensive research on the influence of mass communication on opinion formation has demonstrated that politicians and other elites can powerfully shape citizens' political preferences (see Kinder, 2003). At the forefront of this literature is the repeated finding that "framing"—understood as a communicator's selective presentation and interpretation of an issue or event—can have a sizable impact on citizens' opinions. For example, Sniderman and Theriault (2004) show that when asked to what extent respondents would support a hate group to hold a political rally, an overwhelming majority supported the rally when the question was framed in terms of free speech. In contrast, less than half of the respondents supported the same rally when the question stressed the risk of violence.

One of the reasons behind such "framing effects" is that citizens often rely on a mix of considerations that could be used to form an opinion on an issue. These considerations might point in different directions, each pushing the individual to support or oppose the issue (Zaller and Feldman, 1992), thus leaving citizens often confused and conflicted about where to stand. "Frames help to resolve this confusion by declaring which of the many considerations is relevant and important, and which should be given less attention" (Nelson and Kinder, 1996: 1058). Frames are therefore thought to shift public opinion via "framing effects" where during "the course of describing an issue or event, a speaker's emphasis on a subset of potentially relevant considerations causes individuals to focus on these considerations when constructing their opinions" (Druckman and Nelson, 2003: 730). By highlighting certain features of a policy, elites can therefore encourage voters to think about policies along particular lines and mobilize voters behind their policy proposals (e.g. Jacoby, 2000: 751).

Scholars have studied framing effects relying on experiments, surveys, and case studies across a range of issues, including government spending (Jacoby, 2000), campaign finance (Grant and Rudolph, 2003), support for the Supreme Court (Nicholson and Howard, 2003), evaluations of foreign nations (Brewer et al., 2003), and many others. Applied to our research context—foreign trade policy and the TTIP agreement in particular—we expect that given the plurality of opinions surrounding the discourse on TTIP and the fact that international trade is typically an issue of low salience (Guisinger, 2009), we are likely to observe framing effects. Put differently, we expect individuals to update their prior opinions in line with the information provided in the treatment message, which in our case consist of information concerning either the positive or negative consequences of TTIP. Accordingly, H1 reads as follows:

> H1: Negative information about TTIP will reduce public support for TTIP, while positive information about TTIP will increase public support for the TTIP agreement.

However, going beyond the simple direction of the framing effect, we make predictions about the underlying mechanism that enables framing effects. Existing research has identified a range of factors, including the repetition of the frame, the competitive environment, that is, how many other messages or frames are competing for individuals' attention, and individual motivations that all potentially mediate the impact of frames on public opinion (see Chong and Druckman, 2007). Here, we focus on emotional reactions as mediators of framing effects.

Affective Processes

A large body of research has treated emotions as consequences of frames, as frames themselves, or as tied to specific types of frames. For example, Gross and D'Ambrosio (2004) treat emotional responses as framing effects, thus viewing as a consequence of the framing process rather than an integral part of it. While the authors show that frames can affect emotional responses, they do not go further and examine how emotions influence opinions. However, a number of studies increasingly suggest that the persuasive effect of a frame also depends on people's emotional reaction to the specific frame (Gross, 2008; Gross and d'Ambrosio, 2004; Lecheler et al., 2013, 2015; Nabi, 1998).[1] These studies examine how the effect of particular types of frames on individuals' opinion is mediated through people's emotional responses to the frame. This corresponds to the view that affective reactions are contingent upon how an issue is framed (Gross, 2008: 170). For example, Gross and d'Ambrosio (2004) compare situational and dispositional frames with regards to their impact on people's level of anger, sympathy, disgust, pity and fear. Gross (2008) compares episodic and thematic frames and finds that episodic framing alters respondents' emotional response relative to a thematic framing of the same topic. Moreover, Druckman and McDermott (2008) show that emotions can influence a frame's effect on risky choice taking. The mediational role of emotions is more explicitly demonstrated in Kim and Cameron's (2011) study which shows that emotions (anger and sadness) induced by different news frames on corporate crises influence individuals' information processing.

Taken together, while past work on emotions and framing does not explicitly ascribe emotions a role as mediator between the message and opinion formation, these studies still indicate that emotional reactions to frames can influence opinion formation.[2] Building on this, we argue that the extent to which an individual is susceptible to an issue frame depends on her emotional reaction to the frame. Theories of affect as information hold that "the experience of affect is (. . .) crucial for providing us with conscious information about our unconscious appraisals" (Clore and Storbeck, 2006: 124, see also Schwarz and Clore, 1983, 1988, 1996). Accordingly, when making judgments about a stimulus, individuals often consult their affective responses, that is, their positive or negative feelings. In other words, an affective reaction actually provides us with information that we can use in judging situations.

However, while existing research suggests that emotions mediate framing effects, not all affective responses should impact on public opinion to the same degree (Lerner and Keltner, 2001). In other words, different emotions may have different mediating effects. In particular, Lecheler et al. (2013) find that positive and negative emotions mediate framing effects on public opinion in distinct ways. At the most general level, this implies that certain types of frames trigger different sets of emotions. In our context, we would expect the negative frame, which emphasizes anticipated losses from the TTIP agreement to trigger negative emotions as compared to the positive frame emphasizing potential gains.

Going further, we argue that frames that trigger a negative emotional response have a greater persuasive power on public opinion than frames that call for a positive emotional reaction. When a frame triggers a negative emotion, individuals become more attentive and warier of the external stimuli and thus react more strongly to the information (Marcus, 2002).[3] In contrast, positive affects in response to a frame should reduce framing effects. In a positive emotional state, individuals should be less likely to engage with the message and more likely to uncritically accept the frame.

Psychology scholars have extensively studied a long list of basic human emotions and their physiological and psychological effects (e.g. Izard, 2007; Schachter and Singer, 1962). There is a plethora of different approaches and conceptualizations of emotions. While some studies examine the role of specific emotions, such as anger and fear or enthusiasm and contentment (e.g. Keltner et al., 1993; Lazarus, 1991), others argue that these emotions should not be treated as separate entities, but should be summarized along a common category, such as valence (e.g. Russell, 2003; Watson et al., 1999). In the framing literature, the majority of studies have employed discrete emotions organized along particular dimensions. In this study, we follow this approach and focus on annoyance (confidence) as examples of a negatively (positively) valenced emotion. Based on above reasoning, we therefore expect the following:

H2: Negative frames have a larger effect than positive frames and this framing effect is mediated by an increase in a negative emotional response (annoyance) and a decrease in a positive emotion (confidence).

Data and Methodology

Our analysis draws on data from an online survey experiment, which we implemented in two waves between May and June 2016. The samples are based on nationally representative web-based household panels provided by leading survey research companies in Germany and the US.[4] Only panel members who were eligible to vote at the time of the survey were allowed to participate. The samples were stratified by geographic region, education, gender and age in accordance with the two countries' most recent census data. In Wave 1, we surveyed 1800 respondents in each country. Of these respondents, 1600 people also participated in the second survey (Wave 2). The high participation rate in both survey waves alleviates concerns about attrition bias, a common worry in panel survey designs.

Germany and the United States were selected for their economic size and their prominent role in the negotiation process. While the political leadership in both countries strongly promoted the trade agreement (at least at the beginning of the negotiation process), TTIP caused much more controversy among the general public in Germany. In fact, mass opposition against TTIP grew so strong that the German government had to retract its initial enthusiasm for the transatlantic trade deal and declared "TTIP is dead" in 2016 after 3 years of negotiation. Thus, testing our theoretical arguments in both countries, we can probe the validity of our findings across different contexts.

Our two-wave design allows us to measure respondents' TTIP opinion in Wave 1 and again after receiving the message frames in Wave 2. We consider this an improvement to existing studies which typically administer before and after-treatment attitudes in one survey. Such designs pose the risk that asking about people's opinion on an issue might ultimately influence their view about the same issue when asked again later in the survey.[5]

In Wave 1, respondents were randomly assigned to evaluate the implications of the TTIP agreement for their country with respect to one of three selected issue areas—economic benefits, standard harmonization, and investor state dispute settlement (ISDS). We decided to assess respondents' attitude toward TTIP predominantly in the context of these issue areas to render the evaluation task more tangible.[6] We focused the argument on these issue areas since intensive pretests showed these to be the most important areas of concerns for citizens. In addition, in Wave 1, respondents answered a standard set of demographic items and questions concerning their economic beliefs. The same respondents also took part in Wave 2, which was administered 1 month after the first survey. In Wave 2, each respondent was assigned to the same issue area she was randomly assigned to in Wave 1. After a brief introduction, respondents were randomly assigned to one of the treatment conditions containing different—positive, negative, or no additional—information about potential impacts of TTIP in the assigned issue area. Thus, overall, our experiment consists of nine treatment groups. Following the treatments, we again asked respondents to evaluate the consequences of the TTIP agreement.

Following the standard approach in the literature, we formulated our frames such that the negative frame places TTIP in a loss context, while the positive frame embeds TTIP in a gain context. The treatment conditions mirror actual arguments by TTIP opponents

Table 1. Experimental Treatments.

Issue area	Positive	Negative
(1) Economic rationale	• Foster economic growth • Create new jobs	• Hamper economic growth • Lead to job losses
(2) Standards	• Harmonization of consumer protection and environmental protection toward higher standards	• Harmonization of consumer protection and environmental protection toward lower standards
(3) ISDS	• Improve legal protection of foreign investors • Increase attractiveness for foreign investment	• Undermine sovereignty of *Country's* government • Increase legal abuse by foreign investors

ISDS: investor state dispute settlement.

and supporters and are adapted from a wide spectrum of actors, such as interest groups, research institutes, labor unions, and non-governmental organizations. In the positive-effects treatment condition, respondents learned about positive outcomes of TTIP in the specific issue area. The negative-effects treatment condition informed respondents about negative consequences of TTIP in the specific issue area. Respondents assigned to the no-information group did not receive any additional information about TTIP. We ensured that the information provided in both conditions (positive and negative) was equivalent and that the "complexity" of the information was about the same, that is, the number of words and sentences was held constant. Table 1 provides an overview of the frame contents.

Empirical strategy

To test our hypotheses, we conduct our empirical analysis in two steps.

Step 1: Measuring Framing Effects. First, to test H1, we employ a within-subject analysis and compare respondents' TTIP opinion across our two waves to identify framing effects. To this end, we compare respondents' TTIP opinion submitted in Wave 1 to their TTIP opinion submitted in Wave 2, after receiving positive/negative information about TTIP. To measure our dependent variable—respondents' evaluation of the overall impact of the TTIP agreement—we asked respondents in both survey waves: *Overall, do you personally think that the TTIP agreement will have positive or negative consequences for the US* (*Germany*)? The responses are captured on a 7-point scale ranging from *very negative* (1) to *very positive* (7).[7]

We predict mean support for TTIP reported in Wave 2 to move in accordance with the frame the respondent was randomly assigned to. Specifically, we expect Wave 2 support for TTIP to be higher (lower) than in Wave 1 when the respondent receives the positive (negative) TTIP frame. To this end and to ensure large enough treatment groups as well as to ease interpretation and presentation of our results, we generate one common indicator for those individuals having received a negative treatment. Hence, we combine all individuals who read a negative text either on the economic effects of TTIP, on standard regulation or ISDS. However, our results are substantively the same if we conduct the analysis split by issue area (see Appendix 1 Tables A2–A4).

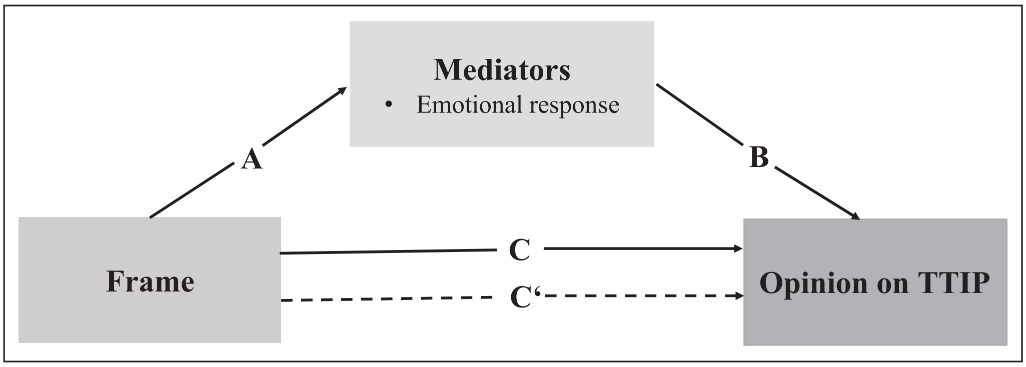

Figure 1. Causal Mediation Analysis (adapted from Imai et al., 2011).
The total causal effect is represented by *C* which links the treatment variable (information treatment) and the outcome variable (support for TTIP). *C′* is the coefficient for the average direct effect of the information treatment on individuals' support for TTIP adjusting for the mediator variables (affective reaction to the message cue). The effect of the mediator variables on the outcome variable is represented by *B*. *A* is the coefficient of the effect of the information treatment on individuals' emotional reaction. The causal mediation effect (CME) is represented by the product coefficient of *AB*.

Step 2: Measuring Mediating Effect of Emotions. Second, we carry out a CMA to estimate the extent to which emotions mediate the effects of our frame on public opinion toward TTIP. A causal mediation is defined by Imai et al. (2011: 767) as "a process whereby one variable causally affects another through an intermediate variable." Here, we are interested in the extent to which the impact of the issue frame on individuals' opinion about TTIP is mediated by respondents' affective reactions to the respective frame. By emotional responses, we mean reported positive (confidence) and negative emotion (annoyance) respondents felt after reading the message. Figure 1 illustrates the overall logic of CMA adapted to our research context.

In essence, CMA allows us to dissect the total effect of a treatment into direct and indirect effect, which is transmitted through a mediator variable to the outcome variable. The direct effect is the causal effect of the issue frames on respondents' TTIP opinion that is not transmitted by their affective reactions. The indirect effect represents the effect of the treatment on the outcome through the mediator variables. This indirect or mediated effect represents the effect on the outcome that follows from the change in the mediator variable that would be induced by the treatment while the direct impact of the treatment is suppressed holding its value constant.

We rely on annoyance and confidence as examples of a negative and a positive emotion, respectively. To measure respondents' emotional reaction to the frames, we asked respondents on a 1–5 scale to what extent they felt annoyed/confident "immediately after reading the text about the consequences of TTIP." Higher values indicate a stronger emotional reaction. Table 2 provides an overview of the relevant variables included in our analysis.[8]

In our study, we are interested in the extent to which negative and positive affective responses mediate framing effects. We hypothesize about the effect of broader dimensions of emotional appraisal (i.e., positive and negative emotional responses), but are agnostic about how specific emotions mediate the influence of message cues. We focus on annoyance and confidence as examples of a negative and positive emotion, which had been featured less prominently in previous studies. These studies have mainly looked at anger and hope.

Table 2. Overview of Treatment, Mediator, and Outcome Variable.

Treatment	Comparison group	Mediators	Outcome
Respondents who received a negative treatment text	Respondents who received a positive treatment text	• Affective reaction: ○ Annoyance ○ Confidence	Change in opinion on TTIP (Waves 1–2)

TTIP: Transatlantic Trade and Investment Partnership.

In selecting which emotion to investigate, we followed the approach by Nisbet et al. (2015), who study four emotions (being confident, encouraged, angry, and annoyed) to examine the mediating effect of affective responses on motivated reasoning. The selected items from our and Nisbet et al.'s (2015) study are adapted from Watson et al.'s (1988) Positive and Negative Affect Schedule (PANAS), which consists of ten emotions reflecting the two dominant dimensions of emotional appraisal. Similarly, the widely used items measured in the American National Election Studies (ANES) (angry, hopeful, afraid, proud, disgusted, sympathetic, and uneasy) have been found to load reliably dimensions, one capturing positive emotions and one capturing negative emotions (Abelson et al., 1982; Marcus, 1988; Marcus and MacKuen, 1993). We recognize that by restricting our analysis to one emotion for each dimension potentially limits the comparability of our findings with existing studies. However, given that previous studies have shown that confidence and annoyance (and other emotions) map on well to the two dominant dimensions of emotional appraisal, we are confident that annoyance and confidence are appropriate markers of positive and negative emotions.

For each of the affective responses (confidence and annoyance), we evaluate how receiving a negative treatment affects this mediator and in turn how the mediator affects support for TTIP. In our CMA, therefore, the relevant comparison group to which we compare respondents who received negative information about the TTIP agreement are those individuals who received positive information about the agreement. As a result, the analysis only includes respondents who read any type of treatment. The reason is simply that only those allocated to a treatment group could have answered our survey questions capturing their emotional reactions to the information treatment.

To estimate both direct and indirect effects, we follow Imai et al. (2011) and use their suggested nonparametric identification strategy for CMA. Accordingly, the causal mediation effect for one respondent captures the difference between her observed TTIP opinion change between Waves 1 and 2 if she receives the negative information on TTIP and her TTIP opinion under the counterfactual scenario in which she also receives the negative information, but her reported annoyance level is as if she received the positive frame. Thus, by fixing the treatment and changing only the mediator, we eliminate all other causal mechanisms and isolate the hypothesized mechanism. If the treatment has no effect on the mediator, then the causal mediation effects will be zero. The total effect is the sum of the direct and the indirect, that is, mediated effect. According to H2, we expect the mediated effect for the negative emotional mediator variable (annoyance) to be larger compared to the mediated effect of the positive emotional mediator variable (confidence).

The estimation strategy of our CMA consists of two parts: In a first step, regression models are fitted for the mediator variable as a function of the treatment and relevant pretreatment variables, and for the outcome variable as a function of the mediator, the treatment, and relevant pretreatment variables. In a second step, two sets of predictions are calculated: Based on the mediator model, CMA generates a prediction for the mediator under the treatment and a prediction for the mediator under the comparison condition. Based on the outcome model, CMA then generates again two sets of prediction—one for the outcome given the predicted values based on the mediator under treatment and one for the outcome given the predicted values based on the mediator under comparison, that is, positive information, status. The average causal mediation effect (ACME) is then calculated as the average difference given the two sets of predictions. In particular, the ACME is defined as:

$$\delta_i(t) \equiv Y_i(t, M_i(1)) - Y_i(t, M_i(0)),$$

while the average direct effect (ADE) is defined as:

$$\xi_i(t) \equiv Y_i(1, M_i(t)) - Y_i(0, M_i(t))$$

given treatment status $t=1$ and $t=0$. The ACME is the difference in the potential outcomes given the same treatment but varying the level of the mediator, while the ADE is the difference in the potential outcomes given different treatment status, but holding the level of the mediator constant. Together, the ACME and the ADE constitute the total effect of the treatment on the respective outcome.

Since both the ACME and the ADE consist of a potential outcome that is not realized in conventional experimental or observational studies, an additional assumption is necessary to estimate both quantities. This assumption is called sequential ignorability assumption and consists of two parts. The first part refers to the treatment being independent of the potential outcomes, which is typically unproblematic in experimental settings, such as ours. The second part of the sequential ignorability assumption refers to the mediator variable. It requires that the mediator is ignorable given both the treatment status and pretreatment confounding variables. This implies that we need to control for all factors that influence both the respective mediator variables, for example, annoyance and individuals' attitude toward TTIP. We therefore include in all regression models underlying our CMA the following variables: a person's gender, her age and level of education, whether she is employed and how informed she is about trade issues.

Results

We first report our findings from the comparison of means of respondents' TTIP view reported in Wave 1 and their TTIP view submitted after receiving information about the potential costs/benefits of TTIP in the second survey wave. Table 3 shows the results for both countries, Germany and the US: the mean of the control group (line 1), the group of respondents who read about positive consequences of the TTIP agreement (line 2), and the group who read about the negative consequences (line 3). In each line, we list the mean in Waves 1 and 2, and the corresponding change in opinion.

Various aspects in Table 3 seem noteworthy. First, all three groups—control, positive, and negative information—start from the same opinion base in Wave 1. That is, the mean values between the three groups are statistically indistinguishable from each other for

Table 3. Mean Comparison of Opinions Submitted in Waves 1 versus 2.

		Opinion on TTIP: Wave 1	Opinion on TTIP: Wave 2	Change in opinion
Germany	Control group	3.48 [3.35, 3.61]	3.39 [3.26, 3.52]	–0.09 [–0.20, 0.02]
	Positive information treatment	3.5 [3.36, 3.63]	3.62 [3.49, 3.77]	0.13 [0.02, 0.24]
	Negative information treatment	3.41 [3.28, 3.55]	2.84 [2.71, 2.97]	–0.57 [–0.69, -0.46]
USA	Control group	3.87 [3.69, 4.05]	3.97 [3.78, 4.15]	0.09 [–0.05, 0.24]
	Positive information treatment	3.81 [3.64, 3.98]	4.18 [3.99, 4.37]	0.37 [0.20, 0.54]
	Negative information treatment	3.84 [3.66, 4.02]	3.00 [2.82, 3.18]	–0.84 [–1.04, –0.65]

TTIP: Transatlantic Trade and Investment Partnership.
(1) Cell entries consist of point estimates and 95% confidence intervals. (2) Results are based on CMA with bootstrapping method with 1000 simulations.

each country. Interestingly, however, US respondents seem in general somewhat more positive toward the TTIP agreement as their higher overall mean values indicate. Second, while the control group in both Germany and the US do not change their opinion significantly as the insignificant change in opinion (last column of Table 3) shows, both treatment groups significantly update their opinion in the corresponding direction of the treatment. This means that those respondents who read about the positive aspects of the agreement became more positive toward the agreement and those who read about the negative aspects became more negative. Therefore, these first results provide empirical support for H1 on the direction of our framing effects.[9]

In addition, Table 3 allows for a first assessment of H2, which claims that frames triggering a negative emotional response should have a stronger effect on people's opinion than frames that trigger a positive emotion. If one compares the size of the opinion change between the group who received the positive and the group who received the negative information, it becomes immediately apparent that opinion change for the negative information group is about four times larger in the case of Germany and more than twice as large in the case of the US.[10] Thus, these results are suggestive that negative information frames trigger a much stronger reaction in terms of opinion change than the equivalent positive information. In the next step, we investigate the mechanisms behind this more pronounced reaction to negative information in greater detail by analyzing the mediating role of emotions.

Figure 2 and Table 4 present the results from the CMA for our German (red part in Figure 2 and upper part of Table 4) and the US sample (green part and lower part). At the most general level, we find that the total effects (lower part of Figure 2/last column in Table 4) are statistically significant and negative in both cases. Hence in line with our theoretical argument, respondents report a significantly more negative assessment of TTIP after having read any of the negative frames. We find that learning about potential negative consequences of TTIP through our negative information treatment had a slightly larger impact on respondents' TTIP evaluation among the US sample. However, in both

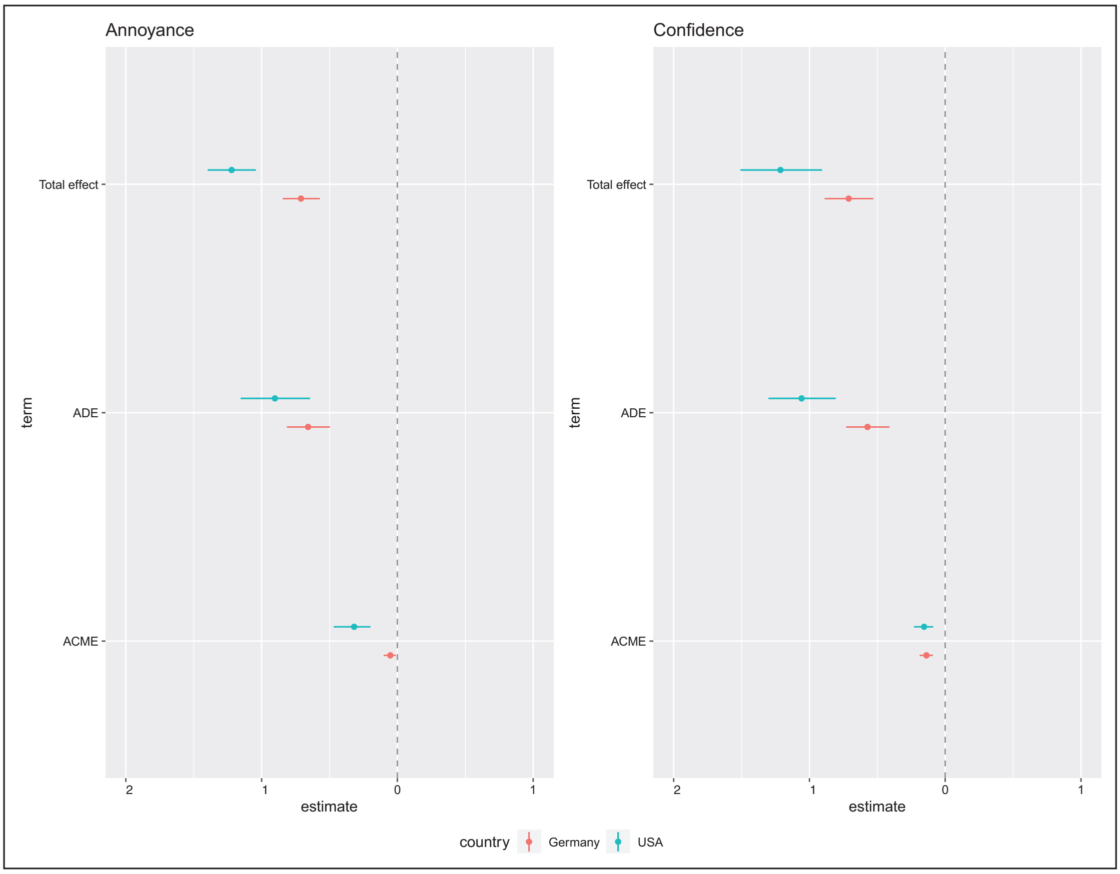

Figure 2. Affective Mediators of Framing Effects.
(1) Support for TTIP is measured on a 1–7 scale with higher values indicating a greater level of support for TTIP. (2) The mediator variables, *annoyance and confidence*, are measured on a 1–5 scale with higher values indicating higher levels of emotional reaction after reading the information provided by the treatment text.

countries, the total effects (i.e. the unmediated) of the negative treatment were both sizable and statistically significant. Furthermore, the results show that the ACMEs are significantly different from zero for both the analysis with confidence and the analysis with annoyance. This supports our baseline argument that the framing effect is mediated by respondents' affective reactions to the issue frame. Again, we observe some nuances in magnitude between the two samples, but overall we find that the ACMEs are significant and negative in both the US and Germany.

We now discuss the two indirect effects in more detail based on the results in Table 4. For both mediators, annoyance and confidence, the ACME is negative and statistically significant. In the case of annoyance, for example, we observe that, on average, the negative information treatment decreases the US respondents' opinion on TTIP in total by 1.22 points on our 7-point scale, where 0.32 points are mediated via the heightened annoyance level. In the German sample, reading about negative consequences of TTIP decreases respondents' opinion on TTIP in total by 0.71 points, but only 0.05 points are mediated via annoyance.

If we compare the two mediators, annoyance and confidence, it becomes apparent that the mediation process works rather differently in the two cases. While reading about negative information on TTIP increases the likelihood of becoming annoyed, it significantly decreases the likelihood of feeling confident. However, annoyance is associated with a less positive view on TTIP while confidence comes with a more

Table 4. Subcomponents of the Causal Mediation Analysis.

		Effect of treatment on mediator	Effect of mediator on outcome	ACME	ADE	Total effect
Germany	Annoyance	0.61	–0.09	–0.05	–0.66	–0.71
		[0.45, 0.77]	[–0.15, –0.02]	[–0.10, –0.01]	[–0.81, –0.50]	[–0.84, –0.57]
	Confidence	–0.68	0.20	–0.14	–0.57	–0.71
		[–0.81, –0.54]	[0.13, 0.28]	[–0.19, –0.09]	[–0.73, –0.41]	[–0.89, –0.53]
USA	Annoyance	1.02	–0.31	–0.32	–0.90	–1.22
		[0.82, 1.23]	[–0.40, –0.22]	[–0.47, –0.20]	[–1.15, –0.64]	[–1.40, –1.04]
	Confidence	–0.51	0.30	–0.16	–1.06	–1.21
		[–0.70, –0.33]	[0.20, 0.40]	[–0.23, –0.09]	[–1.30, –0.81]	[–1.51, –0.91]

ACME: average causal mediation effect; ADE: average direct effect.
(1) Cell entries consist of point estimates and 95% confidence intervals. (2) Results are based on CMA with bootstrapping method with 1000 simulations.

positive view on TTIP. Yet in combination, it leads to the same result: individuals who have read negative information are significantly more negative in their assessment of TTIP.[11]

Robustness

As discussed above, the CMA as suggested by Imai et al. (2011) is based on the assumption of sequential ignorability. The assumption implies that *the treatment variable is first assumed to be ignorable given the pre-treatment covariates, and then that the mediator variable* "is assumed to be ignorable given the observed value of the treatment as well as the pre-treatment covariates" (Imai et al., 2011: 770). The first part of this assumption should be satisfied in our case because of randomization of the treatment. The second part, however, implies that there are no unmeasured confounding factors between mediator and outcome, which is often questionable even in a randomized trial. Moreover, this assumption is not verifiable in practice and sensitivity analysis should be performed to quantify the degree to which violation of the assumption would change the results.

We therefore follow the procedure suggested by Imai et al. (2011) and plot the correlation ρ of the error terms of the mediation and the outcome regression model. If we included all relevant confounders the correlation between the two regression models should be zero. However, if we did not include all relevant factors, ρ would either be smaller or greater than zero depending on the unaccounted factors. In essence, this type of sensitivity analysis amounts to quantifying "the exact degree to which the key identification assumption must be violated for a researcher's original conclusion to be reversed" (Imai et al., 2011: 770).

Figure 3 plots the results from the sensitivity analyses. The results are encouraging as they show that for most of the range of ρ we can expect to see a negative ACME. In both country samples, only if $\rho < -0.3$ in the case of annoyance and $\rho > 0.2$ in the case of confidence, we would expect to see an insignificant or positive ACME. The findings from the sensitivity analysis therefore give us confidence that that our results are robust to violation of the sequential ignorability assumption.

Conclusion

While existing research on framing effects has placed considerable emphasis on the impact of framing on people's opinion, little is known about the mechanisms underlying the impact of framing on opinion formation, that is, *how* individuals process frames. Using a survey experiment embedded in a two-wave survey with nationally representative samples from Germany and the US, we test whether contesting frames about a major trade deal has an impact on how the general public evaluates the desirability of the trade agreement and whether such framing effects are mediated by individuals' affective reactions to the frame.

Consistent with previous results from the framing literature, we find that when exposed to new information, individuals update their opinion in line with the information of the frame. In our specific research context, respondents who received information about the negative consequences of the TTIP agreement reported lower support for the trade deal, while respondents who read about the positive effects of TTIP reported higher levels of support. Furthermore, and in line with our theoretical expectations, reading about negative

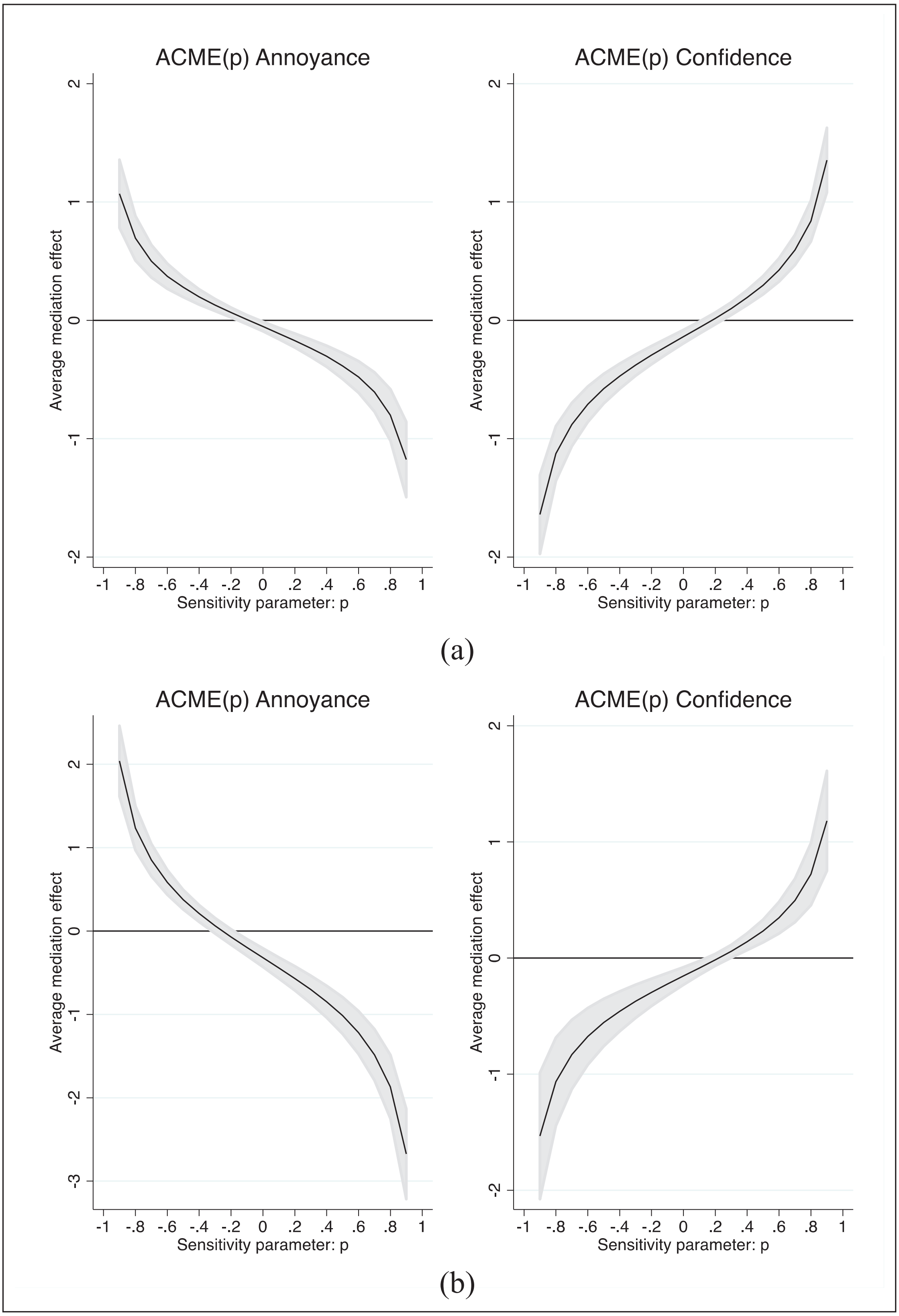

Figure 3. Sensitivity Analysis for Sequential Ignorability. (a) Germany. (b) USA.

consequences of an international agreement results in much stronger opinion changes than reading about the equivalent positive consequences. The results from our CMA suggest that these message effects operate through changes in respondents' mood levels. We find that our negative message frames trigger both an increase in annoyance and a reduction in confidence. Accordingly, reading about negative consequences of TTIP induces respondents to become less confident and more annoyed. As increases in annoyance and decreases in confidence are both associated with a more negative view on the TTIP agreement, we observe in both cases an opinion change in Wave 2 of the survey; respondents who received the negative frame are much more negative about the agreement in comparison to their own assessment of the agreement in Wave 1 and in comparison to respondents who received the positive frame or respondents who did not receive any information on the agreement at all.

Our finding that negative information trigger strong affective reactions and thus mediate some part of the framing effect may partly explain the negativity bias in message effects reported in numerous studies. Namely, the phenomenon that public opinion often seems to react more strongly to frames that pertain to a loss framework than to equivalent frames emphasizing gains. While further research is needed to fully test this assumption, it already becomes apparent from our findings that framing research has serious normative and practical implications for understanding how interactions between elites and the public work.

Our results draw on data from survey experiments with samples from the US and Germany, the two largest economies included in the TTIP agreement. While we expected differences between these cases given the different public discourse on TTIP in the two countries during the negotiation process, we found similar results. This gives us confidence that the mechanism tested here transcends differences in external conditions, such as the public discourse and media reporting of the topic.

We see our major contribution as empirical. There is a lot of great theoretical work that examines the influence of emotions on framing effects. In this study, using a two-stage analysis based on data from a survey-embedded experiment with representative samples from Germany and the United States, we provide a rigorous test of (1) whether frames have an effect on individuals' policy preference formation and (2) if so, to what extent these framing effects are mediated by emotions. In doing so, we are building on existing studies from psychology to inform a major research inquiry in political economy, which tends to put a lot of emphasis on rational models suggesting that citizens are mainly motivated by maximizing their material gains. Consequently, these explanations have too often overlooked non-economic factors, such as individuals' affective reactions, that can also have an important effect on citizens' public policy preference formation.

Finally, evidence for framing effects invites debate about the malleability of public opinion and the ability of citizens to participate meaningfully in democratic politics. Our results suggest that while elites indeed have great leeway in persuading citizens' opinion, we also demonstrate that citizens are not likely to be passive message takers. They do engage emotionally with the messages they are confronted with before making a call on which message they will follow. Thus, unless elites can design their messages in such a way that is engaging with citizens' underlying affection in a favorable way, they will find themselves in a situation in which the public will hear, but not listen.

Data deposition

Data and code for replication are deposited at: Nguyen, Quynh, 2019, "Replication data and R script for TTIP_CausalMediationAnalysis," https://doi.org/10.7910/DVN/TSUJTI, Harvard Dataverse.

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Notes

1. For a review, see Schuck and Feinholdt (2014).
2. Aaroe (2011) argues, however, that it is not the emotional reaction as such, but the intensity of the emotional reaction to the frame that influences the effect of the issue frame on people's opinion.
3. Alternatively, negative emotions may also be triggered by frames that contain information that is inconsistent with the message recipient's prior beliefs. This, in turn, has an effect on the way the recipient processes the frame, and ultimately how the frame influences their opinion. The incongruence between the frame message and the person's existing views and beliefs can cause emotional distress. In an attempt to actively (cognitively) counterargue the new, dissonant information, the inconsistent frame is likely to trigger negative emotions.
4. YouGov in the US and Infratest Dimap in Germany.
5. We acknowledge, however, that even with the two-wave design, there is some remaining risk of priming as people may have strong memories of the first survey when being exposed to the frames and answering the post-treatment questions in the second-survey wave.
6. Respondents received a short neutral information statement on the respective issue area to eliminate ambiguities.
7. In our survey, we randomized whether the 1–7 response scale ranged from very negative to very positive or very positive to very negative.
8. Table A1 of Appendix 1 presents descriptive statistics and the question wording of the variables included in the main analysis.
9. Tables A2–A4 in Appendix 1 show that these results also hold if we use the issue-specific treatments.
10. These differences are also statistically different.
11. Table A5 in Appendix 1 shows the results if we rely on opinion in Wave 2 and controlling for opinion in Wave 1 instead of opinion change as the dependent variable. The results are substantively the same.

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Appendix I

Table A1. Question Wording and Descriptive Statistics of Main Variables.

Variable	Mean	*SD*	Min.	Max.
TTIP opinion. Overall, do you personally think that the TTIP agreement will have positive or negative consequences for the United States? (1 = very negative, 7 = very positive)	3.33 *3.84*	1.48 *1.79*	1	7
Annoyance. We are interested in what emotions you felt immediately after reading the text about the consequences of TTIP. On a scale of 1–5, please tell us how strongly you felt the following emotions toward the information? ((1 = not at all, 5 = strongly)	2.79 *2.67*	1.28 *1.40*	1	5
Confidence. We are interested in what emotions you felt immediately after reading the text about the consequences of TTIP. On a scale of 1–5, please tell us how strongly you felt the following emotions toward the information? (1 = not at all, 5 = strongly)	2.40 *2.56*	1.09 *1.22*	1	5
Age	49.47 *48.14*	15 *16.71*	19 *20*	103 *94*
Gender	1.52 *1.54*	0.5 *0.5*	1	2
Education	3.2 *3.18*	1.11 *1.27*	1	5
Income	6.15 *5.44*	2.62 *3.15*	1	12
Interest in TTIP	2.65 *2.04*	1.02 *1.09*	1	5

TTIP: Transatlantic Trade and Investment Partnership.
Descriptive statistics of the US sample in italics.

Table A2. Mean Values Based on Economic Consequences Treatment Only.

		Opinion on TTIP: Wave 1	Opinion on TTIP: Wave 2	Change in opinion
Germany	Control group	3.46 [3.23, 3.68]	3.61 [3.39, 3.84]	0.16 [–0.04, 0.35]
	Positive information treatment	3.45 [3.21, 3.69]	3.79 [3.54, 4.04]	0.34 [0.14, 0.55]
	Negative information treatment	3.37 [3.12, 3.62]	2.82 [2.59, 3.05]	–0.55 [–0.76, –0.33]
USA	Control group	3.82 [3.50, 4.14]	3.99 [3.67, 4.32]	0.17 [–0.08, 0.42]
	Positive information treatment	4.07 [3.77, 4.38]	4.10 [3.77, 4.44]	0.03 [–0.23, 0.29]
	Negative information treatment	4.07 [3.76, 4.38]	3.10 [2.76, 3.44]	–0.98 [–1.33, –0.62]

TTIP: Transatlantic Trade and Investment Partnership.

Table A3. Mean Values Based on Standards Treatment Only.

		Opinion on TTIP: Wave 1	Opinion on TTIP: Wave 2	Change in opinion
Germany	Control group	3.39 [3.17, 3.62]	3.22 [2.98, 3.47]	–0.17 [–0.34, 0.00]
	Positive information treatment	3.59 [3.36, 3.83]	3.63 [3.39, 3.88]	0.04 [–0.14, 0.22]
	Negative information treatment	3.46 [3.23, 3.69]	2.87 [2.66, 3.08]	–0.59 [–0.78, –0.40]
USA	Control group	3.91 [3.61, 4.21]	4.12 [3.80, 4.43]	0.20 [–0.03, 0.44]
	Positive information treatment	3.67 [3.38, 3.95]	4.47 [4.12, 4.82]	0.8 [0.49, 1.11]
	Negative information treatment	3.63 [3.28, 3.98]	2.91 [2.58, 3.25]	–0.72 [–1.06, –0.38]

TTIP: Transatlantic Trade and Investment Partnership.

Table A4. Mean Values Based on ISDS Treatment Only.

		Opinion on TTIP: Wave 1	Opinion on TTIP: Wave 2	Change in opinion
Germany	Control group	3.57 [3.36, 3.79]	3.32 [3.11, 3.53]	–0.25 [–0.44, –0.07]
	Positive information treatment	3.44 [3.20, 3.69]	3.47 [3.23, 3.71]	0.02 [–0.16, 0.21]
	Negative information treatment	3.41 [3.17, 3.66]	2.83 [2.60, 3.06]	–0.58 [–0.77, –0.39]
USA	Control group	3.88 [3.56, 4.21]	3.79 [3.47, 4.11]	–0.09 [–0.36, 0.18]
	Positive information treatment	3.67 [3.37, 3.97]	3.96 [3.64, 4.27]	0.28 [0.01, 0.56]
	Negative information treatment	3.80 [3.51, 4.10]	2.98 [2.70, 3.26]	–0.83 [–1.13, –0.52]

TTIP: Transatlantic Trade and Investment Partnership.

Table A5. Subcomponents of the Causal Mediation Analysis using Opinion in Wave 2 as Outcome Variable.

		Effect of treatment on mediator	Effect of mediator on outcome	ACME	ADE	Total effect
Germany	Annoyance	0.652	–0.444	–0.290	–0.564	–0.854
		[0.47, 0.83]	[–0.52, –0.37]	[–0.40, –0.20]	[–0.75, –0.37]	[–1.06, –0.66]
	Confidence	–0.696	0.882	–0.613	–0.240	–0.854
		[–0.84, –0.55]	[0.81, 0.96]	[–0.77, –0.47]	[–0.42, –0.07]	[–1.06, –0.66]
USA	Annoyance	1.052	–0.629	–0.662	–0.571	–1.233
		[0.87, 1.23]	[–0.71, –0.55]	[–0.82, –0.52]	[–0.84, –0.33]	[–1.48, –0.99]
	Confidence	–0.573	0.890	–0.510	–0.723	–1.233
		[–0.74, –0.41]	[0.81, 0.97]	[–0.67, –0.36]	[–0.93, –0.52]	[–1.48, –0.99]

ACME: average causal mediation effect; ADE: average direct effect.
(1) Cell entries consist of point estimates and 95% confidence intervals. (2) Results are based on CMA with bootstrapping method with 1000 simulations.