For replication, go to: https://github.com/DamonCharlesRoberts/visual_information_and_political_participation.

How does visual information influence social interactions?

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ABSTRACT Though talking politics with others have a number of positive effects for a number of democratic outcomes, skepticism remains of whether it has any benefits. While some literature suggests that conversations about politics can encourage formal democratic participation and can reduce political polarization, other work argues that the context around the conversation neutralize these benefits. Some of this literature suggests that conversations with out-partisans are quite unlikely as we are motivated to avoid such conversations. The mechanism by which we know prior to a conversation about another's political viewpoints are quite unclear. I argue in this chapter that we rely on simple visual cues to help us make inferences about another's political views; specifically color. Such simple information, though error-prone, has important behavioral implications. Beyond that, I argue that those snap-judgments made have potent influences upon the content and effects of the conversation if it happens. This snap-judgment model of political information processing argues that we cue on simple visual information like the color of clothing people wear and that shapes the tendency to engage in conversations and our feelings about the conversation after it is over. Not only does this model have implications for the role that color plays in signaling partisanship in the United States but it also has implications for our understanding of the mechanisms underlying the limited benefits that political conversation has on democratic outcomes.

Introduction

Do politically-relevant colors predict our propensity to engage in political conversations? Does this have downstream consequences for informal political participation and for affective polarization? Conversations about politics are often considered to be a central component of political behavior in American democracy (Huckfeldt 2007). Evidence suggests that political conversations encourage many different forms of participation in politics (Verba, Schlozman, and Brady 1995; Klofstad 2007), increase one's levels of political knowledge (McClurg 2003), and is even capable of buffering animosity toward out-partisans (Levendusky and Stecula 2021). Though it has these benefits, the existing literature in political science demonstrates that social groups, and particularly partisanship, motivate vast amounts of political behavior as well. One primary way that this manifests is the degree to which we interact with out-partisans relative to co-partisans. Rooted in classic social identity theory, the argument is that we have these tendencies out of a motivation to defend our pre-existing beliefs (Kunda 1990; Jost, Baldassarri, and Druckman 2022).

Evidence of motivated reasoning manifests in a number of political (see Iyengar and Westwood 2015) and even non-political (Nicholson et al. 2016) contexts. There are a number of consequences for this. First, many of our networks with whom we talk to regularly are constructed of close friends and family and we are often reluctant to harm those relationships through disagreement; therefore, organic and meaningful conversations about politics are relatively uncommon (Mutz 2002, 2006). Second, outside of our family and close friends, our networks are quite politically homogenous (Huckfeldt and Sprague 1987; Butters and Hare 2022). Third, evidence suggests that even if we are offered information from other po-

litical perspectives, we do not try to integrate it with our prior beliefs (Kunda 1990; Lodge and Taber 2013) and the benefits of any exposure to such information do not last very long (Levendusky and Stecula 2021) as a result.

Though the literature is mixed on whether cross-partisan conversations are beneficial for formal participation and reducing affective polarization, much of the evidence for their drawbacks start from the position that we enter a conversation with motivated reasoning already active. While this offers leverage to researchers to determine whether we can overcome motivated reasoning, it muddies our ability to make examine deliberation's effects on affective polarization and participation. In response, some have put in effort to examine the ways in which individuals enter political conversations without prior information about another's political viewpoints. Carlson and Settle (2022) argue that we can use the clothing of others to make an informed guess about the partisanship of a potential discussion partner. For example, it would probably be reasonable to assume that someone wearing a Patagonia jacket would be a Democrat and someone wearing a Carhartt jacket would be Republican. Just these assumptions based on the appearance of another person can lead someone to avoid a potential political conversation with others these scholars conclude (Carlson and Settle 2022). This fits with a well-established literature in political psychology that suggests that there are cultural differences between partisans (Hetherington and Weiler 2018) and a rich literature in social psychology demonstrating the role of social groups, more broadly, which have visual cues that we cultivate for ourselves and detect in others (see Pietraszewski et al. 2015).

In this chapter I argue that the visual information required to encourage political conversation can be simple, yet potent. I argue that this visual information need not necessarily

be as complex as things like the branding of someone's clothes. While that is visual information, it is rather complex visual information as it requires not only brand recognition but also requires prior knowledge and accessible information associating a particular brand with a partisan position. Though it seems as though every company has developed *some* sort of reputation because they have taken some sort of stance on a issue wrapped up in a culture war, not everyone follows the latest source of political outrage all of the time [MARCUS PRIOR BOOK]. Colors convey significant amounts of information by themselves. As an almost universal form of visual information, color is among the fastest types of information that humans process (see Ames, Fiske, and Todorov 2012). Colors are deeply embedded into a number of schemas that organize our previous experiences which enable the processing and reacting to new information (see Cimbalo, Beck, and Sendziak 1978). Colors not only have strong associations with our affective state (see Mehta and Zhu 2009; Elliot and Maier 2012), but they also convey significant amounts of information about social groups (Pietraszewski et al. 2015).

As colors provide potent information about salient social groups, I argue that politically-relevant colors, red and blue, are important informational cues that individuals rely upon to evaluate others and their ideological positions when politics is salient to them. As parties increase their efforts to stake out their positions and to highlight their distinctions, the colors they use are increasingly used as a visual cue and heuristic to convey one party versus the other (Elving 2014). The implication of this argument not only explains the ways in which colors may be a source of information that people can use to decide whether or not to participate in a conversation about politics with someone else, but also it applies a model and applies a particular type of political information that explains the cognitive processes

underlying the potential efficacy of political conversations on depolarization. This chapter demonstrates that even simple information that we as researchers and citizens often take for granted has significant downstream effects on our political attitudes and behaviors.

In the following section I lay out the fundamental theories and concepts in neuroscience and psychology that I build my argument upon. After I lay out these fundamental ideas, I then elaborate on my snap-judgment model of political information processing that leaves me with a number of predictions about how people will form attitudes and behave under different conditions. While doing so, I discuss the implications of this model upon our existing understanding in political science about the effects of political conversations upon political polarization.

The cognitive architecture of attitudes and the role of colors

While the formation of attitudes is an extremely complex process, there are a few themes. The first among them is that attitude formation, which is to evaluate an object we interact with out in the world, is heavily dependent on drawing connections between things that we have experienced in our past, our memories (Fazio 2007). The second theme is that these memories are, they themselves, connected to a vast network of information that not only includes other memories but are multi-dimensional in nature (Kahana, Diamond, and Aka 2022). This complex web of associations are often referred to as a cognitive schema (Lodge and Taber 2013); I will use this terminology as well moving forward as a shorthand.

The first theme of research on attitudes suggests that attitudes are tightly connected to memories (Fazio 2007; Cunningham, Haas, and Jahn 2012). Attitudes formed on current objects are the result of a complex network of memories that have a number of important valanced, affectively positive or negative, ties (Cunningham, Haas, and Jahn 2012). That is, memories are not just a encyclopedic encoding of an experience. Central to memory is the encoding of emotion (or affect). Experiences that we have that evoke strong affective responses tend to be stronger memories that we tap into more often and they tend to last longer than those that produced weaker emotions (Kensinger and Fields 2022). Recent experiences and those that are closely related by similarity are also fundamental contributors to the strength of a memory and its centrality in our vast network of information we rely upon to evaluate new information (Kahana, Diamond, and Aka 2022).

As I mentioned before, these connections to other forms of information, other memories, and their branches form a cognitive schema. Cognitive schemas are not only useful for allowing us to form opinions on whether we like eating Broccoli or not, but are also highly influential in prediction. We do not just rely upon the schema of the object itself, but we can also utilize auxillary information related to the object (Fazio 2007; Kahana, Diamond, and Aka 2022). This is highly useful in situations involving uncertainty. That is, where we are unsure about an object, we can rely on this complex network of memories to find memories about similar objects to help us get a sense of how we should respond to an object (Kahana, Diamond, and Aka 2022). This complexity also is quite efficient. Though our memories and formation of attitudes rely on information that is multidimensional, this allows for us to tap into a vast amount of features about different memories to help us form

some evaluation about a current experience – even when we are unsure about what exactly we are experiencing(Fazio 2007).

One set of dimensions that are highly influential in attitude formation due to their tendency to simplify our understanding of the world is information about social groups. Research suggests that we are attuned to information that has implications for social groupings when we are experiencing something new (Santavirta et al. 2023). For over five decades, social psychologists have been building strong evidence suggesting that we rely on social groups to simplify our understanding of the world and that the social groups we belong to are heavily influential in our attitude formation and resulting behaviors [TAJFEL]. A rich literature in nueroscience, referred to here as "social neuroscience" has connected these streams of work on attitude formation from a neurosicientists' focus on congitive schemas with that of social psychologists. This rich literature has demonstrated that our efficient cognitive schemas often encode information about social groups as part of our multidimensional construction of memories (Santavirta et al. 2023).

Tying it all back to color, one such example of the centrality of social group information as a dimension by which we form and store attitudes is through the use of color to reflect things like sports team affiliations and gang memberships (Pietraszewski et al. 2015). Colors as information come with a lot of baggage (Cimbalo, Beck, and Sendziak 1978). For example, colors like red are associated with anger and arousal while blue is associated with happiness (Elliot and Maier 2012; D'Andrade and Egan 1974). Beyond the affective information that colors provide, they are widespread and efficient cues that help us connect information. Some literature suggests that we can process (absorb, process, and contextualize) color in as little as 33 milliseconds(Ames, Fiske, and Todorov 2012). This partly occurs as result

of the fact that we process colors automatically and pre-consciously (Mehta and Zhu 2009). Due to this, we also tend to unconsciously embed information about the color of an object when processing information. The theories on why this occurs are varied, but one intuitive explanation comes from a evolutionary biology perspective: we expect that particular fruits or animals should be of a certain color or of a certain shape, variation from that triggers a suspicion that there might be something wrong and we should avoid it (see Norman, Cacioppo, and Berntson 2012; Kahana, Diamond, and Aka 2022). As colors provide an important role for an individual's survival, they are processed efficiently and are often a central dimension included in a memory. With these features, colors are not auxillary forms of information that are encoded with an experience. Rather, they are universal and potent.

Here I summarize some of the fundamental concepts that I build upon to explain the role of color in depolarization and poltical conversations. (1) Memories are highly involved in attitude formation; (2) and are multidimensional in that they contain large amounts of different information. (3) One such form of information contained within them is the affect-laden valence that encodes whether experience with an object was positive or negative. (4) All of these memories are organized into a large and complex network of other memories that each have their associations as well that I refer to as a cognitve schema. (5) We tap into the information contained in our cognitive schema to evaluate objects that we are currently interacting with by finding similar prior experiences and using the encoded information with that prior experience and other associated prior experiences. (6) As this is an extremely complex and voluminous set of information, we need to rely on various shortcuts to help evaluate objects we are interacting with quickly. (7) One such form of information that we rely upon is information about social groups. (8) However, this too is quite complex

so we can even rely simple visual information such as color to help cue us toward group membership. (9) Colors are not just something we interact with but they also are heavily involved in our memories and as a result can act as a source of information to access in our cognitive schema. (10) In fact, as an almost universal form of information that is efficiently processed, we can use colors to come to pre-conscious evaluations of a current object and therefore have the potential to heavily shape what paths in a cognitive schema we access and ultimately the attitude we form.

Predicting the role of color in political attitude formation and behavior

Evidence suggests that political parties are an important social group to people. While people may have a number of social group memberships that may cross-cut eachother, one's membership with either the Republican or Democratic party appears to increasingly align with other identities (e.g., christian versus not religious, lives in the countryside or a city-dweller) (Mason 2018). As one's partisan identification is more central to people's self-conception, individuals in the United States are more invested in protecting their partisanship as it subsumes other characteristics that make them who they are (Mason 2018). As a result, we are seeing more and more political polarization due to this strong affective desire to protect their group (Mason 2018; Iyengar et al. 2019; see also Iyengar, Sood, and Lelkes 2012). For those that are not heavily engaged in politics or are reluctant to participate in *partisan* politics, specifically, many are still functionally partisan; however, they identify as an "Independent" as a result of their distaste for the hyperpolarized nature that characterizes

contemporary politics in the United States and not for their moderate policy positions (Klar and Krupnikov 2016).

One result of the growing centrality of partisanship as an identity for individuals in the United States is that we are seeing more in-and-out-group oriented behavior based on partisanship both in and outside of political contexts. In political contexts, individuals are relatively accurate and willing to assume the partisan affiliation of a political candidate with ***no*** prior information on the candidate except for looking at their physical characteristics – Republican candidates are associated with more "masculine" physical features (Olivola et al. 2012). Relative to other significant social groups in the United States, animosity directed toward the other party, abstractly, is stronger than the willingness to express animosity toward racial and ethnic groups (Iyengar and Westwood 2015).[1] This goes so far as to generate "empathy gaps" where individuals exhibit lower levels of empathy for out-partisans experiencing the negative effects of a policy that they and their party supported (Allamong and Peterson 2021). The effects are that moderate candidates cannot win because many voters see the stakes as too high and often choose "stronger" partisans that have a higher chance of getting everyone within the party to turn out to vote (Utych 2020). The effects of partisan membership extend beyond just political contexts where individuals are less likely contact people from the other party on a dating app (Nicholson et al. 2016).

This group-based behavior on the basis of partisan identity has led to a number of important implications relevant to the present study. Firstly, the two parties are heavily engaged in differentiating themselves from one another (Enders 2021) and that this even shows up in

1. Though, see Westwood and Peterson (2022).

how members of Congress interact or do not interact with out-partisan colleagues (Dietrich 2021). Second, there are cultural differences tied to the parties that are recognizable to the average individual (Hetherington and Weiler 2018). Third, the visual elements of politics and of these brands are important as they provide significant amounts of information about group membership through the careful efforts made by the parties to curate a "brand" (see Grabe and Bucy 2009; Lilleker 2019; Messaris 2019).

How does partisanship influence attitude formation? Merging some of the important themes in social neuroscience, Lodge and Taber (2013) argue that political attitudes are formed by using cognitive schemas that are heavily biased toward information that fits with attitudes shared by co-partisans. This motivated reasoning is pervasive beyond politics (see Kunda 1990), however, politics is a strong case study for that phenomenon. This means that politics is not just expressive (see Huddy, Mason, and Aarøe 2015), but that it deeply influences our pre-conscious processing of new political information (Lodge and Taber 2013). Rather than us consuming new political information and folding it into our existing beliefs (Zaller 1992), it often dictates a behavioral response that immediately follows our valanced evaluation of the object to either ignore the information coming in or to only use the information as a foil to make a defensive counterpoint to it (Taber and Lodge 2006).

Using this knowledge as a foundation for the snap-judgment model of political information processing, I argue that politically-relevant colors are one such form of information that have heavily influences on what types of information we process and encode and it the directs motivations that we have even in non-political circumstances. The snap-judgement model would suggest that exposure to an object containing politically relevant colors – red and blue, in particular – should activate a particular set of memories that have those and related colors

encoded with it. This makes the paths to particular memories and associated memories "hot." As the literature on cognitive schemas suggest, these memories are not just memories about color but that they have important affective valence associated with them (Cimbalo, Beck, and Sendziak 1978).

Though colors have generalized affective associations, they also are multi-dimensional and contain associations in particular contexts like other memory objects. This affective valence is not simply "happy" or "sad" (e.g.,), but is complicated by the association of those colors with particular party brands – namely that Republicans are more associated with the color red and Democrats with the color blue in the United States. If one has antagonistic attitudes toward Republicans but see Democrats in a positive light, the color red when politics is salient to them should lead them to have a negatively valenced attitude toward the object while the color blue would lend itself to a positive one. I am agnostic toward the particular discrete emotions it evokes as some research in affective neuroscience also suggests that initial evaluations are also agnostic about discrete emotions and are usually limited to valance (positive or negative) until one has more information. This fits with the prevailing literature on attitude formation as well. As we may have memories associating Republicans with some type of positive emotion, we likely just average across those evaluations to come up with "positive" prior experiences as opposed to averaging across discrete emotions (e.g., joyful versus happy) to come up with a discrete emotion to encapsulate all prior experiences with Republicans.

Motivated reasoning suggests that once these paths are activated and the affective valance they induce are active, we often have one of two motivations – to either avoid further interaction with the thing that makes you feel bad or to keep interacting with it in hopes that you

will have a positive experience (Valentino et al. 2011; Norman, Cacioppo, and Berntson 2012; Taber and Lodge 2006; see also Sander 2013; Dror 2017). As discussed in the opening pages, the particular political behavior I focus on here is a willingness to engage or disengage in political conversations. Conversations about politics are viewed to be a promising avenue by which we can reduce societal divisions that we are currently observing in the United States (see Levendusky and Stecula 2021; Levendusky 2023). The snap-judgement model would answer this elusive question with "it depends."

So far, the snap-judgment model gives the impression that if one sees someone with a red hat and immediately think "that person is probably a Donald Trump suppporter, and a Republican", my discussion of the model so far would indicate that there is a strong motivation to disengage and avoid the conversation. If it was someone wearing a blue hat and someone's initial impression is "that person must be a Democrat like me," then rather than being motivated to disengage, they may be more willing to participate in the conversation. These expectations align – though they expand upon the way we come to those expectations – with the vast majority of the literature on informal political participation and political deliberation. We are not always able to avoid a conversation, however.

Despite some of our best efforts, we often are roped into a conversation with another person that we may disagree with. However, so far, we have already formed a snap-judgment about them. We either reluctantly found ourselves caught in a conversation with someone that identifies with the other political party or are thankfully in a conversation with someone we agree with and were lucky to not get caught in the conversation with the other folks who you were concerned you would disagree with. When new information comes about from this conversation, our initial snap-judgment likely changes. We either become more sure that we

were initially right to avoid the person with the blue or red hat or we now might think "huh, I may have judged a book by its cover and this wasn't as bad as I had originally feared." The snap-judgment model builds upon existing work on the implications of polarization on political conversations by highlighting a mechanism whereby individuals may have formed a snap-judgment that can be quite incorrect as a result of relatively unreliable heuristics – not everyone who wears a red hat at any given social function is doing so because they are a Republican. Though these snap-judgments are quite error prone, they are heavily influential in the final encoding of the experience as positive or negative. As the model has highlighted so far, these snap-judgments can dictate whether you engage in the conversation in the first place and if you are stuck in one anyhow, it dictates your motivation in the conversation: to find information that fits with the snap-judgment you had already formed.

Snap-judgments have even more influence than likelihood of conversation or motivation at the outset to agree or disagree with everything a discussion partner says, but also the motivated cognitive path they have you access also requires significantly more work for you to change your mind if the new information does not comport with your snap-judgment. As the snap-judgment is derived from a particular path that leads to an evaluative position – "I have a bad feeling about this" or "this should be engaging" – the information that does not fit with the current path we are on must successfully move us onto a contiguous path but one that has more positive associations. As these are likely rarer (see Taber and Lodge 2006; Lodge and Taber 2013), countervailing information has its work cut out for it. Even if we can leave the conversation feeling more positively, we have a strong bias to encode memories with negative evaluations (Norman, Cacioppo, and Berntson 2012; see also Lodge and Taber 2013). Furthermore, the likelihood that this memory "sticks" and remains an accessible path

that is not forgotton is quite low as well unless we have other similar experiences (Kahana, Diamond, and Aka 2022) that challenge our pre-existing feelings on having conversations with those outside of politics.

Figure 1 provides a visual representation of the mechanisms involved in the snap-judgment model. The conclusions from this model largely align with pre-existing findings. However this model provides a few novel contributions. First, the model demonstrates how even simple visual cues like color can have deep and long-lasting (in terms of the duration of an experience) effects on behavior and attitudes. Second, the model combines foundational knowledge from social neuroscience, affective neuroscience, social psychology, and political psychology to outline the mechanisms at the root of question that has yielded quite perplexing empirical evidence making it difficult to identify a clean set of conclusions.

To be clear, Table 1 outlines a set of testable hypotheses generated from this model when applied to color as a set of visual information to prime reactions to a potential conversation about politics. First, I expect that people notice the color of the clothing that people are wearing in the first place. When we are in situations of anxiety, which often accompany the prospect of having a conversation with a new person about politics (see Carlson and Settle 2022), we often seek out whatever information we can get our hands on (Marcus, Neuman, and Mackuen 2000). Second, I expect that when we are primed to think of politics and think of the colors red and blue in terms of politics, rather than say a sports team, people are less likely to want to have a conversation with an out-partisan (Huckfeldt and Sprague 1987). Third, if we have the conversation anyhow, we are more likely to report significant amounts of discomfort in the conversation if we are unable to find anything to agree on or to find a common or shared identity beyond our partisan identification (Santoro and Broockman

2022). Fourth, on the other side of the coin, if the conversation goes in a direction where we can find shared ground, then we are more likely to find something positive about the conversation (Santoro and Broockman 2022). And finally, if we have a conversation that went better than expected, measures of affective polarization are likely to be lower relative to those that had a conversation go just about what we had expected or worse. The following section outlines a research design to examine whether there is empirical evidence supporting the hypotheses outlined in Table 1 that were derived from the snap-judgment model.

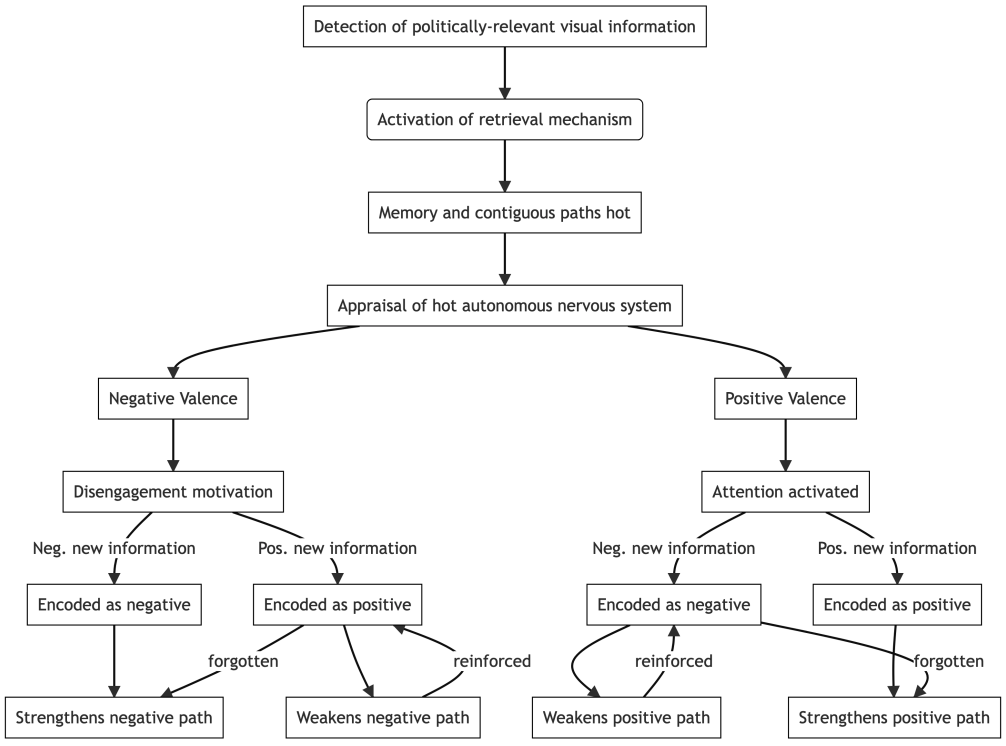

Figure 1: Snap-judgment model of political visual information

Table 1: Summary of hypotheses

Hypotheses	Expectation
H_1	People notice the color of clothing a potential conversation partner is wearing
H_2	When primed to think about politics, people are less likely to want to have a conversation with someone wearing a blue shirt if they are a Republican and a red shirt if they are a democrat.
H_3	If one is feeling pressured to participate in a conversation but are still unable to find common ground, they are still likely to want to disengage from the conversation.
H_4	If one is feeling pressured to participate in a conversation and are able to find common ground despite first impressions, they are likely to be more willing to engage in a conversation.

Research design

I recruit students from a large university in the southwestern region of the United States by posting advertisements and through word of mouth. Though it is a convenience sample, I expect that common demographic differences between a student-based convenience sample and the general population *do not* have consequences for the effect of the treatment upon my measured outcomes (Krupnikov, Nam, and Style 2021).[2]

2. While color-blindness may be a factor influencing these effects and the rates of it are lower among a student sample, this is a different population of interest. I do not expect that racial and ethnic, socio-economic, or gender differences alone would cause differences in my treatment's effect.

The students who volunteer to participate in the study are emailed containing a link to a URL to the study. Students are informed that this is a "pre-screen for the study". In this "pre-screen", I ask participants about their demographics and a number of questions about their interest in politics, two feeling thermometers for Democrats and Republicans to be used to measure affective polarization, and their partisan identification. I purposely ask participants these questions *before* introducing the treatment as to make politics and partisan affiliations salient.

After completing these questions, subjects participate in the first trial of the treatment. They are shown an image of a college-aged person wearing a t-shirt. This is a plain t-shirt, however, the color of that shirt is randomly chosen to be either red, blue, or white. Below the image, I ask participants whether they "would be willing to come to campus to have a conversation about politics with this person." This is designed to address H_2. After answering "yes" or "no", I ask participants to report their feelings toward Republicans and Democrats with two feeling thermometer scales. They are then asked "to make sure that you were paying attention, what color shirt was the person wearing?" This is meant to address H_1. They are then debriefed and told that researchers will be following up with them in the next couple of weeks. Their response to whether or not they are willing to have a conversation shoul

One week later, participants will be contacted again via email with another link to a "follow-up to the pre-screening". This time, they will see the image again, however, there will be a "profile" for the person that lists their partisan identification as either "Republican", "Independent", or "Democrat". Additionally, I randomize whether that person is supportive of universal basic income, abortion, and gun control. I explain below the image, above

the profile, as being "more information that we've collected since they have completed the pre-screening for the study too." This will leave some participants with a situation whereby their original assumption about the person's partisanship may be incorrect and others it was right. Additionally, it also will lead to some circumstances where participants are in a situation where they may find common ground with the potential discussion partner despite differences in partisan identification. Below the profile, I ask participants again whether they would be willing to come to campus to have a conversation. This is designed to address H_3 and H_4. I additionally ask them a third time about their feelings toward Republicans and Democrats through two feeling-thermometer scales to address H_5.

After completing this second round, I debrief participants and inform them that the "potential discussion partner" was fictional. After explaining to them the necessity for deception, I provide information about how they can be compensated for participating in the study. I exclude participants from the study who do not complete both rounds – they are informed of this beforehand.

NOTE

Should I go with this 3x2x2 design or should I go with a 3x2 design? So either red vs. white vs. blue shirt x pid matches vs. pid does not match x common ground on policy vs. no common ground on policy. OR red vs. white vs. blue shirt x pid matches vs. pid does not match?

Methods

Results

Discussion

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