Belief Bubbles:

How Latitudes of Acceptance Shape Social Decisions

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Abstract

An individual's "latitude of acceptance"—defined as the range of opinions that an individual considers to be acceptable for a specific issue—was first used by proponents of social judgment theory to predict susceptibility to attitude change; however, latitudes may also have implications for interpersonal relations. In six studies (total N=1816), we adapted traditional latitude measures to predict an interpersonal outcome. Studies 1a and 1b found that traditional latitude measures did not predict willingness to associate with another individual who held a divergent viewpoint. Study 2 developed a method for measuring "contextualized" latitudes, which consisted of judgments about opinions held by individuals. In comparing "contextualized" latitudes to traditional "decontextualized" latitudes for opinions in the abstract, Study 2 identified that contextualized latitudes tend to be wider, which suggests individuals underestimate their tolerance toward others' views. Studies 3a-3c found that unlike the decontextualized latitudes in Studies 1a and 1b, contextualized latitudes were significant predictors of an interpersonal outcome: narrow latitude individuals were more likely to avoid associating with someone who held a different viewpoint, though this meant foregoing hypothetical money. This work suggests latitudes of acceptance may have far-reaching consequences for interpersonal relations. In addition to being used as indexes of susceptibility to attitude change, they may also be useful measures of openness to others in social contexts.

Keywords: Latitudes of acceptance, social judgments, interpersonal relations, social decision-making, decision-making, social judgment theory

Belief Bubbles: How Latitudes of Acceptance Shape Social Decisions

Humans develop the ability to understand that other people have minds before they hit first grade (Wellman, Cross, & Watson, 2001). This 'theory of mind' allows one to understand that the content of another person's mind is different from the content of one's own, and that other people can hold a variety of beliefs and attitudes (Flavell, 1988). The attitudes of others, though invisible and intangible, become social objects that can be perceived and judged just like physical ones.

Despite knowing that others hold different views, most humans do not treat all other views as having equal merit. Social judgment theory proposes that when individuals evaluate others' attitudes, they judge these attitudes according to an internal reference scale built from their past experiences (Telaak, 1971). This scale has traditionally been described as consisting of three regions: the latitude of acceptance, latitude of non-committal, and latitude of rejection (Hovland, Harvey, & Sherif, 1957). All attitudes that fall in the latitude of acceptance are considered to be reasonable attitudes to hold, while all attitudes in the latitude of rejection are considered to be unreasonable; attitudes in the latitude of non-committal are somewhere in between. Thus, social judgment theory defines attitudes as complex structures, or "bubbles" encompassing multiple scale points, rather than simple point estimates (Sherif & Sherif, 1956).

Social judgment theory emerged in response to inconsistent findings that came from studies on persuasion. Some studies found that participants moved their attitudes toward the

position advocated in a persuasive message and that greatest attitude change occurred in response to the most extreme positions (Ewing, 1942; Hovland & Pritzker, 1957). However, other research showed that extreme messages caused participants to move their attitudes in the opposite direction, a phenomenon coined the "boomerang effect" (Hovland, Janis, & Kelley, 1953). In other studies, attitude change occurred in both directions. Persuasive messages produced a bimodal distribution of attitude scores, sharply dividing participants into two extreme camps (Murphy, Murphy & Newcomb, 1937; Hovland, Harvey & Sherif, 1957).

To explain these discrepancies, researchers hypothesized that a curvilinear relationship might exist between the likelihood of attitude change and the distance of a message from a participant's own attitude (Hovland, Harvey & Sherif, 1957; Sherif & Hovland, 1961; Whittaker, 1963). In support of this hypothesis, several studies have shown that attitude change is more likely to occur when a persuasive message falls inside the latitude of acceptance. Hovland et al. (1953) found that persuasive communications about alcohol prohibition were perceived as more reasonable and fair and elicited greater attitude change when they fell inside the latitude versus outside. Researchers also showed that participants were more likely to change their attitudes toward fraternities if they read a persuasive communication that they perceived to fall inside their latitude of acceptance for the issue (Atkins, Deaux, & Bieri, 1967). In these studies, the optimal persuasive message was discrepant enough from a participant's own attitude to produce change, but not so discrepant that it would produce the boomerang effect. This research suggested that latitude structure, specifically the locations of the boundaries of latitudes of acceptance and rejection, is an important predictor of behavior.

In contrast, other researchers argued that the boundaries of latitudes are less important than overall latitude size. Eagley & Telaak (1972) suggested that latitudes should be considered

more generally as individual difference measures of open-mindedness. Their study of attitudes on birth control showed that individuals with wide latitudes were more likely to change their attitudes compared to narrow latitude individuals. This effect occurred even when persuasive messages fell outside of the latitude of acceptance for wide-latitude individuals and inside the latitude for narrow-latitude individuals. However, the researchers did find a significant difference in attitude change for individuals that perceived the message to be inside their latitude of acceptance versus outside of it. Thus, when it comes to predicting attitude change or other outcomes, the evidence so far indicates that both latitude size and structure may be important. In some cases, latitude size may be a better predictor of certain outcomes, serving as an individual difference measure that represents a more general index of influencibility or openness. In other cases, the locations of the boundaries of the latitude of acceptance may be more important, serving as dividing lines for making binary predictions.

Though studies of latitudes have investigated how latitudes impact attitude change within individuals, little research has explored how latitudes may impact relations between individuals. Our research aims to investigate this question in a new context by adapting latitudes of acceptance to become predictors of more "social" judgments. Social judgment theory, which has not yet been applied to a truly social context, may have the potential to offer new insights into how individuals treat others who hold attitudes that they find to be reasonable versus unreasonable. Studies have shown that individuals tend to affiliate and collaborate with others who are more similar to them, a phenomenon referred to as homophily (McPherson, Smith-Lovin, & Cook, 2001; Curry & Dunbar, 2013). Attitude similarity (or attitude distance) is one dimension that predicts friendship (Bahns, Crandall, & Preacher, 2016). However, it is unclear whether attitude similarity or difference is likely to influence decisions about collaboration on a

task for which one's attitudes are irrelevant. Moreover, attitude similarity effects on social decision-making may be different when an individual's latitude is wide or narrow.

The current research attempts to take the first step toward making social judgment theory "more social." The following studies adapt social judgment theory's methods of measuring latitudes of acceptance for the purpose of studying their interpersonal consequences. For the current research, we aimed to investigate whether latitudes of acceptance would predict participants' willingness to associate themselves with another individual. In the real world, people are often hesitant to be around, or even to be linked with someone who holds views that they consider to be unreasonable. Once another person crosses what seems like an "invisible line" of what is considered reasonable, this person is someone who is not welcome at our barbecues, in our boardrooms, or on our college campuses. In a series of six studies, we aimed to adapt latitudes of acceptance to a more social context, which included a) developing a paradigm that assesses the impact of latitudes on social decisions and b) adapting how latitudes are measured.

General Method

Participants

In each study, participants were recruited from Amazon's online crowdsourcing platform Mechanical Turk (MTurk). Participants were redirected to a website to complete a survey in exchange for $1.00-$1.50. The survey was only available for participants who lived in the U.S. and had an approval rating greater than or equal to 97% on MTurk. Previous research has shown that MTurk samples are more representative demographically of the U.S. population and as reliable as compared to traditional university-student samples (Berinsky, Huber, & Lenz, 2012). Participants were excluded if they took the survey multiple times or failed any of four attention

checks, which included an explicit question on whether or not they paid attention and memory tests about the information provided to them.

General Procedure

A series of six closely related studies (including three replications) were conducted in order to investigate how latitudes of acceptance affect social decisions. Studies 1 (a and b) and 3 (a, b, and c) assessed the influence of latitudes on a social outcome, while Study 2 developed a new methodology for assessing latitudes. In each study, latitudes were assessed by providing participants with a range of possible attitudes that *other people* might hold. In Study 1, participants provided this range using anchors on one scale. Study 2 assessed latitudes using both the scalar "decontextualized" method and a newly developed item-by-item "contextualized" method, and Study 3 utilized the item-by-item method.

In order to measure a social outcome of latitudes, Studies 1 and 3 presented participants with a hypothetical scenario. Participants were asked to think about choosing a partner for a "difficult math task" based on information that they learned about one political opinion that each partner held and each partner's math ability. They were told to imagine that their partner choice would influence their ability to win money as their scores on a math test would be combined. One partner always held the same opinion as the participant, but was worse at math than the other. In contrast, the other partner was always worse at math, but often held an opinion that was different from participants' own. We predicted that *most* participants would choose the partner who was better at math, regardless of that partner's political opinion, in order to maximize their hypothetical economic benefit. We reasoned that the situation was hypothetical and participants knew they would not have to interact with either of the partners face-to-face, and thus would be highly likely to make their choice based on math ability alone. However, we also predicted that a

significant minority of participants would select the partner who was worse at math. Furthermore, we expected that the size of their latitudes of acceptance and/or the locations of the boundaries of their latitudes would be significant predictors of this decision to prioritize similarity in opinion over superior math ability.

Study 1a

Study 1 was designed to investigate whether participants base their social decisions solely on individuals' abilities directly relevant to task performance, or if attributes that were not task-relevant (e.g. political opinions) also influenced social decisions. In this study, we tested whether the distance of another individual's political opinion from a participant's own would influence partner selection. We also examined whether participants' latitude of acceptance for another individual's opinion would influence partner selection.

Method

Participants. In Study 1, we recruited 450 participants. The final sample of participants who passed all attention checks included 326 adults (155 males, 167 females) between the ages of 18 and 74 (M_{age}=35.9, *SD*=11.58). In this final sample, 25% of participants identified as *slightly* to *very* conservative, 20% as moderate, and 53% as *slightly* to *very* liberal.

Procedure. Participants were told that they would be giving their opinions on five current issues ("more gun control," "self-driving cars," "universal health care," "corporate tax cuts," and "offshore drilling.") For each issue, participants were presented with a sentence with a blank space inserted into it (e.g. "I am _____ more gun control") and asked to complete that sentence by selecting an anchor from a 1-to-7 Likert scale (1=*completely against*, 2=*against*, 3=*sort of against*, 4=*neither for nor against*, 5=*sort of for*, 6=*for*, 7=*completely for*). They also

indicated how much they cared about each issue on a sliding scale from 0 (*not at all*) to 100 (*very much*).

Participants then provided information about their latitudes of acceptance for the issues. For each issue, participants were presented with another sentence with a blank inserted (e.g. “It is reasonable for someone to be _____ more gun control”). Participants were instructed to use two sliders to indicate the mark the boundaries of their latitudes of acceptance (Figure 1).

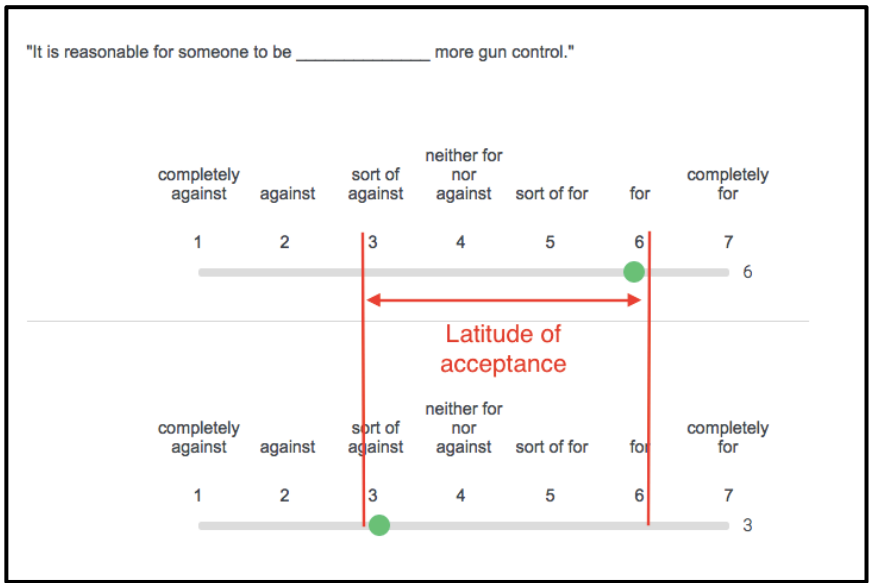

Figure 1. Example of item presented to participants in order to measure latitudes of acceptance. Participants used two sliders to indicate the range of opinions that they considered to be acceptable. Participants were instructed to move one slider (top) to indicate the highest point on the scale that they considered to be acceptable. The other slider (bottom) was used to indicate the lowest point they considered acceptable.

After providing their attitudes and latitudes of acceptance, participants were presented with the following hypothetical scenario:

> Imagine that you are about to take a hard math test. For this test, you will be paired with a partner. You will each take the test separately, but your scores will be averaged together so that you each receive the same final score. Imagine that pairs with scores in the top 10% will be paid an additional bonus. Thus, how well you

> do on the test, and your ability to get the bonus, depends on how well your partner does.
>
> You will be presented with two potential partners. You will learn a little bit of information about them, and then you will choose which one you would want as your partner. Pay close attention (and keep track of who is who), as you will not have the opportunity to review the information again.

Prior to learning about the two potential partners, participants indicated their own math ability on a sliding scale from 0 (extremely bad) to 100 (extremely good). All participants were told that one partner was better at math (70 on the scale) compared to the other partner (50).

In condition 1, participants learned that the better math partner held the same opinion as them on gun control, which was predicted to be an issue of high importance based on pilot work. They learned that the worse math partner held the same opinion as them about self-driving cars, which was predicted to be a less important issue based on pilot work. In condition 2, participants learned that the better math partner held an opinion about gun control that fell 3 points away from their own on the 1-to-7 opinion scale. It was expected that with a moderate discrepancy from the participant's own view, the better math partner's view would likely fall inside the latitude of acceptance for some participants and outside for others. Furthermore, it was important to hold the better math partner's view at a constant distance, such that distance and placement relative to the latitude of acceptance would not be confounded. The worse math partner held the same opinion as them about self-driving cars. Thus, in condition 2, participants were presented with a trade-off between one partner who was better at math but held a different opinion than them on an important issue and one partner who was worse at math but held the same opinion as them on a less important issue.

After reading about the partners, participants indicated whether they thought the partners' opinions were reasonable (yes/no), which was intended as a manipulation check. They were then reminded of the initial hypothetical scenario presented to them, and were asked to select which

partner they would "choose to be…[their] partner." We expected that most participants would select the better math partner based on math ability, especially considering that the scenario specified that they would never have to interact with this person. However, we expected that the partners' political views would also exert some influence on partner selection. We hypothesized that the distance of the better math partner's opinion from the participant's own would influence partner selection, expecting that participants in condition 1 would be more likely than those in condition 2 to select the better math partner. We also hypothesized that participants' latitudes of acceptance would influence partner selection, such that participants with larger latitudes of acceptance for gun control would be more likely to select the better math partner compared to participants with narrower latitudes.

Results and Discussion

Issue Ratings. As predicted, participants cared more about gun control (M=77.4, SD=22.99) than self-driving cars (M=52.25, SD=28.18), t(326)=12.89, p<0.001. Participants had smaller overall latitudes of acceptance for gun control (M=3.28, SD=1.88) compared to self-driving cars (M=3.98, SD=1.7), t(325)=-6.86, p<0.001.

Distance and Partner Selection. A chi-square test found that there was a significant difference in partner selection rates between conditions 1 and 2, which varied in terms of the distance between the better math partner's opinion and the participant's own, $\chi^2(1, N=326)=9.01$, p<0.001, OR=6.88, 95% CI [1.63, 29.12].

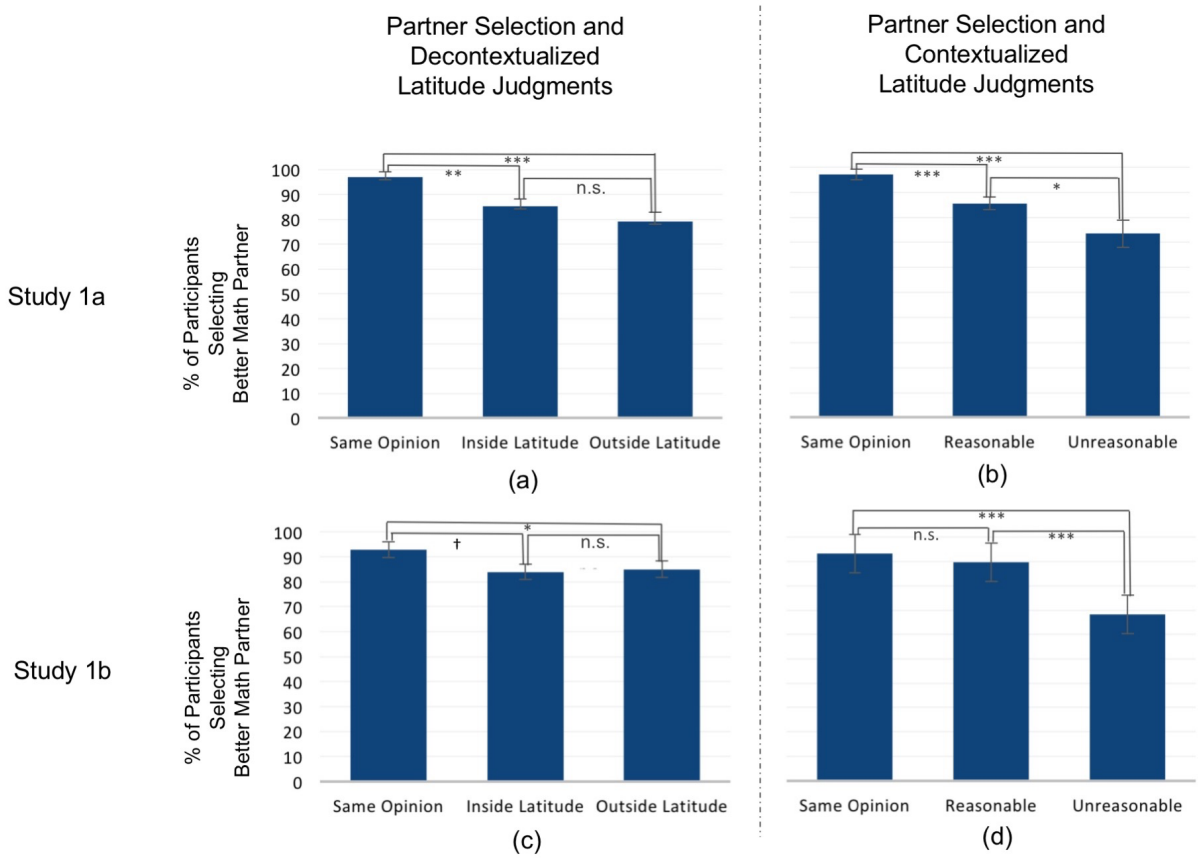

Figure 2. Relationship between partner selection and latitude judgments. **(a)** and **(c)** show relationship between partner selection and decontextualized latitudes. Participants in condition 1, for whom the better math partner held the same opinion as them, were more likely to select the better math partner than those in condition 2, for whom the better math partner held an opinion 3 points away. There was no effect of whether or not the better math partner's opinion was inside or outside the decontextualized latitude on partner selection. **(b)** and **(d)** show relationship between partner selection and contextualized latitude judgments. Participants who viewed the better math partner's opinion as reasonable were more likely to select the better math partner than those who viewed the opinion as unreasonable.

Among participants in condition 1 (n=66), who were choosing between two partners who both held the same opinion as them on the two issues, 97.0% selected the better math partner (Figure 2a). In contrast, among participants in condition 2, who chose between one partner who was better at math but held a different opinion from them and one partner who was worse but held the same opinion as them, only 82.3% selected the better math partner. This supported our hypothesis that individuals would take both math ability and political opinion into account when

selecting a partner, and that they would be less likely to associate themselves with a partner who held a different opinion from them.

Decontextualized Latitudes and Partner Selection. Participants in condition 2 (n=260) were assigned to groups post hoc based on whether the better math partner's opinion fell inside or outside their latitudes of acceptance. No significant difference was found between the inside (n=135) and outside (n=125) latitude groups in terms of how many participants selected the better math partner (Figure 2a). Of participants in the inside latitude group (n=135), 85.2% selected the better math partner compared to 79.2% in the outside latitude group (n=125), a difference which was numerically in the expected direction but was not significant, $\chi^2(1, N=260)=1.60$, p=0.206, OR=1.51: 95% CI [0.80, 2.87].

Given this null finding, we investigated the validity of the self-reported latitude measure. We examined whether the latitudes that participants provided before reading about their potential partners matched up with their responses about whether or not the specific partners' opinions were reasonable. We found that among participants in the outside latitude group, for whom the better math partner's opinion should have been *un*reasonable, 56.8% said that the opinion was actually reasonable. In other words, more than half of these participants who had previously said that an attitude three points away from their own was unreasonable changed their tune: they now said that the attitude of this particular person that was three points away from their own attitude was, in fact, reasonable. In contrast, among participants in the inside latitude group, for whom the better math partner's opinion should have been reasonable, only 10.4% said that the partner's opinion was unreasonable.

This data suggests that there was a discrepancy between judgments of the reasonableness of opinions of specific individuals ("contextualized" latitude judgments) and latitude boundaries

provided by participants in the abstract ("decontextualized" latitude judgments). A McNemar test ($p<0.001$) confirmed that there was a consistent pattern to the discrepancy, such that participants were more likely to switch from labeling an opinion as unreasonable in the abstract to reasonable in a specific context as opposed to the other way around. As further indication that the discrepancy was not due to chance, in comparison, only 3.1% of participants labeled the opinion of the worse math partner (their own opinion) as unreasonable in the specific context (McNemar test: $p<0.001$).

Contextualized Latitudes and Partner Selection. In a subsequent exploratory analysis, participants in condition 2 were reassigned to groups based on whether or not they considered the better math partner's opinion to be reasonable (their "contextualized" latitude judgments), disregarding their self-reported latitude boundaries (their "decontextualized" latitude judgments). In using this alternative post hoc grouping method, there was a significant difference in partner selection between these two groups, $\chi^2(1, N=260)=4.87$, $p=0.027$, OR=2.11: 95% CI [1.08, 4.13]. Among participants who thought the opinion was reasonable (n=192), 85.4% selected the better math partner, whereas 73.5% of participants who thought the opinion was unreasonable (n=69) selected this partner (Figure 2b).

As a way to bring the two latitude measurements together, we excluded any participants whose decontextualized latitude boundaries did not line up with their subsequent answers about whether or not the better math partner's opinion was reasonable. Participants who said the better math partner's opinion was reasonable even though that opinion fell outside the latitude of acceptance were excluded from the sample. Those who said that the better math partner's opinion was unreasonable even though that opinion fell inside the latitude of acceptance were also excluded. In this reduced sample (N=175), 86.0% of participants in the inside latitude group

(n=121) selected the better math partner compared to 72.2% of participants in the outside latitude group (n=54). This difference was significant, $\chi^2(1, N=175)=4.71$, p=0.03, OR=2.35: 95% CI [1.07, 5.16].

Given that the better math partner always held an opinion that was 3 points away from a participant's own opinion, this effect cannot be explained merely by the fact that the partner's opinion was different from their own. Despite the small effect size, it is surprising to see an effect at all given that the scenario was hypothetical, participants knew they would never be expected to interact with another person, and they knew that these potential "partners" were not real. This study provides the first evidence to suggest that people may be hesitant even to be "digitally comingled" with someone whose opinion they deem to be unreasonable.

Study 1b

Since Study 1a was exploratory and used newly created measures, we conducted a direct replication of it in Study 1b. The only modification introduced to the study was a counterbalancing of the order in which the potential partners were presented.

Method

Participants. Participants (N=447) were recruited, and after excluding participants based on the same criteria as in the first study, the final sample included 317 adults (142 males, 173 females) between the ages of 18 and 74 (M_{age}=34.48, SD=10.66). In this final sample, 22.7% of participants identified as *slightly* to *very* conservative, 22.1% as moderate, and 54.5% as *slightly* to *very* liberal. There were no significant differences between issue importance and latitude size between the replication and original study.

Procedure. See Study 1a procedure above.

Results and Discussion

Distance and partner selection. For participants in condition 1 (n=60), 93.3% selected the better math partner (Figure 2c). In contrast, only 82.3% of participants in condition 2 (n=257) selected the better math partner, $\chi^2(1, N=317)=3.0$, p=0.083, OR=2.51, 95% CI [0.86, 7.30]. This difference trended in the same direction as the difference in Study 1, though it did not reach statistical significance.

Latitudes and partner selection. As in the original study, participants in condition 2 (N=257) were assigned to groups post hoc based on whether the better math partner's opinion fell inside (n=137) or outside (n=120) of their latitudes of acceptance. No significant difference was found between the two groups in terms of how many participants selected the better math partner, $\chi^2(1, N=257)=0.076$, p=0.783, OR=1.10: 95% CI [0.56, 2.18] (Figure 2c). However, there was a significant difference in partner selection between participants who considered the better math partner's opinion to be reasonable and participants who considered the opinion unreasonable (Figure 2d). Among participants who thought the opinion was reasonable (n=197), 89.8% selected the better math partner, whereas only 68.3% of participants who thought the opinion was unreasonable (n=60) selected this partner, $\chi^2(1, N=257)=16.538$, p<0.001, OR=4.10: 95% CI [2.01, 8.37].

Again, we found that 62.5% of participants for whom the better math partner's opinion should have been unreasonable, based on the latitude measures they provided, said that the opinion was reasonable; 10.9% of participants for whom the opinion should have been reasonable said it was unreasonable (McNemar test: p<0.001). When we excluded these participants whose latitude measures did not match up, we found a significant difference between the inside latitude group (n=122) and the outside latitude group (n=45), $\chi^2(1, N=167)=6.62$,

p=0.010, OR=3.05: 95% CI [1.27, 7.32]. Overall, the latitude findings of Study 1b closely replicated those seen in Study 1a.

Study 2

In Studies 1a and 1b, we found that participants' latitudes of acceptance, which were measured in the abstract *a priori* (i.e. decontextualized), were not reliable predictors of partner choice; conversely, the contextualized judgments that participants made about the opinions of specific individuals were reliably related to partner choice. Furthermore, we noticed that participants who changed their minds about the reasonableness of an opinion tended to state that it was outside of their latitude of acceptance when decontextualized, but then would consider it to be reasonable when it was contextualized as held by a specific individual. Participants were less likely to change their minds in the opposite direction.

In Study 2, we further investigated this discrepancy between decontextualized and contextualized latitude judgments, and we attempted to quantify the magnitude of this effect. We developed a new paradigm to assess contextualized latitudes, which we then compared to the decontextualized measures employed in Study 1. We also hypothesized that the discrepancy might be due to a difference in the salience of the cognitive versus affective components of attitudes during measurement of the decontextualized and the contextualized latitudes. Specifically, we reasoned that participants might be in a "cooler," more rational mindset when making decontextualized judgments and in a "warmer," more affective mindset when making contextualized judgments.

In Study 2, we measured both decontextualized and contextualized latitudes twice using language that attempted to make salient either a more cognitive or more affective interpretation of latitudes. Cognitive latitude questions focused on the reasonableness of opinions, which we

thought would give rise to judgments based on logic and rational evaluation. Affective questions focused on whether or not other opinions were bothersome and anger-inducing, which we hypothesized would give rise to judgments that were driven more by affective responses. We hypothesized that separating out these two components of latitudes would result in greater consistency between decontextualized and contextualized judgments.

Method

Participants. Of 200 participants who were recruited, the final sample included 170 adults (84 males) between the ages of 21 and 71 (M_{age}=37.01, SD=10.94). Participants were excluded for improper use of latitude sliders, admitting that they did not pay attention, and completing duplicate surveys. In addition, participants were excluded for having a neutral opinion (4) on the target issue based on measurement requirements. In the final sample, 28.2% of participants identified as *slightly* to *very* conservative, 11.8% as moderate, and 60.1% as *slightly* to *very* liberal.

Procedure. Study 2 consisted of 2 parts. In Part 1, participants indicated their own opinions on a 1-to-7 scale (from "completely against" to "completely for") about two topical political issues ("deporting undocumented immigrants" and "stricter gun control laws"). They also indicated how much they cared about the issue (0="not at all" to 100="very much").

Subsequently, their decontextualized latitudes--both the cognitive and affective versions--were assessed, with the order of the two counterbalanced. The "cognitive" latitude, which was referred to as their "range for what's reasonable" was defined as the "range of opinions that you think are reasonable for a person to hold." This language was consistent with the language used for the latitude measure in Study 1. Participants were presented with one prompt for each of the two political issues (e.g. "It is reasonable for a person to be _____ deporting undocumented

immigrants.") For the cognitive latitude assessment, participants used two sliders to mark the "boundaries" of the range of opinions that they thought were reasonable for each issue.

The "affective" latitude, which was referred to as participants' "latitude of acceptance" (in order to distinguish it from the cognitive latitude) was defined as the "range of opinions that DON'T bother you or make you angry." Participants were presented again with prompts for each of the issues (e.g. "It does NOT bother me or make me angry when a person is _____ deporting undocumented immigrants.") They used sliders to mark the boundaries of the range of opinions that did not bother them or make them angry.

In Part 2, participants made a series of "contextualized" judgments, in which they were presented with the name of a specific person, that person's opinion, and an image of where that opinion fell on the 1-to-7 scale (e.g. "Meet Taylor. Taylor holds the following opinion on deporting undocumented immigrants: 'I am against deporting undocumented immigrants.') For each trial, participants made both a cognitive and affective judgment: they indicated whether or not they thought the person's opinion was reasonable (yes/no) and whether the opinion was inside or outside of their latitude of acceptance ("inside=does not bother me or make me angry" or "outside=bothers me or makes me angry)." Participants were instructed to base their responses on how they were feeling in the moment and not to worry about whether or not their answers were consistent with what they had answered before.

Trials alternated between showing opinions on immigration (the issue of interest) and gun control (the "filler issue") such that participants would be more likely to consider each opinion individually and not compare the answer for each question to a previous answer. Participants were shown an opinion at each point along the scale for both issues. We decided *a priori* that the contextualized latitude measures would be computed as count variables (range: 0-3) based on

participants' responses to a subset of the scale: the midpoint and two points on the opposite side of the scale from their own opinion. We expected that latitude boundaries were most likely to shift at these points, as opposed to on the same side of the scale as the participant's own opinion, or at the very end of the scale on the opposite side.

As an example, the latitude measures for an individual whose own attitude was a "7" would be computed based on her responses to opinions "2" "3" and "4." If this individual categorized each opinion as unreasonable, she would have a cognitive latitude size of 0; if she indicated that only one opinion did not "bother her or make her angry," she would have an affective latitude size of 1. The key trials (2, 3, and 4 or 4, 5, and 6), were shown first, along with filler trials, so that they would be less affected by participant fatigue. We decided to compute "half" latitude measures (as opposed to computing latitudes based on judgments of the entire scale) because we were most interested in examining how participants' views for people with opinions "on the other side of the aisle" were likely to change, and we wanted to keep the latitude measurement brief so that it could be used easily in future research. At the end of the survey, participants provided basic demographic information.

Results and Discussion

Decontextualized v. Contextualized Latitude Measures. In order to follow up on the findings from Study 1, we examined the degree to which the decontextualized and contextualized latitude measures varied from one another. In order to compare the measures, we converted the decontextualized measures (full scale latitudes) into half-latitude count variables (0-3). These count variables were computed by adding up how many of the opinions from the mid-point and part of the opposite side of the scale were included in participants' full-size decontextualized latitudes. For instance, for an individual with a full-size decontextualized latitude of 1-to-5, we

looked at whether 4, 5, and 6 fell inside the latitude. This 1-to-5 individual would get a decontextualized latitude count of 2 because 4 and 5 fall inside the latitude, but 6 falls outside.

As was seen in Study 1, the decontextualized and contextualized cognitive measures were not identical: they showed a moderate correlation with one another (r_s = 0.535, p<0.001, Cramer's V=0.440). Similar results were found with the affective measures (r_s = 0.557, p<0.001, Cramer's V=0.451). Moreover, McNemar-Bowker tests showed that for both cognitive and affective latitudes, the decontextualized and contextualized measures varied from one another systematically, X^2(6, N=170)=18.796, p=0.005; X^2(6, N=170)=20.208, p=0.003. Participants whose contextualized latitudes differed from their decontextualized latitudes tended to have wider (more tolerant) contextualized latitudes and narrower (less tolerant) decontextualized latitudes (see Figure 3). We found that 75% of participants whose cognitive latitudes changed and 78.7% whose affective latitudes changed showed only a 1-point difference in their latitude size from the abstract measure (see Figure 3).

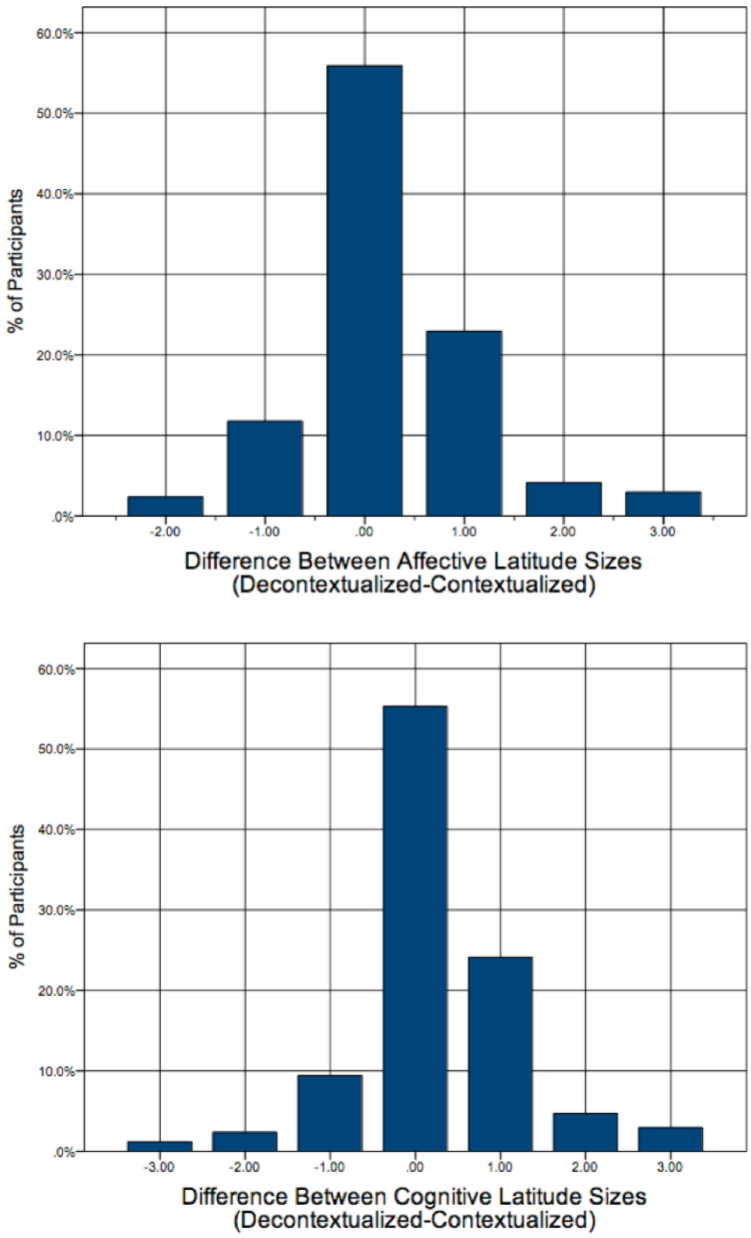

Figure 3. The difference between participants' initial decontextualized latitude sizes and their subsequent contextualized latitudes. Overall patterns in both the cognitive (upper) and affective (lower) assessments show that participants were more likely to broaden their latitudes when evaluating attitudes held by specific individuals.

Cognitive v. Affective Latitude Measures. We also examined how the cognitive and affective measures compared to one another. The cognitive and affective decontextualized measures were significantly correlated at $r_s = 0.564$ ($p<0.001$, Cramer's V=0.437) and did not

vary systematically from one another, $X^2(6, N=170)=2.391$, $p=0.880$. Similarly, the cognitive and affective contextualized latitude measures significantly correlated with one another (r_s = 0.712, $p<0.001$, Cramer's V=0.511), and did not vary systematically, $X^2(6, N=170)=8.195$, $p=0.146$. This correlation between the contextualized cognitive and affect latitude measures was significantly greater than the correlation between each contextualized measure and its corresponding decontextualized measure ($z=2.978$, $p=0.003$, 95% CI [0.06, 0.30]; $z=2.820$, $p=0.005$, 95% CI [0.05, 0.27]). In other words, the contextualized latitude judgments were more similar to one another than they were to their decontextualized counterparts (see Figure 4).

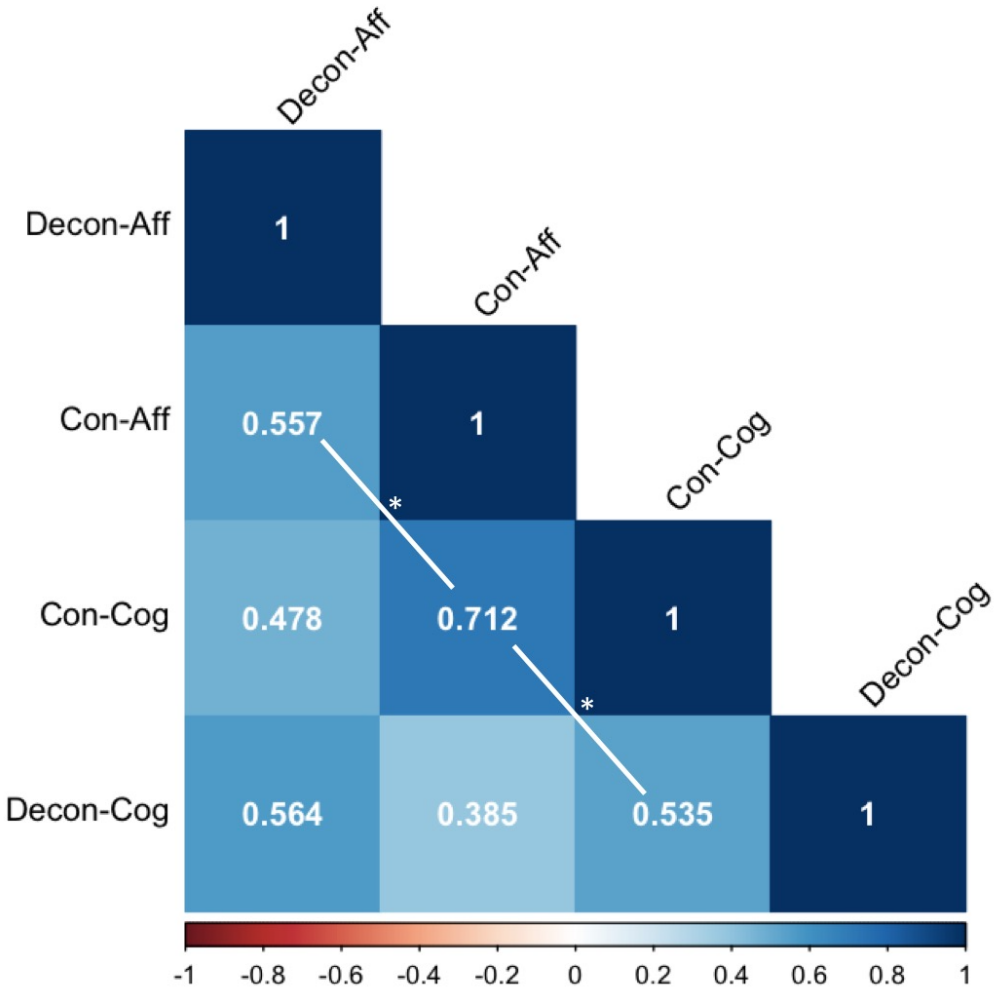

Figure 4. Correlations between 4 latitude sizes: Decontextualized affective (Decon-Aff), contextualized affective (Con-Aff), contextualized cognitive (Con-Cog), and decontextualized

cognitive (Decon-Cog). The two contextualized measures showed a significantly higher correlation with one another compared to the correlations between each contextualized measure and their decontextualized counterparts.

In summary, this study replicated the findings from Study 1 showing that participants consistently reported lower tolerance toward differing opinions when those opinions were decontextualized; however, they were more tolerant when those opinions were contextualized (i.e. held by specific individuals). We predicted that this pattern might be due to using a cognitive latitude measure that made the cognitive or affective components of latitudes more salient in one context versus another. However, after disambiguating between affective and cognitive components and examining the relationship between contextualized and decontextualized for each component, we observed the same pattern as seen in Study 1 for both types of latitudes. These results suggest that the discrepancy between contextualized and decontextualized latitudes instead might be due to the inherent difference between the two, in that one is more "interpersonal" and one is abstracted from the interpersonal context. Such findings, which reveal an inherent discrepancy between contextualized and decontextualized latitudes, suggested that contextualized latitudes might be better predictors of socially relevant outcomes.

Study 3a

Study 3a examined whether the new contextualized latitude measures developed in Study 2 would be better predictors of partner selection compared to the decontextualized measure used in Study 1. We hypothesized that there would be a significant relationship between partner selection and participants' *a priori* contextualized judgments of the attitude held by the better math partner (prior to knowing this was the better math partner's attitude). This prediction was based on the fact that there was a significant relationship between participants' partner choice

and their contextualized judgments of the attitudes of the potential math partners in Study 1. However, in Study 1, it is possible that these variables were more closely related than partner selection was with the decontextualized latitude measure due to the fact that attitudes change quickly; whereas participants provided their decontextualized measures before the hypothetical scenario was introduced, they made contextualized judgments immediately prior to partner selection.

In Study 3a, participants provided contextualized attitude judgments before the scenario was introduced (analogous to the timing of the decontextualized latitude measurement in Study 1). Therefore, this study could test for whether the contextualized judgments in Study 1 were related to partner selection due to their contextualized nature or their temporal proximity to partner selection.

Method

Participants

After conducting a one-tailed a priori power test conducted in G*power for chi-square analyses, based on the proportions and sample sizes found in Study 1, we determined that a sample size of 350 would to achieve power at the recommended 0.8 level. A larger sample of participants (N=457) was recruited, given that a significant number of participants had failed attention checks in Study 1. Furthermore, only participants who held a specific attitude on a 1-to-7 scale (1-3 or 5-7) could be included due to requirements for the study design. The final sample of participants who passed the attention checks and screening included 348 adults (161 male, 182 female) between the ages of 18 and 71 (M_{age}=35.57, SD=10.99). In the final sample, 28.4% identified as conservative, 17.2% as moderate, and 53.5% as liberal.

Procedure

Study 3a used a similar method for measuring contextualized latitudes as the one used in Study 2, with a slight modification. First, participants indicated their own attitudes about stricter gun control laws and deporting undocumented immigrants. Next, participants were presented with a series of 4 contextualized attitudes, which included the midpoint and all points along the opposite side of the scale from the participant's own opinion. This abbreviated latitude measurement was used due to: a) the assumption that most participants will endorse attitudes that are on the same side of the scale, b) the necessity of presenting participants with the same attitude that would be associated with the better math partner (i.e. an attitude 3 points away), and c) a concern that presenting participants with too many attitudes would lead to fatigue and negatively impact the quality of their judgments. Items were presented in a pseudo-randomized order with attitudes about gun control interspersed as fillers. Participants indicated whether the latitude fell inside their latitude (did not bother them or make them angry) or outside their latitude. They also indicated whether or not they thought each item was reasonable. That is, participants made both affective and cognitive assessments, as in Study 2. The order in which these two questions were presented (inside/outside latitude and reasonable/unreasonable) was counterbalanced across participants.

Following latitude assessment, Study 3 used the same hypothetical scenario and math abilities associated with the partners in condition 2 of Study 1. The better math partner held an opinion about immigration that fell 3 points away from participants' own opinion, and the worse math partner held the same opinion about immigration as the participant. This allowed participants to make a more direct comparison between the two partners on their math abilities and opinions. The wording of the opinions of the partners was identical to the wording of the

corresponding opinions presented to participants during the *a priori* latitude assessment. Participants then selected which person they would rather have as their partner.

Results and Discussion

Contextualized Latitudes and Partner Selection. The judgments that participants made during the latitude assessment were used to sort participants post hoc into inside and outside latitude groups in order to examine the relationship between partner selection and latitudes. Specifically, participants were sorted based on their responses regarding the attitude about immigration that was 3 points away from their own. Analyses were conducted for both the affective and cognitive latitude judgments. Thus, participants were sorted into groups twice based on their responses.

For the affective latitude judgments, there was a significant relationship between partner selection and latitude for the better math partner's opinion, $\chi^2(1, N=348)=7.514$, p=0.006, Cramer's V=0.147, OR=2.40: 95% CI [1.27, 4.54]. Among participants for whom the better math partner's opinion fell inside their latitude, 90.24% (n=246) selected that partner compared to 79.41% of participants in the outside latitude group (n=102). For the cognitive latitude judgments, the relationship between partner selection and latitude for the better math partner's opinion was marginally significant, $\chi^2(1, N=348)=2.85$, p=0.091, OR=1.74: 95% CI [0.91, 3.32]. Of participants who said that the better math partner's opinion was reasonable (n=246), 89.02% selected that partner compared to 82.35% of participants who said it was unreasonable (n=102). The affective and reasonable judgments were closely associated with one another, but not identical ($\chi^2(1, N=348)=97.184$, p<0.001, Cramer's V=0.528), and they did not vary from one another systematically (McNemar's test: p=1.0).

Latitude Size and Partner Selection. Next, participants' partial latitude sizes (cognitive and affective) for immigration were computed. These variables, which ranged from 0 to 4, were created by counting the number of attitudes that participants said rated as being reasonable (cognitive latitude judgments) or not bothersome (affective latitude judgments). There was a strong, positive correlation between these two latitude sizes, r_s=0.700, p<0.001, as was seen in Study 2. We ran separate models to investigate whether each of these latitude sizes could predict partner selection. First, we ran a logistic regression using a backward stepwise method to assess the relationship between partner selection and affective latitude size, along with the importance of the issue, the participants' own math ability, and partner order. There was a significant relationship between affective latitude size and partner selection, B=0.488, exp(B)=1.629, p<0.001. For every 1-point increase in latitude size (bigger latitudes=not as bothered by alternative views), participants were 1.6 times as likely to select the better math partner. Participants' own math ability was also a significant predictor of partner selection, B=0.014, exp(B)=1.014, p=0.043. In order to make the relationship between math ability and partner selection more interpretable, own math ability was rescaled from a 1-to-100 scale to a 1-to-10 scale. The importance of immigration and the order in which the two potential partners were presented were not significant predictors, and were dropped from the model. The final model explained 9.4% of the variance in partner selection (Nagelkerke's R^2).

We saw similar results (though slightly smaller effect sizes) when we ran a logistic regression with the backward stepwise method to assess the relationship between the same variables, except using the cognitive version of latitude size. Cognitive latitude size significantly predicted partner selection, B=0.333, exp(B)=1.395, p=0.013. For every 1-point increase in latitude size (bigger latitudes=more open to alternative views), participants were 1.4 times as

likely to select the better math partner. There were marginally significant relationships between partner selection and math ability and the importance of immigration (B=0.012, p=0.082; B=-0.013, p=0.092, respectively). There was no significant relationship between partner selection and the order in which the partners were presented, so this term was dropped from the model. The final model explained 9.2% of the variance in partner selection (Nagelkerke's R^2).

In summary, Study 3a showed that the contextualized latitude measurement developed in Study 2 proved to be a more reliable predictor of partner selection in comparison to the decontextualized latitude predictor in Study 1. These results suggest that latitudes influence social decisions for which political opinions might be considered irrelevant. Study 3a also investigated the effect of making salient the cognitive versus affective components of latitudes. In examining the relationship between the latitude judgment for the better math partner's opinion and partner selection, only the affective latitude was a significant predictor. As more general "indexes" of openness, both cognitive and affective contextualized latitudes predicted partner selection independently. These results highlight that different components of latitudes might be more relevant predictors depending on which attitude components are more salient for a given outcome, and whether the size or the boundaries of latitudes are relevant for a given outcome.

Study 3b

In Study 3a, we compared affective and cognitive latitude judgments within the same sample; however, we hypothesized that presenting both types of judgments simultaneously might lead participants to alter and perhaps exaggerate their answers in order to differentiate them. Therefore, we conducted replications in which participants provided only one type of latitude (affective or cognitive) in order to examine the relationship between each latitude type and partner selection separately.

Method

Participants. A total of 453 participants were recruited. Participants were included based on the same criteria applied in Study 3a, and the final sample consisted of 338 adults (148 male, 190 female) between the ages of 19 and 72 (M_{age}=36.14, *SD*=11.44). 24.8% identified as conservative, 19.5% as moderate, and 55.3% as liberal.

Procedure. Study 3b replicated the Study 3a procedure, simply using instructions and measures associated with the affective component of latitudes and omitting materials related to the cognitive component.

Results and Discussion

As in the original study, there was a significant relationship between partner selection and affective latitude for the better math partner's opinion, $\chi^2(1, N=338)=9.116$, p=0.003, Cramer's V=0.164, OR=2.61: 95% CI [1.34, 4.93]. Of participants for whom the better math partner's opinion fell inside their latitude (n=218), 90.82% selected that partner compared to 79.16% of participants in the outside latitude group (n=120).

We also saw similar results for the regression of partner selection on affective latitude size as in the original study. Latitude size was moderately correlated with the importance of immigration (r_s=-0.400, p<0.001) and the extremity of participants' views (r_s=-0.425, p<0.001). There was a significant relationship between affective latitude size and partner selection, B=0.351, exp(B)=1.421, p=0.006. For every 1-point increase in latitude size, participants were 1.4 times as likely to select the better math partner. Participants' own math ability was a marginally significant predictor of partner selection, B=0.012, exp(B)=1.013, p=0.069. The importance of immigration and the order in which the two potential partners were presented were not significant predictors, and were dropped from the model. The final model explained 6.6% of

the variance in partner selection (Nagelkerke's R^2). Overall, Study 3b replicated the findings associated with the affective latitude measurement in Study 3a, suggesting that contextualized affective latitudes are good predictors of decisions about associating with other people, which likely invoke affective processes.

Study 3c

Study 3c (the "cognitive" replication of Study 3a) examined the relationship between partner selection and the cognitive latitude assessment.

Method

Participants. 454 participants were recruited in total, and according to the inclusion criteria from 3a, 317 adults (143 male, 173 female) between the ages of 20 and 82 (M_{age}=36.14, *SD*=10.95) were included in the final analyses. 29.3% identified as conservative, 16.7% as moderate, and 52.7% as liberal.

Procedure. Study 3c replicated the Study 3a procedure, using only instructions and measures associated with the cognitive component of latitudes.

Results and Discussion

The relationship between partner selection and cognitive latitude judgment was statistically significant (in contrast to the original study, in which the relationship was marginally significant), χ^2(1, N=317)=4.615, p=0.032, Cramer's V=0.121, OR=2.2, 95% CI [1.06, 4.58]. Of participants for whom the better math partner's opinion fell inside their latitude (n=224), 91.96% selected that partner compared to 83.87% of participants in the outside latitude group (n=93).

As in the original study and in the affective replication, latitude size was moderately correlated with the importance of immigration (r_s=-0.420, p<0.001) and the extremity of participants' views (r_s=-0.475, p<0.001). There was a significant relationship between cognitive

latitude size and partner selection, B=0.352, exp(B)=1.422, p=0.017. For every 1-point increase in latitude size, participants were 1.4 times as likely to select the better math partner. Participants' own math ability was also a significant predictor of partner selection, B=0.015, exp(B)=1.016, p=0.041. The importance of immigration and the order in which the two potential partners were presented were not significant predictors, and were dropped from the model. The final model explained 6.2% of the variance in partner selection (Nagelkerke's R^2). Overall, there was a stronger association between partner selection and cognitive latitudes in Study 3c as compared to Study 3a, which may have occurred because participants were not specifically distinguishing between the affective and cognitive components.

General Discussion

While previous studies have used latitudes of acceptance to predict individual susceptibility to attitude change, this research is the first to examine the influence of latitudes on social cognition and decision-making. The current work develops a new method for measuring latitudes and demonstrates that latitudes predict social behavior above and beyond the effect of how far another person's attitudes are from one's own.

In five of the six studies, participants were faced with a choice between two prospective partners who were better or worse at math. In one condition, both prospective partners share the same attitude as the participant on important political topics. In another condition, the partner who was better at math held a different view from the participant on an important political topic, while the partner who was poorer at math continued to have the same attitude as the participant. Given that the task ostensibly involved combining their own math score with their partner's, if the goal was to maximize earnings, then the partner's math ability should have alone determined partner choice.

In Studies 1a and 1b, we found that individuals did consider the political attitudes of the prospective partner as the better math partner was chosen less often when they held a different political attitude than the participant. Additionally, the tendency to choose the better math participant was influenced by whether this partner's attitude was judged as reasonable or unreasonable. We also noted that the range of attitudes considered as reasonable when asked in a broad decontextualized manner became wider and more flexible when latitude judgments became more contextualized, focusing on the attitude of a particular individual. This finding is reminiscent of a classic social psychology study in which people were more closed-minded when thinking about "symbolic" others versus real people (LaPiere, 1934). Whereas 92% of restaurant and hotel workers reported that they would not serve Chinese individuals in general (their "symbolic" response), fewer than 1% of these same workers actually turned away a specific Chinese individual when confronted with the situation (their "overt" response). These "symbolic" and "overt" responses are analogous to our decontextualized and contextualized judgments.

Study 2 directly examined the discrepancy between contextualized and decontextualized latitudes, developing a new method for measuring contextualized latitudes. Study 2 replicated the tendency for participants to report narrower decontextualized latitudes and wider contextualized latitudes. The majority of participants whose contextualized latitudes became wider than their decontextualized latitudes showed an increase of 1 point in latitude size. This decontextualized-contextualized discrepancy occurred regardless of whether the language used to assess latitudes framed them in a more affective or cognitive manner. Studies 3a, 3b, and 3c used the same paradigm as in Study 1, but replaced the decontextualized latitude measure with the contextualized latitude measures (both cognitive and affective variants) developed in Study 2.

The results showed that the contextualized latitude measure—the affective, in particular—reliably predicted partner selection.

Together, these studies indicate that the size of an individual's latitude of acceptance can predict how the person will make social decisions that have consequences for themselves and others. Latitudes have been considered as indexes of susceptibility to attitude change, but they might also be considered as indexes of willingness to engage with others. These indexes result in similar predictions, such that individuals with wide latitudes are likely to be more susceptible to attitude change and more willing to engage with others who hold different attitudes.

Furthermore, the current work highlights a discrepancy in how individuals might construe and judge abstract decontextualized attitudes in contrast to contextualized attitudes held by specific individuals. This result is not entirely surprising given that previous studies have shown attitudes are often unstable over time, and that it is common for there to be a discrepancy between attitudes and subsequent behavior. According to the "attitudes-as-constructions" view, individuals are likely to hold several beliefs (some contradictory), constructing their attitudes based on context as opposed to retrieving them from a mental file drawer (Wilson & Hodges, 1992). Research on the attitude-behavior discrepancy suggests that the behavior must have a similar specificity as the initial attitude in order for the two to be strongly correlated (Ajzen & Fishbein, 1977; Jaccard, King, & Pomazal, 1977). If latitudes are considered as a range of attitudes, they may also be amenable to construction and vary based on context. In the present research, contextualizing attitudes as abstract versus social and individualized may have resulted in different latitude constructions due to their differing levels of specificity.

Though general attitude instability helps explain why there was a difference between contextualized and decontextualized latitudes in general, it does not account for why there was a

consistent pattern to this discrepancy. If the difference between the abstract and specific latitudes are considered through the lens of construal level theory (Liberman & Trope, 2008), decontextualized latitudes might be construed at a high level (general, broad) whereas as specific latitudes are likely to be construed at a low level (more concrete). Previous research has associated high construals with greater social psychological distance, and low construals with less psychological distance, greater familiarity, and more resource allocation (Stephan, Liberman, & Trope, 2011). Perhaps attitudes that are evaluated in the abstract may feel more distant psychologically, or more impersonal, which lowers the threshold for evaluating them as unreasonable. When attitudes are held by specific individuals, they may be evaluated with more leniency.

Though only anecdotal, one participant who changed their attitudes reported the following: "… when asked about range of opinions the first time I was thinking in general terms about views held by people in general, but when applied to individual people specifically, I tend to be more tolerant to a wider range of views." Another wrote, "Everyone is entitled to their own opinions. Perhaps I was being too harsh in my initial judgment." More evidence is needed to support the hypothesis that attitudes are evaluated more harshly when decontextualized and more leniently when given social context. One study that provides potential evidence found that individuals show greater empathic concern when using a concrete versus abstract processing style (Woltin, Corneille, Yzerbyt, & Forster, 2011).

Limitations and Future Directions

Although novel findings have emerged from the current research, it is important to acknowledge certain limitations and pathways for extending the work. Given our findings that latitudes can influence social decisions, it remains unclear whether individuals might be

motivated to avoid associating with others who hold views outside their latitude; conversely, they might be attracted to similar others as a way of endorsing their own values. Future work should explore whether a prevention or promotion focus, or combination of both, is behind these decisions.

It is necessary to acknowledge that the studies above demonstrate that latitudes of acceptance influence intentions to make social decisions that impact others; however, intentions and perceptions of what one would do are not always accurate reflections of actual behavior (Ajzen & Fishbein, 1977). The current research takes an important step as a proof of concept in establishing a link between latitudes of acceptance and interpersonal relations, but only in the hypothetical context. Future work is needed to demonstrate a link between latitudes of acceptance and actual social behavior, such that this research can generalize more easily to real-world outcomes. That said, it is worth noting that lots of real-world decisions are made based on mental simulations that are not so different from the one presented here. People often decide not to engage with others because of what one believes it would be like and thus never move beyond the hypothetical encounter.

In addition, this work is the first to consider that latitudes can be measured using language that makes either the cognitive or affective components of attitudes more salient. According to the "tripartite model" of attitudes, attitudes can be considered to have cognitive, affective, and behavioral components (Breckler, 1984). Since latitudes consist of a series of attitudes, their size is likely to vary based on which components are most salient at the time of judgment. In the current work, cognitive and affective latitudes varied, though not in a consistent manner. In terms of the relationship between latitudes and partner selection, more consistent results were seen in using affective language for the purpose of using latitudes as predictors, but

the relative importance of one component versus the other may depend on the outcome being predicted. Future work might further explore the effects of framing latitudes as either more cognitive or affective on predicting various outcomes. Similarly, although this research discovered a consistent pattern in the discrepancy between decontextualized and contextualized latitudes, further work is required to determine the mechanisms behind that discrepancy. Such research might focus on psychological distance, construal level, concrete v. abstract thinking, and the interaction between thinking style and intensity of affect.

Furthermore, it remains unclear whether latitudes are general indexes of susceptibility (individual difference measures), or whether their structure contains a discrete boundary for which there are distinct consequences for attitudes that are inside versus outside of the boundary. Further work is required to investigate the structure of latitudes in the social context to determine the level of detail that they can provide about individuals' tolerance for other viewpoints. Finally, in the current work, we assessed participants' latitudes as individual difference measures, but we did not causally manipulate them. Future research might focus on designing interventions to alter latitudes in order to explore their causal consequences.

Conclusion

This new line of research suggests that latitudes of acceptance, traditionally used only as indexes of susceptibility to attitude change, may have much broader interpersonal implications. This work is the first, to the best of our knowledge, to provide evidence for how latitudes can affect what seem like straightforward decisions in the social realm, leading to behavior that economists would consider "irrational." In the current research, individuals decided that they did not want to associate themselves with a person who held an opinion they considered unreasonable, even though they knew that the situation was hypothetical and had no real

consequences. One can only imagine how judgments of reasonableness might impact decisions in the real world, from deciding who should be on the invitation list to your barbecue to deciding whom to hire, collaborate with, or even vote for.

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