

Why won't you listen to me?
Measuring receptiveness to opposing views

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Abstract

In five studies we develop and validate an 18-item self-report measure of receptiveness to opposing views. Studies 1a and 1b present the new scale and report measures of internal, convergent, and discriminant validity. The scale consists of four factors, and is distinct from related measures. In Study 2 more receptive individuals (as measured by our scale) reported being more willing to interact with disagreeing others on hot-button political topics. In Study 3 more receptive individuals demonstrated more balanced recall of arguments for and against their positions. In Study 4 more receptive individuals evaluated supporting and opposing arguments more impartially. Finally, in Study 5 more receptive students in a Massively Open Online Course (MOOC) were more likely to participate in online forum discussions on controversial policy topics. We discuss the scale as a tool to advance our understanding of the consequences of receptiveness for conflict, decision-making, and collaboration (147 words).

Why won't you listen to me?

Measuring receptiveness to opposing views

Democratic governance, sound judgment, and congenial relationships all require that individuals thoughtfully engage with ideas they disagree with, or even find offensive. Successfully navigating attitude conflict (Judd, 1978) has myriad implications for domains ranging from parenting to international diplomacy. However, people often seem unable or unwilling to consider opposing views with the same level of tolerance as they afford to views that echo their own (Fernbach, Rogers, Fox & Sloman, 2013; Krosnick, 1988; Lord, Ross, & Lepper, 1979; Pronin, Gilovich, & Ross, 2004). Conflict can thus be perpetuated by partisans' reluctance to expose themselves to each other's arguments and evaluate them in a thoughtful and fair-minded manner.

The present research introduces and investigates a scale measure of *receptiveness to opposing views*. We define receptiveness as a willingness to expose oneself to, and to thoughtfully and fairly consider, the opposing views of others. We posit that such willingness is an important and under-investigated feature of behavior in both conflictual and collaborative settings, which affects numerous individual and interpersonal outcomes.

In five studies we develop and validate an 18-item questionnaire measure that assesses individuals' receptiveness to opposing views. Study 1 describes the psychometric properties of the scale and reports measures of convergent and discriminant validity with other conceptually-related scales. In Studies 2 – 4 we demonstrate that the scale predicts behavior on three conceptually-related laboratory tasks. In Study 5 we

demonstrate that individuals who score highly on our scale are more willing to engage in discussions on policy-related topics in a field setting.

What is receptiveness?

Most of us can readily recall a specific instance when a conversation partner with an opposing viewpoint listened to our arguments thoughtfully, seemingly considering the proffered information, and asked follow-up questions suggesting genuine curiosity and a desire to understand. Such experiences are memorable in part because they are rare.

Extensive research demonstrates that when the issue at hand is a deeply held, identity-relevant attitude—as may be the case in many social, political, or international conflicts—disputants rarely display a willingness to even-handedly consider arguments for both sides of the issue. Instead, they selectively seek out (Frey, 1986; Hart et al., 2009a), attend to (Nickerson, 1998) and preferentially process (Lord et al., 1979) information that supports their prior opinions. Even when exposed to opposing arguments, partisans often attribute disagreement to ignorance, bias, or malevolence on the part of the disagreeing other (Ross & Ward, 1995, 1996) thus readily dismissing any new considerations.

In the present research we propose the presence of an underlying latent construct, receptiveness to opposing views, that determines individuals' willingness to expose themselves to, thoughtfully consider, and fairly evaluate information that contradicts their strongly-held beliefs. We theorize that the biases that have been documented by prior scholars at different stages of information processing are symptomatic of this unified construct. Whereas prior research has treated such biases as separate phenomena, we theorize that at least part of the variance in their occurrence is explained by an

individual's underlying level of receptiveness. Specifically, we believe that biases at major stages of information processing including (1) information seeking, (2) information recall, and (3) information evaluation, covary as a function of an individual's level of receptiveness.

First and foremost, we theorize that more receptive individuals are more willing to physically expose themselves to the opposing views of others. In everyday life, this might mean not changing the television channel when a political candidate you oppose begins to speak, or remaining in the room when your "ill-informed" uncle turns dinnertime discussion toward his views on immigration. In the laboratory, such willingness to expose oneself to opposing views should be apparent using standard measures of selective exposure (Frey, 1986) or congeniality bias (Hart et al., 2009a). We predict that more receptive individuals will show more equal interest in reading, listening to, or viewing arguments for both their own and opposing viewpoints than their less receptive counterparts.

However, many individuals often skillfully "tune out" arguments for the other side even while being physically exposed to them. Thus, we hypothesize that in addition being more willing to expose themselves to opposing views, highly receptive people are also more willing to process information more thoroughly and thoughtfully, avoiding the temptation to consider or dismiss the information based simply on whether it supports or opposes their beliefs. Research on recall of supporting versus opposing viewpoints shows that people on average are better at recalling supporting versus opposing evidence (Eagly, et al., 1999). Similarly, research on the "myside bias" shows that people are better at generating arguments consistent with their own views, even when explicitly instructed to

list arguments for both sides of a controversial topic (Baron, 1995; Perkins, 1985; Stanovich, West, & Toplak, 2013). We propose that more receptive individuals should demonstrate an attenuation of tendencies that are symptomatic of deeper processing of attitude confirming versus disconfirming information.

Finally, research on the phenomenon of naïve realism (Ross & Ward, 1995, 1996) shows that people often attribute disagreement on important issues to misinformation, stupidity, bias, or malevolence on the part others. Thus, even after having been exposed to and having considered opposing views, individuals still find ways to banish the undesirable evidence from their minds on the grounds that it is inferior or irrelevant. Indeed, research on biased assimilation of information (Lord, Lepper, & Preston, 1984; Lord et al., 1979) suggests that evidence is evaluated more favorably and has greater impact on attitudes if it happens to support one's own prior viewpoint. We propose that more receptive individuals will tend to evaluate argument quality and argument sources in a manner that is less affected by whether the argument supports or opposes their prior positions.

In sum, we believe that the underlying cognitive tendency of receptiveness toward opposing views operates at three distinct stages of information processing: 1) information seeking, 2) information recall, and 3) information evaluation. At each stage we predict that higher receptiveness would be characterized by smaller differences in an individual's treatment of attitude-confirming versus attitude-disconfirming information.

Receptiveness and attitude change

In defining the construct of receptiveness to opposing views it is important to consider its relationship to the voluminous body of work on attitude formation and change. Classic theorizing in the attitudes literature posits a multi-step process leading from communication of new information to a decision or attitude arising from the consideration of that information (Eagly, 1999; McGuire, 1968, 1969; Petty & Cacioppo, 1996). For example, as early as 1968 McGuire proposed a six-step attitude change process involving “communication,” “attention,” “comprehension,” “yielding,” “retention,” and “action.” In this process new information must first be communicated, and then a recipient must attend to that communication and comprehend it. Only if those steps are in place might the recipient’s prior attitude yield to new information, the new attitude come to be retained in memory, and serve to motivate future action. Extensive scholarship has since explored the later steps in this chain dealing directly with attitude change (“yielding”), and its consequences (“action”). Our present interests, however, are more closely aligned with the “attention” and “comprehension” steps that begin the process.

In defining our construct, we emphasize that high levels of receptiveness are neither necessary nor sufficient for attitude change. Research on central versus peripheral routes to persuasion has repeatedly demonstrated that persuasion efforts following the peripheral route can lead to attitude change in absence of thoughtful exposure to, consideration, or recall of relevant arguments (Fitzsimons et al., 2002). Thus receptiveness to opposing views is not a necessary condition for attitude change because individuals can change their attitudes with seemingly little awareness of the information that led them to do so.

More importantly perhaps, receptiveness is also not a sufficient condition for attitude change. Individuals may hear the other side's arguments, consider them thoughtfully, and come to the conclusion that although the arguments on the other side are of a nature that reasonable and moral people could make, the arguments on their own side are either more weighty, more numerous, or more plausible. Thus we propose that after thoughtful and unbiased consideration that characterizes high levels of receptiveness, reasonable individuals can decide to retain their prior attitudes and "agree to disagree."

Even in the absence of attitude change, however, receptiveness can contribute to the "subjective value" (Curhan, Elfenbein, & Xu, 2006) that partisans experience during a negotiation or in a conflictual setting (Chen, Minson & Tormala, 2010). In turn, high subjective value (e.g., positive emotions and perceptions related to one's own behavior, the behavior of one's debate or negotiation counterpart, and the overall process of a negotiation) predicts positive long-term consequences that extend beyond a single negotiation (Curhan, Elfenbein, & Kilduff, 2009; Curhan, Elfenbein, & Eisenkraft, 2010).

Research Overview

In the present manuscript we report the results of five studies that develop and validate a self-report scale of receptiveness to opposing views. Study 1 describes the process of item generation and the psychometric properties of the scale. We also report convergent and discriminant validity measures between our new measure and conceptually related self-report scales. Then, we go on to show how the scale predicts three stages of information processing: seeking, recall, and evaluation. In Study 2

(*information seeking*) we demonstrate that the scores on the scale moderate individuals' preferences for social activities that involve disagreement on hot-button political topics. In Study 3 (*information recall*) we show that the responses on the scale predict participants' tendency to disproportionately recall arguments that support rather than oppose one's position in a debate. In Study 4 (*information evaluation*) we demonstrate that scale scores moderate participants' tendency to evaluate opposing arguments more negatively than supporting arguments. Finally, in Study 5 we present data from a field study conducted in the context of a Massively Open Online Course (MOOC) that demonstrate that individuals who are higher in receptiveness engage more actively in discussions on controversial political topics.

Study 1: Scale Development

In Study 1 we develop a measure of receptiveness to opposing views. To generate an initial pool of items, in a between-subjects design, we presented participants on Amazon Mechanical Turk (mTurk) with two scenarios wherein they imagined either: a) attending a family gathering where a family member expressed a view they strongly disagree with; or b) watching a television program featuring a politician that they strongly disagree with. After imagining the scenario, participants described what they would think and feel in this situation and reported their liking or dislike of the situation on a 7-pt Likert scale.

Participants' open-ended descriptions of their reactions to disagreement were illuminating in that they provided rich, first-person insight into why individuals find exposure to opposing views aversive. The responses frequently mentioned negative

emotions such as anger, frustration, and disgust. Furthermore, participants often alluded to the intellectual and moral shortcomings that might lead others to hold views different from their own. Only a small minority of respondents mentioned any positive aspects of being exposed to opposing views, such as empathizing with different perspectives or satisfying curiosity.

We used the responses from this pilot study and our own prior theorizing on this topic (Chen, Minson, & Tormala, 2010; Chen, Minson, Schöne, & Heinrichs, 2013) to generate an initial pool of items for our scale. The items broadly reflected the themes touched on in the open-ended responses, including negative emotional reactions toward disagreement; derogation of those holding opposing views; intellectual curiosity regarding opposing views; and a belief that it is inappropriate to debate certain issues.

We then used four participant samples from Amazon Mechanical Turk to generate and refine the items in the scale. We removed items with factor loadings of less than .40, and any that may have been open to multiple interpretations. The sections below present the method and results of the third and fourth rounds of data collection.

Study 1a: Method

Participants: Participants were workers on Amazon Mechanical Turk ($N = 205$, 57% male; $M_{\text{age}} = 34$).

Procedure: Participants responded to 22 items, presented in random order, that we hypothesized would measure receptiveness to opposing views. We presented each item in the form of a statement and asked participants to indicate their agreement or disagreement with each statement using a scale anchored at “-3: Strongly Disagree” and “+3: Strongly Agree.”

In order to evaluate the extent to which receptiveness to opposing views is a unique construct, distinguishable from related constructs measured by existing scales, we also asked participants to respond to the Big Five Personality Inventory (John & Srivastava, 1999), the Need for Closure Scale (Roets & Van Hiel, 2011), the Need to Evaluate Scale (Jarvis & Petty, 1996), the Perspective Taking subscale of the Davis Interpersonal Reactivity Index (Davis, 1980), the Resistance to Persuasion Scale, and the Bolster-Counterargue Scale (Briñol, Rucker, Tormala, & Petty, 2004). In order to reduce the effect of participant fatigue on the quality of responses for any individual scale, the order of the scales was randomized for each participant.

Study 1a: Results

We conducted an exploratory principal components factor analysis with varimax rotation on the 22 items in our questionnaire. The rotated matrix returned 12 factors. The factor loadings for each item are presented in Table 1. We retained four interpretable factors with Eigenvalues above 1.0, consisting of 20 items. We eliminated two more items from the final scale. One item loaded to a similar degree on two different factors. The other item lacked sufficient clarity in wording and had lower loadings on its factor. The final 18 items used in future analyses and studies are presented in Appendix 1.

The final scale contains four factors and has a high overall scale reliability ($\alpha = 0.87$). The first factor conceptually corresponds to emotional reactions to attitude-incongruent views ($\alpha = .86$). It suggests that an important barrier to engaging with holders of opposing opinions is anticipation of negative emotions such as anger and frustration. The second factor corresponds to the value that individuals' place on understanding others and their views ($\alpha = .85$). The items in this factor reflect a

desire to engage in behaviors that provide one with greater insight and information about the beliefs of others. The third factor corresponds to derogation of holders of opposing views ($\alpha = .80$). The items in the factor suggest that one reason people may avoid alternative opinions is because they make negative judgments and attributions regarding disagreeing others and their motives. Finally, the fourth factor corresponds to a set of beliefs about the sacred nature of some issues ($\alpha = .78$). Individuals high on this factor may avoid disagreement because they believe that particular issues are not subject to debate.¹

Our new scale and its individual factors possess appropriate levels of discriminant validity relative to other conceptually related constructs. Table 2 presents the correlations with and discriminant validities between the new scale and related measures using the correction for attenuation formula of the Multitrait-Multimethod Matrix (Campbell & Fiske, 1959). The absolute value of the correlations for the overall scale ranged from $r = .02$ (with Need to Evaluate) to $r = .42$ (Perspective taking). The absolute values of discriminant validities for the overall scale ranged from $.02$ (with Need to Evaluate) to $.49$ (Perspective taking).

Study 1b: Method

Participants: Participants were workers on Amazon Mechanical Turk ($N = 202$, 49% male; $M_{\text{age}} = 36$).

Procedure: Participants responded to the 18 items of the new receptiveness to opposing views scale presented in random order. In order to further establish how our new scale relates to established measures participants also responded to the Bias

¹ The fourth factor has an Eigenvalue of 0.73, which is lower than the traditional cut-off of 1.0. However we chose to retain it because it explained a relatively high proportion of variance and seemed conceptually important and distinct from the first three factors.

Blindspot Scale (Scopelliti et al., 2015), the Thomas-Killman Inventory (Kilmann & Thomas, 1977), the Narcissistic Personality Scale (Raskin & Hall, 1981), and the Individual and Group Loyalty scale (Beer & Watson, 2009). To avoid confounds due to participant fatigue, all scales were presented in random order.

Study 1b: Results

The second administration of our scale revealed that the reliability of the scale remained high: $\alpha = .88$, which is well above the traditional threshold of $.70$ (Nunnally, 1978). Furthermore, when we correlated each individual item with the overall scale the average item-to-total correlation equaled $.57$, suggesting that each individual item was highly correlated with the overall construct. The average pairwise correlation between the items was $.32$. Of the 171 possible pairwise correlations, 140 were positive and significant, 25 were positive but did not reach significance, and 6 were negative and non-significant.

Prior to conducting confirmatory factor analysis to evaluate how well our Study 1a data fit the model identified in Study 1a we evaluated the assumption of multivariate normality by conducting Mardia's (1980) test of multivariate skewdness. The test returned a significant Chi square statistic ($X^2 = 1885, p < .001$) for skewdness, suggesting that the data are not normally distributed. For this reason we used a robust maximum likelihood estimation procedure. Our results suggest that the hypothesized factor structure that emerged in Study 1a adequately explains the data in Study 1b. We obtained a root mean square error of approximation (RMSEA) statistic of 0.060 , indicating a good model fit (MacCallum, Browne, & Sugawara, 1996). Thus our theorized model provides us with a good description of the underlying data structure.

Tables 3a and 3b present the factor structure of the scale and the item loadings obtained in both exploratory and confirmatory factor analyses.

We further observed that our scale possesses appropriate levels of convergent and discriminant validity in relation to the additional measures used in Study 1b (See Table 2). Thus receptiveness was positively correlated with the Individual and Group Loyalty Scale (Beer & Watson, 2009) and the Cooperation subscale of the Thomas-Kilmann Inventory (Kilmann & Thomas, 1977). However, these correlations were modest, once again suggesting that the new scale is measuring a distinct construct.

Discussion

In Study 1 we developed and validated a new self-report measure of individuals' receptiveness to opposing views. We identified 18-items that load on four conceptually distinct, yet related factors that emerge when individuals consider interacting with holders of opposing views. The four identified factors were: negative emotions, intellectual curiosity, derogation of opponents, and sacred issues. The confirmatory factor analysis in Study 1b replicated the factor structure identified in Study 1a. Furthermore, we established the fact that although responses on the new scale are correlated with responses on conceptually related scales, the new scale possesses appropriate levels of discriminant validity.

In Studies 2-5 we turn to testing whether our scale predicts behaviors that we theorized to be correlated with receptiveness to opposing views. We use a set of well-established laboratory paradigms to demonstrate that the scores on the receptiveness scale moderate the magnitude of several distinct biases in information processing.

Study 2: Exposure to Supporting and Opposing Arguments

In Study 2 we begin to test whether our new scale predicts behaviors conceptually associated with receptiveness to opposing views. We theorized that receptiveness to opposing views should, first and foremost, make people willing to expose themselves to counter-attitudinal arguments by engaging in interactions with disagreeing others. Thus, in Study 2 we ask individuals to report their willingness to engage in a variety of activities, including social interaction with holders of opposing views. Extensive research on the phenomenon of selective exposure predicts that people will be more willing to interact with those they agree with rather than disagree with (Frey, 1986; Hart et al., 2009a; Jonas, Schulz-Hardt, Frey, & Thelen, 2001). However, we hypothesize that this overall tendency will be moderated by individuals' responses on the receptiveness scale. In our study we used several different social contexts and several hot-button topics to demonstrate that receptiveness is positively related to willingness to engage with opposing views across a variety of situations.

Method

Participants: Participants on Amazon Mechanical Turk ($N = 205$, 61% male; $M_{age} = 33.3$) rated their enjoyment of spending twenty minutes on each of seventeen different everyday activities (e.g. taking a bubble bath, eating tacos, paying the bills, visiting an elderly relative) on a 7-point Likert scale anchored at "1: Dislike Very Much" and "7: Like Very Much." Four of the activities entailed a social interaction (having lunch, riding in a taxi, watching a television program, talking to a family member) with a person expressing an opinion on a current hot-button political issue (abolishing the death

penalty, legalizing same-sex marriage, repealing the Affordable Care Act, and limiting access to abortions). We counter-balanced the order and content of activities between participants to include every combination of four types of activities paired with the four political issues. Participants then reported their own views on a variety of political topics, including the four that were included in the activities using a 7-point scale anchored at “-3: Strongly Disagree” and “+3: Strongly Agree.” This allowed us to compare the anticipated activity enjoyment of people who agreed versus disagreed with the speaker in the scenario on the focal issue. After rating their enjoyment of all seventeen activities, participants responded to the receptiveness scale and reported demographic information.

Results

The average enjoyment ratings of the thirteen activities that did not involve the discussion of a political topic ranged from 5.85 ($SD = 1.46$) for the enjoyment of bubble baths, down to 2.66 ($SD = 1.33$) for doing laundry. To analyze the relationship between the predicted enjoyment of an activity and agreement with the point of view being expressed by one’s discussion counterpart, we collapsed participants’ responses across the four activities that featured a discussion of a political topic and the four political topics used in the study. We then created an indicator of disagreement with the protagonist in the scenario based on the participants’ own stated attitude about each political issue collected at the end of the survey.

When we regressed participants’ enjoyment of a particular activity that involved social interaction on their level of disagreement with their conversation counterpart, and included fixed effects for activity type and political issue, degree of disagreement

predicted interaction enjoyment, $b = 0.22$, $t = 6.30$, $p < .001$. Thus, on activities during which participants expected to strongly agree with their interaction partner average enjoyment was rated as $M = 3.51$ ($SD = 2.67$), or close to neutral, whereas on activities during which participants expected to strongly disagree with their interaction partner enjoyment ratings fell to $M = 1.84$ ($SD = 1.60$), notably lower than the worst-ranked activity that did not involve political discussion (doing laundry).

To test whether the responses to the receptiveness scale moderate individuals' preference for interacting with agreeing versus disagreeing others we interacted participants' scores on the scale with the extent to which they disagreed with their counterpart, again including fixed effects for interaction scenario and political topic in question. We observed a significant interaction between disagreement and receptiveness with respect to how much participants expected to enjoy the social interactions, $b = -0.08$, $t = 2.39$, $p < .02$. To further examine the nature of this interaction we divided our sample into participants who reported higher or lower than average receptiveness. Participants who reported a lower than average level of receptiveness demonstrated a strong and significant relationship between agreement with their interaction partner and their level of predicted enjoyment of the interaction, $b = 0.29$, $t = 5.43$, $p < .001$. This relationship was significantly attenuated for participants who reported higher levels of receptiveness to opposing views: $b = 0.17$, $t = 3.52$, $p < .01$. Thus although participants both in the higher and lower half of our receptiveness distribution expected to enjoy interaction with agreeing others more than with disagreeing others, this pattern was attenuated for those who scored higher on the scale.

Our measure of participant attitudes toward the focal political issues allows us to examine whether the extremity of one's attitude is related to the role of receptiveness in predicting enjoyment of political discussion. This analysis reveals that the interaction between receptiveness and disagreement reported above was entirely driven by participants who reported relatively strong attitudes (-3 or +3 on our scale) regarding the issue in question. Whereas participants who had strong attitudes demonstrated a significant interaction between receptiveness and expected disagreement in their predicted enjoyment of social interactions $b = 0.20, t = 6.58, p < .001$, no such relationship was observed for participants who had moderate and weak attitudes on the issue in question $b = 0.02, t = 0.30, ns$.

Finally, to test whether receptiveness uniquely predicts individuals' evaluation of social interactions that feature some degree of disagreement (as opposed to being a more general trait that may increase enjoyment of all social interactions), we re-ran the analysis above simply regressing individuals' enjoyment of all four activities featuring discussion (irrespective of level of agreement or disagreement) on their self-reported receptiveness. We observed a non-significant and negative relationship between predicted enjoyment of the activity and receptiveness, $b = -0.15, t = 1.49, p < .14$, suggesting that more receptive individuals do not simply enjoy all discussion more than their less receptive counterparts.

Discussion

Study 2 demonstrates that responses on our new scale are related to individuals' predicted enjoyment of discussions with agreeing and disagreeing others. Whereas on average people strongly preferred social interactions that feature agreement versus

disagreement, our scale moderated this tendency significantly. Individuals who reported being receptive to the opposing views of others predicted that they would enjoy discussion with disagreeing others more. Importantly, this effect was most evident in instances when the respondents had strong attitudes on the issue at hand, suggesting that being receptive does not simply mean having a weak attitude on the topic in question.

Study 2 suggests that receptive individuals are more likely to engage with others who hold opposing views on important issues. However, there are two ways in which such self-reported receptiveness may be only “skin deep.” First, it is possible that people who claim that they would enjoy an interaction with a disagreeing other, would still avoid such an interaction when given the chance. Second, it is possible that even when physically exposed to opposing views, receptive and unreceptive individuals would be similarly likely to dismiss or forget the information presented to them. Study 3 addresses these possibilities by examining the extent to which scores on the receptiveness scale predict individuals’ ability to recall relevant arguments for and against their preferred viewpoint.

Study 3: Recall of Supporting and Opposing Arguments

Study 2 demonstrated that participants who scored highly on the receptiveness scale predict a higher level of enjoyment for interactions with holders of opposing views. In Study 3 we examine whether—beyond affecting participants anticipated enjoyment of hypothetical interactions—participants’ scale responses predict their recall for arguments for and against their own position on a controversial topic.

Prior studies have documented a “myside bias” (Baron, 1995; Perkins, 1985; Stanovich et al., 2013) wherein individuals asked to provide as many arguments as they can on both sides of an issue generate more arguments for their own position than for the opposing position. In Study 3 we examine whether individuals’ score on the receptiveness scale predicts the extent to which they show biased recall with the respect to arguments related to current hot-button issues. As in Study 2, we use a variety of issues and a large and diverse sample to ensure that our findings are broadly generalizable.

Method

We recruited participants from Amazon Mechanical Turk ($N = 702$, 53% male; $M_{\text{age}} = 37$). Participants first expressed their views on several controversial issues (e.g. legalizing a market for human organs; regulation of firearms; etc.) by agreeing or disagreeing with a position statement (e. g. “The United States should institute tougher gun control laws.”) using a 7-point Likert scale. We then randomly assigned participants to one of the issues and asked them to write down as many arguments both for and against the statement as they could think of. Participants received explicit instructions to write down arguments on both sides of the issue, irrespective of their own opinion.

Participants entered their arguments in individual text boxes in the experimental software. Every time they completed writing one argument and pressed the “Enter” key, an additional text box appeared. When they could think of no additional arguments they moved on to the next part of the survey by pressing the “Submit” button on the page. Participants then viewed the arguments they generated and categorized each one as being for one or the other side of the issue, or neither (task adapted from Hardisty, Johnson, & Weber, 2010; also see Weber et al., 2007; and Johnson, Häubl, & Keinan, 2007). The

accuracy of the participants' categorizations was checked and confirmed by experimenters. Participants then completed the receptiveness scale and demographic information.

Results

Participants wrote an average of 4.20 ($SD = 2.10$) arguments, ranging from a minimum of 1 to a maximum of 16. On average, participants generated almost twice as many arguments supporting their stated beliefs $M = 2.66$, $SD = 1.63$, as arguments opposing their beliefs $M = 1.44$, $SD = 1.49$. Very few arguments remained uncategorized, $M = 0.11$, $SD = 0.35$. When we calculated the number of arguments that participants produced in favor of their viewpoint and subtracted the arguments they produced in opposition to their viewpoint, we observed evidence of a strong tendency toward generating arguments for one's own side of the argument, despite the instructions to represent both sides of the debate $M = 1.23$, $SD = 2.3$, $t(701) = 14.1$, $p < .001$. This tendency was more pronounced for people who reported stronger attitudes on the issue in question: $b = 0.15$, $t = 4.02$, $p < .001$.

To test our focal prediction, we regressed the z-scored difference in pro- versus counter-attitudinal arguments generated by each participant on their z-scored receptiveness scale score. We observed a significant negative relationship such that participants who scored higher on receptiveness were less one-sided in their generation of arguments, $b = -0.09$, $t = -2.40$, $p < .02$. Interestingly, although receptiveness predicted the tendency to generate more pro-attitudinal versus counter-attitudinal arguments, it did not predict the total number of arguments generated $b = 0.01$, $t = 0.08$, ns .

As in Study 2, we examined the extent that the strength of one's attitude on the focal topic impacted the relationship between receptiveness and generation of pro- versus counter-attitudinal arguments. At every level of attitude strength participants generated significantly more arguments for their own viewpoint versus the opposing viewpoint (weak attitudes: $M = 0.73$, $SD = 1.94$; moderate attitudes: $M = 1.16$, $SD = 2.40$; strong attitudes: $M = 1.57$, $SD = 2.37$). However, when we again regressed this difference on receptiveness scale scores we observed a significant relationship only among holders of strong attitudes, $b = -0.12$, $t = -2.39$, $p < .02$. Receptiveness did not predict biased generation of arguments for participants holding weak ($b = -0.005$, $t = -0.08$, *ns*) or moderate attitudes ($b = -0.09$, $t = -0.89$, *ns*).

Discussion

Study 3 demonstrated that beyond simply professing a willingness to engage in interaction with holders of opposing views, people who score higher on our scale are more able to generate arguments on both sides of hot-button political issues. This suggests that in addition to being more likely to have heard arguments from both sides, more receptive individuals are more willing to intellectually engage with those arguments, in at least as far as being able to generate or reproduce them when prompted.

Interestingly, we again observed the greatest effect of receptiveness for individuals who held strong attitudes on the issues in our study. In cases of weak and moderate attitudes participants on average were more even-handed in their recall of arguments supporting and opposing their chosen viewpoint. However, in cases of strongly held attitudes wherein on average participants produced considerably more

attitude-confirming versus -disconfirming arguments, individuals who reported being more receptive were able to offer a more balanced set of arguments on the topic.

Study 4: Evaluation of Supporting and Opposing Arguments

Study 4 examines the manner in which people evaluate arguments for versus against their viewpoint as a function of their level of receptiveness. Extensive prior research demonstrates that people readily derogate the holders of opposing views and the arguments they put forth (Pronin, Gilovich, & Ross, 2004; Lord et al., 1979). Thus, it is possible that although more receptive individuals are more willing to interact with disagreeing others and demonstrate a better command of both supporting and opposing arguments, they continue to derogate holders of opposing views and their arguments. If such derogation then allows one to dismiss those arguments as inferior or irrelevant, receptive individuals may not fare any differently in conflictual dialogue than their less receptive peers. Thus Study 4 examines the extent to which greater receptiveness is correlated with more even-handed evaluation of arguments irrespective of one's prior position.

Method

We recruited participants ($N = 200$, 56% male, $M_{age} = 36.9$) through Amazon Mechanical Turk. Participants began the questionnaire by stating their level of agreement or disagreement with the following statement: "The United States should expend greater human and financial resources to prevent illegal workers from crossing the border" on a 7-point scale anchored at "-3: Strongly Disagree" and "+3: Strongly Agree." Participants then viewed a series of ten arguments that supported or opposed this statement. In order

to ensure that any findings were not due to the specific arguments we used we created two versions of the survey using 10 different arguments in each, and randomly assigned participants to one of the two argument sets.

The order of the arguments that each participant saw was counterbalanced such that half of the participants viewed five arguments that supported the statement, followed by five arguments that opposed the statement; the other half of the participants viewed the two blocks of five argument in the opposite order. In order to alleviate participant fatigue and check for lapses in attention, participants answered five easy mental arithmetic questions between the two sets of arguments. We decided a priori to drop the data from any participant that entered an incorrect answer to more than one of these five problems.

After each of the ten arguments participants answered six items evaluating the argument and the individuals who would agree with the argument. Specifically, participants stated the extent to which the argument was persuasive, true, and relevant to the issue at hand using 5-point Likert scales anchored at “1: Not at all” to “5: Very much.” They also stated the extent to which people who would put forth each of the arguments are moral, intelligent, and objective using 7-pt scales anchored from “-3: Completely immoral/unintelligent/biased” to “+3: Completely moral/intelligent/objective.” After answering questions about all ten arguments participants responded to the receptiveness scale and provided demographic information.

Results

We collapse our data across the two sets of arguments and the two orders of argument presentation because neither factor moderated any of the results we describe

below. We collapsed the three measures evaluating arguments (persuasiveness, truthfulness, and relevance, $\alpha = .89$) and the three measures evaluating individuals who would agree with those arguments (morality, intelligence, and objectivity, $\alpha = .84$) into two measures evaluating the arguments themselves and evaluating individuals who support a particular argument. We dropped data from eight participants who entered incorrect responses to more than one of the arithmetic attention check problems. Furthermore, 15 participants reported having no opinion on the focal statement regarding border security. The below analyses are based on the remaining 177 participants.

In line with prior findings, participants drew a sharp distinction between arguments supporting versus opposing their stated position. Participants evaluated arguments supporting their views more positively than arguments opposing their views, $M = 3.65$ vs. $M = 2.50$, $b = 0.58$, $z = 12.39$, $p < .001$. Similarly, participants evaluated individuals who agree with arguments that supported the participant's position more positively than individuals who agreed with arguments that opposed the participant's position, $M = 1.91$ vs. $M = 0.80$, $b = 0.57$, $z = 10.17$, $p < .001$. Both of these effects, however, were moderated by the participants' self-reported level of receptiveness to opposing views. Specifically, more receptive participants judged disagreeing arguments and agreeing arguments more similarly relative to less receptive participants, $b = -.21$, $z = 4.80$, $p < .001$. This was due to the fact that more receptive participants evaluated agreeing arguments less positively than their less receptive counterparts ($b = -.26$, $t = -4.65$, $p < .001$), and also evaluated disagreeing arguments less negatively than their less receptive counterparts ($b = .15$, $t = 2.82$, $p < .01$).

Similarly, more receptive participants judged individuals who support arguments with which they personally disagree or agree more similarly than less receptive participants $b = -0.18, z = 3.09, p < .003$. More receptive participants judged others who supported arguments that agreed with their stance more negatively than less receptive participants ($b = -0.19, t = -2.30, p < .03$). Similarly, they judged others who supported arguments that contradicted their stance less negatively than less receptive participants ($b = .18, t = 2.07, p < .05$).

When we examine the data as a function of how strongly participants felt about the issue statement we see that in line with our prior studies participants evaluation of the holders of pro- versus counter-attitudinal arguments was most strongly moderated by receptiveness for those who felt strongly about the issue (weak attitudes: $b = -0.10, t = -1.36, ns$; moderate attitudes: $b = -.03, t = -0.33, ns$; strong attitudes: $b = -0.21, t = -1.86, p < .07$). Interestingly, participants' evaluations of the arguments themselves were strongly moderated by their level of receptiveness in cases of both weak and strong attitudes (weak attitudes: $b = -0.19, t = -3.39, p < .01$; moderate attitudes: $b = 0.02, t = 0.33, ns$; strong attitudes: $b = -0.21, t = -2.95, p < .01$).

Discussion

Study 4 demonstrates that individuals who score higher on our scale evaluate arguments supporting and opposing their point of view more similarly than less receptive individuals. In line with prior research, participants strongly favored arguments that supported their views and evaluated individuals who put forth those arguments more positively. However, this pattern was moderated by individuals' self-reported level of receptiveness.

Together with Studies 2 and 3, Study 4 presents a picture of receptiveness as a tendency toward more even-handed treatment of belief-confirming and disconfirming arguments across various stages of information processing. Using several laboratory measures that have been previously used to establish bias in treatment of belief-confirming versus disconfirming information we demonstrate that receptiveness predictably moderates these biases.

In Study 5 we go on to examine whether receptiveness is correlated with behavior outside of the psychological laboratory. This transition into a field setting allows us to test whether our scale predicts actual behavior (as opposed to questionnaire responses), over the span of several months (as opposed to a single testing session). Furthermore, the context allows us to minimize demand effects and test our scale on a highly diverse population of participants.

Study 5: Receptiveness in a Massively Open Online Course

We conducted Study 5 in the context of a Massively Open Online Course (MOOC) offered through the HarvardX platform. The course, HKS101A American Government, is offered free of charge to any individual, anywhere in the world, who has an internet connection and chooses to register on the HarvardX platform.

In addition to listening to recorded lectures, and doing related coursework, HKS101A requires students to participate in online discussion boards in order to respond to thought questions posed by the teaching team. Many of the thought questions touch on politically polarizing topics such as the consequences of free trade, or appropriate methods of economic stimulation. Prior research has argued that MOOCs create opportunities for participants with diverse political views to engage in meaningful

discourse, advancing democratic thought and strengthening civil society (Hansen & Reich, 2015; Reich, Stewart, Mavon, & Tingley, 2016). The current study allowed us to examine whether responses on our scale are predictive of such behavior.

In this study we were interested in assessing whether students' self-reported receptiveness predicts their engagement in online discussions on potentially controversial topics. To this end we obtained records of student participation in the course discussion forums and related them to their scores on the receptiveness scale.

Method

Participants: Participants were students in a Massively Open Online Course on American Government offered through the HarvardX platform. Of the 512 students who took the optional post-course survey, 285 completed the receptiveness scale and 260 of those had enrolled in the course during its first month. Our analyses are based on these 260 individuals, enabling us to examine the behavior of this sample over the course of several months. We were able to match roughly 85% of the participants who took the post course survey to demographic information that they provided in the beginning of the course. This group of participants was approximately 70% male, $M_{age} = 41.5$).

Procedure: Over the course of the semester, students received reading assignments on topics in American Government along with discussion questions for each assignment. Students posted comments and replies with regard to the assigned topics on the course's online forum. Whereas there was a small incentive to participate in the discussions (a self-assigned grade), there was substantial heterogeneity in the extent of students' actual participation. Our hypothesis was that students' scores on the

receptiveness scale would predict the extent of their participation in the online discussion forums.

Results

Prior to running our analyses we dropped from the dataset administrative posts from the teaching team and the posts that students wrote to introduce themselves at the beginning of the semester. A total of 1,988 students posted on the course forums during the semester at least once. This resulted in a total of 21,929 forum posts, with an average of 7.2 posts per student.

Students who filled out the post-course survey that included the receptiveness scale were substantially more active in their forum posts, with an average of 28.03 posts per student. And yet even among this self-selected group of committed students, we observed a significant effect of self-reported receptiveness on forum activity. Figure 4 presents the average number of weekly posts for students scoring in the top third and bottom third of the distribution of receptiveness scores. On average, a one standard deviation increase in receptiveness resulted in 4.82 more forum postings (17.2%) per person (Kendall's $\tau = 0.127$, $z(260) = 3.0$, $p = .003$).

We repeated the above analysis using the number of words posted by each course participant as the dependent variable. Participants on average used 2,563 total words in their forum posts over the course of the semester. We again observed that one standard deviation increase in receptiveness resulted in an average of 501 additional words used in the posts (Kendall's $\tau = 0.122$, $z(260) = 2.9$, $p = .004$). This additional analysis suggests that more receptive course participants did not simply write a greater number of shorter posts, but actually contributed more content to the course forums.

Finally, our data collected over the course of 18 weeks allows us to examine the extent to which receptiveness is related to behavior over time. For example, it seems possible that the relationship between scale responses and the relevant behavioral measure would weaken as the time between measurements increases. Figure 4 suggests however, that the relationship remained consistent. To examine this question statistically, we repeated our analyses separately using posting behavior data from the first versus last nine weeks of the semester. We obtain results that are strikingly similar despite the large time lag between posting behavior and the administration of the receptiveness scale. Receptiveness was related to more forum activity during both the first half (Kendall's $\tau = 0.121$, $z(260) = 2.8$, $p = .005$) and the second half of the semester (Kendall's $\tau = 0.130$, $z(260) = 3.0$, $p = .003$).

Discussion

Study 5 provides us with initial evidence regarding the relationship between receptiveness and an important real-world behavior: engaging in potentially controversial political discourse as part of an online course. Online education has been hailed by some as a new engine of democracy (Hansen & Reich, 2015; Reich et al., 2016) enabling individuals with different opinions and different backgrounds to interact and engage in meaningful discourse. However, it seems plausible that even in this relatively safe context where participation is actively encouraged and diversity of views is celebrated, individuals exhibit different levels of willingness to engage with opposing views.

We find that our new scale predicts at least one measure of such willingness. Course members who reported being more receptive participated to a greater extent (i.e., wrote more and longer posts on the course discussion boards) than participants who

reported a lower level of receptiveness. Furthermore, this difference was apparent throughout the duration of the semester.

Our data suffer from the traditional limitations of correlational analyses collected in a field setting. For example, we cannot rule out the possibility that the experience of engaging in the online message boards made course participants more receptive. Yet, this seems less likely, in that expressing one's own views should have little influence on one's openness to the views of others. Despite these possible shortcomings, we interpret Study 5 as an initial piece of evidence suggesting that our scale can predict important real-world behavior.

General Discussion

In five studies we develop and validate a questionnaire measure of receptiveness to opposing views, conceptualized as an individual's willingness to expose oneself to, and intellectually engage with, arguments both for and against their point of view on important, personally relevant issues. Our measure is made up of 18 items that load onto four conceptually distinct, but correlated factors that emerge both in exploratory and confirmatory factor analysis.

Studies 1a and 1b demonstrate that the scale possesses appropriate levels of internal, convergent, and discriminant validity. Studies 2 - 4 show that individuals' scores on the scale are correlated with their tendency to exhibit well-documented biases in information processing. Specifically, in Study 2 more receptive individuals predicted that they would experience greater enjoyment from interacting with disagreeing others than less receptive individuals. In Study 3 more receptive individuals exhibited less one-sided generation of arguments for and against a viewpoint on a hot-button political topic. In

Study 4 more receptive individuals evaluated attitude-confirming and attitude-disconfirming arguments in a more even-handed manner than less receptive individuals. Finally, Study 5 demonstrated that scores on the receptiveness scale are correlated with behavior outside of the laboratory. Students in an online course in American Government who reported higher levels of receptiveness in a post-course questionnaire wrote more forum posts on controversial topics related to government and public policy.

Scale Validity and Structure

Study 1 demonstrates that our new scale measures a construct that is distinct from other constructs measured by conceptually-related scales. Importantly, although receptiveness is positively correlated with the Agreeableness and Emotional Reactivity subscales of the Big Five, these correlations are quite modest. Furthermore, Receptiveness appears to be entirely distinct from Openness to Experience, and only modestly related to Need for Cognitive Closure. Receptiveness is most related to Perspective-taking and Resistance to Persuasion. However, even the correlations with these scales fall well below the standard cut-offs for discriminant validity (Campbell & Fiske, 1959).

Our scale consists of four factors. Table 4 presents the relationships of the dependent variables in each of our studies with the overall scale as well as with each factor individually. The first factor focuses on the negative affective reactions that individuals experience when confronted with disagreement. The fact that this sub-factor is positively correlated with the Emotional Reactivity subscale of the Big Five personality inventory suggests that receptiveness to opposing views may be a construct that is stable

throughout the lifetime because of its link to a personality trait whose stability is well-documented (Soldz & Vaillant, 1999). However, the role of emotional reactions in our scale also suggests a number of interventions and manipulations that may be able to shift individuals' level of receptiveness (Huber, Van Boven, Park, & Pizzi, 2015).

For example, future research should investigate whether incidental emotions induced in one situation affect receptiveness in future situations.

The second factor in our scale can be characterized as intellectual curiosity toward opposing views and a value for understanding and exploring disagreement. Although this factor accounts for the second-largest proportion of variance in our factor analysis, Table 4 shows that it primarily predicted behavior in Study 2, where we measured participants' ability to generate arguments for and against their viewpoint. Future research should investigate whether individuals' responses on this scale can be manipulated by making curiosity a more salient value and whether related individual difference factors such as level of education or the Need to Evaluate can affect relevant behaviors.

The third factor that consistently predicted variance in our participants' behavior was a tendency to derogate the holders of opposing views as having poor reasoning or ill intentions. The extent to which participants subscribed to these ideas predicted their willingness to interact with disagreeing others, their ability to recall reason for and against a point of view, and their evaluation of arguments on both sides of an issue. The extent to which this factor drove our results suggests that manipulations focused on empathy or perspective taking may be effective in increasing receptiveness in conflict.

Finally, our fourth factor addresses the extent to which individuals hold certain views to be sacred and beyond the pale of public discourse. Although this factor was only

marginally correlated with several of our measures, this could be the result of the use of hot-button social and political topics in all of our studies. This factor may predict reactions to opposing views more robustly when tested across a variety of issues, varying in importance. Individuals' level of receptiveness in any given situation may also vary to the extent that the sacred nature of particular issues can be made more or less salient.

Situational versus Dispositional Receptiveness

An important question regarding receptiveness to opposing views deals with whether one's level of receptiveness should be considered to be an individual difference or a function of the present social situation. In the current investigation we have treated receptiveness as an individual difference, prompting scale respondents to consider how they typically react to expressions of disagreement. However, as apparent from the above discussion, we also believe that an individual's level of receptiveness can vary with the situation. Thus, we propose a contingency model (e.g. Dweck & Leggett, 1988; Mischel & Shoda, 1995) wherein receptiveness varies both between individuals and within a single individual across situations. In this aspect of our theorizing, we follow prior classic models that have demonstrated that particular psychological tendencies (e.g. moral identity centrality, capacity for self-control, implicit theories regarding intelligence) can vary both between people and within the same person from context to context (Aquino & Reed, 2002; Muraven & Baumeister, 2000).

More specifically, we consider one's level of receptiveness as a habitual tendency with which individuals approach interaction with disagreeing others. As is the case with any other habit, we predict that certain individuals will consider opposing views with

greater ease and frequency. Thus we expect that the same individual will demonstrate consistent levels of receptiveness across multiple measurements and with respect to multiple topics of disagreement. Our Study 5 data, wherein receptiveness scores were correlated with participation in online message boards over the course of several months, provide initial evidence of the stability of the construct.

However, it also seems likely that an individual's level of receptiveness will vary across situations. For example, people may be less receptive when confronted with contrary views that assail their basic values (Tetlock, 1986). Similarly, people may be less receptive when experiencing emotions high in certainty, such as anger or pride (Lerner & Keltner, 2001). Although here we present an individual difference version of the scale, identifying manipulations that affect individuals' receptiveness to opposing views will be important to both furthering our understanding of the underlying psychology as well as improving dialogue across a variety of contexts. Future studies should systematically address the extent to which receptiveness remains stable or varies over the lifetime, across topics, and across social contexts.

Receptiveness and Motivated Reasoning

Our theorizing regarding people's willingness to expose themselves to and thoughtfully consider the opposing views of others is related to the extensive prior literature on motivated reasoning (Kunda, 1990). Despite the extensive cognitive challenge to this body of work mounted in the 1970's and 1980's, considerable research now demonstrates that at least in some situations individuals' decisions are driven by

their desire to believe in a certain state of the world (e.g. Dawson, Gilovich, & Regan, 2002).

Receptiveness (or lack thereof) is distinct from motivated reasoning, however, in two important ways. First, similarly to work on attitude change, which concerns itself with the attitude of the individual after exposure to a communication, the work on motivated reasoning primarily concerns itself with the final decision or judgment that emerges as the outcome of a reasoning process. Considered from this perspective, receptiveness can be seen as a precursor to a motivated reasoning process, to the extent that faulty reasoning might emerge as a result of a failure to sufficiently engage with evidence for an opposing point of view. Whereas the motivated reasoning literature is concerned with the final decision resulting from a consideration of evidence, we are primarily concerned with the willingness to consider the evidence in the first place.

Secondly, it is easy to envision a number of contexts wherein individuals reluctance to expose themselves to views they disagree with is in direct opposition to what they would “like” to believe. For example, most individuals who believe in the deleterious effects of climate change *would like* to believe that the threat to the planet is less severe than the data suggest. However, they would still be reluctant to engage in deep discussion on this topic with individuals who consider climate change to be a “hoax.” Future research should investigate whether there are specific circumstances under which motivated reasoning enhances versus undermines receptiveness.

Receptiveness in Social Interaction

In the current work we develop and validate the construct of receptiveness to opposing views using a self-report measure and several individual-level measures of cognitive processing. However, beyond impacting the objectivity of individual judgment, receptiveness is perhaps most important in conflict settings. Individuals can frequently be heard praising others for being “good listeners” or condemning them as being “closed-minded.” Clearly, our perception of others’ receptiveness is an important dimension of social judgment, especially in contexts rife with disagreement.

Our studies provide initial evidence suggesting that features of the social context (such as the level of disagreement with one’s counterpart) affect behaviors associated with receptiveness (such as willingness to engage in interaction). However, it remains to be seen whether individuals can accurately perceive the receptiveness of others and whether this construct (either as measured by self-report, behavior, or social perception) has measurable impact on conflict. Future work should examine whether self-reported receptiveness can be accurately detected by the “lay psychologist” (Ross, 1977). We theorize that both higher levels of counterpart receptiveness and being well-calibrated in its detection should have positive effects on conflictual dialogue.

Furthermore, we suspect that in addition to impacting social interaction, receptiveness also emerges from social interaction in a dynamic manner. In the world outside of the laboratory, receptiveness to opposing views necessitates interacting over time with a holder of those views. When that interaction involves “live” back and forth (as opposed to solitary reading or video viewing), one individual’s level of receptiveness is likely to affect their counterpart’s level of receptiveness, and vice versa. Understanding this dynamic process can lead to important insights not only regarding the underlying

psychology of receptiveness, but also regarding how individuals should behave if they want their views and opinions to be “heard.” Recent advances in research methodology and recording technology can enable future researchers to track how receptiveness unfolds over time, affects, and is affected, by social behavior.

Conclusion

The current work describes an effort to develop a self-report measure of receptiveness to opposing views. Developing such a self-report scale rests on the assumption that in addition to being detectable by psychologists, and being observable to third parties, one’s level of receptiveness is something individuals can access and accurately report. The self-report measure possesses both advantages and disadvantages relative to behavioral measures and third party evaluation. The scale may fall short in detecting the receptive mindset due to people’s lack of awareness of their internal states, or due to a systematic bias that might, for example, lead individuals to report that they are more receptive than they really are. However, relative to third party observation a scale possesses the advantage of not relying on the interpersonal skills of the observer for its conclusions. Relative to laboratory measures the scale also possesses the advantage of ease of administration that can allow it to be used to detect the way different manipulations affect receptiveness, or how receptiveness persists or varies across contexts.

We believe that the availability of our scale provides the groundwork for a multifaceted exploration of receptiveness, its antecedents, and consequences. The above discussion has touched on important questions regarding the interpersonal nature of receptiveness and whether individuals can accurately access it in others (given how often

they complain about its lack). Of similarly high concern, given today's polarized political climate, are interventions that might increase receptiveness and enable a deeper and more thoughtful dialogue. The items of our scale provide future scholars with several potentially fruitful avenues of exploration, including emotion inductions, piquing curiosity, or reframing issues as belonging to a less sacred domain.

An additional area of research concerns the impact of receptiveness on decision-making in fields beyond policy debate or conflict resolution. For example, it may be the case that when individuals are faced with difficult problems requiring the consideration of several avenues of action, those who are more receptive may be more willing to entertain contrarian proposals and achieve better outcomes. Furthermore, decision-making teams comprised of a greater proportion of highly receptive individuals may experience lower levels of conflict and engage in more productive deliberation.

In closing, we believe that our new scale measures an important construct, related to a variety of outcomes in individual information processing, conflict and decision-making. We hope that future research will further explore the tendency for individuals to willingly consider the views of others, in order to generate further insight into this important facet of social behavior.

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RUNNING HEAD: RECEPTIVENESS TO OPPOSING VIEWS

Table 1: Correlations between each scale item and the entire Receptiveness Scale.

		Entire Scale	F1				F2					F3				F4			
			1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
F1	1. Angry	0.73	1.00																
	2. Disgusted	0.58	0.45	1.00															
	3. Frustrated	0.71	0.63	0.58	1.00														
	4. Annoyed	0.70	0.61	0.57	0.71	1.00													
F2	5. Conversations	0.54	0.52	0.13	0.25	0.27	1.00												
	6. Reading	0.44	0.35	0.07	0.19	0.21	0.50	1.00											
	7. Listening	0.62	0.45	0.26	0.38	0.41	0.64	0.51	1.00										
	8. Value interactions	0.66	0.51	0.28	0.41	0.44	0.60	0.54	0.64	1.00									
	9. Curious	0.54	0.46	0.10	0.25	0.30	0.68	0.51	0.62	0.62	1.00								
F3	10. Views too extreme	0.74	0.53	0.40	0.49	0.50	0.37	0.22	0.46	0.45	0.38	1.00							
	11. Uncompelling arguments	0.61	0.31	0.35	0.37	0.36	0.19	0.17	0.37	0.37	0.29	0.51	1.00						
	12. Designed to mislead	0.64	0.37	0.32	0.45	0.40	0.16	0.13	0.25	0.27	0.19	0.57	0.57	1.00					
	13. Opponents biased	0.50	0.26	0.35	0.41	0.35	-0.02	0.08	0.17	0.18	0.06	0.34	0.42	0.50	1.00				
	14. Emotional arguments	0.55	0.34	0.36	0.43	0.44	0.07	0.09	0.18	0.20	0.13	0.45	0.52	0.56	0.46	1.00			
F4	15. Too offensive	0.46	0.23	0.24	0.19	0.21	0.07	0.02	0.07	0.15	0.07	0.28	0.17	0.21	0.15	0.14	1.00		
	16. Not debatable	0.53	0.22	0.25	0.28	0.22	0.17	0.14	0.18	0.24	0.11	0.31	0.18	0.27	0.17	0.19	0.42	1.00	
	17. Ideas dangerous	0.43	0.14	0.05	0.07	0.10	0.21	0.14	0.13	0.16	0.15	0.22	0.10	0.22	0.06	0.05	0.59	0.52	1.00
	18. Sacred issues	0.30	0.15	0.12	0.16	0.10	-0.02	-0.11	-0.05	-0.03	-0.07	0.18	0.12	0.15	0.28	0.10	0.20	0.30	0.26

RUNNING HEAD: RECEPTIVENESS TO OPPOSING VIEWS

Table 2: Correlations and discriminant validity measures between Receptiveness to Opposing Views and related measures.

Related Measures	Factor 1: Negative Emotions		Factor 2: Intellectual Curiosity		Factor 3: Derogation of Opponents		Factor 4: Sacred Issues		Overall Scale	
	Corr. Coefficient	Disc. Validity	Corr. Coefficient	Disc. Validity	Corr. Coefficient	Disc. Validity	Corr. Coefficient	Disc. Validity	Corr. Coefficient	Disc. Validity
Big Five Personality										
Extraversion	0.23	0.26	0.09	0.10	0.10	0.12	-0.08	-0.09	0.12	0.13
Agreeableness	0.28	0.33	0.17	0.20	0.24	0.29	-0.13	-0.16	0.19	0.22
Conscientiousness	0.16	0.18	0.13	0.15	0.08	0.10	-0.11	-0.13	0.09	0.10
Emotional Reactivity	-0.34	-0.38	-0.06	-0.07	-0.10	-0.12	-0.03	-0.04	-0.19	-0.21
Openness to Experience	0.01	0.01	0.23	0.27	-0.23	-0.28	0.09	0.11	0.03	0.03
Need for Closure	-0.21	-0.24	-0.09	-0.10	-0.03	-0.04	-0.29	-0.35	-0.22	-0.25
Need to Evaluate	-0.07	-0.08	0.24	0.28	-0.19	-0.23	-0.02	-0.02	-0.02	-0.02
Perspective Taking	0.31	0.36	0.52	0.61	0.29	0.35	0.09	0.11	0.42	0.49
Resistance to Persuasion	-0.16	-0.18	-0.19	-0.22	-0.24	-0.28	-0.31	-0.37	-0.32	-0.36
Bolster-Counterargue	-0.03	-0.04	0.30	0.36	-0.10	-0.12	0.03	0.04	0.07	0.08
Bias Blind Spot	-0.11	-0.13	0.21	0.23	-0.17	-0.19	0.01	0.02	-0.02	-0.02
Thomas Kilmann Inventory										
Competing	-0.08	-0.10	-0.27	-0.32	-0.18	-0.22	-0.02	-0.03	-0.20	-0.23
Avoiding	-0.16	-0.27	-0.14	-0.24	-0.01	-0.01	-0.06	-0.11	-0.12	-0.21
Compromising	0.05	0.07	0.25	0.35	0.11	0.15	-0.01	-0.02	0.14	0.19
Cooperating	0.14	0.23	0.13	0.21	0.03	0.05	0.16	0.29	0.16	0.25
Accommodating	0.01	0.02	0.27	0.38	-0.07	-0.10	0.06	0.10	0.10	0.14
Narcissistic Personality	0.12	0.14	-0.12	-0.13	-0.03	-0.03	-0.05	-0.06	-0.03	-0.03
Individual and Group										
Individual Loyalty	0.11	0.13	0.46	0.51	0.07	0.09	-0.13	-0.16	0.19	0.21
Group Loyalty	0.29	0.32	0.13	0.15	0.15	0.18	-0.23	-0.28	0.13	0.14

RUNNING HEAD: RECEPTIVENESS TO OPPOSING VIEWS

Table 3: Receptiveness to Opposing Views factor structure.

Table 3a: Correlations between factors.

N = 205 (Study 1a)	Factor 1: Negative Emotions	Factor 2: Intellectual Curiosity	Factor 3: Derogation of Opponents	Factor 4: Sacred Issues
Factor 1: Negative Emotions	($\alpha = .86$)			
Factor 2: Intellectual Curiosity	0.38	($\alpha = .85$)		
Factor 3: Derogation of Opponents	0.61	0.33	($\alpha = .80$)	
Factor 4: Sacred Issues	0.23	0.26	0.25	($\alpha = .78$)

Table 3b: Factor loadings and completely standardized parameters.

		Factor Loading (EFA)	Completely Standardized Parameter (CFA)
Factor 1	Angry	0.66	0.75
	Disgusted	0.78	0.66
	Frustrated	0.81	0.85
	Annoyed	0.80	0.83
Factor 2	Conversations	0.83	0.79
	Reading	0.73	0.64
	Listening	0.78	0.81
	Value interactions	0.76	0.80
	Curious	0.84	0.80
Factor 3	Views too extreme	0.53	0.73
	Uncompelling arguments	0.77	0.71
	Designed to mislead	0.79	0.79
	Opponents biased	0.67	0.59
	Emotional arguments	0.73	0.70
Factor 4	Too offensive	0.76	0.71
	Not debatable	0.73	0.66
	Ideas dangerous	0.86	0.80
	Sacred issues	0.48	0.34

RUNNING HEAD: RECEPTIVENESS TO OPPOSING VIEWS

Table 4:

Study	Overall Scale	Factor 1: Negative Emotions	Factor 2: Intellectual Curiosity	Factor 3: Derogation of Opponents	Factor 4: Sacred Issues
Study 2 – Selective exposure	b = -.08 t = -2.39 p < 0.018	b = -.10 t = -3.07 p < 0.002	b = -.04 t = -1.18 ns	b = -.07 t = -2.10 p < 0.04	b = -.04 b = -1.09 ns
Study 3 – Biased recall of arguments	b = -.12 t = -2.39 p < 0.02	b = -.06, t = -1.63, p = 0.10	b = -.12, t = -3.22, p < 0.001	b = -.11, t = -2.68, p < 0.01	b = .02, ns
Study 4 – Biased evaluation of arguments	b = -.20 t = -4.85 p < 0.001	b = -.18 t = -4.05 p < 0.001	b = -.058 t = -1.12 ns	b = -.28 t = -6.85 p < 0.001	b = -.08 t = -1.61 p < 0.11
Study 4 – Biased evaluation of opponents	b = .18 t = -3.11 p < 0.003	b = -.19 t = -3.14 p < 0.003	b = .04 t = 0.62 ns	b = -.29 t = -5.08 p < 0.001	b = -.10 t = -1.81 p < 0.08
Study 5 – Course forum posts	τ = .13 z = 2.98 p < .003	τ = .12 z = 2.77 p < .01	τ = .02 z = .53 ns	τ = .09 z = 2.16 p < .04	τ = .13 z = 2.94 p < .005

Figure 1: Predicted ratings of interaction enjoyment (Study 2).

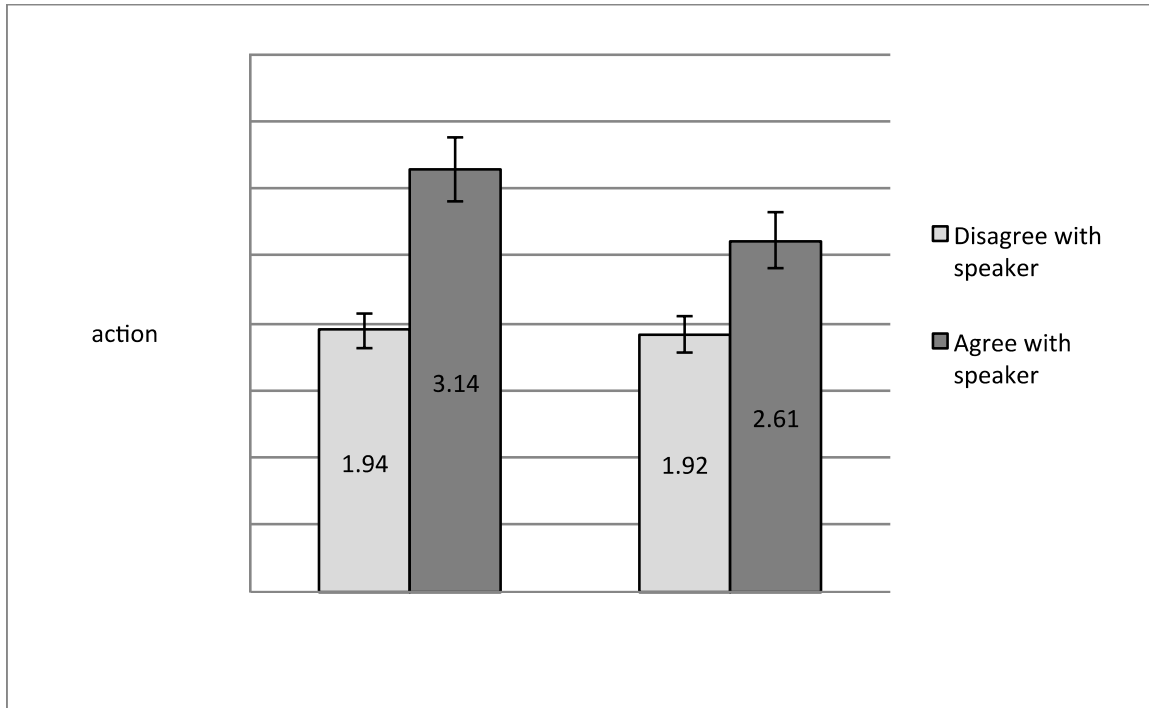
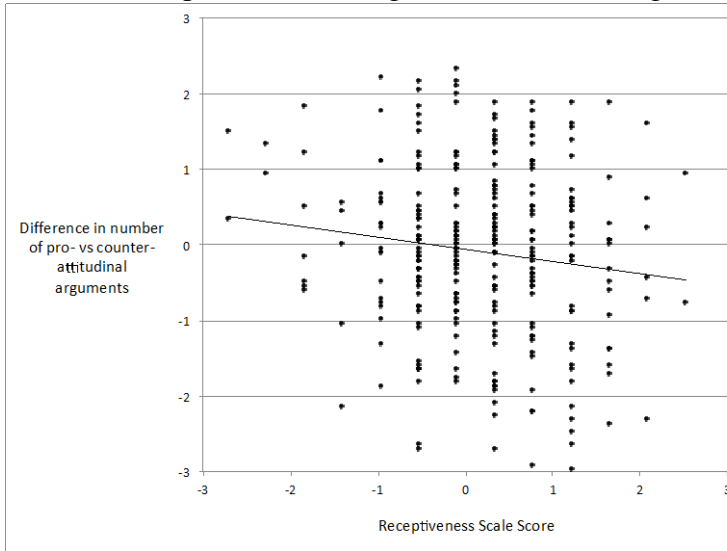
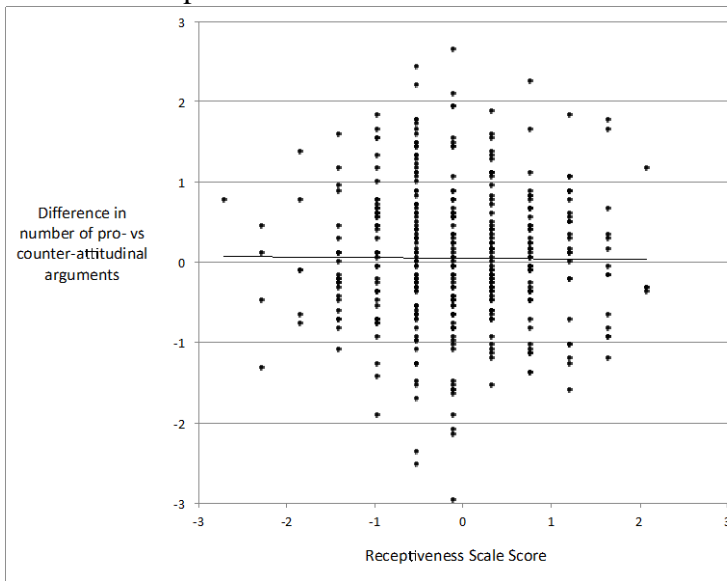


Figure 2: Standardized scores on the receptiveness scale and generation of pro- vs. counter-attitudinal arguments.

a. Participants with strong attitudes on the target issue.



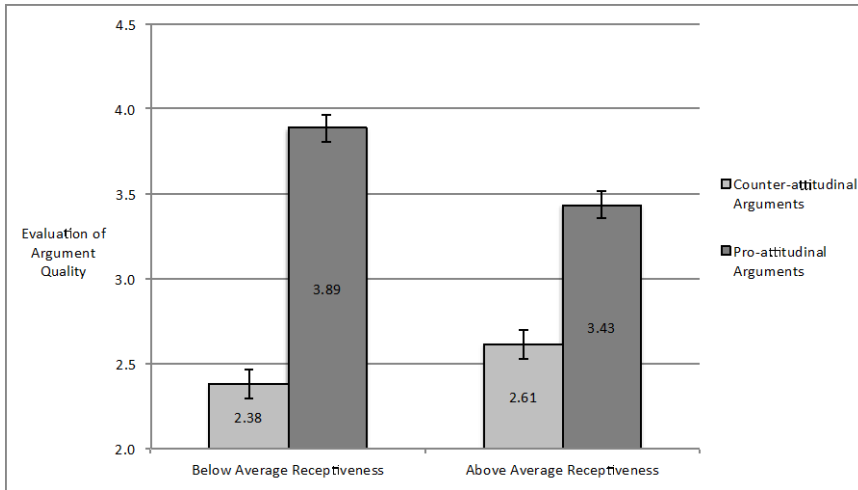
b. Participants with weak and moderate attitudes on the target issue.



Note: Figure excludes 9 participants whose score on the dependent variable fell more than 3 standard deviations from the mean. This exclusion does not change the direction or the significance of the result.

Figure 3: Evaluation of pro- and counter-attitudinal arguments and argument supporters by participants high and low in receptiveness (Study 4).

a.) Evaluation of arguments



a.) Evaluation of argument supporters

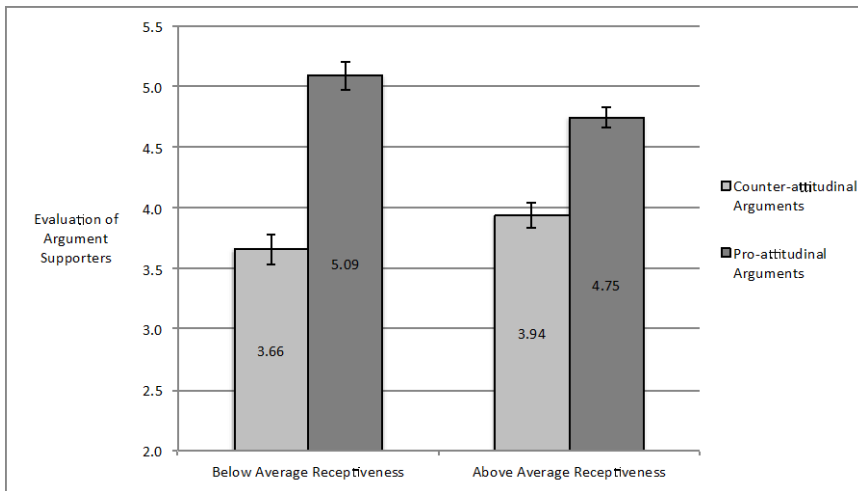
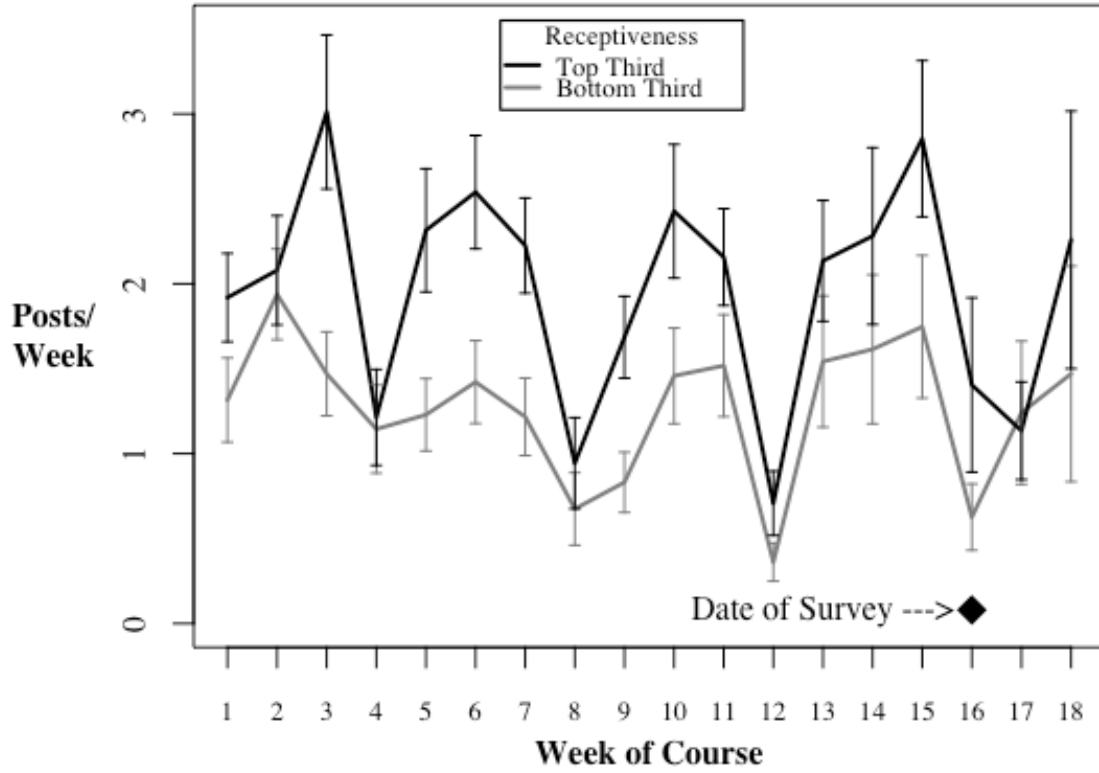


Figure 4: Receptiveness scores and weekly forum posts (Study 5).



Appendix A: Receptiveness to Opposing Views Scale

The questions below address the manner in which you deal with contrary views and opinions on social and political issues that are important to you. When answering these questions think about the hotly contested issues in current social and political discourse (for example: universal healthcare, abortion, immigration reform, gay rights, gun control, environmental regulation, etc.). Consider especially the issues that you care about the most.

Please click the radio button below each statement to indicate the extent to which **you agree or disagree with that statement.**

Strongly Disagree	Somewhat Disagree	Slightly Disagree	Neither Agree nor Disagree	Slightly Agree	Somewhat Agree	Strongly Agree
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1. I am willing to have conversations with individuals who hold strong views opposite to my own.
2. I like reading well thought-out information and arguments supporting viewpoints opposite to mine.
3. I find listening to opposing views informative.
4. I value interactions with people who hold strong views opposite to mine.
5. I am generally curious to find out why other people have different opinions than I do.
6. People who have opinions that are opposite to mine often have views which are too extreme to be taken seriously.
7. People who have views that oppose mine rarely present compelling arguments.
8. Information from people who have strong opinions that oppose mine is often designed to mislead less-informed listeners.
9. Some points of view are too offensive to be equally represented in the media.
10. Some issues are just not up for debate.
11. Some ideas are simply too dangerous to be part of public discourse.
12. I consider my views on some issues to be sacred.
13. People who have views that oppose mine are often biased by what would be best for them and their group.
14. People who have views that oppose mine often base their arguments on emotion rather than logic.
15. Listening to people with views that strongly oppose mine tends to make me angry.
16. I feel disgusted by some of the things that people with views that oppose mine say.
17. I often feel frustrated when I listen to people with social and political views that oppose mine.
18. I often get annoyed during discussions with people with views that are very different from mine.

Scoring: Items 6-18 are reverse coded; responses on the 18 items are then averaged to create a total receptiveness index. Factor 1 (Negative Emotions) is comprised of items 15-18. Factor 2 (Intellectual Curiosity) is comprised of items 1-5. Factor 3 (Derogation of Opponents) is comprised of items 6, 7, 13, and 14. Factor 4 (Sacred Issues) is comprised of items 9-12.