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Group-Motivated Sampling: From Skewed Experiences to Biased Evaluations

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From planning daily activities with close others to passively overhearing a stranger's conversation on the bus, humans spend roughly half of their waking life in the presence of other humans (US Bureau of Labor Statistics, 2003-2016). These social interactions constitute the source of a large proportion of the information that individuals gather on a daily basis. At the same time, people are often limited to only a small portion of information, or *samples*, in relation to all the possible information made available during a social experience (Ambady & Rosenthal, 1993; Fiedler, 2000). The fundamental question guiding this chapter is how group-motivated sampling of social information facilitates biased evaluations. One feature unique to social interactions is that the categories or groups to which individuals belong or affiliate (e.g., gender, race, political, religious, sports affiliations) elicit motivations that fluctuate across time and social contexts (Tamir & Hughes, 2018). Whereas extant sampling models have accounted for many dimensions of both internal and external sampling behavior, less attention has been dedicated to the motivations that may guide sampling behaviors within these social contexts. We provide a framework to account for how motivations not only influence the social experiences people have in group settings, but also how motivations influence the interpretations and beliefs people form based on those social experiences.

Social contexts elicit different types of motivations that may influence sampling behavior. *Interpersonal motivations* arise as a function of an individual's social roles and their surrounding needs, which give rise to motivations related to maintaining positive affect and achieving personal goals (e.g., avoiding displeasing individuals; Denrell, 2005). *Group-based motivations*, on the other hand, relate to the different groups that people categorize themselves and others into (e.g., based on gender, race, political affiliation), and how these group-identity attachments give rise to motivations related to social belonging and positive group esteem

(Kahan et al., 2013). While interpersonal motivations have received some attention in previous work (e.g., Denrell, 2005), less attention has focused on the role of group-based motivations in sampling behavior. Given that individuals belong to multiple different categories (Brewer, 2001; Brewer & Pierce, 2005; Hogg et al., 1995; Onorato & Turner, 2004; Willer et al., 1989), and these social identities shape social cognitive processes (Bolsen et al., 2014; Hughes et al., 2017; Kahan, 2013; Kunda, 1990), how might belonging to a group impact sampling behavior?

There are many different social categories that divide us into different groups (Cikara et al., 2017; Onorato & Turner, 2004; Willer et al., 1989), which engender different motivations that can produce intergroup biases. In its purest form, intergroup motivations can be examined in minimal group contexts, where individuals are arbitrarily assigned to novel and experimentally-created groups in which no pre-existing knowledge can influence cognition and behavior (Tajfel & Billig, 1973). From a sampling perspective, the minimal group context provides a baseline for examining how group-based motives bias sampling behavior as people have no prior knowledge about ingroup and outgroup members. One benefit of establishing a baseline of sampling biases in the context of minimal groups is that it provides an opportunity to examine if and how sampling biases diverge in the context of real groups. In contrast to minimal groups, people often maintain strong pre-existing beliefs and attitudes about members of real groups that may introduce other motivations (Miller et al., 2009). For instance, real group contexts defined by intergroup conflict may engender motivations to derogate and harm outgroup members, which is rarely seen in minimal group contexts (e.g., Mummendey et al., 1992). Information sampling may thus deviate based on whether people have prior knowledge about ingroup and outgroup members (i.e. real groups) or not (i.e. minimal groups).

Social group affiliations can lead to biased evaluations of social targets via several mechanisms (see Figure 1). First, through *motivated sampling* (see Figure 1, Path A), motivations may constrain the availability of samples by guiding attention towards particular information. Here, we are concerned with sampling choices that sacrifice accuracy in social perceptions in order to satisfy some other goal or wish of a person. Whether these motivations are rational or not, and whether they are associated with deliberate or “accidental” biases, is not the crux of the argument. Indeed, some goals can be rational (e.g., avoiding things that are unpleasant or harmful) and only generate accidental evaluative biases (e.g., Denrell, 2005). More important for our purposes, however, motivations may also be tied to groups and these may generate biases that cannot easily be explained by actors solely attempting to navigate the environment at hand. For example, if people want to find the best place to get food, and they are tasked to evaluate if they get better recommendations from some groups than others, then it makes little sense to seek more information from one group – especially when the groups are novel and completely arbitrary (Bergh & Lindskog, 2019). If people were trying to maximize utility or maximize information gain, they should gather the same amount of information from each group, given what the task and environment entails. A deviation from equal sampling from each group would constitute motivated sampling. We use the term motivation broadly to capture the various reasons why people prefer information from some groups over others.

A long line of work shows that interactions with ingroup members are often guided by concerns over reputation, trustworthiness, and cooperation (Everett et al., 2015), where people may be *by default* more interested in ingroup members (Brewer, 1999), and may therefore gather more information from them. Conversely, interactions with outgroup members are often guided by concerns related to threat and competition over resources (Anderson & Putterman, 2003;

Hewstone et al., 2002). It could be argued then to be a rational choice to avoid outgroups, at least in some cases. Avoidance of outgroups could also be accidental, because of a combination of interpersonal motivations (avoid unpleasant interactions) and differential likelihoods of encountering new people from certain groups (Denrell, 2005). We offer a third possibility: People may also have an intrinsic motivation to seek out information about ingroups to a greater extent than outgroups – even when both information sources are equally accessible. Specifically, we suggest that in both minimal and real group contexts, group-based identities may guide sampling behavior towards one group over another, giving rise to experiences that are not representative of the population. Critically, if people fail to account for their skewed experiences, these biased samples may lead to biased evaluations (i.e. data-driven biases; Denrell & Le Mens, 2017; Fiedler, 2000; Le Mens & Denrell, 2011; Lindskog et al., 2013; Lindskog & Winman, 2014).

Figure 1. A visual schema of where motivations may influence information processing. First, motivations constrain samples by guiding attention towards goal relevant information based on the current social context (Path A), which may produce non-representative samples. Second, group-based motivation may lead to motivated interpretations of the sampled information (Path B). Finally, people may employ different sampling strategies over time that capitalize on skewed experiences (Path C). Note that any one of these processes may have more or less influence in a given context.

Second, through *motivated interpretations* (see Figure 1, Path B), when a sample has been obtained, motivations may also guide the interpretation of sampled information, for instance by shifting attention and memory processes towards congenial information and away from uncongenial information. Here, we operationalize congenial as both information that is favorable to the ingroup and information that is unfavorable to the outgroup, and uncongenial as both information that is unfavorable to the ingroup and information that is favorable to the outgroup. In some cases, such as with real groups, congenial may also comprise favorable ingroup and unfavorable outgroup information that is congruent with expectations, as people believe a priori that their group is better than the outgroup. In social contexts, the same motivations that guide sampling behavior may also contribute to erroneous interpretations of information after samples are obtained, introducing a second stage of information processing where motivations can bias evaluations. From this perspective, motivations can lead people to form conclusions that are most desired rather than those that are most accurate. For instance, research has consistently found that people interpret congenial information or information from congenial sources (e.g., coming from the ingroup) more favorably and perceive it as more valid than uncongenial information (Flynn et al., 2017; Gampa et al., 2019; Hughes et al., 2017). Conversely, when confronted with uncongenial information, people often become skeptical and require more and stronger information before information is adopted (Ditto & Lopez, 1992; Kraft

et al., 2015; Taber et al., 2011). Taken together, motivated interpretations may interact with biased samples, giving rise to evaluations that favor the ingroup over the outgroup.

Third, motivations may influence the processing of group-based information by changing sampling behaviors over time, based on the congeniality of sampled information (see Figure 1, Path C). That is, sampling to infer an unknown population parameter is a dynamic process: samples are gathered, interpreted, and then gathered again to reach a conclusion. When people are limited in their ability to interpret information in a favorable way (e.g., because their own group is worse than an outgroup on some attribute), they may capitalize on skewed experiences by adapting where they sample over time (hereinafter sampling strategies). Sampling strategies can thus obfuscate real group differences by steering sampling towards congenial or away from uncongenial information.

Empirical Framework

To empirically test how motivations in social group contexts guide information sampling, and the extent to which skewed experiences interact with motivated interpretations to produce biased evaluations, we conducted seven studies in minimal and political groups (Bergh & Lindskog, 2019; Derreumaux et al., in press). In all studies, participants actively sampled numerical information from ingroup and outgroup categories that represented some underlying attribute (e.g., trustworthiness, intellectual abilities), and stop sampling when they felt confident that they could accurately evaluate each group. In each trial, a participant could freely choose to gather information from either the ingroup or outgroup category. The sampled information was subjected to two manipulations designed to examine how sampling behavior may interact with motivated interpretations to produce biased evaluations. First, we manipulated the valence of the first sample to be either overly positive or overly negative to examine how first experiences

influence evaluations and guide subsequent information sampling. If the majority of people begin sampling from their own group, this outlier will increase the variability of ingroup relative to outgroup experiences, as their overall ingroup samples will be biased upward or downward. If motivations only influence information processing in Path A (i.e. sampling first from the ingroup), but not Path B (i.e. no interpretive biases), then differences between participant's ingroup and outgroup evaluations should be of similar magnitude based on their overly positive or negative initial experiences (i.e. a sampling-driven biases). Conversely, if motivations only influence information processing in Path B (i.e. motivated interpretations), but not Path A (i.e. no motivated sampling), then we would expect participants to randomly sample from the ingroup and outgroup first, and that both positive and negative initial samples would likely lead significantly higher ingroup compared to outgroup evaluations. This is because in both situations, people would interpret the information as more favorable than it is and arrive at similarly biased evaluations. However, we predicted that biased evaluations arise from sampling biases in Path A as most participants sample first and most often from the ingroup (Brewer, 1999), which produces more variable ingroup experiences (Konovalova & Le Mens, 2020), and its interaction with interpretive biases in Path B, which produces asymmetric updating of initial samples based on their congeniality (Hughes et al., 2017; Hart et al., 2009).

Second, participants were randomly assigned to real group difference conditions (i.e. distributions of information that statistically differed in one direction or another), such that their ingroup was either (1) better than, (2) worse than, or (3) the same as the outgroup on some evaluative dimension (e.g., more or less trustworthy). Manipulating the real group differences provides a second opportunity to examine whether biased evaluations interact with biased samples. If participants are not biased in their interpretation of information (Path B), and instead

follow the data they encounter (data-driven), then their evaluations about ingroup and outgroup members should be similarly accurate (i.e. equally likely to report the direction of the magnitude of the group difference when the ingroup is doing better and worse). However, we predict that participants will be capable of accurately representing data they encounter (e.g., Denrell & Le Mens, 2017; Fiedler, 2000), but only do so when the ingroup is de facto better. When the ingroup is de facto worse, we predict that participants will fail to pick up on any differences and evaluate the ingroup and outgroup similarly (Gramzow et al., 2001; Howard & Rothbart, 1980). Thus, we predict that participants will selectively integrate samples and pick up on underlying distributions based on whether the environment is favorable (i.e. ingroup is de facto better) or unfavorable (i.e. outgroup is de facto better).

Next, we discuss how our research design addresses sampling biases in Path A, their interaction with interpretive biases in Path B, and changes in sampling strategies over time in Path C, as outlined in Figure 1.

Figure 2. A visual representation of how information was sampled over time. Below the arrow is a generic representation of the paradigm flow. Above the arrow is a representation of how information was sampled in Studies 6 and 7.

Path A: Group-based motivations constrain individual samples

Examining sampling biases in the context of minimal groups allows us to compare and contrast if and how sampling biases diverge in the context of real groups. Because people have no prior knowledge about ingroup and outgroup members in the minimal group context, any sampling biases that emerge should represent “pure” group-based motivations. These motivations would not have to be overtly aimed at discriminating against other groups. Instead, they could be as innocent as wanting to first learn about one’s own group. That is, in the minimal group context, sampling biases may emerge simply because people are more curious about ingroup members, and as a result, sample first and most often from them. Motivations to sample first and most often from one’s own group are also likely to bias sampling in the context of real groups, in line with work suggesting that people often prefer information from congenial sources (e.g., an ingroup member). However, the specific motivations underlying sampling behavior – and more importantly, how people interpret sampled information – may diverge in the presence of real groups. This is because people often maintain pre-existing beliefs (e.g., about ingroups as superior and outgroups as inferior), which engenders intergroup biases (Brewer, 1999). For instance, in a real group context, people’s motivations may shift from focusing solely on positive ingroup information to also focusing on negative outgroup information.

Throughout all seven studies, the majority of participants chose their first piece of information from the ingroup (see Table 1), demonstrating that group-based motives influence information sampling from the very start. Because the first sample was either overly positive or negative, most participants also had more varied experiences about their ingroup relative to their outgroup.

In the minimal group context, roughly 90% of participants started sampling from the ingroup, providing strong evidence for group-based motives even when people could not have any “rational” prior beliefs about ingroup and outgroup members, nor any knowledge about pre-existing differences between groups (Bergh & Lindskog, 2019). In the political context, roughly 70% of participants started sampling from the ingroup, suggesting that group-based motives also guide sampling behavior in real groups (Derreumaux et al., in press). In the minimal group context, sampling behavior likely reflects “pure” ingroup favoritism driven by a greater interest to learn about ingroup members by default, because minimal group contexts are not contaminated by pre-existing motivations or expectations associated with either group. However, even in minimal groups where no pre-existing beliefs or associations exist, sampled information can still vary in the extent to which it bears implications for the self, and this can contribute additional motivations to biased information sampling beyond greater interest. For instance, in Study 4, participants gathered IQ scores from novel ingroups and outgroups. IQ scores represent meaningful pieces of information that could have a real impact on the success or failure of future coalitions (Ditto & Lopez, 1992), and therefore people may have good reason to gather more IQ scores from novel ingroups compared to novel outgroups. Thus, sampling in this context may be considered “rational”, yet it is still driven by motivations surrounding group membership. Likewise, in the political context, sampling behavior may be driven by motivations beyond greater ingroup interest, such as motivations to confirm prior beliefs about the superiority of one’s own group. Indeed, we find evidence that sampling more from the ingroup was stronger for participants who identified more strongly with their political identity and for those with stronger political conviction. This finding provides an explicit connection between strength of

identity and motivated sampling behavior, and suggests that biases in sampling behavior in part represent group-specific motivations.

Absent any prior knowledge about ingroups and outgroups, one reason that participants may have predominantly begun sampling from their ingroup is that they are testing an internally generated hypothesis that their ingroup is better (i.e. a positive test strategy). This possibility aligns with work suggesting that people often maintain overly positive expectations about ingroup attributes relative to outgroup attributes (King & Bee, 2020). To more formally test the extent to which sampling from the ingroup first represents a positive test strategy to confirm that the ingroup is better, in addition to a general or “default” motivation to learn more about ingroup members, the last of our studies introduced a global pundit impression. This manipulation took place prior to any sampling, such that participants either received a positive or negative pundit impression about the candidates from an ingroup or outgroup source. This context aligns or misaligns positive test strategies for the externally-generated hypothesis (i.e. the pundit comment) with motivations to learn more about ingroup members. The positive pundit impression aligns a positive test strategy with the motivation to learn more about ingroup members, as both should lead to more ingroup first samples. Conversely, the negative pundit impression misaligns a positive test strategy with the motivation to learn more about ingroup members, as testing the hypothesis that the outgroup is better should lead to an increase in sampling from the outgroup first. Results suggest that when these two motivations align, participants were more likely (77%) to select the first sample from the ingroup. In contrast, following a negative pundit impression, participants were equally likely to sample from the ingroup (51%) or the outgroup (49%) first. This suggests that positive test strategies exert some influence over initial sampling behavior, but they do not fully account for sampling biases. In

addition to sampling more often from the ingroup first, participants also sampled more information on average from the ingroup, demonstrating that group-based motivations also influence sampling behavior on aggregate.

Sampling biases were reliable across contexts with a few notable exceptions. Participants sampled overall more information when gathering information about novel ingroups as compared to real groups, as well as sampled overall more information when sampling from groups, as compared to group representatives. One parsimonious explanation for both of these effects pertains to perceived variability, represented both in terms of novel groups (about which participants have no priors) as well as inferring group characteristics from interactions with individual group members. Specifically, participants may sample more information from novel groups simply because they have less a priori information about them and therefore require more experiences before feeling confident in evaluating them on a given attribute.

Study	<i>n</i>	Ingroup first sample	Location	Online/In-lab	Context	Group Type
1	40	85% CI [70,94]	Scandinavia	In-lab	Restaurant Ratings	Minimal
2	63	92% CI [82,97]	Scandinavia	In-lab	Restaurant Ratings	Minimal
3	140	92% CI [87,96]	United States	Online	Security Screening	Minimal
4	142	92% CI [87,96]	United States	Online	Cognitive Abilities	Minimal
5	540	71% CI [66,74]	United States	Online	Political Knowledge	Political
6	905	70% CI [66,72]	United States	Online	Fact-Check Ratings	Political
7	986	66% CI [61,67]	United States	Online	Fact-Check Ratings	Political

Table 1. Overview of sample information for all 7 empirical studies.

Path B: Biased samples interact with motivated interpretations

Although motivated sampling and motivated interpretations can be viewed as taking place at different stages during information processing, it is possible that they interact. Across all studies, the observed pattern of results suggest that evaluative biases arise from the interaction of motivated sampling and motivated interpretations: the influence of the sampled information (Path A) on evaluations depends not only on where the sample came from (i.e. ingroup or outgroup), but also the congeniality of that sample.

Across studies, we find evidence that observers asymmetrically integrate initial experiences into their evaluations based on congeniality (see Figure 3a and 3b). Specifically, observers integrated positive initial experiences about the ingroup into their evaluations, but failed to integrate negative initial ingroup experiences into their evaluations. These results are inconsistent with the notion that biased evaluations only depend on motivated interpretations, as both congenial and uncongenial initial experiences should lead to similarly biased evaluations. Thus, these findings explicitly connect group-motivated biases in sampling to biases in evaluations, such that biased evaluations represent the interaction of motivated sampling (producing more variable ingroup experiences) and motivated interpretations (selectively relying on favorable information about the ingroup).

In addition to manipulating the first piece of information to be overly positive or negative, we also manipulated the overall favorability of the environment. Consistent with work suggesting that people are capable of veridically representing data they encounter (Denrell, 2005; Denrell & Le Mens, 2017; Fiedler, 2000; Le Mens et al., 2018; Le Mens & Denrell, 2011; Lindskog et al., 2013; Lindskog & Winman, 2014), participants across studies were quite adept

at inferring the direction and magnitude of the real group differences, but only when their group was de facto better (see Figure 3c and 3d). Once again, these results are consistent with the notion that biased evaluations depend on the interaction of motivated sampling and motivated interpretations, as people were quite adept at accurately interpreting information when the ingroup was de facto better, but were less accurate at inferring real group differences when the ingroup was de facto worse. Specifically, when sampled information about the ingroup was unfavorable, participants failed to pick up on any group differences and evaluated the ingroup and outgroup similarly.

Overall, we observed very similar evaluative biases between minimal and political groups (see Figure 3). However, results suggest that in the political context evaluative biases seem to reflect participants under-estimating outgroup averages, and in the minimal group context evaluative biases seem to indicate that participants are inflating ingroup averages. One interpretation of this finding is that evaluations of minimal groups may be more susceptible to anchoring effects on the response scale (e.g. answering closer to the midpoint of the scale), given that people have little prior experiences from which to draw. An alternative hypothesis is that political polarization in the U.S. and strong political affiliation (Iyengar et al., 2019; Iyengar & Krupenkin, 2018; Iyengar & Westwood, 2015) elicits additional motivations to derogate political outgroups, and may therefore manifest in harsher interpretations of unfavorable outgroup information.

Figure 3. Evaluations of ingroups and outgroups as a function of Valence of initial impressions (Panels A and B) or Real Group differences (Panels C and D) in the political context (Study 2; Derreumaux et al., in press) and minimal group context (Study 3; Bergh & Lindskog, 2019). Worse, Same and Better is stated in reference to the ingroup. Vertical bars denote standard error of the mean.

Path C: Sampling strategies and dynamics

In order to uncover underlying attributes about individuals or groups, people must sample and interpret information iteratively. Therefore, examining sampling behavior on aggregate may not fully capture the dynamic features of sampling behavior as it evolves over time. For instance, people may employ different sampling strategies based on the congeniality of sampled information. In this situation, aggregate trends would wash out any changes in sampling trajectories over time. Therefore, in order to elucidate whether particular trajectories of sampling

behavior manifest over time as a function of the congeniality of sampled information, and whether these trajectories were associated with downstream evaluative biases, we modeled sampling using mixed logistic regression models in our biggest samples that could most easily be analyzed jointly (i.e. the political samples).

These models revealed that participants adopted different sampling strategies when the ingroup was de facto worse, such that a positive first sample led to a higher propensity of outgroup sampling, whereas a negative first sample led to a higher propensity of ingroup sampling (see Figure 4). One explanation for this behavior is that when the ingroup is de facto worse, participants are limited in their ability to selectively attend to congenial information and must therefore try and maintain plausible deniability about the superiority of the outgroup. One way this can be accomplished is by shifting attention away from the ingroup following a positive initial experience, and thus reducing the uncertainty of new information (that is most likely unfavorable to the ingroup), while shifting attention towards the ingroup following a negative first experience, as new experiences are likely to be better relative to the first experience. Critically, participants who employed this strategy were also more likely to end up with the most biased evaluations, suggesting that sampling strategies may be effective at obfuscating real group differences.

Figure. Probability (predicted estimate) of sampling from the ingroup when the ingroup was de facto worse (Meta-Analysis 3; Derreumaux et al., in press). Red lines denote sampling trajectories as a function of a negative first sample, whereas blue lines denote sampling trajectories as a function of a positive first sample. Error bars denote standard error of the mean.

Conclusions and future directions

Human experiences are often guided by motivations engendered by the groups with which we affiliate, which can constrain the availability of information and pave the way for motivated interpretations. In the current chapter, we demonstrate that sampling models provide a useful method to examine and quantify how group-based motivations guide information processing in real-world settings.

Replicating these effects across a variety of sampling categories (e.g., minimal and real group; individual groups and individual group representatives) and sampled information (e.g., sampling ingroup and outgroup restaurant helpfulness ratings; sampling political candidate fact-check scores), we find that biased sampling behaviors interact with motivated interpretations to

produce biased evaluations. Specifically, we outline three stages where motivations permeate information processing. First, motivations drive people to sample first and most often from their own groups (Path A in Figure 1). This in turn generates samples that are skewed and not representative, as people have larger and more variable ingroup experiences to draw from (Konovalova & Le Mens, 2020). Second, people selectively attend and integrate information into their evaluations based on congeniality: favorable information about the ingroup is integrated, whereas unfavorable information about the ingroup is not (Path B in Figure 1). Importantly, the ability to selectively attend to and integrate certain pieces of information, while ignoring others, was driven by biases outlined in path A, demonstrating that biased evaluations depend on the interaction of motivated sampling and motivated interpretations. Third, sampling behavior changed over time when people's ingroup was de facto worse, based on whether the first piece of information was positive or negative (Path C in Figure 1). Thus, in addition to biases in path A and B, when people are limited in their ability to selectively attend to information, they changed their sampling trajectories over time in a way that allowed for the most favorable interpretations. Next, we describe how social contexts often elicit additional moderators that may further influence information processing.

A premise of the proposed framework is that population attributes are noisy, and that in order to accurately approximate them people need to gather a sufficient amount of information, account for biased samples, and then accurately make inferences. An implicit assumption is that participants may rationalize downweighing of uncongenial information to those samples being invalid or unreliable. This hypothesis is in line with prior work suggesting that people are often motivated skeptics of uncongenial information – requiring more and stronger evidence before it is adopted (Ditto & Lopez, 1992). Future research could explicitly manipulate the reliability and

validity of the source from which information is sampled. Doing so may provide insights into the mechanisms underlying the interaction of biased sampling behavior and biased interpretations. For instance, how sensitive are people to the validity or reliability of information, and does this sensitivity change based on whether information in the sampling environment favors the ingroup or the outgroup?

One benefit of examining information processing biases in both minimal and political groups is that it provides insights into if and how different classes and strengths of motivations may lead to differences in evaluative biases. Although our results suggest that biases are relatively consistent across our sampling contexts, evaluative biases in the minimal group context seem to indicate that participants overestimated ingroup averages (i.e. ingroup evaluations were greater than their true group means), and in the political context evaluative biases seem to reflect that participants underestimated outgroup averages (i.e. outgroup evaluations were lower than their true group means; see Figure 3). This finding is consistent with prior work that shows that outgroup derogation is likely to emerge in intergroup contexts characterized by a perception of threat or zero-sum competition over resources (Brewer, 1999; Cikara et al., 2017). We speculate that the underestimation of outgroup averages in the political context may generalize to other real groups also faced with competition and intergroup conflict (e.g., race, religion, sports teams). However, unlike political contexts, overt outgroup derogation may not be deemed socially acceptable in other intergroup contexts (e.g., race), suggesting that social norms may also play a role in guiding information processing. For instance, in some contexts it may be socially unacceptable for a White individual to actively search for negative information about a Black individual based on their race. In this situation, social norms (e.g., social desirability; Paulhus & Reid, 1991) may “unbias” sampling behavior (Path A), as actively

searching for negative outgroup information would be frowned upon. Conversely, sampling may be impervious to social norms, as people may believe that their sampling behavior is "hidden" from others (e.g., online). In both contexts, people may still arrive at biased evaluations, yet via different mechanisms.

In real intergroup contexts, additional group dynamics, like social status, may also bias sampling behavior and further constrain the environment. For instance, prior work has shown that people attend to and admire high status individuals, in part because they tend to have power and dictate social norms (Dalmaso et al., 2012), and that ingroup biases are often strongest in high status groups (e.g., Mullen et al., 1992). These results suggest that the ingroup- and outgroup- dynamics we find across minimal and political groups may diverge when groups differ on social status. Thus, sampling models may help to explain why intergroup biases are strongest when they intersect with status, as ingroup and status motivations may align. Since most social categories intersect with social status on some level, future research on intergroup biases may prioritize extending sampling models in these contexts.

If intergroup biases depend, in part, on biases in information sampling, then what strategies may be used to intervene and reduce intergroup bias? Our results highlight the role of initial ingroup experiences in driving downstream information processing biases. As such, one route to reducing bias may be to encourage people to sample first and more often from outgroup members. That is, if biases are driven by people selectively attending to positive ingroup samples rather than negative outgroup samples, then sampling from the outgroup might mitigate biases as participants would have less biased ingroup experiences to selectively attend to. Indeed, in the political context, we find preliminary evidence that under certain conditions, sampling first from the outgroup leads to less biased ingroup and outgroup evaluations (Derreumaux et al., in press).

This suggests that under certain conditions, having more variable outgroup samples may be one route to reducing partisan prejudice.

Taken together, extending sampling models to social contexts offers a number of exciting avenues for future research to better understand how sampling and interpretations jointly produce biased evaluations. Most importantly, we believe that increasing crosstalk between researchers studying sampling and interpretive sources of bias will greatly improve research and theory in the domain of intergroup conflict.

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