# Two-Sided Messages Promote Openness for a Variety of Deeply Entrenched Attitudes

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## Abstract

Prior research showed that people holding attitudes on relatively moral topics became more open to two- rather than one-sided messages as the moral basis of their attitudes increased. Across three studies ($N = 963$), we extend this finding to relatively non-moral topics by demonstrating that two-sided messages can encourage people with strong attitudes indexed by various non-moral attitude strength measures to be more open to contrary positions. Study 1 demonstrated this for four indicators of attitude strength (e.g., certainty). As the strength of one's attitude increased, two-sided messages increased in relative effectiveness over one-sided communication. This was mediated by perceived appreciation for the speaker acknowledging one's view. Study 2 replicated this finding in a preregistered experiment. Study 3 conceptually replicated and extended it to people holding attitudes based on their political identity. Finally, evidence was obtained supporting perceived appreciation (rather than source evaluation) as the key driver of this interactive effect.

Deeply entrenched, or "strong" attitudes are identified by their stability over time, ability to predict behavior, and most relevant to the current work, their resistance to persuasion (Krosnick & Petty, 1995). Decades of research have revealed an array of attitude strength indicators including the certainty with which one's attitude is held (Rucker et al., 2014), the perceived importance of the attitude (Krosnick, 1989), how self-defining the attitude is (Zunick et al., 2017), how quickly it comes to mind (Fazio, 1995), the extent to which the attitude reflects core moral values (Skitka, 2010), and how closely the attitude is tied to one's political identity (Westfall et al., 2015). Each of these indicators of strength has been linked to attitudes being more difficult to change (see Luttrell & Sawicki, 2020; Petty & Krosnick, 1995, for reviews). The current research presents a strategy that is especially effective for making people more open to changing their strong attitudes.

As just noted, there are many ways to identify strong attitudes. First, consider attitude certainty. When people are highly confident in their attitudes, they are reluctant to change them because change signals that they could have been wrong and that their confidence was misplaced. Rucker and colleagues (2014) identified several determinants of attitude certainty, such as the perception that one's attitude was based on complete information. Notably, this appraisal framework does not require the appraisals to be correct (cf.

Barden & Petty, 2008). Regardless of the source of a person's attitude certainty, the more certainty there is, the more the attitude tends to be stable over time, resistant to change, and predictive of behavior (e.g., Bassili, 1996; Tormala & Petty, 2004), although some exceptions exist (e.g., Luttrell et al., 2016; Sawicki & Wegener, 2018).

Another strength indicator is attitude importance which refers to the extent to which a person is concerned with and cares about a particular attitude (Krosnick, 1989). Self-interest and value relevance are two determinants of attitude importance (Boninger et al., 1995a). The more important one's attitude is, the more often it is expressed (Visser et al., 2003) and the more actively people seek out attitude-relevant information (Krosnick et al., 1993).

Yet another strength indicator that has become increasingly important concerns how linked an attitude is to one's identity. Identities refer to people's connections to cherished groups such as their nationalities, ethnicities, genders, and even favorite sports teams (Huddy, 2013). Individuals who

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strongly identify with their group are more likely to act on behalf of group-related causes and to act defensively in the face of group criticism (Hogg et al., 2017). In today's polarized political environment, political identities have become an important topic of study. Although most Americans favor one political party over the other, for some individuals these attitudes are linked to their identities, strengthening them. For example, the more one's political party attitude is linked to one's political identity, the more it biases information processing, reasoning, implicit evaluation, and even perception (Van Bavel & Pereira, 2018).

## Changing Strong Attitudes

Although there is much empirical work on ways to produce attitude change in general (e.g., Maio et al., 2019), very little prior research has examined methods and procedures that might be particularly effective in influencing *strong* attitudes. Indeed, most persuasion techniques work better with weak attitudes. Thus, identifying a method that works better as attitude strength increases is rare. With respect to attitude certainty, for example, there is little, if any, research examining what strategies might be especially useful in rendering people more open to alternative viewpoints when their attitudes are held with high confidence.

The same dearth of research goes for most other indicators of strength such as importance, identity, and so on. One notable exception concerns research on changing morally versus practically based attitudes. Some studies have suggested that an effective method of changing morally based attitudes is to present people with moral (versus practical) arguments (Luttrell et al., 2019) or arguments that match the particular moral foundations of the attitude (Feinberg & Willer, 2013, 2015). Although using moral arguments to target moral attitudes fits well with other research on matching arguments to a person's attitude (Teeny et al., 2021), there is no reason to think that using moral arguments would be especially effective in changing other strong attitudes such as those that are highly certain or that fit one's group identity.

In recent research (Xu & Petty, 2022), using two-sided rather than one-sided messages was demonstrated to be particularly effective for people who held morally based attitudes. One-sided messages only present arguments in favor of the advocated position whereas two-sided messages also present a few arguments on the opposite side. Research on Message Sidedness is a classic topic in persuasion (e.g., Hovland et al., 1953) with several moderators being uncovered, for example, recipients' level of intelligence (Hovland et al., 1949) and their motivation or ability to think (Kao, 2011).

Xu and Petty (2022) found that Message Sidedness interacted with Moral Basis to affect Openness to change such that two-sided messages became increasingly effective as the moral basis of attitudes increased. This was argued to be because two-sided communications invoked the moral norm of reciprocity (Cialdini & Goldstein, 2004). As Cialdini

(1993) noted, the moral character of the norm suggests that reciprocity is obligatory rather than a choice and failure to reciprocate would result in guilt. Because of the moral imperative of reciprocity, when people have a moral basis to an attitude, they might be especially susceptible to this norm. Thus, if a speaker acknowledges some merit to your position, those who hold attitudes based on morality should feel especially obligated to acknowledge some merit to the speaker's view, facilitating openness to that view.

In short, there is reason to believe that the norm of reciprocity invoked by two-sided messages might be particularly effective for morally based attitudes. However, we argue that because reciprocity is a widely accepted norm that goes beyond just being an ethical one, it potentially could be effective in influencing *any* strongly held attitudes. This is because acknowledging some merit to the target's opinion is conceptually similar to doing a favor for the target. If another person does a favor for us, then we should return the favor (Cialdini et al., 1992). Thus, if a speaker seems open to the target's position, then the target should reciprocate by being open to the speaker's view (see also, Hussein & Tormala, 2021). Importantly, just as the size of the favor matters according to the principle of reciprocity, so too might the strength of the attitude that is acknowledged make a difference. Specifically, acknowledging a strongly held attitude is a larger favor than acknowledging a weaker one and thus should induce a greater need to reciprocate by acknowledging the merit of the communicator's view. This core idea is tested in the current work.

Across three studies using varied topics, we examine whether two-sided messages become more effective than one-sided communications in rendering people open to change as the strength of attitudes indexed by non-moral factors is increased. That is, we examine whether prior findings for morally based attitudes can be extended to the non-moral domain, using alternative attitude strength indicators. If so, then the interactive effect between moral basis and Message Sidedness on openness to change could be construed as a much broader influence technique in which the benefit of using two-sided messages to encourage more openness holds for a variety of deeply entrenched attitudes.[1] If the benefit of two sided-messages extends to other strength indicators, this finding would contribute to the attitude strength literature more broadly and to the ongoing discussion on how to bring together people with strongly held views.

It is noteworthy that the prior work on changing moralized beliefs with two-sided messages focused specifically on examining *Openness* as the key dependent measure. Drawing from the education, psychotherapy, and social psychology literatures, openness is a mindset referring to people's willingness to consider information from others and potentially change their own perceptions (Riggs, 2010). Especially for people who hold deeply entrenched attitudes, increased openness to change can be an important precursor to attitude change (Norcross et al., 2010). Xu and Petty (2022)

also suggested that openness is similar to the construct of "receptiveness" which has been developed as both an individual difference variable (Minson et al., 2019) and one that can vary with the situation (Chen et al., 2010). In the current work, we also aim to establish empirically the overlap between the constructs of openness and receptiveness.

## Overview

The five objectives of the present research are: First, we examine whether the relative benefits of two- versus one-sided messages hold for indicators of attitude strength other than moral bases when the message topics are relatively non-moral ones. Specifically, we investigate whether as the strength of one's opinion increases, a two-sided message increases in its relative effectiveness over a one-sided communication. Second, we compare the relative predictive ability of non-moral attitude strength indicators with moral basis. We hypothesize that for the less moralized issues, non-moral strength indicators, compared with moral basis, should do a better job in predicting influence outcomes. Third, we assess the viability of a reciprocity mechanism to account for the results when non-moral attitude strength indicators are examined. Our prediction is that the more one holds a deeply entrenched attitude, the more one would appreciate a two- vs. one-sided communication and reciprocate by being more open to the position advocated. Fourth, in Study 3, we compared the reciprocity mechanism with an alternative source evaluation mechanism examined in prior work on Message Sidedness. Finally, in Study 2, we examine the relationship between measures of openness and receptiveness and hypothesize that both measures would produce similar results. Before getting to our experiments, we first report a pilot study examining the extent to which the topics used in the current research were relatively non-moral in nature as intended.

## Pilot Study

To examine the topics used in the current research, 149 MTurk workers rated the extent to which they thought the general public in the United States would view each of several issues as moral topics on a 7-point scale anchored at 1, *not at all moral* to 7, *extremely moral*. The topics rated include the issues from the current article (i.e., dental hygiene and party affiliation) and the presumably more morally based issues used by Xu and Petty (2022; i.e., gun control, Nazi's freedom of speech, facemask wearing during Covid-19). The ratings for dental hygiene ($M = 2.67$, $SD = 1.81$) and party affiliation ($M = 4.21$, $SD = 1.78$) were significantly lower than the ratings for gun control ($M = 5.05$, $SD = 1.63$), Nazis' freedom of speech ($M = 4.95$, $SD = 1.94$), and facemask wearing ($M = 4.90$, $SD = 1.72$), $ps \leq .001$. Thus, both issues used in the current research were perceived as less moralized than those from prior research.

## Study 1

In Study 1, participants were asked to read either a one- or a two-sided message that argued against common dental hygiene practices. For all studies, we predetermined the sample size and collected all data before conducting analyses. We report all manipulations, exclusion criteria, and all items collected for analyses for each study. Data are available here: https://osf.io/7uqr9/?view_only=3b35acbdf6ea44498c88ff04aeb30bba.

## Method

*Participants.* One hundred ninety undergraduate students from a large Midwestern university participated. Given there was no prior information about what effect size to expect for this particular topic, message, and attitude strength combination, a small effect size was assumed, (partial $\eta^2 = .03$; Cohen, 1988) for the predicted interaction between Attitude Strength and Message Sidedness on Openness to change. Using G*Power (Faul et al., 2009), 208 participants are needed to have 80% power to detect a significant two-way interaction. Data from 190 participants were obtained before the end of the semester, but 7 were excluded for holding negative attitudes toward dental hygiene practices (because the message would not be counter-attitudinal for them). This left 183 participants, resulting in 76% power to detect the expected interaction.

*Procedure.* All participants who signed up for the study were asked to follow instructions presented using the Qualtrics survey program (the same program was used for all studies in this article). Participants first answered whether they saw the issue of dental hygiene practices as well as recycling as moral issues. Then, they completed four other attitude strength items (e.g., attitude certainty). Next, participants were told that the program would randomly assign one of the two topics to each participant and more questions would be asked on that topic. In reality, all participants received more questions on the topic of interest and dental hygiene practices.

Participants then rated their attitudes toward dental hygiene practices defined as frequent tooth brushing, flossing, and getting annual dental X-rays and were randomly presented with either the one- or two-sided message. After reading the message, participants responded to the measures of openness and attitudes toward common dental hygiene practices. Finally, participants answered questions assessing the extent to which they appreciated that the message they just read acknowledged their position.

### Independent variables

*Moral basis.* Participants responded to 2 items assessing whether they viewed the topic of dental hygiene practices as a moral one ($\alpha = .83$). They rated to what extent they thought that their position on this topic was a reflection of their core

moral beliefs and convictions and also whether their position on this topic was connected to their beliefs about what is fundamentally right and wrong (Skitka, 2010). Participants responded on 5-point scales anchored at 1, *not at all* and 5, *very much*. Participants' Moral Basis scores were calculated by taking the average rating of these items.

*Pre-message attitudes.* Participants also indicated their initial attitudes toward common dental hygiene practices by responding to one 6-point semantic differential item (negative–positive).

*Non-moral attitude strength.* Participants responded to 4 non-moral attitude strength items. They rated how certain, correct, important, as well as self-defining their position on the topic of dental hygiene practices was to them on 7-point scales anchored at 1, *not at all (certain/correct/important/ defining)* and 7, *very (certain/correct/important /defining)*. These are common items to assess attitude strength (e.g., Krosnick, 1989; Petrocelli et al., 2007; Zunick et al., 2017). Although some of these items are conceptually distinct, they were correlated with each other. Thus, an overall Non-moral Attitude Strength index was the average rating of these 4 items ($\alpha = .76$), although analyses with each item separately are reported in the online supplement.

*Message sidedness.* Participants were told that the article they were about to read was written by journalist, Rebecca Samson, and they had about 2 min to read the article. In both versions, the articles argued that there was surprisingly little evidence for the accepted wisdom about dental hygiene. In the *one-sided condition*, the author claimed that there was research evidence that frequent brushing and flossing had not been shown to prevent cavities or severe periodontal disease, and there was no need to perform annual dental X-rays. In the *two-sided condition*, the author first presented the same two arguments as in the one-sided version and then briefly acknowledged the fact that there are some reasonable points on the other side of this issue. In addition, the author briefly mentioned a few such arguments, suggesting that there are some benefits to brushing teeth, flossing, and annual dental X-rays. See the online supplement for the full messages.

### Dependent variables

*Openness.* Four items were used to measure how open participants were to the advocacy after reading the article. All participants rated how likely they were to share the article they read with friends, how much they appreciated the position taken in the message, how likely they were to want to read another article taking the same position as they just read, and how much they recognized the merit of the arguments provided for the position. Participants answered all four questions on 7-point scales anchored at 1, *extremely unlikely* and 7, *extremely likely*. The 4 items were used previously by Xu and Petty (2022). The items appeared in a

randomized order, and given the reasonable reliability of the items ($\alpha = .76$), the average score served as the key dependent measure.

*Attitudes.* Two 7-point semantic differential items ($\alpha = .91$) were included to measure participants' attitudes toward dental hygiene practices (negative–positive and unfavorable–favorable) after presenting participants with the message. The average of these 2 items was taken, and lower Post-message attitude scores indicated more agreement with the position advocated.

*Perceived appreciation.* Two items were used to measure the extent to which participants felt that their side was *acknowledged* and whether their view was *appreciated* in the message they read. These 2 items were adapted from prior work on appreciation (e.g., Ward et al., 2008; Xu & Petty, 2022) and showed reasonable reliability ($r = .69$). Therefore, the average of the items served as the perceived appreciation measure. Notably, unlike the item included in the openness measure which asked if the recipient appreciated the *speaker's view*, these items were intended to assess whether the participant believed that the speaker appreciated the *recipient's view*.

## Results

### Openness

*Non-moral attitude strength.* We used a multiple linear regression to examine the effect of Non-moral Attitude Strength and Message Sidedness on participants' Openness to the counter-attitudinal article. In the model, Non-moral Attitude Strength and Message Sidedness along with their two-way interaction were the independent variables, the Openness measure was the dependent variable, and Pre-message Attitudes served as the covariate. There was a significant two-way interaction between Non-moral Attitude Strength and Message Sidedness, $B = .35$, $t(178) = 2.19$, $p = .03$, partial $\eta^2 = .027$ (see Figure 1 top panel).[2] Decomposing this interaction, when participants read the two-sided message, the more strongly participants held their positions toward dental hygiene practices, the more open they were to the counter-attitudinal message, $B = .27$, $t(178) = 2.52$, $p = .01$, partial $\eta^2 = .035$. However, when participants read the one-sided message, the direction of the effect was opposite, although not significant, $B = -.08$, $t(178) = -.61$, $p = .55$.[3]

*Moral basis.* A similar multiple linear regression model was conducted to examine the interactive effect of the Moral Basis of attitudes and Message Sidedness on participants' Openness toward the counter-attitudinal article.[4] There was a trending two-way interaction, $B = .26$, $t(178) = 1.71$, $p = .09$, partial $\eta^2 = .016$ (see Figure 1 bottom panel). Although not significant, this replicated the same interactive pattern
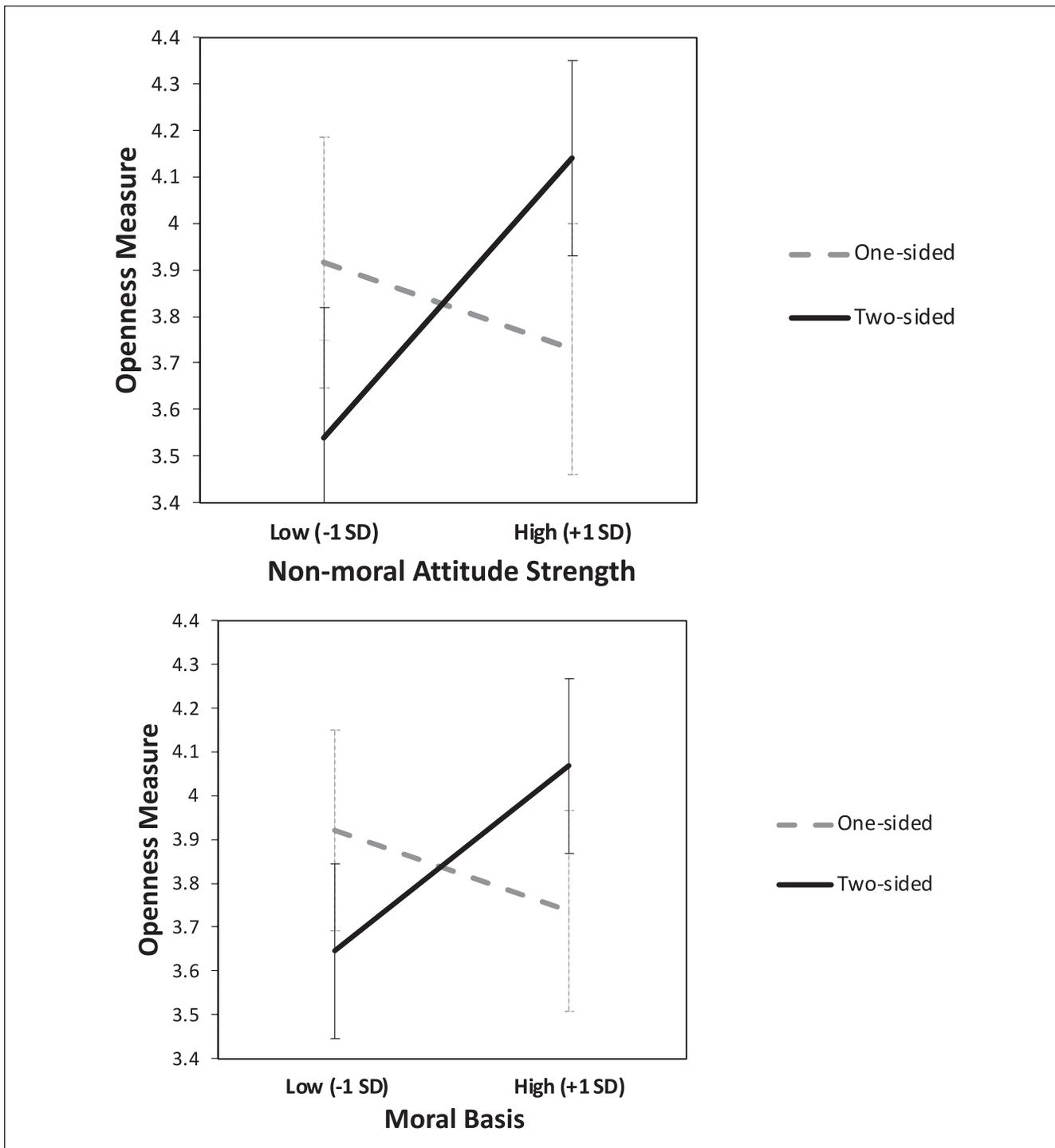
**Figure 1.** Top panel: Interactive effect of Non-moral Attitude Strength and Message Sidedness on Openness in Study 1; Bottom panel: Interactive effect of Moral Basis and Message Sidedness on Openness in Study 1.
*Note.* All error bars reported in the graphs are based on the standard error of the simple main effect of Attitude Strength (Nonmoral or Moral) on Openness within each Message Sidedness condition.

obtained by Xu and Petty (2022) even for the relatively non-moral topic of dental hygiene practices. It is also worth noting that when including both the interaction between Non-moral Attitude Strength and Message Sidedness as well as the interaction between Moral Basis and Message Sidedness in the same regression model, the interaction between Moral Basis and Message Sidedness was not significant, $B = .06$, $t(176) = .32$, $p = .75$. The interaction between Non-
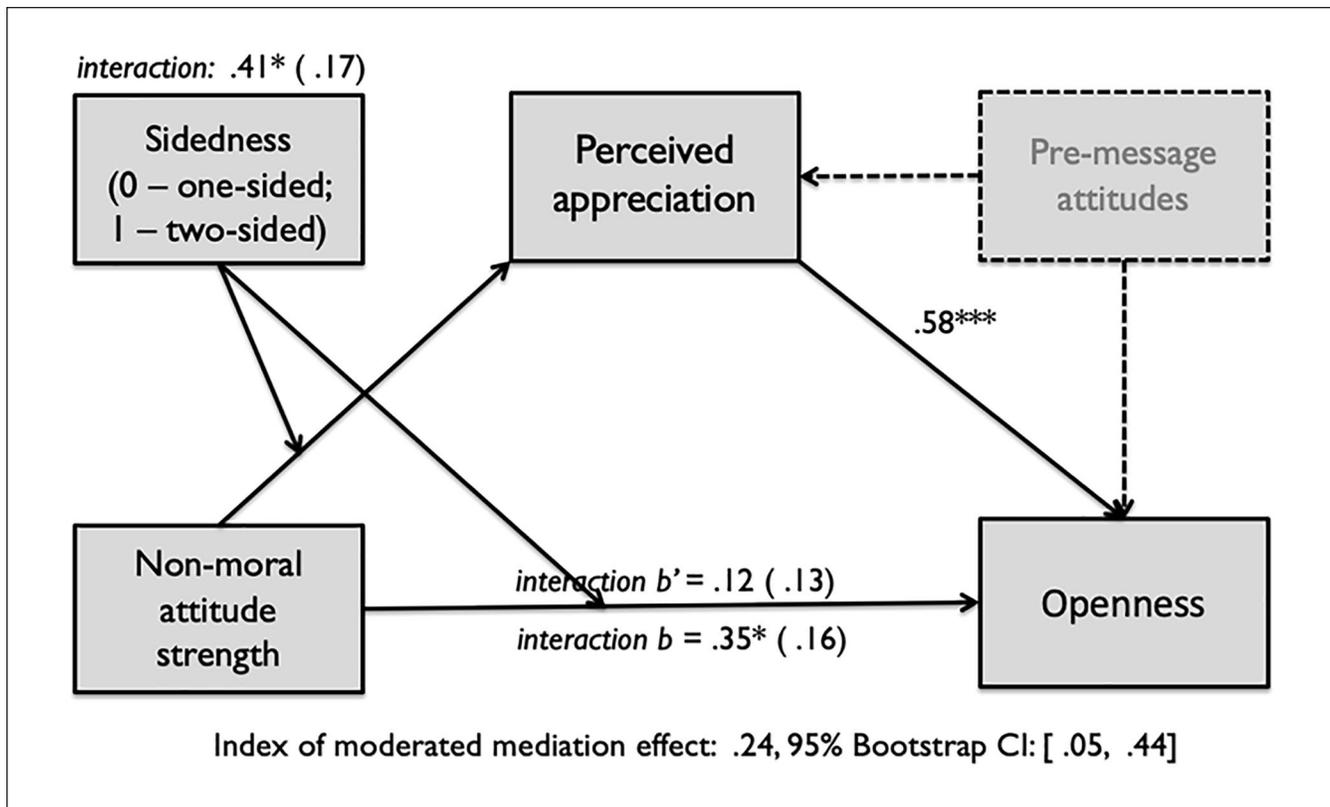
**Figure 2.** Moderated mediation demonstrating the significant indirect path of the Non-moral Attitude Strength and Message Sidedness interactive effect on Openness through Perceived Appreciation in Study 1.
*Note.* ***Denotes effect is significant at 0.001 level; **Denotes effect is significant at 0.01 level; *Denotes effect is significant at 0.05 level. Standard errors are reported in parentheses.

moral Attitude Strength and Message Sidedness approached significance, $B = .33$, $t(176) = 1.65$, $p = .10$.[5]

*Attitudes.* The same two multiple linear regression analyses conducted on Openness were also conducted on Post-message Attitudes controlling for Pre-message Attitudes. This resulted in a trending interaction in the same form as Openness, $B = -.30$, $t(178) = -1.92$, $p = .06$, partial $\eta^2 = .02$. The same analysis using Moral Basis instead of Non-moral Attitude Strength was not significant ($p = .95$).

*Perceived appreciation.* The same two multiple linear regression models were conducted on Perceived Appreciation of the message source. The two-way interaction between Non-moral Attitude Strength and Sidedness was in the predicted direction and significant, $B = .41$, $t(178) = 2.38$, $p = .02$, partial $\eta^2 = .031$. When receiving a two-sided strong message, there was a trending positive effect of Non-moral Attitude Strength on Perceived Appreciation, *effect* $= .19$, $t(178) = 1.71$, $p = .09$, partial $\eta^2 = .016$. However, after receiving a one-sided message, the direction of the effect was opposite, $B = -.21$, $t(178) = -1.45$, $p = .15$. Finally, there was no overall two-way interaction between Moral Basis and Message Sidedness ($p > .64$).

*Moderated mediation path analysis.* PROCESS macro model 8 (Hayes, 2017) was used to look at the mediational effect of Perceived Appreciation. Non-moral Attitude Strength was treated as the independent variable, Message Sidedness as the moderator, Appreciation as the mediator, Openness as the dependent variable, and Pre-message Attitudes as the covariate. There was a significant moderated mediation path, *effect* $= .24$, 95% bootstrapping confidence interval (CI): [ .05, .44] (see Figure 2), suggesting that increased appreciation of the message among participants with strong attitudes after viewing a two-sided counter-attitudinal message predicted their increased openness on the issue of dental health.[6] In Studies 1 and 2, we also examined whether the interactive effect between Non-moral Attitude Strength and Message Sidedness on Post-message Attitudes toward the topic was mediated by Openness (see the General Discussion for discussion and the online supplement for analyses).

### Discussion

Prior research showed that for relatively moral issues, two-sided messages became increasingly effective in producing openness to a counter-attitudinal position as the moral basis of the attitude increased (Xu & Petty, 2022). In Study 1, we

examined whether this finding could be conceptually replicated for a relatively non-moral topic using a Non-moral Attitude Strength Index. We successfully demonstrated that the measure of Moral Basis did not predict Openness as well as a Non-moral Attitude Strength index. However, likely because of the lack of power in the current study to distinguish between correlated measures, the current data did not show the predictive power of the Non-moral Attitude Strength index was significantly superior to the Moral Basis measure for this relatively non-moral topic. Thus, in the next study, we aimed to recruit a much larger sample in a preregistered study to replicate the current findings and to obtain more reliable evidence supporting the greater predictive power of a Non-moral Attitude Strength measure for a less moralized topic.

## Study 2

Employing a very similar design as Study 1, we conducted a preregistered replication using a larger sample.[7] In addition, we aimed to demonstrate that the *Openness* measure used in Study 1 was tapping into the presumably similar construct of *receptiveness* (Chen et al., 2010; Minson et al., 2019). To achieve this, we included questions about receptiveness adapted from prior work along with our items assessing openness. The items were expected to be highly correlated, form one overall index, and produce the same interaction between Non-moral Attitude Strength and Message Sidedness as observed in Study 1.

### Method

*Participants.* To detect a relatively small interaction effect (partial $\eta^2 = .027$, calculated based on Study 1), a power analysis using G*Power revealed that for 90% power, we needed 392 participants. We collected data from 401 Amazon MTurk workers.

*Procedure.* The procedure employed in this study was similar to Study 1 except for a few changes described shortly. Participants who initially were unfavorable toward common dental hygiene practices were informed that they were ineligible to participate in the study (i.e., because the message would not be counter-attitudinal for them).

#### Independent variables

*Pre-message attitudes.* The same Pre-message Attitudes measure from Study 1 was used.

*Moral basis.* The same 2 items from Study 1 were used ($\alpha = .88$). The average of the 2 items was taken to form the Moral Basis index.

*Non-moral attitude strength index.* Participants responded to the same four non-moral attitude strength items from

Study 1. An overall Non-moral Attitude Strength Index was the average rating of these 4 items ($\alpha = .81$).

*Message sidedness.* A very similar version of the one- and two-sided messages used in Study 1 were used (see online supplement).

#### Dependent variables

*Openness and receptiveness.* The same four 7-point scales from Study 1 were employed to assess participants' Openness. In addition, three new items were included to assess Receptiveness and were adapted from prior work (Chen et al., 2010; Minson et al., 2019). Participants were asked to rate how much they feel receptive to the author's views, how much they are willing to receive more information supporting the author's views, and how much they are willing to have a future conversation with the author on this issue. Responses were made on three 7-point scales anchored at 1, *extremely not* and 7, *extremely*.

To assess whether the 4 openness and 3 receptiveness items were related, we conducted an exploratory factor analysis using the maximum likelihood method with Direct Oblimin rotation. All items loaded on one factor. However, the receptiveness item assessing how much participants were willing to have a future conversation with the author showed a commonality score of only .29, below the recommended cut-off value of .3 to .4, suggesting that it does not hang together with the other measures and should be considered for removal (Child, 2006). Indeed, this particular item showed the lowest factor loading (.5) while all other items were in the .7 to .8 range. Thus, according to the general rule of thumb recommended by previous work, we excluded this item when forming the new Openness/Receptiveness index. The index was the average rating of the remaining 6 items. The high reliability of these items ($\alpha = .93$) confirmed our initial expectation that the Openness measure used in Study 1 largely overlapped with the concept assessed by the Receptiveness items.

*Attitudes.* The same two 7-point semantic differential items ($\alpha = .95$) from Study 1 were included to measure participants' post-message attitudes. The average of these 2 items was taken to derive the Post-message Attitudes measure.

*Perceived appreciation.* The same two items from Study 1 were used to measure participants' perceived appreciation of the speaker's message. These items indicated good reliability ($\alpha = .92$) and were averaged to form the Perceived Appreciation measure.

### Results

#### Openness/receptiveness

*Non-moral attitude strength.* We used the same multiple linear regression model to examine the effect of Non-moral Attitude Strength and Message Sidedness on participants'

Openness/Receptiveness to the counter-attitudinal article. We replicated the significant two-way interaction between the Non-moral Attitude Strength measure and Message Sidedness, $B = .35$, $t(396) = 2.10$, $p = .036$, partial $\eta^2 = .011$ (see Figure 3 top panel).[8] When participants read the two-sided message, the more strongly participants held their positions toward dental hygiene practices, the more they were open/receptive to the counter-attitudinal message, $B = .35$, $t(396) = 2.83$, $p = .005$, partial $\eta^2 = .02$. However, when participants read the one-sided message, the effect was not significant, $B = .001$, $t(396) = .004$, $p = .99$.

*Moral basis.* A similar multiple linear regression model was conducted to examine the interactive effect of the Moral Basis and Message Sidedness variables on participants' Openness/Receptiveness toward the counter-attitudinal article.[9] The two-way interaction was not significant but showed a similar pattern, $B = .15$, $t(396) = 1.15$, $p = .25$.

Importantly, the interaction between Non-moral Attitude Strength and Message Sidedness remained significant when controlling for the interaction between Moral Basis and Message Sidedness, $B = .40$, $t(394) = 2.15$, $p = .03$, partial $\eta^2 = .02$, demonstrating that the predictive power of Non-moral Attitude Strength was over and above that of Moral Basis for this relatively non-moral topic.

*Attitudes.* The same two multiple linear regression model analyses conducted on the Openness/Receptiveness measure were also conducted on Post-message Attitudes controlling for Pre-message attitudes. Neither interaction was significant ($ps > .31$).

*Perceived appreciation.* The same two multiple linear regression models were conducted on Perceived Appreciation. The two-way interaction between Non-moral Attitude Strength and Sidedness was significant, $B = .41$, $t(395) = 2.39$, $p = .02$, partial $\eta^2 = .014$ (see Figure 3 bottom panel). When receiving a two-sided message, there was a positive effect of Non-moral Attitude Strength on Perceived Appreciation, *effect* $= .31$, $t(395) = 2.39$, $p = .02$, partial $\eta^2 = .014$. However, after receiving a one-sided message, the direction of the effect was opposite, $B = -.11$, $t(395) = -.73$, $p = .47$. In contrast to the effect for Non-moral Attitude Strength, there was no overall two-way interaction between Moral Basis and Message Sidedness ($p > .81$).

*Moderated mediation path analysis.* Using the same moderated mediation model described in Study 1, there was a significant indirect effect of Non-moral Attitude Strength and Sidedness on Openness/Receptiveness through Appreciation, *effect* $= .27$, 95% bootstrapping CI: [ .04, .50] (see Figure 4 top panel), suggesting that increased appreciation of the message among participants with strong attitudes after viewing a two-sided counter-attitudinal message was associated with their increased Openness/Receptiveness on the issue of dental health.

## Discussion

Study 2 successfully replicated the main findings from Study 1 using a preregistered, well-powered study. We demonstrated that when using a relatively non-moral issue, a measure of Non-moral Attitude Strength interacted with Message Sidedness to predict Openness/Receptiveness to the message. Also, the Non-moral Attitude Strength Index showed greater predictive ability compared with Moral Basis when accounting for this outcome. Furthermore, we demonstrated that the Openness measure used in Study 1 and prior research tapped into a construct that was similar to past measures of Receptiveness to opposing views.

## Study 3

In Study 3, we aimed to conceptually replicate and extend the previous findings by using both a new topic and a new attitude strength indicator. Group identity, especially political identity, has become an increasingly important determinant of political attitude strength in recent years (Kim et al., 2018; Westfall et al., 2015). We hypothesized that the more political party attitudes were linked to a group identity, the more effective a two-sided counter-attitudinal message would be over a one-sided message in encouraging openness to the contrary political position. Given the similar results on the items assessing Openness and Receptiveness in Study 2, we only measured Openness in Study 3 as the primary dependent variable. Finally, we compared the predictive ability of a measure of Moral Basis with the Non-moral Group Identification Attitude Strength indicator. We expected that Party Identification would show greater predictive ability than Moral Basis when accounting for the predicted Openness outcome given that party affiliation is a relatively non-moral issue (see pilot study).

A second goal of Study 3 was to compare the reciprocity mechanism supported in Studies 1 and 2 with an account based on source credibility. Consistent with a source attribution account (Jones & Davis, 1965), previous work has shown that when encountering a message, recipients can attribute the claims either to the source's desire to push forward their beliefs (one-sided message) or to a more holistic account of the given issue communicated by an honest source (two-sided message). In some prior research, recipients perceived the two-sided message source as having greater credibility. This enhanced perception of source credibility then facilitates acceptance of the position the source is taking (Golden & Alpert, 1987; Kamins, 1989). Thus, it could be that individuals with strong attitudes are particularly likely to infer greater source credibility when the source presents a two-sided message. To examine these alternative accounts, we included both Perceived Appreciation and a series of Author Evaluation measures (including Credibility) as mediators.

### Method

*Participants.* Three hundred and fifty-nine MTurk workers participated in exchange for a nominal fee. We assumed a
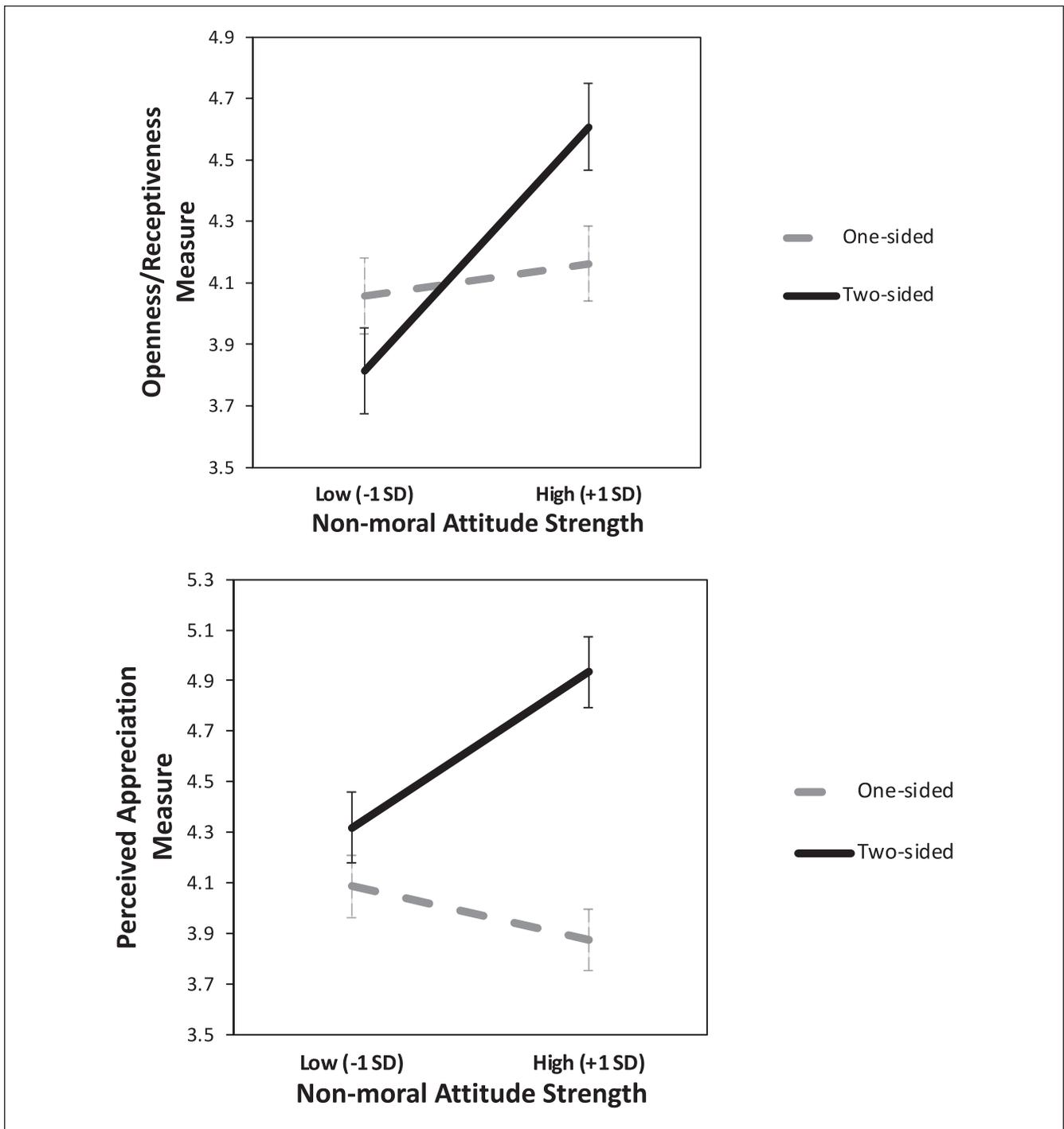
**Figure 3.** Moderated mediation demonstrating the significant indirect path of the Non-moral Attitude Strength and Message Sidedness interactive effect on Openness/Receptiveness through Perceived Appreciation in Study 2.
*Note.* All error bars reported in the graphs are based on the standard error of the simple main effect of Non-moral Attitude Strength on the respective dependent measure within each Message Sidedness condition.

small effect size (i.e., partial $\eta^2$ = .027, calculated based on Study 1) of the key interaction when determining the sample size for the current study. In all, 293 participants are needed to have 80% power to detect a significant two-way interaction according to G*Power. Additional participants were

included in case of response incompletion. With the 359 participants recruited, the power is 87.4%.

*Procedure.* Participants first indicated their preferred political party. Then, they evaluated the parties. Next, we assessed
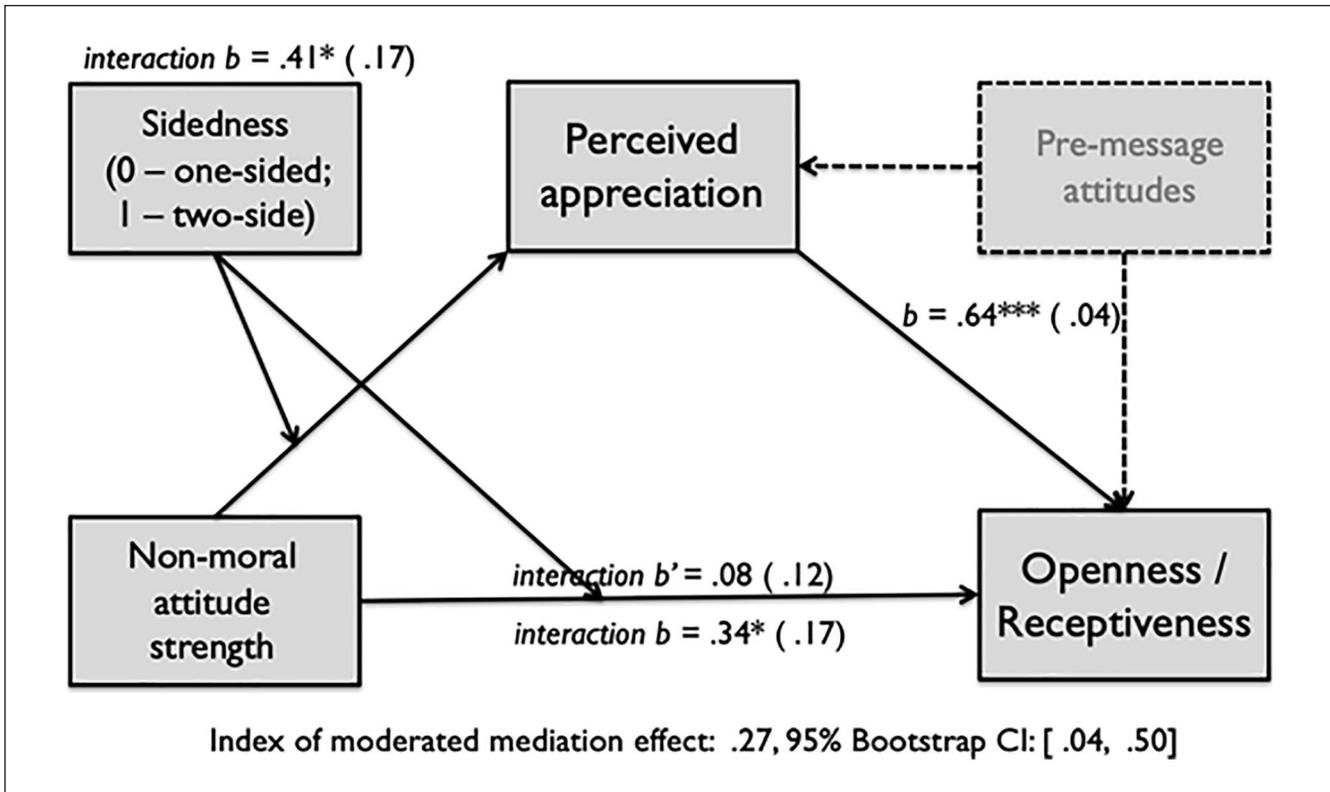
**Figure 4.** Moderated mediation demonstrating the significant indirect path of the nonmoral attitude strength and Message Sidedness interactive effect on openness/receptiveness through perceived appreciation in Study 2.
*Note.* ***Denotes effect is significant at 0.001 level; **Denotes effect is significant at 0.01 level; *Denotes effect is significant at 0.05 level. Standard errors are reported in parentheses.

their group identification and the moral basis of their party affiliation. After that, participants were randomly presented with either a one- or two-sided message arguing in favor of the opposing party's policies. Next, participants responded to the measures of Openness. Finally, participants answered questions assessing their perceived appreciation and their perceptions of the message source.

*Independent variables*
    *Political party.* Participants first indicated their political party affiliation by choosing between the Democratic and the Republican parties.

    *Pre-message party attitudes.* Participants provided their evaluations of the political parties on a 7-point scale anchored at 1, *strongly favor Republican Party* and 7, *strongly favor Democratic Party*. In this study, Post-message Attitudes were not measured.

    *Group identification.* For our key non-moral attitude strength measure, we assessed participants' Group Identification with the political party they favored using an item adapted from Hogg and colleagues (2017). Participants responded to the item assessing how strongly they identify with the political

party they favor more on a 7-point scale anchored at 1, *do not identify at all*, and 7, *identify very strongly*.

    *Moral basis.* Participants responded to 1 item assessing whether they viewed their political group as a reflection of their core moral beliefs and convictions on a 5-point scale, anchored at 1, *not at all*, and 5, *very much*.

    *Message sidedness.* Participants always received a message that argued in favor of the political party that differed from their own. For participants whose views were closer to the Democratic party, they were assigned to read either a one- or two-sided message discussing the merits of Republican social and economic policies. In the *one-sided condition*, the author explained that the Republican Party today supports a pro-business platform and its philosophy leans toward individual freedoms, rights, and responsibilities. In the *two-sided condition*, the author first presented the same information as in the one-sided version. Then, the author briefly acknowledged the fact that there are some reasonable points when it comes to the social and economic policy approaches of Democrats and presented a few such arguments. Both messages concluded with a statement that the author more strongly favored the Republican platform.

For participants whose views were closer to the Republican party, they were assigned to read either a one- or two-sided message discussing the merits of Democratic social and economic policies. In the *one-sided condition*, the author explained that the Democratic Party today supports a pro-equality and opportunity for all platform and its philosophy blends notions of civil liberties and social equality with support for a mixed economy. In the *two-sided condition*, the author first presented the same information as in the one-sided version. Then the author briefly acknowledged the fact that there are some reasonable points when it comes to the social and economic policy approaches of Republicans and presented a few such arguments. Both messages concluded with a statement that the author more strongly favored the Democratic platform. See the online supplement for the full messages.

### Dependent variables

*Openness.* The same 4 items from Study 1 were used to measure how open participants were to the advocacy, and the average score served as the key dependent measure of Openness ($\alpha = .90$).

*Perceived appreciation.* The same 2 items from Study 1 were employed to assess perceived appreciation. They were averaged to serve as the Perceived Appreciation measure ($r = .62$).

*Author evaluation.* Participants rated the author of the message on five 7-point semantic differentials (incompetent-competent; unfair-fair; biased-impartial; not credible-credible; dishonest-honest; $\alpha = .93$). The average was taken to form an overall Author Evaluation index.

## Results

### Openness

*Group identification.* A multiple linear regression similar to the one used in Studies 1 and 2 was conducted to examine the interactive effect of Group Identification and Message Sidedness on participants' Openness toward the counter-attitudinal article while controlling for the Pre-message Party Attitudes. First, there was a direct effect of Group Identification on Openness, $B = -.21$, $t(354) = -3.25$, $p = .001$, partial $\eta^2 = .028$. This suggests that those who identify with their favored political party more tend to be less open to the counter-attitudinal article discussing the merits of the opposite party. More importantly, we obtained the two-way interaction between Group Identification and Message Sidedness, $B = .24$, $t(354) = 2.51$, $p = .01$, partial $\eta^2 = .017$ (see Figure 5 top panel). When participants read the one-sided message, the more participants identified with the favored political party, the less open they were to the counter-attitudinal message, $B = -.21$, $t(354) = -3.25$, $p = .001$, partial $\eta^2 = .028$. However, when participants read the two-sided message, the

direction of the effect reversed, though was not significant, $B = .03$, $t(354) = .44$, $p = .66$.[10] Importantly, this two-way interaction between Group Identification and Message Sidedness was not further moderated by Party Affiliation ($p = .95$).

*Moral basis.* Using the same multiple linear regression just described but replacing Group Identification with the Moral Basis measure, we found that the two-way interaction between Moral Basis and Message Sidedness was not significant, $B = .04$, $t(354) = .25$, $p = .80$. However, the interaction between Group Identification and Message Sidedness remained significant when controlling for the interaction between Moral Basis and Message Sidedness, $B = .34$, $t(352) = 2.81$, $p = .005$, partial $\eta^2 = .022$.[11]

*Perceived appreciation.* The same two multiple linear regression models described previously were run, only replacing the dependent measure with the Appreciation measure. The two-way interaction between the Group Identification and Message Sidedness was in the predicted direction and significant, $B = .24$, $t(354) = 2.67$, $p = .01$, partial $\eta^2 = .02$ (see Figure 5 bottom panel). When receiving a one-sided message, there was a significant negative effect of Group Identification on the Appreciation measure, $B = -.14$, $t(354) = -2.37$, $p = .02$, partial $\eta^2 = .015$. However, after receiving a two-sided message, the direction of the effect was reversed, but not significant, $B = .10$, $t(354) = -1.42$, $p = .16$. The two-way interaction between Group Identification and Message Sidedness was not further moderated by participants' Political Party ($p = .64$). Notably, there was no overall two-way interaction between Moral Basis and Message Sidedness ($p = .16$).

*Moderated mediation path analysis.* PROCESS macro model 8 was used to examine the mediational role of Appreciation. Group Identification was treated as the independent variable, Message Sidedness as the moderator, Appreciation as the mediator, Openness as the dependent variable, and Pre-message Attitudes as the covariate. There was a significant moderated mediation path, *effect* $= .18$, 95% bootstrapping CI: [.03, .34] (see Figure 6). This suggested that the increased appreciation of the message among high group identification participants after viewing a two-sided counter-attitudinal message reliably predicted their increased openness.

*Author evaluation as an alternative process.* In this study, we also assessed participants' author evaluations as an alternative process measure. First, we ran a similar multiple regression model replacing the Openness measure with Author Evaluation as the dependent measure and found that the two-way interaction between the Group Identification and Message Sidedness was in the same direction as for Openness but was not significant, $B = .10$, $t(354) = 1.16$, $p = .25$.[12] Then, we ran a similar
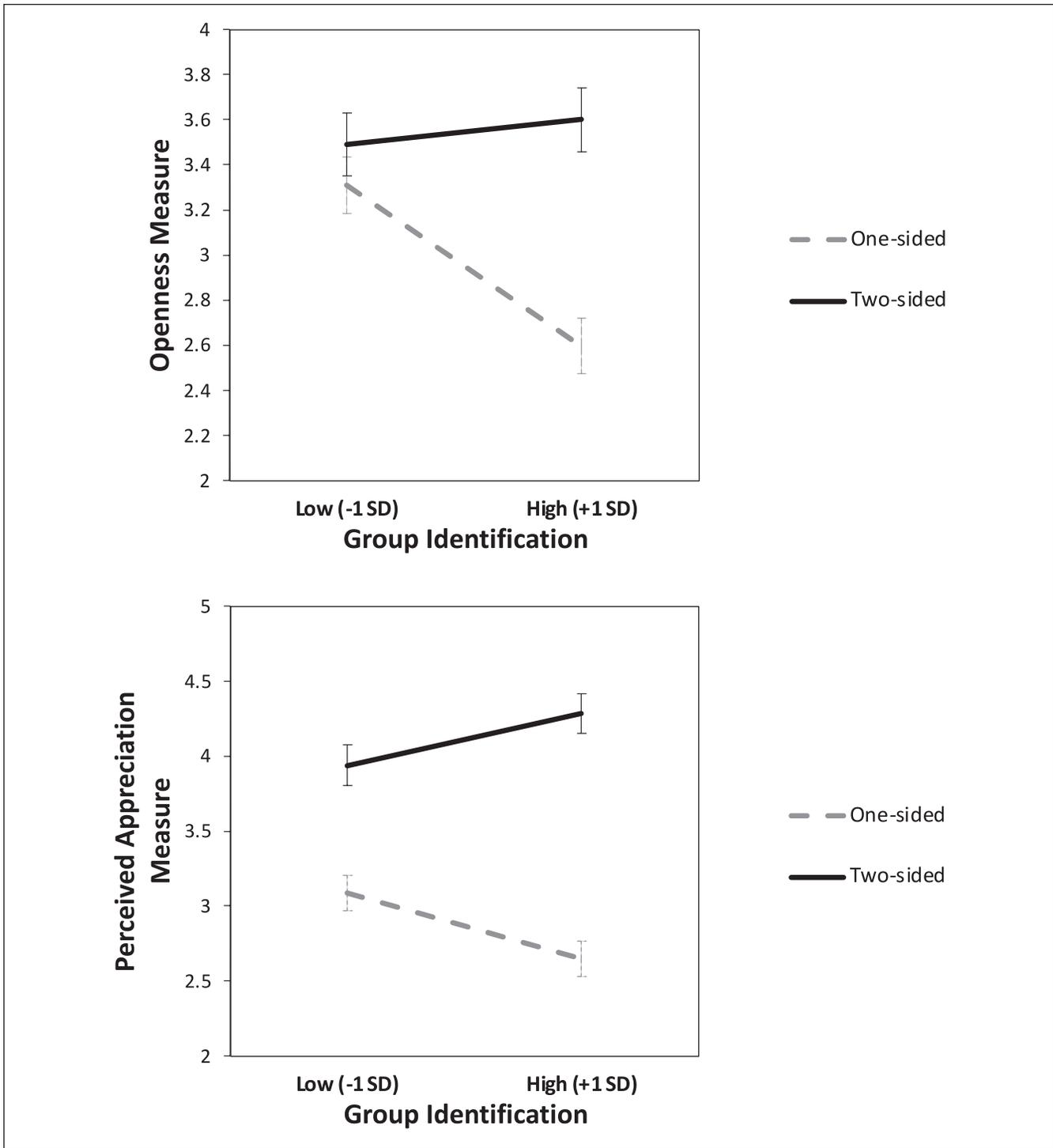
**Figure 5.** Top panel: Interactive effect of Group Identification and Message Sidedness on Openness in Study 3. Bottom panel: Interactive effect of Group Identification and Message Sidedness on Perceived Appreciation in Study 3.
*Note.* All error bars reported in the graph are based on the standard error of the simple main effect of Group Identification on Openness within each Message Sidedness condition.

moderated mediation model replacing Perceived Appreciation with Author Evaluation as the mediator. In this case, the moderated mediation effect was not significant, *effect* = .07, 95%

bootstrapping CI: [ −.06, .20]. This suggested that in the current paradigm, the reciprocity mechanism provides the more viable explanation for why a two-sided message would induce

a greater sense of openness toward a counter-attitudinal position than a one-sided message among those who strongly identify with their political party.

## Discussion

In Study 3, we demonstrated that two-sided messages are a particularly effective way of rendering people more open to influence when they are highly identified with their political party. In prior studies, we saw that when the message was two-sided, as attitude strength increased, openness was increased, whereas for one-sided message, this enhancement in openness was attenuated or reversed. In Study 3, we saw that when the message was one-sided, as attitude strength increased, openness was reduced, whereas, for the two-sided message, this reduction in openness was attenuated. It is important to note that once the main effects for Attitude Strength and Sidedness are removed (which can vary depending on the topic and specific messages used), these interactions are in fact of precisely the same form (see Rosnow & Rosenthal, 1989). That is, these interactions all show that the *relative benefit* of a two-sided message over a one-sided communication is enhanced as attitude strength is increased, consistent with our core hypothesis. Furthermore, we demonstrated that the Non-moral Attitude Strength measure (i.e., Group Identification) showed greater predictive ability than the Moral Basis measure for this relatively less moralized topic. Finally, we also compared the reciprocity mechanism with a source evaluation account and demonstrated that the reciprocity mechanism explained more variance in the interactive effect between Group Identification and Message Sidedness on Openness to a counter-attitudinal message.

## General Discussion

Although there are thousands of social influence studies in the literature, very few have focused on techniques that might be especially effective in influencing deeply held or strong attitudes. Previous work examined the utility of using two-sided rather than one-sided counter-attitudinal messages as a way to encourage openness on relatively moral topics among people whose attitudes are morally based (Xu & Petty, 2022). Although there was some reason to believe that two-sided messages might be especially effective for morally based attitudes because reciprocity is a moral norm, in the present research, we demonstrated that two-sided messages can also be especially effective even when the topic is not a highly moral one and attitude strength is not based on morality. Thus, the current research supports a more general interactive effect between Attitude Strength and Message Sidedness on Openness toward opposing views.

Across three studies using relatively non-moral topics (i.e., around the midpoint of a perceived moral basis scale or below), we found that the benefits of two- versus one-sided messages held for indicators of attitude strength other than moral bases (e.g., certainty, group identification). In each study, using non-moral attitude strength indicators, as the strength of one's opinion increased, a two-sided message increased in its relative effectiveness over a one-sided communication. In addition, we obtained evidence suggesting that for the relatively less moralized issues used, the array of non-moral strength indicators did a better job in predicting openness as compared with moral basis. Last, we confirmed the viability of a reciprocity mechanism to account for the results and showed that the reciprocity mechanism is superior than the alternative source evaluation account.

## Theoretical Contribution

This work demonstrates an effective way of encouraging people with deeply entrenched attitudes to be open to change with the use of two-sided messages that respectfully acknowledge the recipient's position by providing some arguments on their side. People's strong attitudes, like those high in certainty, tend to be quite difficult to influence (Petty & Krosnick, 1995). A similar situation holds for people whose attitudes are based on their group identity. Past work suggests that those with a higher degree of group identification show a greater sense of belonging to the given group (Cameron, 2004). This sense of group belonging regulates group members' perceptions, feelings, and behaviors to conform to group-based views (Hogg & Abrams, 1988). Thus, the stronger one's sense of group identification, the harder it is to deviate from prototypical group-based beliefs. For precisely this reason, very little prior research has examined ways that might be *especially* effective in influencing identity-based attitudes. Thus, the current work presents a valuable method that was particularly suited to influencing strong attitudes. Furthermore, the current studies showed that although it can be difficult to change people's strongly held attitudes, encouraging openness to change might be a good way to approach these individuals so that at least they would be open to listen and explore the opposing side.

The current work also contributes to the reciprocity literature. Cialdini (1993) noted that the norm of reciprocity has a moral character to it. However, because reciprocity is a widely accepted norm, it could go beyond just being an ethical imperative. The current work provides direct empirical demonstrations of this, showing that the norm of reciprocity can be particularly effective in influencing any strongly held attitude, thereby contributing to the literature on when reciprocity as an influence technique can be especially useful.

Finally, we have also demonstrated empirically the relationship between the openness measure used previously (Xu & Petty, 2022) and measures of receptiveness to opposing views (Minson et al., 2019). Although Xu and Petty (2022) discussed the conceptual overlap between the openness
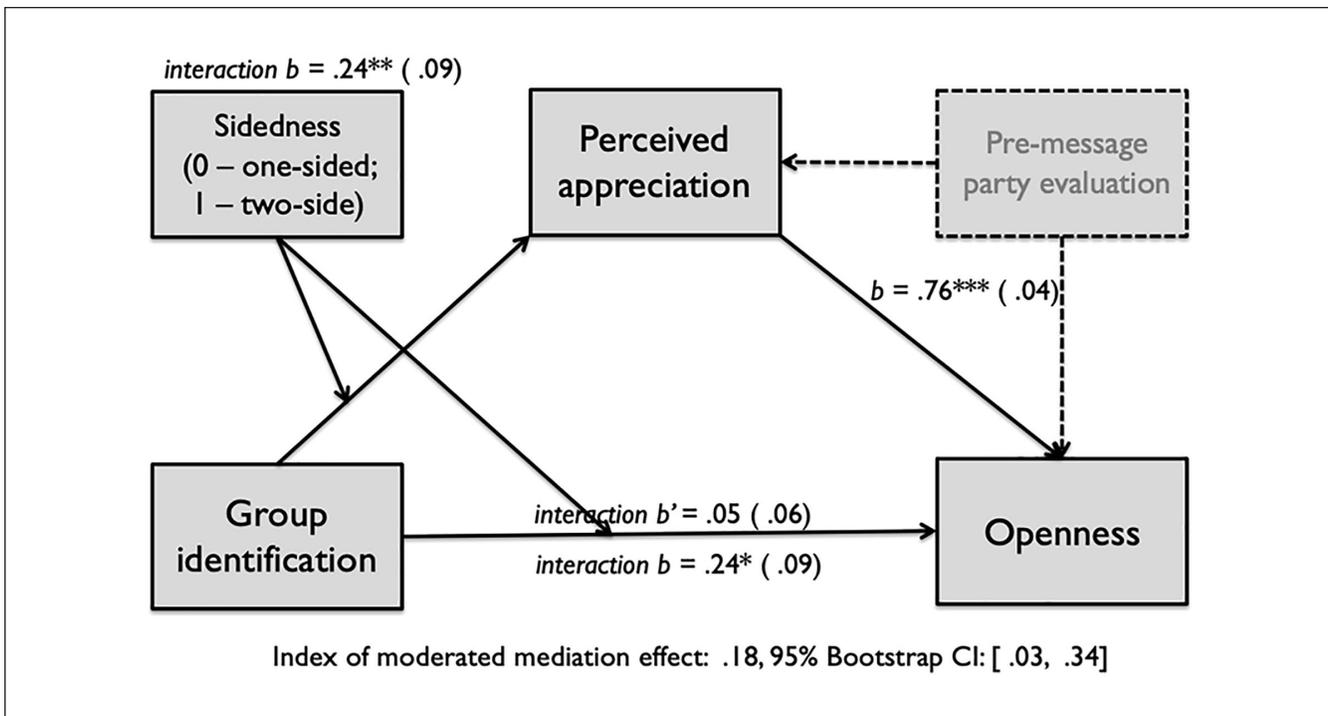
**Figure 6.** Moderated mediation demonstrating the significant indirect path of the Group Identification and Message Sidedness interactive effect on Openness through Perceived Appreciation in Study 3.
*Note.* ***Denotes effect is significant at 0.001 level; **Denotes effect is significant at 0.01 level; *Denotes effect is significant at 0.05 level. Standard errors are reported in parentheses.

measure used and concepts like receptiveness (Chen et al., 2010), it was not shown empirically. However, in Study 2, we demonstrated that the openness and the receptiveness concepts appear to be tapping into similar constructs—the willingness of people to be open or receptive to learning more about counter-attitudinal views.

### Limitations and Future Directions

In the current article, we included measures of Post-message Attitudes toward the advocated position in Studies 1 and 2. The interaction of Attitude Strength and Sidedness on Attitudes was only marginal in Study 1 and not significant in Study 2. Nonetheless, Attitudes were indirectly influenced in each study by the impact of the experimental manipulations via Openness (see online supplement for detailed analyses). In Study 3, we did not include another measure of party preference after the message, but it is not difficult to imagine how unlikely it would be to change one's party preference using a single attempt. In general, using a one-shot effort to change people's deeply entrenched attitudes should be quite difficult. However, the existence of a significant indirect effect on the post-message attitudes through openness in Studies 1 and 2 suggests that openness could be a precursor to attitude change, consistent with general *stages of change* models of influence (e.g., Norcross et al., 2010).

Consequently, in future studies, another potentially important downstream consequence to explore would be people's willingness to consider a compromise as a result of being more open to the opposing viewpoint. For example, researchers could assess people's willingness to consider a compromise using behavioral indicators, such as people's willingness to make tradeoffs between material benefits and their deeply entrenched convictions (Delton et al., 2020).

In addition, Studies 1 and 2 explored the use of a two-sided message to challenge commonly accepted health beliefs. It would be of interest to extend this use of two-sided messages to influence other important behaviors in the health domain. For instance, persuading smokers to reconsider their decision to smoke would be valuable. Relatedly, in the domain of public welfare, the current work suggests that it might be useful to acknowledge the reactance people experience when the government is telling them not to text while driving and to stop driving when intoxicated among those most vehement in their opposition to these mandates.

Another way to extend the current work is to explore the role of additional mechanisms. One promising approach might be to consider how a source acknowledging the message recipient's side might produce a type of self-affirmation (Steele, 1988). Previous work (Correll et al., 2004) suggested that self-affirmation can reduce defensiveness and thereby enable people to objectively evaluate information that would

otherwise evoke a negative reaction. One might imagine that a plausible consequence of acknowledging and appreciating the recipient's position could be to help them secure a stronger sense of self, prompting recipients to be more open to opposing viewpoints. This possibility is worth further exploration.

Overall, by extending the benefits of two-sided over one-sided messages beyond attitudes with a moral basis, the current work opens new doors to increase openness toward counter-attitudinal positions for a wide variety of deeply entrenched attitudes.

## Declaration of Conflicting Interests

## Funding

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## Supplemental Material

Supplemental material is available online with this article.

## Notes

1. In addition to assessing the moral bases of attitudes, Xu and Petty (2022) measured other strength indicators (e.g., certainty) and found that the interaction between Moral Basis and Message Sidedness on Openness held when these other strength variables were controlled. This was expected because the topics studied by Xu and Petty were selected because of their strong link to morality. In contrast, the current work uses topics lower in their moral basis and examines whether Non-moral Strength indicators will predict outcomes above and beyond Moral Basis.

2. The key effects reported in all studies and the conclusions drawn remain the same when the Pre-message Attitude measure was not used as a covariate (see online supplement for details).

3. Given some critiques associated with using stepwise hierarchical multiple regression (Smith, 2018; Whittingham et al., 2006), we employed straightforward multiple regression. However, it is worth noting that the results of the key interaction terms in all studies were the same when using stepwise hierarchical multiple regression.

4. The correlation between Moral Basis and the Non-moral Attitude Strength Index was .58 ($p < .001$).

5. When each Attitude Strength measure was examined separately, the two-way interaction between the measure and the Message Sidedness was in the same direction for all measures and significant for the Self-defining measure (see online supplement).

6. In all studies, we included a Manipulation Check measure assessing the extent to which participants noticed that the two-sided message presented more balanced information than the one-sided message (1 for *extremely one-sided information* and 7 for *extremely balanced information*). In each study, there was a main effect of the Sidedness induction on the manipulation check (see the online supplement). To verify that simply noticing that the message presented an argument acknowledging the participants' point of view is theoretically different from appreciating that acknowledgment, we ran similar regression analyses on this Manipulation Check measure as on the Appreciation measure. Across all studies, the two-way interaction between Non-moral Attitude Strength and Message Sidedness was not significant ($ps > .30$). Furthermore, the Manipulation Check measure did not mediate the indirect effect of the Strength by Message Sidedness interaction on Openness (see the online supplement).

7. The preregistration is at https://aspredicted.org/CR8_D74.

8. When just analyzing the average of the four openness items ($\alpha = .89$) as the dependent measure, the two-way interaction between Non-moral Attitude Strength and Message Sidedness was significant, $B = .35$, $t(396) = 2.10$, $p = .037$, partial $\eta^2 = .011$, replicating Study 1. When using the average of all three receptiveness items as the dependent measure ($\alpha = .81$), the two-way interaction was not significant ($p = .40$). However, when using just the 2 receptiveness items that correlated highly with each other ($\alpha = .90$) and loaded on the same factor as the openness items, the two-way interaction was trending significant, $B = .35$, $t(396) = 1.89$, $p = .06$, partial $\eta^2 = .009$. Using the type of measure (4 item-openness, 2-item receptiveness) as a within subject factor did not further moderate the Strength X Sidedness two-way interaction, showing that each type of measure produced equivalent results ($p = .43$).

9. The correlation between Moral Basis and the Non-moral Attitude Strength Index was .44 ($p < .001$).

10. We also ran a separate analysis examining if the two-way interaction between Group Identification and Sidedness would still hold when controlling for the interaction between Pre-message Party Attitudes and Sidedness. The results suggested that the two-way interaction between Group Identification and Sidedness remained significant, $B = .24$, $t(353) = 2.43$, $p = .02$, partial $\eta^2 = .016$. However, the two-way interaction between Pre-message Party Attitudes and Sidedness was not significant ($p = .94$).

11. In this study, we also included some alternative Non-moral Attitude Strength measures (i.e., Certainty and Importance; Krosnick & Petty, 1995). To examine whether these alternative Non-moral Attitude Strength measures would produce effects similar to Group Identification, each was used as the sole attitude strength predictor in the model. They produced similar interaction patterns with Message Sidedness as would be expected if two-sided messages become more effective as attitude strength is increased. See online supplement for detailed analyses.

12. The interaction did not appear on any of the individual items either. However, for the item assessing Fairness, the interaction approached significance in the same direction as Appreciation ($p = .06$). The next closet interaction was for Credibility ($p = .18$).

# References

Barden, J., & Petty, R. E. (2008). The mere perception of elaboration creates attitude certainty: Exploring the thoughtfulness heuristic. *Journal of Personality and Social Psychology*, *95*(3), 489–509. https://doi.org/10.1037/a0012559

Bassili, J. N. (1996). Meta-judgmental versus operative indexes of psychological attributes: The case of measures of attitude strength. *Journal of Personality and Social Psychology*, *71*(4), 637–653. https://doi.org/10.1037/0022-3514.71.4.637

Boninger, D. S., Krosnick, J. A., & Berent, M. K. (1995a). Origins of attitude importance: Self-interest, social identification, and value relevance. *Journal of Personality and Social Psychology*, *68*(1), 61–80.

Cameron, J. E. (2004). A three-factor model of social identity. *Self and Identity*, *3*(3), 239–262.

Chen, F. S., Minson, J. A., & Tormala, Z. L. (2010). Tell me more: The effects of expressed interest on receptiveness during dialog. *Journal of Experimental Social Psychology*, *46*(5), 850–853. https://doi.org/10.1016/j.jesp.2010.04.012

Child, D. (2006). *The essentials of factor analysis*. A&C Black.

Cialdini, R. B. (1993). *The psychology of persuasion*. Collins.

Cialdini, R. B., & Goldstein, N. J. (2004). Social influence: Compliance and conformity. *Annual Review of Psychology*, *55*, 591–621. https://doi.org/10.1146/annurev.psych.55.090902.142015

Cialdini, R. B., Green, B. L., & Rusch, A. J. (1992). When tactical pronouncements of change become real change: The case of reciprocal persuasion. *Journal of Personality and Social Psychology*, *63*, 30–40. https://doi.org/10.1037/0022-3514.63.1.30

Cohen, J. (1988). *Statistical power analysis for the behavioral sciences*. Routledge Academic.

Correll, J., Spencer, S. J., & Zanna, M. P. (2004). An affirmed self and an open mind: Self-affirmation and sensitivity to argument strength. *Journal of Experimental Social Psychology*, *40*(3), 350–356.

Delton, A. W., DeScioli, P., & Ryan, T. J. (2020). Moral obstinacy in political negotiations. *Political Psychology*, *41*(1), 3–20.

Faul, F., Erdfelder, E., Buchner, A., & Lang, A. G. (2009). Statistical power analyses using G* Power 3.1: Tests for correlation and regression analyses. *Behavior Research Methods*, *41*(4), 1149–1160.

Fazio, R. H. (1995). Attitudes as object-evaluation associations: Determinants, consequences, and correlates of attitude accessibility. In R. E. Petty & J. A. Krosnick (Eds.), Attitude strength: Antecedents and consequences (pp. 247–282). Psychology Press.

Feinberg, M., & Willer, R. (2013). The moral roots of environmental attitudes. *Psychological Science*, *24*(1), 56–62. https://doi.org/10.1177/0956797612449177

Feinberg, M., & Willer, R. (2015). From gulf to bridge: When do moral arguments facilitate political influence? *Personality and Social Psychology Bulletin*, *41*(12), 1665–1681. https://doi.org/10.1177/0146167215607842

Golden, L. L., & Alpert, M. I. (1987). Comparative analysis of the relative effectiveness of one-and two-sided communication for contrasting products. *Journal of Advertising*, *16*(1), 18–68. https://doi.org/10.1080/00913367.1987.10673056

Hayes, A. F. (2017). *Introduction to mediation, moderation, and conditional process analysis: A regression-based approach*. Guilford.

Abrams, D., & Hogg, M. A. (1988). Comments on the motivational status of self-esteem in social identity and intergroup discrimination. *European Journal of Social Psychology*, *18*(4), 317–334.

Hogg, M. A., Abrams, D., & Brewer, M. B. (2017). Social identity: The role of self in group processes and intergroup relations. *Group Processes & Intergroup Relations*, *20*(5), 570–581.

Hovland, C. I., Janis, I. L., & Kelley, H. H. (1953). *Communication and persuasion*. Yale University Press.

Hovland, C. I., Lumsdaine, A. A., & Sheffield, F. D. (1949). *Experiments on mass communication* (Studies in social psychology in World War II, Vol. 3). Princeton University Press.

Huddy, L. (2013). From group identity to political cohesion and commitment. In L. Huddy, D. O. Sears, & J. S. Levy (Eds.), *The Oxford handbook of political psychology* (pp. 737–773). Oxford University Press.

Hussein, M. A., & Tormala, Z. L. (2021). Undermining your case to enhance your impact: A framework for understanding the effects of acts of receptiveness in persuasion, *25*(3), 229–250. https://doi.org/10.1177/10888683211001269

Jones, E. E., & Davis, K. E. (1965). From acts to dispositions the attribution process in person perception. *Advances in Experimental Social Psychology*, *2*, 219–266.

Kamins, M. A. (1989). Celebrity and noncelebrity advertising in a two-sided context. *Journal of Advertising Research*, *29*(3), 34–42.

Kao, D. T. (2011). Message sidedness in advertising: The moderating roles of need for cognition and time pressure in persuasion. *Scandinavian Journal of Psychology*, *52*(4), 329–340. https://doi.org/10.1111/j.1467-9450.2011.00882.x

Kim, C. H., Han, D., Duhachek, A., & Tormala, Z. L. (2018). Political identity, preference, and persuasion. *Social Influence*, *13*(4), 177–191.

Krosnick, J. A. (1989). Attitude importance and attitude accessibility. *Personality and Social Psychology Bulletin*, *15*(3), 297–308. https://doi.org/10.1177/0146167289153002

Krosnick, J. A., Boninger, D. S., Chuang, Y. C., Berent, M. K., & Carnot, C. G. (1993). Attitude strength: One construct or many related constructs? *Journal of Personality and Social Psychology*, *65*(6), 1132–1151.

Krosnick, J. A., & Petty, R. E. (1995). Attitude strength: An overview. In R. E. Petty & J. A. Krosnick (Eds.), *Attitude strength: Antecedents and consequences* (pp. 1–24). Lawrence Erlbaum.

Luttrell, A., Petty, R. E., & Briñol, P. (2016). Ambivalence and certainty can interact to predict attitude stability over time. *Journal of Experimental Social Psychology*, *63*, 56–68. https://doi.org/10.1016/j.jesp.2015.11.008

Luttrell, A., Philipp-Muller, A., & Petty, R. E. (2019). Challenging moral attitudes with moral messages. *Psychological Science*, *30*, 1136–1150. https://doi.org/10.1177/0956797619854706

Luttrell, A., & Sawicki, V. (2020). Attitude strength: Distinguishing predictors versus defining features. *Social and Personality Psychology Compass*, *14*(8), e12555. https://doi.org/10.1111/spc3.12555

Maio, G. P., Haddock, G., & Verplanken, B. (2019). *The psychology of attitudes and attitude change* (3rd ed.). SAGE.

Minson, J. A., Chen, F. S., & Tinsley, C. H. (2019). Why won't you listen to me? Measuring receptiveness to opposing

views. *Management Science*, *66*(7), 3069–3094. https://doi.org/10.2139/ssrn.3295946

Norcross, J. C., Krebs, P. M., & Prochaska, J. O. (2010). Stages of change. *Journal of Clinical Psychology*, *67*(2), 143–154. https://doi.org/10.1002/jclp.20758

Petrocelli, J. V., Tormala, Z. L., & Rucker, D. D. (2007). Unpacking attitude certainty: Attitude clarity and attitude correctness. *Journal of Personality and Social Psychology*, *92*(1), 30–41.

Petty, R. E., & Krosnick, J. A. (Eds.). (1995). *Attitude strength: Antecedents and consequences*. Lawrence Erlbaum.

Riggs, W. (2010). Open-mindedness. *Metaphilosophy*, *41*(1–2), 172–188. https://doi.org/10.1111/j.1467-9973.2009.01625.x

Rosnow, R. L., & Rosenthal, R. (1989). Definition and interpretation of interaction effects. *Psychological Bulletin*, *105*, 143–146.

Rucker, D. D., Tormala, Z. L., Petty, R. E., & Briñol, P. (2014). Consumer conviction and commitment: An appraisal-based framework for attitude certainty. *Journal of Consumer Psychology*, *24*(1), 119–136. https://doi.org/10.1016/j.jcps.2013.07.001

Sawicki, V., & Wegener, D. T. (2018). Metacognitive reflection as a moderator of attitude strength versus attitude bolstering: Implications for attitude similarity and attraction. *Personality and Social Psychology Bulletin*, *44*(5), 638–652. https://doi.org/10.1177/0146167217744196

Skitka, L. J. (2010). The psychology of moral conviction. *Social and Personality Psychology Compass*, *4*(4), 267–281. https://doi.org/10.1111/j.1751-9004.2010.00254.x

Smith, G. (2018). Step away from stepwise. *Journal of Big Data*, *5*(1), 1–12. https://doi.org/10.1186/s40537-018-0143-6

Steele, C. M. (1988). The psychology of self-affirmation: Sustaining the integrity of the self. *Advances in Experimental Social Psychology*, *21*, 261–302.

Teeny, J. D., Siev, J. J., Briñol, P., & Petty, R. E. (2021). A review and conceptual framework for understanding personalized matching effects in persuasion. *Journal of Consumer Psychology*, *31*(2), 382–414. https://doi.org/10.1002/jcpy.1198

Tormala, Z. L., & Petty, R. E. (2004a). Resistance to persuasion and attitude certainty: The moderating role of elaboration. *Personality and Social Psychology Bulletin*, *30*(11), 1446–1457. https://doi.org/10.1177/0146167204264251

Van Bavel, J. J., & Pereira, A. (2018). The partisan brain: An identity-based model of political belief. *Trends in Cognitive Sciences*, *22*(3), 213–224.

Visser, P. S., Krosnick, J. A., & Simmons, J. P. (2003). Distinguishing the cognitive and behavioral consequences of attitude importance and certainty: A new approach to testing the common-factor hypothesis. *Journal of Experimental Social Psychology*, *39*(2), 118–141.

Ward, A., Disston, L. G., Brenner, L., & Ross, L. (2008). Acknowledging the other side in negotiation. *Negotiation Journal*, *24*(3), 269–285. https://doi.org/10.1111/j.1571-9979.2008.00184.x

Westfall, J., Van Boven, L., Chambers, J. R., & Judd, C. M. (2015). Perceiving political polarization in the United States: Party identity strength and attitude extremity exacerbate the perceived partisan divide. *Perspectives on Psychological Science*, *10*(2), 145–158. https://doi.org/10.1177/1745691615569849

Whittingham, M. J., Stephens, P. A., Bradbury, R. B., & Freckleton, R. P. (2006). Why do we still use stepwise modelling in ecology and behaviour? *Journal of Animal Ecology*, *75*(5), 1182–1189.

Xu, M., & Petty, R. E. (2022). Two-sided messages promote openness for morally based attitudes. *Personality and Social Psychology Bulletin*, *48*(8), 1151–1166. https://doi.org/10.1177/0146167220988371

Zunick, P. V., Teeny, J. D., & Fazio, R. H. (2017). Are some attitudes more self-defining than others? Assessing self-related attitude functions and their consequences. *Personality and Social Psychology Bulletin*, *43*(8), 1136–1149. https://doi.org/10.1177/0146167217705121