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Online communication to the ingroup and the outgroup: the role of identity in the "what" and "why" of information sharing

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Abstract

How and why do people share opinions online? In research conducted offline, the social identity of the audience is a key factor: whether they are composed of one's ingroup or outgroup affects what people share and why. Do people behave similarly and for similar reasons online? To test this, we put participants (N = 326) in imaginary forums belonging to their ingroup and outgroup. In each, people selected statements to share, along with reasons for doing so. The results showed a high degree of heterogeneity; people shared nearly all kinds of statements with both audiences, for a variety of reasons. However, there were also consistent patterns. Identity expression was the most common reason for sharing to both audiences, but this led to different things being shared to each. To the ingroup, people preferred to share statements expressing ingroup beliefs, while to the outgroup, they preferred statements expressing universal beliefs.

Keywords: information sharing; intergroup relations; intragroup relations; communication; online communication; social identity; common ground

Introduction

Humans are cultural learners. Ever since the emergence of modern humans, we have been learning from others by imitation and teaching others through instruction (for a recent review, see Tomasello, 2016). We also learn collaboratively from each other by exchanging information about matters of common interest (Tomasello, Kruger, & Ratner, 1993). Although we continue to do these things in online environments, the nature of the information exchange in that context has become more complicated and unclear. In this paper we experimentally investigate the following question: *What information do people exchange online and why?*

This is a pressing question; in part because it is not obvious how much of our scientific knowledge about communication in offline contexts is applicable in online ones. Unlike in-person exchanges, online environments are often impersonal and anonymous, with messages being read by a diverse and unknown audience (Connolly, Jessup, & Valacich, 1990). They are also less interactive (Oh, Ozkaya, & LaRose, 2014) and lacking in communicative feedback, since body language and facial expression are absent (Kane, Alavi, Labianca, & Borgatti, 2014). Given the spread of misinformation and rise in polarisation associated with social media, online information exchange is not only a significant scientific question, but also an urgent societal issue in need of understanding.

One critical factor in interpersonal communication is *social identity*: whether the audience is a part of the sender's ingroup or outgroup (Beukeboom & Burgers, 2019). For instance, a Democrat might share very different opinion pieces about gun control to fellow Democrats than they would a group of Republicans; in part because they know the response would be different in each case. This matters since the nature of the response could either exacerbate animosity or facilitate reasoned deliberation. Indeed, we can classify types of information according to the anticipated reactions from ingroup and outgroup audiences. Universal information describes ideas that both the ingroup and outgroup agree with. Another kind of information is Ingroup Supportive: these are ideas that the ingroup agrees with but the outgroup does not. The opposite of this is Outgroup Supportive: the outgroup agrees but the ingroup does not. Finally, Divisive information is that which even ingroup members disagree on with each other.

What information might we expect people to exchange to their ingroup online? When people interact in person with members of their ingroup, they tend to conform to the norms of that group; for instance, they prefer to share information consistent with the stereotypes that are accepted in that group (A. Clark & Kashima, 2007; Kurz & Lyons, 2009). Conformity to ingroup norms is not only present in the online environment, but may be even stronger than in face-to-face communication (Postmes, Spears, & Lea, 1998). When one does not know members of the audience personally, cues about their social identity (e.g., usernames) can have a stronger impact on behaviour (Reicher, Spears, & Postmes, 1995). Accordingly, many theoretical perspectives suggest that people are unlikely to share divisive or outgroup supportive information to the ingroup. Sharing universal and ingroup supportive information to the ingroup allows people to affirm their shared identity (Turner, Hogg, Oakes, Reicher, & Wetherell, 1987) and establish common ground (Kashima, Klein, & Clark, 2007; H. Clark, 1996).

Much less is known about what information people exchange with their outgroup, whether in person or online. Understanding this and how it relates to ingroup communication is critically important, given the role of social media in our information system and the fact that many people's experience with their outgroup occurs online. We can begin to answer this by considering *why* people exchange information. On the one hand, a main driver of information sharing is social connection (e.g., Pryor, Perfors, & Howe, 2019; Stein, 2013; A. Clark & Kashima, 2007). This motivates people to share information that the audience is expected to agree with, like universal or outgroup supportive information (when sharing to the outgroup). On the other hand, people are also motivated by identity expression; they have a desire to signal "who they

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Table 1: **Information types**. The four types of statements participants shared in the main study. These statements are classified according to how people in the norming study thought they would be interpreted by ingroup and outgroup members.

Type	Description	Example
Universal	Both ingroup and outgroup agree	"America is too divided" (Democrat)
Divisive	Ingroup members disagree with each other	"LGBT communities should be allowed to exclude transgender people" (LGBT)
InSupport	Ingroup members agree, outgroup disagree	"There is a heaven in the afterlife" (Christian)
OutSupport	Outgroup members agree, ingroup disagree	"It is easy to become nutritionally deficient on a vegetarian diet" (Vegetarian)

are" through what they choose to share (e.g., Ekstrom & Lai, 2021). This might lead people to do things like express their ingroup identity by sharing ingroup supportive information, despite its potential to provoke disagreement. This suggests that different information may be shared depending on which motive (connection or identity expression) is stronger.

That said, people have multiple levels of identity: they may see themselves not just as Democrats or Republicans but also as Americans and humans. Thus, one could share universal information to an outgroup while being motivated by identity expression if they were acting on the basis of a *more inclusive* social identity. In fact, self-categorization theory suggests that people's social identity shifts depending on the social context in this manner (Turner et al., 1987). In the case of communication, people may attempt to establish common ground with their outgroup audience by transmitting universal information that signals an inclusive social identity (Kashima et al., 2007).

Importantly, online communication introduces other complexities that do not arise in person. For instance, the relative anonymity and lack of communicative feedback might make people want to anger the outgroup audience, even though this is confronting and typically avoided in face-to-face interactions (Wollebæk, Karlsen, Steen-Johnsen, & Enjolras, 2019). They also might have more deliberative motives, like wanting to discuss a social issue or to persuade the audience to change their opinions (Weeks, Ardèvol-Abreu, & Gil de Zúñiga, 2017).

Although there are many hypotheses about what people share online to the outgroup and why, this question is relatively understudied. One reason is that observational studies of platforms like Twitter or Reddit are limited as there exists no tools that can categorise messages according to the typology in Table 1. Additionally, in most cases it is unclear what the real identities of the people involved are. Even if those problems could be solved, we still would not know what people's reasons for sharing were. These considerations highlight the difficulty of making accurate inferences about communication motives solely based on what people choose to share.

This situation calls for an experimental investigation, which allows us to precisely control and measure the audience, context, and information shared, while also asking people their reasons for sharing it. The current study is our first attempt at achieving this. In it, participants are asked to imagine they are interacting in an online forums corresponding to either their ingroup or outgroup, and must choose among a set of statements to share and give their reason for doing so. We chose to focus on an environment like an online forum (instead of something broader like Twitter) because it makes the intended audience clear and highlights the salience of the group identity. To further ensure this, we analysed only the people who identify strongly with the groups involved (Hutchison & Abrams, 2003; Turner, 1991).

Initial norming study

Since our primary question in this study was whether information sharing differed if the audience was composed of ingroup or outgroup members, we wanted to present them with information – in this case, short statements – that were likely to be interpreted differently by these different audiences. We therefore generated statements and had participants classify them in a preliminary norming study.

We began by creating a pool of 19 different possible statements designed to capture a range of opinions and beliefs relating to issues within each of seven groups (LGBT, Vegetarian, Democrat, Republican, Christian, Parents, and Black). We then recruited 145 people (46% female) from MTurk, all of whom had previously passed a qualification task measuring facility with English. They were then asked to classify[1] each of the statements as one of the following four types:

Universal. Both the ingroup and outgroup would agree: e.g., "Everyone is deserving of respect" (LGBT) or "Everyone should eat good nutritional food" (Vegetarian)

Divisive. Members within the ingroup would have different opinions about this: e.g., "You cannot be a good Christian if you never read the entire bible" (Christian) or "America needs to be more socialist" (Democrat)

Ingroup Supportive. Members of the ingroup but not the outgroup would agree: e.g., "Gun possession and usage should be more strictly controlled" (Democrat) or "Eating animals is murder" (Vegetarian)

Outgroup Supportive. Members of the outgroup but not the ingroup would agree: e.g., "People who identify as nonbinary or want to use they/them pronouns are just seeking attention" (LGBT) or "Homosexuality is not a sin" (Christian)

For each group, we then identified eight stimuli to use in the main study: the two best statements of each of the four

[1]The examples we show here are statements that were rated as that type by these participants; the participants in the norming study themselves were not told the name of the four types. Instead they chose from descriptions like "Both X and non-X people would agree with this" with X replaced by the relevant group name.

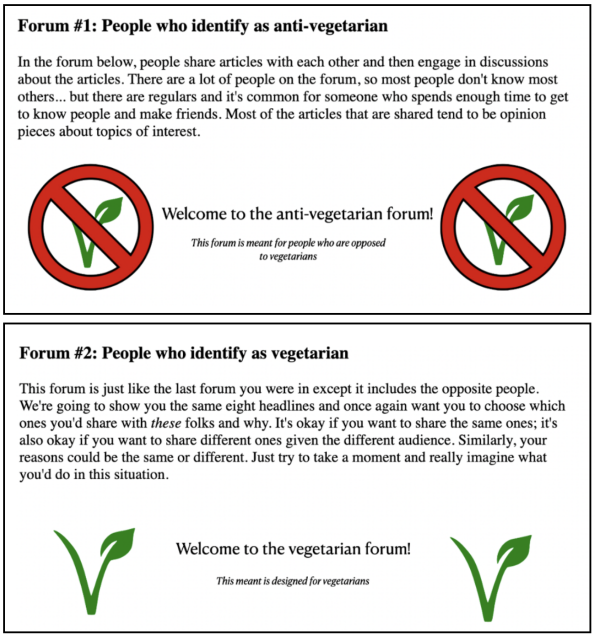

Figure 1: **Example of fictitious forum**. Screenshots of the two Vegetarian fora for a participant who saw the outgroup (top) first and the ingroup (bottom) second. An image was added to make the group salient. For the LGBT group the image was a rainbow flag, for Christians it was a cross, for Democrats it was the democratic donkey, and for Vegetarians it was a plant.

types (i.e., those statements for which most people agreed that it should be classified that way). For four of the groups (LGBT, Vegetarian, Democrat, Christian) we were able to find eight statements for which (a) there were enough ingroup raters for us to be confident about the classifications and (b) the raters mostly agreed about the classification into these statement types. As pre-registered,[2] the main study, explained next, thus excluded the other three groups (Black, Parents, and Republican). Table 1 shows an example statement of each type, and full details of the norming study and stimuli are in the Supplementary Materials.[3]

Method

Participants

427 participants were recruited through MTurk and paid US$1.20 for this 5-10 minute experiment. None of these people had participated in the norming study, and all had also passed the same English qualification. As we describe below, 12 participants were excluded for failing the attention check and 89 were excluded because they could not be assigned to an ingroup that they identified highly with. The final dataset thus consisted of 326 people (47.5% female) whose ages ranged from 20 to 71 (M = 39.79, SD = 11.79) and who were primarily located in the USA (89%).

[2]Pregregistration: `https://aspredicted.org/bq23t.pdf`

[3]Found at `https://osf.io/x27h4/`

Procedure

Since we were interested in the differences in behaviour depending on whether people were communicating with their ingroup or their outgroup, the first part of our task involved identifying what those groups were. In order to do this, we asked each participant to rate how strongly they identified with each of the four groups (LGBT, Vegetarian, Christian, Democrat) using a five-point Likert scale. People were classified as high identifiers for a particular group if they strongly agreed or agreed that they identified that way.

Participants who were high identifiers for only one group were put into the condition for that group. If a person was a high identifier for more than one group, group allocation operated on a preferential basis, first favouring allocation to the LGBT group, then Vegetarian, then Christian, then Democrat.[4] Participants who did not identify with any group ($N = 89$) were randomly allocated to a condition and paid for their work, but their data was excluded. Therefore, the final sample consisted of 28 people in the Vegetarian group, 45 in LGBT, 95 in Democrat, and 158 in Christian.

Participants were then shown the following instructions, with X replaced with their group name, and the order of the forums randomised so that some people saw the outgroup ("anti") first and others saw it second:

> We're interested in learning what kind of information people share with different groups. On a lot of social media, it's really easy to share articles or memes with other people. Very often these things are shared based on just the headline, without even being read.
>
> So in this experiment we're trying to ''simulate'' that experience for you. We'll put you into two imaginary social media forums: the first will consist mainly of people who identify as anti-X, while the second will consist mainly of people who identify as X. In each forum, you'll be given a list of eight statements (corresponding to eight different opinion pieces) and asked which statement you'd be most likely to share with the people on that forum and why.

After correctly answering two questions to make sure they understood the instructions, participants entered the first forum, where the group membership was made salient with a picture; an example for the Vegetarian group is shown in Figure 1. In that forum, people were asked (on separate pages) to select two different statements to share with the group along with their reasons for sharing. Statements were shown in a different random order for each participant.

Reasons were selected from a dropdown menu with the following five options: **Express Self-Identity** ("This is something I feel strongly about; I want to show people who I am"); **Persuade** ("I want to persuade the people here to agree with me"); **Socially Connect** ("Posting this would be a good way to make friends here since probably most people here would

[4]This order was based on the frequencies of high identifiers found in the norming study; allocating people to the uncommon groups first would maximise sample size for each group.

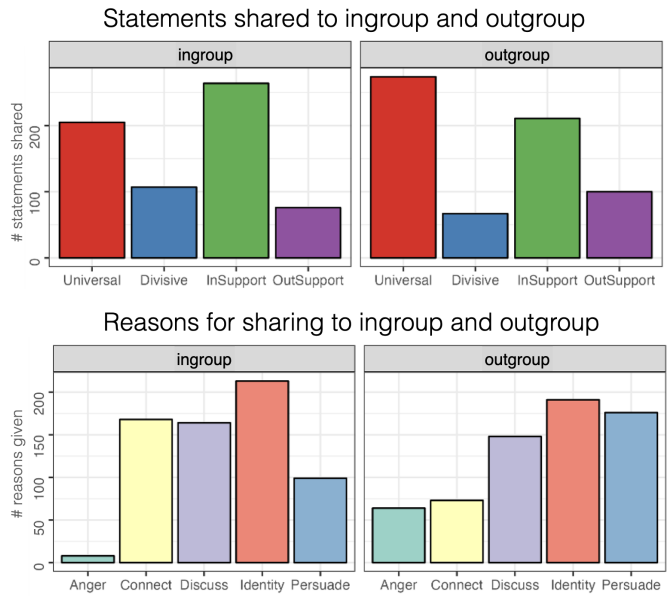

Figure 2: **Results**. *Top panel*: Statements of each type shared to ingroup and outgroup. For both, Divisive and OutSupport statements were rarely shared, while Universal and InSupport were common. The most common statements shared to the ingroup were those that only the ingroup would agree with (InSupport) while the most common shared to the outgroup were those that everyone would agree with (Universal). *Bottom panel*: Reasons given for sharing. Identity expression (Identity) was the most common reason regardless of audience, but people were more likely to want to Connect to the ingroup and Persuade or Anger the outgroup.

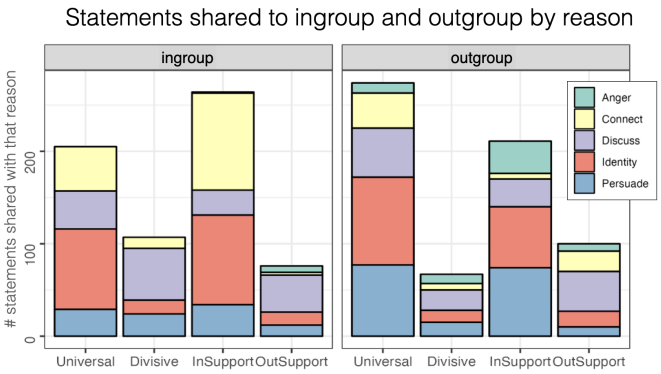

Figure 3: **Results breakdown**. This shows the same data as in Figure 2, broken down so that the distribution of reasons for each statement is visible. There is a high degree of heterogeneity, with most reasons being offered for every statement type to every audience. These results also show that the same statement types are often shared for different reasons to different audiences; for instance, Universal and InSupport statements are commonly shared to the ingroup to Connect but more often shared to the outgroup to Persuade.

agree with it"); **Anger Others** ("This will make people angry and I want to see that"); and **Discuss** ("It would be fun to see the discussion about this, because there are probably many different opinions here").

After selecting two statements and reasons in the first forum, participants then entered the second forum where they selected another two statements and reasons for that group. People were allowed to share the same statements to both the ingroup and outgroup if they wanted, and could choose the same or different reasons each time. At the end, as an attention check, people were asked to recall the order in which they were assigned to the two fora. The 12 participants who answered incorrectly were excluded from the analysis.

Results

Since our statistical analysis (details below) suggested no significant effect of group identity (LGBT, Vegetarian, Democrat, or Christian) or statement order, for space reasons all of the analyses presented here collapse across groups and orders. The Supplementary Materials contain the full results.

Figure 2 shows the type of statements and reasons shared to the ingroup and outgroup. The InSupport and Universal statements were the most shared in both conditions. This is perhaps unsurprising in the case of Universal statements, which are agreed upon by everybody, but InSupport statements have different effects on different audiences, since the ingroup agrees with them but the outgroup does not. This may be why InSupport statements were shared more to the ingroup and Universal shared more to the outgroup.We can look to the reasons for sharing for possible explanations: Identity expression was the most used reason for sharing information in either forum, and might explain this pattern of results. Additionally, the desire to Connect was a fairly popular reason for ingroup communication, while outgroup communication was more motivated by the desire to Persuade or Anger the audience. Participants were equally likely to select Discuss as a reason in either forum.

Examining patterns of sharing and reasoning in isolation can take us only so far; the interaction between the two is potentially more revealing about what people are thinking when deciding what to share. Figure 3 shows a breakdown of the reasons given for sharing each of the statement types. There is a large amount of heterogeneity; with the exception of Anger toward the ingroup, all statement types were shared for all reasons to all audiences. Notably, Identity expression was a common reason for sharing Universal and InSupport statements to both ingroup and outgroup. When examining sharing in the outgroup condition, Persuade was also a prevalent reason for sharing Universal and InSupport statements compared to the ingroup condition. On the other hand, using Connect was a common reason to share InSupport statements with the ingroup, whereas no similar trend was observable with the outgroup. Although these observations are only qualitative in nature, they already provide interesting implications for com-

Table 2: **Statistical results**. For each of the four outcome variables, we compared five nested generalised logistic regressions. All of the models included `participant` as a random term, but differed in the inclusion of terms for `audience` (ingroup vs outgroup), `reason`, `identity` (LGBT, Vegetarian, Democrat, or Christian), and `headlineNum` (first or second). The numbers reflect model BIC, and bold indicates the best model for that outcome variable. For all outcome variables except OutSupport, the best model was MAR, which has fixed effects of `audience` and `reason`. This suggests that participants shared different statements for different reasons to ingroup and outgroup. The dashed line indicates models that failed to converge.

Model	Outcome			
	Universal	Divisive	InSupport	OutSupport
MA: `audience + (1|participant)`	1720	1029	1720	1038
MR: `reason + (1|participant)`	1723	1005	1684	**1004**
MAR: `audience + reason + (1|participant)`	**1708**	**996**	**1679**	1008
MARI: `audience + reason + identity + (1|participant)`	1717	–	1686	–
MARN: `audience + reason + headlineNum + (1|participant)`	1713	999.0	1685	1014

municating in an online space, especially regarding the sharing intention versus how it may be perceived by others.

To quantitatively assess what factors predicted the sharing of each kind of statement, we compared five nested generalised logistic models for each of the four possible statement types as binary outcome variables (Universal, Divisive, InSupport, and OutSupport).[5] All of the models included a random intercept term for each participant. Model MA had only a fixed term indicating the `audience` (ingroup or outgroup), MR had only a fixed term for the `reason`, and MAR contained both `audience` and `reason`. We also considered an additional model that had those terms plus a fixed term for `identity` (Vegetarian, Democrat, LBGT, or Christian), as well as one that had them plus a fixed term for `headlineNum` (first or second). We do not report any models with an interaction because they failed to converge.[6] All models were run using the `glmer()` function in the *lme*4 package in R.

To assess the relative performance of each model, we compared them based on the BIC, which penalises model complexity. As shown in Table 2, MAR was preferred (i.e., had the lowest BIC) for all of the outcome variables except OutSupport, where MR was preferred. In all cases, all of the fixed terms in the model favoured by BIC were significant ($p < .05$). This suggests that participants shared Divisive, Universal, and InSupport statements differently to ingroup and outgroup audiences, and that people gave different reasons for sharing that statement type than they gave for the others. The fact that models with `identity` and `headlineNum` were not favoured suggests that there was no significant difference based on whether the statement was chosen first or second, or the forum was focused on LGBT, Vegetarian, Democrat, or Christian topics.

[5]This was different from the results analysis we pre-registered, which was chi-squared tests. On reflection, these nested models are more appropriate because they allow us to capture the nested experimental structure and compare different models via model selection.

[6]This is not too surprising, given the number of variables and degrees of freedom relative to the amount of data.

One interesting aspect of these results comes from comparing the variance associated with the random effect of `participant` for different outcome variables. The variance was very low for when the outcome variable was a Universal statements (0.009), somewhat low for InSupport statements (0.148), and much larger for OutSupport (0.588) and Divisive (0.737) statements. This may suggest that people do not differ much from each other in how or why they share statements meant to connect or express their identity, but differ much more when it comes to statements that are more controversial; the latter are shared less often and by fewer people.

Discussion

When interacting with the ingroup, ingroup supportive statements are the most shared, followed by universal ones; supporting the claim that people have a tendency to transmit information consistent with ingroup beliefs (e.g., Kurz & Lyons, 2009). Interestingly, identity expression is the main motivator. In line with Kashima et al. (2007), people may be motivated to signal who "we" are to those who also agree with these statements, thus creating common ground and forging a shared identity. Perhaps, since the online environment has a lack of individuating *personal* information, people's *social* identity may become even more salient (Faulmüller, Mojzisch, Kerschreiter, & Schulz-Hardt, 2012; Postmes et al., 1998). In signalling a shared social identity, they may be trying to socially connect with their audience (A. Clark & Kashima, 2007), albeit in an indirect way. Indeed, social connection was also often nominated as a reason for sharing ingroup supportive and universal statements with the ingroup, alluding to its social nature.

How does this compare when interacting with the outgroup? Universal and ingroup supportive statements were again most frequently shared with the outgroup. However, the order was reversed, with universal statements being shared the most. Nonetheless, similar to the ingroup, identity expression was nominated most frequently as a reason for sharing universal statements. Given that, the sharing of universal statements could still be understood in terms of common

ground seeking through the establishment of a shared (inclusive) social identity. These results are consistent with self-categorization theory (Turner et al., 1987; Turner, 1991); the change in the social context seems to have shifted people's social identities to become more inclusive in order to find some common ground, rather than signalling the less inclusive ingroup identity that separates them from the audience (e.g., presenting themselves as an American rather than a Democrat; Kashima et al., 2007; Gaertner, Dovidio, Anastasio, Bachman, & Rust, 1993). In other words, people may identify themselves with a more inclusive and broader group that is likely to share commonalities with the audience.

That said, this explanation cannot fully account for the popularity of ingroup supportive statements that are shared to the outgroup, which are expected to trigger disagreement. Although it may seem natural to assume that ingroup supportive statements are shared with the outgroup to anger them (e.g., Wollebæk et al., 2019), the nominated reasons suggest otherwise. Certainly, anger was nominated as one of the reasons; however, this was a relative minority. Instead, ingroup supportive statements were primarily shared to express identity and to persuade. This may suggest an attempt to *position* oneself (i.e., to discursively show one's stance on an issue) relative to the audience (Harré & Van Langenhove, 1999), or an attempt to create common ground by persuading the outgroup members to change their minds. Therefore, whereas people are inclined to adjust their communication to find common ground overall, this does not seem to go as far as being willing to share outgroup supportive statements. Arguably, shifting to a more inclusive social identity may be a primary way to create common ground with an outgroup, but some people may also try to achieve common ground by persuasion and conversion.

In all, although people tend to share universal or ingroup supportive information with both the ingroup and outgroup, the heterogeneity of the reasons for doing so is telling in considering how communication may play out online. In particular, this provides a better understanding of online miscommunication (e.g., Mazer & Ledbetter, 2012) by illustrating how mixed the motives for information sharing seem to be. Given the lack of communicative feedback found online (e.g., body language, facial expression, tone of voice), it is easy to imagine how the audience may misinterpret the sharers' true intent. For example, when someone shares statements that the audience disagrees with, the latter may see it as an attempt to anger them, when in fact the sender is simply positioning themselves, or entering into a conversation to persuade. Consequently, these potential misunderstandings can lead to negative intergroup perceptions. Although online incivility is prevalent (e.g., Anderson, Brossard, Scheufele, Xenos, & Ladwig, 2014; Coe, Kenski, & Rains, 2014), this study might offer an alternative perspective: rather than actual incivility, this might be more people *perceiving* the action as uncivil.

Despite the insights afforded by this study, there are many limitations. First, the information sharing task in the current experiment is rather limited. For instance, we asked participants to identify one reason to share the given information. However, as we suggested, people may have multiple reasons for sharing information (also see Faulmüller et al., 2012). A critical next step will be to examine any secondary reasons people may have when sharing information. Another aspect is that participants had to select at least some statement to share, but did not have an option *not* to share anything at all. Perhaps when there is no choice but to interact, individuals do not want to be outright confrontational, and so they may decide to form a shared identity with others. Given the chance to avoid interaction, are people still interested in seeking to establish common ground with the outgroup? These ideas will benefit from further exploration.

Second, the context in which the information sharing task is placed can be expanded. For example, we had participants *imagine* sharing information in a forum. This obviously impacts ecological validity. Even though the participants were told that the information they shared may be viewable to others in later experiments, the sharing occurred on a fictitious forum that lacked the usual interactions present online (Fischer & Reuber, 2011). Seeing what others are sharing may influence what the people decide to share themselves (e.g., Zhou, 2011); for instance, if sharing divisive statements seems to be the norm, it might make people more inclined to share them. Additionally, although we focused on forums to make group memberships salient, different online contexts will exhibit different social norms and interactivity. Social media such as Facebook and Twitter afford greater interactivity and a more fluid social identity negotiation (Lim & Datta, 2016), potentially influencing what information is shared and why. It may be useful to explore the impact of contextual variations on online information sharing in future research.

In conclusion, our study has considerable implications for how information sharing operates online. Even if done in different ways, people appear to primarily seek common ground by establishing a shared social identity with the receiver, regardless of their ingroup or outgroup membership. However, it is unclear whether these motivations are understood by others; the heterogeneity of the nominated reasons for sharing does suggest that misunderstandings and an increased perception of incivility are likely, especially in the online sphere where contextual cues are limited. That said, the work here is preliminary and would benefit from additional research such as testing this in ecologically valid and diverse online spaces and assessing any additional motivations people might have in sharing information.

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