Inferring Identity From Language: Linguistic Intergroup Bias Informs Social Categorization

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Abstract

The present research examined whether a communicator's verbal, implicit message regarding a target is used as a cue for inferring that communicator's social identity. Previous research has found linguistic intergroup bias (LIB) in individuals' speech: They use abstract language to describe in-group targets' desirable behaviors and concrete language to describe their undesirable behaviors (favorable LIB), but use concrete language for out-group targets' desirable behaviors and abstract language for their undesirable behaviors (unfavorable LIB). Consequently, one can infer the type of language a communicator is likely to use to describe in-group and out-group targets. We hypothesized and found evidence for the reverse inference. Across four studies, individuals inferred a communicator's social identity on the basis of the communicator's use of an LIB. Specifically, participants more strongly believed that a communicator and target shared a social identity when the communicator used the favorable, rather than the unfavorable, LIB in describing that target.

People's attitudes, expectations, and beliefs about others are passed on to those with whom they communicate (Fiedler, 2007). Although this transfer of information can be explicit, such as through the use of blatant stereotypes, it can also be subtle. Research has demonstrated that in addition to communicating explicit content through language (*what* is said), one can communicate an implicit message via the linguistic properties of one's language (*how* something is said; Hogg & Reid, 2006; Maass, Salvi, Arcuri, & Semin, 1989). The present research tested whether features of a communicator's verbal message regarding a target can be used to discern the communicator's social identity.

Linguistic Bias in the Intergroup Context

According to the linguistic category model, one way a communicator conveys an implicit message is via variations in the degree to which that communicator's language is concrete versus abstract (Semin & Fiedler, 1988). Descriptive action verbs are at the most concrete end of the continuum, followed by interpretive action verbs, state verbs, and, finally, nouns or adjectives. Compared with more abstract language, descriptive and interpretive action verbs (e.g., "Sam hit her friend") indicate that a target's behavior is more discrete and less characteristic. By contrast, adjectives and nouns (e.g., "Sam is violent") suggest that a target's behavior is more stable and lasting. Although communicators may be unaware of these features of their language, research suggests that levels of abstraction are used systematically to convey information across a variety of contexts,

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audiences, and desired goals (Maass, 1999; Maass, Ceccarelli, & Rudin, 1996; Reitsma-van Rooijen, Semin, & van Leeuwen, 2007; Wigboldus & Douglas, 2007; Wigboldus, Spears, & Semin, 2005). Likewise, although audiences may not recognize the use of different linguistic categories per se, there is evidence that they are influenced by this linguistic variation. For example, listeners believe that behavior described abstractly rather than concretely is more dispositional, and more likely to recur (Semin & de Poot, 1997; Semin & Fiedler, 1988; Wigboldus, Semin, & Spears, 2000). Thus, subtle linguistic variations can have a substantial effect on what is conveyed about a target.

Research on linguistic categories has further documented meaningful and predictable patterns of language use in intergroup contexts (Beukeboom, 2014; Maass et al., 1996). Individuals tend to use abstract language to describe in-group members' desirable behaviors and concrete language to describe their undesirable behaviors—a pattern we refer to as the *favorable linguistic intergroup bias* (favorable LIB). In contrast, individuals tend to use abstract language to describe out-group members' undesirable behaviors and concrete language to describe their desirable behaviors—the *unfavorable* LIB. Consequently, one can infer the type of language that a communicator is likely to use to describe an in-group or an out-group target. In the present work, we explored whether the reverse inference is possible: Can one infer the group membership of a communicator from the language that the communicator uses to describe a target?

We propose that a communicator's use of an LIB when describing a target of known group membership provides a cue to that communicator's social identity. Consistent with this possibility, research conducted outside of the intergroup context has found that individuals form impressions of communicators on the basis of their use of linguistic categories (Douglas & Sutton, 2003, 2006, 2010). Recent research situated within the intergroup context has corroborated these findings (Assilaméhou, Lepastourel, & Testé, 2013; Assilaméhou & Testé, 2012). This work has found evidence for a variety of effects when both a communicator's and a target's social identities are salient. For example, communicators are evaluated more positively when they use either component of the favorable LIB to describe in-group members, rather than using the unfavorable LIB. Likewise, communicators using more abstract language to describe a target are perceived as holding more biased attitudes. All of these findings suggest that the LIB communicators use can have implications for other people's judgments about them. Building on this work, we examined whether, in addition to the demonstrated effects of LIB on perceptions of a communicator of known social identity, LIB can also be used to infer a communicator's social identity.

We conducted four studies that tested the effect of LIB on social category inferences. In each study, participants read passages in which a communicator described behaviors of a target of easily discerned social identity, using either a favorable or an unfavorable LIB. Participants then made a determination about the communicator's social identity. We predicted that in all the studies, individuals would infer that a communicator and target shared a social group membership when the communicator described the target using the favorable, rather than unfavorable, LIB.

Study 1a

Method

Participants. Eighty-eight participants (58 women, 30 men; mean age = 39.25 years) were recruited from Amazon Mechanical Turk (MTurk.com). The self-reported political-party affiliation of the participants was as follows: 36% Democrat, 23.9% Republican, 34.1% Independent, and 5.7% "other." On the basis of past research in this area, we conservatively estimated the sample size needed to find an effect. As a result, we sampled 90 participants and stopped collecting data once that number was reached; 2 participants did not complete the dependent-variable measure.

Materials and procedure. Participants completed all tasks on a computer. They were asked to read a passage and then respond to questions. The beginning of the passage was the same for all participants: "Imagine that someone is communicating with you about a man named Peter. Peter is American, has an interest in politics, and voted for Barack Obama." This information was intended to subtly imply that Peter (the target) was a Democrat. In the second part of the passage, participants were provided with the communicator's description of Peter's helpful and rude behaviors (for the complete text of these descriptions, see Table S1 in the Supplemental Material available online). In the favorable-LIB condition, Peter's helping behavior was described abstractly (e.g., "[Peter] is someone who stands up for the interests of others"), and his rude behavior was described concretely (e.g., "Peter said something rude to another person recently"). In the unfavorable-LIB condition, Peter's helping behavior was described concretely (e.g., "Peter helped another person, even when it did not benefit him"), and his rude behavior was described abstractly (e.g., "[Peter] is cold and unfriendly").

After reading the passage, participants were asked to assess the likelihood that the communicator was either a Democrat or a Republican. Ratings were made on a 7-point scale, anchored by 1, *definitely a Republican*, and

7, definitely a Democrat. As a check of the effectiveness of the LIB manipulation, we asked participants to estimate the percentage of future situations in which Peter was likely to be helpful and the percentage of future situations in which he was likely to be rude (Semin & de Poot, 1997). Finally, participants completed a demographic questionnaire that asked their gender, their political-party affiliation, and the degree to which they endorsed liberal and conservative beliefs (on 7-point scales ranging from 1, *strongly disagree*, to 7, *strongly agree*).

Results

LIB manipulation check. As expected, participants in the favorable-LIB condition believed that Peter was more likely to be helpful in the future ($M = 70.29\%$, $SD = 23.58$) than did participants in the unfavorable-LIB condition ($M = 57.83\%$, $SD = 24.08$), $t(86) = 2.45$, $p = .016$, $d = 0.53$. Similarly, participants in the favorable-LIB condition indicated that Peter was less likely to be rude in the future ($M = 33.67\%$, $SD = 25.48$) compared with participants in the unfavorable-LIB condition ($M = 53.93\%$, $SD = 25.22$), $t(86) = 3.73$, $p < .001$, $d = 0.80$.

Social category inference. The primary dependent measure was participants' inferences regarding the communicator's political affiliation. As predicted, participants in the favorable-LIB condition were significantly more likely to believe that the communicator was a Democrat, and thus shared a party affiliation with the target, than were participants in the unfavorable-LIB condition, $t(86) = 2.89$, $p = .005$, $d = 0.62$ (Fig. 1). This difference was not moderated by participants' self-reported political-party affiliation or ideological endorsement ($ps > .18$). Our findings suggested initial support for our hypothesis that individuals can infer a communicator's social identity from his or her language, regardless of their own social identity.

Study 1b

Study 1b used a different social category in order to test the generalizability of the LIB effect found in Study 1a.

Method

Participants. One hundred eight participants (41 women, 32 men, 35 people with unreported gender; mean age = 33.13 years) were recruited from MTurk.com to participate in the study. Of the 95 participants who responded to a question on their religion, 16.8% reported having no religion, 12.6% indicated that they were agnostics, 60% reported that they were Christians, and 10.5%
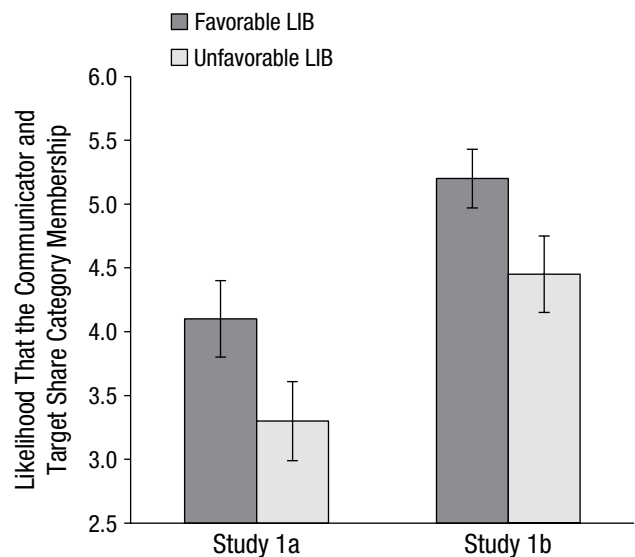
Fig. 1. Social group categorization of the communicator in Studies 1a and 1b. For each study, the graph shows the mean rated likelihood that the communicator and target shared group membership (Democrats in Study 1a, Christians in Study 1b), separately for the favorable- and unfavorable-linguistic-intergroup-bias (LIB) conditions. Error bars represent 95% confidence intervals.

reported being Jewish, Muslim, Hindu, or "other." Given the effect size in Study 1a, we estimated that a sample of 120 participants was needed. We stopped collecting data once that number was reached; 12 participants did not complete the measure of the dependent variable.

Materials and procedure. The materials and procedure were identical to those of Study 1a, with four notable differences. First, the passage participants read suggested that the target was Christian: "Peter is American, has an interest in politics, and attends his local church once per week." Second, the social categorization measure was a rating of the likelihood that the communicator was Christian. Third, the rating scale was anchored by 1, *definitely not Christian*, and 7, *definitely Christian*. This slight change in the scale anchors was intended to test whether the forced-choice scale used in Study 1a (i.e., Republican vs. Democrat) was responsible for the observed effect. Last, participants were asked to indicate their own religious affiliation and how important their religion was to them (on 5-point scales ranging from 1, *not at all*, to 5, *very*), rather than to report their political views.

Results

LIB manipulation check. Participants in the favorable-LIB condition believed that the target would be more helpful in the future ($M = 77.07\%$, $SD = 16.80$) than

did participants in the unfavorable-LIB condition (M = 62.89%, SD = 22.12), $t(106)$ = 3.75, p < .001, d = 0.73. Participants in the favorable-LIB condition also indicated that the target was less likely to be rude in the future (M = 27.24%, SD = 23.70) compared with participants in the unfavorable-LIB condition (M = 55.85%, SD = 22.98), $t(106)$ = 6.37, p < .001, d = 1.24.

Social category inference. The results of Study 1a were replicated. Participants in the favorable-LIB condition were significantly more likely to believe that the communicator was Christian than were participants in the unfavorable-LIB condition, $t(106)$ = 2.39, p < .05, d = 0.46 (Fig. 1). Participants' religion and the self-reported importance of religion to them did not moderate these results (ps > .20). Considered in tandem, the findings of Studies 1a and 1b offer compelling evidence that individuals can infer the social identity of a communicator on the basis of his or her use of an LIB.

Study 2

Study 2 explored whether LIB influences a subtler measure of social categorization. Participants read the descriptions used in Study 1a, but prior to explicitly categorizing the communicator, they made judgments about the communicator's social-policy preferences. If participants categorized the communicator even without explicit directions to do so, then participants in the favorable-LIB condition, compared with those in the unfavorable-LIB condition, would believe that the communicator held more typically Democratic policy positions.

Method

Participants. One hundred eighteen participants (61 women, 57 men; mean age = 34.20 years) were recruited from MTurk.com. Participants' self-reported political-party affiliations were as follows: 30.5% Democrat, 31.4% Republican, 33.1% Independent, 2.5% "other," and 2.5% not reported. Given the effect size in Study 1a, we estimated that a sample of 120 participants was needed and stopped collecting data when that number was reached; 2 participants did not complete the dependent measures.

Materials and procedure. Participants read one of the short passages from Study 1a and then responded to a series of questions measuring their beliefs about the communicator's attitudes regarding social-policy issues in the United States for which the political parties have well-known stances. The specific issues were (a) increasing legal immigration to the United States, (b) increasing taxes on the wealthy, and (c) legalizing same-sex marriage.

Participants responded on 7-point scales, ranging from 1, *strongly opposed*, to 7, *strongly in favor*. Participants then completed the explicit social categorization of the communicator, as described in Study 1a, and the same demographic questionnaire used in Study 1a.

Results

Policy ratings. The ratings for the social-policy issues were averaged to form a composite (α = .63).[1] Higher scores indicate greater endorsement of the Democratic Party's policy positions. As predicted, participants in the favorable-LIB condition believed that the communicator was more likely to support these Democratic-leaning social policies (M = 4.90, SD = 0.99), compared with participants in the unfavorable-LIB condition (M = 4.33, SD = 0.90), $t(116)$ = 3.25, p = .002, d = 0.60 (Fig. 2). Neither participants' self-reported political-party affiliation nor their political-ideology endorsements moderated this result (ps > .39).

Social category inference. Participants' social category inferences replicated the results of the previous studies. Participants in the favorable-LIB condition were significantly more likely to indicate that the communicator was a Democrat (M = 4.34, SD = 1.29) than were participants in the unfavorable-LIB condition (M = 3.28, SD = 1.64), $t(113)$ = 3.90, p < .001, d = 0.62 (Fig. 2). Neither participants' self-reported political-party affiliation nor their political ideology moderated this result (ps > .63).

Discussion

Together, these findings offer compelling evidence that participants can categorize communicators on the basis of their use of an LIB. Even prior to being asked to categorize the communicator explicitly, participants were willing and able to infer the communicators' likely policy preferences, which suggests that explicit categorization judgments are not required to elicit the effect. These ratings were consistent with the patterns observed in the previous studies: Communicators were thought to be more likely to share a social group membership with the target if they used the favorable, rather than unfavorable, LIB.

Study 3

Study 3 tested possible alternative explanations of the observed LIB effect. New descriptions of the target's behavior were designed to eliminate subtle between-conditions differences (i.e., in temporality and valence) that could have accounted for the effect. The group membership of the target was also manipulated, in order to rule
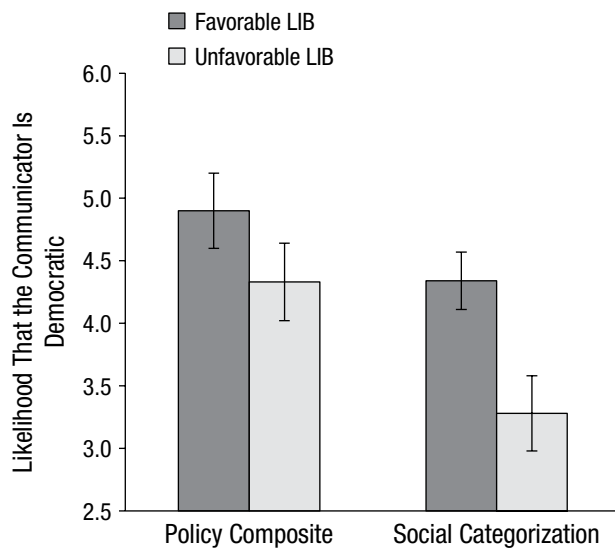
Fig. 2. Participants' ratings of the communicator in Study 2. The graph shows the mean rated likelihood that the communicator supported the Democratic positions on policy issues (bars on the left) and that the communicator shared the target's Democratic group membership (bars on the right), separately for the favorable- and unfavorable-linguistic-intergroup-bias (LIB) conditions. Error bars represent 95% confidence intervals.

out the possibility that the earlier findings were an artifact of the particular group memberships implied and behaviors described. For instance, individuals might associate social responsibility more with Democrats than with Republicans. Consequently, a participant might surmise that a communicator describing a Democrat as dispositionally helpful is likely to be another Democrat because of a belief that Democrats tend to describe other Democrats stereotypically, rather than favorably.

In addition, Study 3 investigated how warmly participants felt toward the communicator as a downstream consequence of their categorization inferences. We predicted that evaluations of the communicator would be moderated by participants' social identity, such that participants would evaluate a communicator whom they believed was part of their own political party more warmly than one who was not (Brewer & Gaertner, 2008). Such a pattern of results would suggest that (a) participants' social identity shapes their evaluative judgments and (b) the null effect of participants' political-party affiliation on social categorization in previous studies was unlikely to have been due to imprecise measurement of party affiliation or political ideology.

Method

Participants. One hundred forty-five participants (mean age = 30.91 years) were recruited from MTurk .com. Participants' self-reported political-party affiliations

were as follows: 41.4% Democrat, 17.2% Republican, 33.1% Independent, 3.4% "other," and 4.8% not reported. On the basis of the effect sizes in our earlier studies and planned analyses, we estimated that a sample of 150 participants was needed. We stopped collecting data once this number was reached. Five participants who did not complete one of the dependent measures, 5 participants who reported their political-party affiliation as "other," and 7 participants who did not report their political-party affiliation were not included in analyses.

Materials and procedure. As in Study 1a, participants were asked to read a passage and then respond to questions. In the Republican-target condition, the passage indicated that Peter had voted for John McCain; in the Democratic-target condition, Peter had voted for Barack Obama.

In the second part of the passage, participants were again provided with an unknown communicator's description of Peter's helpful and rude behaviors. Following Wigboldus et al. (2000), we included a description of one discrete episode, expressed in the present tense, for each type of behavior (for the full descriptions, see Table S1 in the Supplemental Material available online). For example, the description of helpful behavior in the favorable-LIB condition was written in abstract language and read as follows: "On one occasion, there is a person in a wheelchair who needs assistance getting up a ramp. Peter reaches for the handles of the wheelchair. Peter is helpful." In the unfavorable-LIB condition, helpful behavior was described concretely: "On one occasion, there is a person in a wheelchair who needs assistance getting up a ramp. Peter reaches for the handles of the wheelchair. Peter pushes the wheelchair up the ramp."

After reading the passage, participants indicated the likely group membership of the communicator on an 8-point scale anchored by 1, *definitely a Democrat*, and 8, *definitely a Republican*. They then rated the likelihood that they would be friends with the communicator, using a 5-point scale ranging from 1, *it is not at all likely*, to 5, *it is extremely likely*. Finally, participants completed the manipulation-check items and a demographic questionnaire on which they reported their political-party affiliation and political ideology.

Results

LIB manipulation check.[2] As expected, participants in the favorable-LIB condition believed that Peter was more likely to be helpful in the future ($M = 71.63\%$, $SD = 18.68$) compared with participants in the unfavorable-LIB condition ($M = 60.39\%$, $SD = 21.52$), $F(1, 129) = 10.14$, $p < .01$, $d = 0.56$. Likewise, participants in the unfavorable-LIB condition believed that Peter was more likely to be

rude in the future (*M* = 53.82%, *SD* = 23.99) compared with participants in the favorable-LIB condition (*M* = 42.18%, *SD* = 19.73), $F(1, 129) = 9.40$, $p < .01$, $d = 0.53$. The three-way interaction among LIB condition, target's political affiliation, and future behavior (helpful vs. rude) did not reach significance, $F(1, 129) = 0.03$; however, the predicted LIB Condition × Future Behavior interactions were found in the Democrat-target condition, $F(1, 63) = 8.94$, $p < .01$, and in the Republication-target condition, $F(1, 66) = 8.61$, $p < .01$. Moreover, the simple effects of LIB condition on estimates of future helpful and rude behaviors were observed both when the target was a Republican, $t(66)s > 2.05$, $ps < .05$, and when he was a Democrat, $t(63)s > 1.95$, $ps < .06$.

Social category inference. Participants' social category judgments were recoded to indicate the likelihood of shared group membership. That is, in the Republican-target condition, higher ratings reflected greater likelihood that the communicator was a Republican, and in the Democratic-target condition, responses were recoded such that higher ratings reflected greater likelihood that the communicator was a Democrat. These ratings were then subjected to a 2 (LIB condition) × 2 (target's political affiliation) × 3 (participant's political affiliation: Democrat vs. Republican vs. Independent) analysis of variance (ANOVA). Results revealed the predicted main effect of LIB condition: Participants in the favorable-LIB condition, relative to those in the unfavorable-LIB condition, were significantly more likely to believe that the communicator and target shared political-group membership, $F(1, 121) = 8.67$, $p < .01$, $d = 0.51$ (Fig. 3). Further, there was no main effect of target's political affiliation, $F(1, 121) = 0.87$, and no interaction between the LIB condition and target's political affiliation, $F(1, 121) = 0.02$. Indeed, supplementary analyses confirmed that the effects of LIB condition were significant and in the predicted direction both when the target was a Democrat, $t(63) = 2.00$, $p = .05$, $d = 0.51$, and when he was a Republican, $t(66) = 2.46$, $p < .05$, $d = 0.63$.

The ANOVA revealed no differences as a function of participants' own political-party identification. The LIB Condition × Participant's Political Affiliation interaction was not reliable, $F(2, 121) = 0.92$, nor was the three-way interaction among LIB condition, target's political affiliation, and participant's political affiliation, $F(2, 121) = 0.32$.

Friendship likelihood. A 2 (LIB condition) × 2 (target's political affiliation) × 3 (participant's political affiliation: Democrat vs. Republican vs. Independent) analysis of variance of participants' ratings of their likelihood of becoming friends with the communicator revealed a significant Target's Political Affiliation × Participant's Political Affiliation interaction, $F(2, 121) = 3.34$, $p < .05$, which was qualified by the LIB Condition × Target's Political
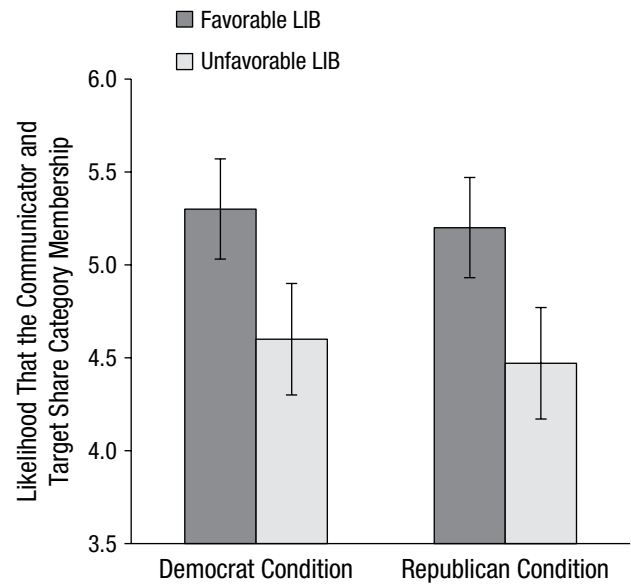
Fig. 3. Social group categorization of the communicator in Study 3. The graph shows the mean rated likelihood that the communicator and target shared political group membership when the target was a Democrat and when he was a Republican. Within each of these conditions, results are shown separately for the favorable- and unfavorable-linguistic-intergroup-bias (LIB) conditions. Error bars represent 95% confidence intervals.

Affiliation × Participant's Political Affiliation interaction, $F(2, 121) = 4.60$, $p = .01$. Subsequent analysis of this three-way interaction revealed that the LIB Condition × Target's Political Affiliation interaction was statistically significant for Democratic participants, $F(1, 56) = 5.29$, $p < .05$; marginal among Republican participants, $F(1, 21) = 3.07$, $p = .09$; and nonsignificant among Independent participants, $F(1, 44) = 0.003$. Democratic participants indeed showed a marginal preference for the communicator who used the favorable, rather than unfavorable, LIB when describing a Democratic target, $t(28) = 1.93$, $p = .06$.

Although most of the other simple effects were unreliable, $ts < 1.7$, $ps > .1$, perhaps because of insufficient power to detect differences, the pattern of means suggests the influence of in-group favoritism. For example, as shown in Table 1, Democratic participants' preference regarding the communicator reversed when the target was a Republican: In that case, they tended to prefer the communicator who used the unfavorable rather than the favorable LIB. In contrast, Republican participants were (nonsignificantly) more likely to believe that they would be friends with a communicator who used the favorable LIB (rather than the unfavorable LIB) to describe a presumed Republican and the unfavorable LIB (rather than the favorable LIB) to describe a presumed Democrat. Independents did not reveal differential interest in becoming friends with the communicator regardless of the target's political affiliation

Table 1. Participants' Mean Self-Reported Ratings of Their Likelihood of Friendship With the Communicator in Study 3

Participant's political affiliation	Democratic target		Republican target	
	Favorable LIB	Unfavorable LIB	Favorable LIB	Unfavorable LIB
Democratic	3.15 (1.07)	2.47 (0.87)	2.33 (0.98)	2.73 (0.70)
Republican	2.00 (0.63)	2.60 (1.52)	3.50 (0.55)	2.63 (1.19)
Independent	2.50 (0.86)	2.70 (0.68)	2.23 (0.60)	2.45 (0.93)

Note: Standard deviations are in parentheses. Democratic participants showed a marginal preference for the communicator who used the favorable, rather than the unfavorable, linguistic intergroup bias (LIB) when describing a Democratic target, $p < .1$.

or the communicator's LIB. Thus, irrespective of both their own social identity and that of the target, participants were more likely to believe that the target and communicator shared a political identity when the communicator used a favorable (rather than unfavorable) LIB; however, participants' own group membership moderated their evaluative assessment of the communicator.

General Discussion

Building on research exploring effects of language on audiences' perceptions of communicators, the studies presented here reveal a novel and significant effect of LIB. Across different dependent measures, social categories, and operationalizations of the LIB manipulation, participants categorized a communicator according to the type of language he or she used. These social category inferences were not dependent on the participants' own group membership vis-à-vis the target or communicator (Study 1), and were made even when participants were not explicitly asked to do so (Study 2). Relevant evaluative judgments—unlike social category inferences—were shaped by both LIB and participants' own social affiliations (Study 3).

Implications and future directions

These findings have a number of interesting implications. For example, to the extent that LIB influences social categorization, it is also likely to contribute to the perpetuation of stereotyping and prejudice. Likewise, given that persuasion is shaped in part by social categorization, use of an LIB could undermine or augment persuasive communications (Haslam, McGarty, & Turner, 1996). Consider, for instance, letters of recommendation for college applicants. Even earnest efforts to write an unbiased letter for an in-group member might result in the use of a favorable LIB that suggests the letter writer's social identity. In turn, the admissions committee might discount favorable

portions of the letter, thereby diluting its overall effectiveness. Future research should examine whether use of an LIB does indeed lead to these sorts of interesting outcomes in real-world contexts.

The present work further suggests that, like other variations in language use, LIB could function as a social marker, used in order to promote one's interpersonal goals (Douglas, Sutton, & McGarty, 2008; Festinger, 1954; Scherer & Giles, 1979). As prior research suggests, using social markers to signal personal characteristics is often automatic, but can also be invoked strategically (St. Clair & Giles, 1980; Giles, Coupland, & Coupland, 1991). Future research might investigate whether communicators use LIB to signal their social identity (or relative power, or status).

Finally, although we examined audiences' judgments based on communicators' language, communicators' language is also shaped by characteristics of the audience (e.g., Giles et al., 1991). As the research in this area continues to gain in sophistication, it will be interesting to examine effects on audiences and communicators simultaneously. Such dynamic effects of LIB warrant future study.

Limitations

Although considerable research on attitudes and judgments has focused on the automatic nature of their activation and application, the methodologies employed in the present study do not allow for claims about the automaticity of the effects (e.g., Bargh, 1989; Higgins, Rholes, & Jones, 1977). The stimuli used were subtle, but there is no direct evidence of participants' level of awareness, nor of the type of processing that led to their judgments. Future work should determine whether the effects demonstrated here are automatic.

The precise mechanism underlying these findings is also still an open question. A parsimonious explanation is that, over time, people develop a simple cognitive association between the type of LIB that a communicator

uses to describe a target and the likelihood that the communicator and target share a social identity. Prior research supports the contention that bidirectional cues develop with repeated exposure to certain pairings (e.g., Cialdini, 1993; Lynn, 1989).

It is also possible that individuals have a generalized expectation for in-group favoritism when communicators use a favorable, rather than unfavorable, LIB to describe targets of their communication (e.g., Foddy, Platow, & Yamagishi, 2009). This expectation might be related to other perceptions of the communicators, such as their closeness to, liking for, or similarity with the targets (Brewer & Gaertner, 2008; Douglas & Sutton, 2006; Reitsma-van Rooijen et al., 2007). Indeed, it is possible that any or all of these perceptions play a role in shaping social category judgments. Irrespective of the specific mechanism involved, however, our study is the first to demonstrate that social category information can be gleaned reliably from a communicator's use of an LIB.

Concluding thoughts

The current work underscores the power of subtle properties of language to shape perception and adds to the evidence that people quickly—and often accurately—infer many types of information on the basis of subtle cues (Ambady, Bernieri, & Richeson, 2000). We believe that it offers an important step forward in elucidating the effects of communicators' language on the perceptions formed by audiences.

Author Contributions

S. C. Porter and J. A. Richeson developed the study design. S. C. Porter created the study materials, collected the data, and conducted the analyses, with some assistance from M. Rheinschmidt-Same and J. A. Richeson. S. C. Porter drafted the initial and revised manuscripts, and J. A. Richeson and M. Rheinschmidt-Same provided detailed feedback on the manuscripts. All authors approved the final version for submission.

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Open Practices

All data have been made publicly available via Open Science Framework and can be accessed at https://osf.io/946vb/. The complete Open Practices Disclosure for this article can be found at http://pss.sagepub.com/content/by/supplemental-data. This article has received the badge for Open Data. More information about the Open Practices badges can be found at https://osf.io/tvyxz/wiki/1.%20View%20the%20Badges/ and http://pss.sagepub.com/content/25/1/3.full.

Notes

1. In a factor analysis, a fourth policy, eliminating affirmative action, did not load with the other items, but revealed the same pattern: Participants in the favorable-LIB condition believed that the communicator was less likely to support the policy ($M = 3.83$, $SD = 1.44$) than did participants in the unfavorable-LIB condition ($M = 4.45$, $SD = 1.13$), $t(116) = 2.61$, $p = .01$.

2. A pilot test was conducted to test for between-conditions differences in the valence of the manipulation. It is possible that, in addition to differing in abstractness, the words used in the two conditions differed in their degree of positivity. Seventy participants were shown one of the following four passages used in Study 3: the concrete description of helpful behavior, the abstract description of helpful behavior, the concrete description of rude behavior, or the abstract description of rude behavior. Participants were asked to rate both how positive ("This description of Peter is positive") and how negative ("This description of Peter is negative") the passages were, on scales ranging from 1, *strongly disagree*, to 7, *strongly agree*. Responses to the negative item were reverse-scored and averaged with responses to the positive item. Analyses revealed significant differences across conditions, $F(3, 69) = 101.22$, $p < .001$. The descriptions of (concrete or abstract) helpful behavior were rated as more positive than the descriptions of (concrete or abstract) rude behavior ($ps < .001$). Participants did not differentiate between concrete and abstract descriptions of helpful behavior ($p = .19$) or between concrete and abstract descriptions of rude behavior ($p = .26$), which suggests that valence was not influenced by level of abstraction.

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