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Self-Categorization of Users' Comments and Ingroup Influence: The Moderating Role of Context-Dependent Ingroup Identification

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Abstract

A web-based experiment (N = 184) examined whether social identity cues embedded in users' comments elicit ingroup bias. Participants viewed a mock Yelp.com webpage that displayed information about a local business together with four users' comments. Consistent with self-categorization theory, viewers adopted their ingroup's comments, but only when they identified highly with their ingroup. Further, a central message that was juxtaposed with users' comments and shaped their focus, determined the degree of ingroup identification; viewers were more likely to identify with their ingroup when the central message dealt with an outgroup-typed (vs. ingroup-typed) topic. Finally, although an outgroup-typed central message elicited stereotypical beliefs of the outgroup's expertise, such beliefs failed to predict viewers' attitudes, thus lending support to the ingroup identification explanation.

Keywords: Users' comments; self-categorization theory; ingroup; identification; distinctiveness; ingroup influence

Introduction

Users' comments, a representative form of user participation, have emerged as crucial elements of current computer-mediated communication systems (Walther & Jang, 2012). To identify what determines attitudinal and perceptual influence of users' comments, previous studies have focused largely on message characteristics, such as valence and argument quality (e.g., Edwards, Edwards, Qing, & Wahl, 2007; Park, Lee, & Han, 2007) or source attributes, such as commentators' expertise and trustworthiness (e.g., Willemsen, Neijens, & Bronner, 2012; Winter & Krämer, 2012). In so doing, it was mostly assumed that viewers assess users' comments simply as third-party observers. Interestingly, through embedded categorical cues, users' comments often elicit a connection between viewers and certain users who generated the comments. For example, by looking at a profile picture or a user's name, a viewer often is able to learn a social identity (e.g., gender, race) of the user who generated the comments.

However, despite the evidence that viewers are able to do so (e.g., Horwitz & Kovács, 2018), little research to date has examined the way such detection affects their perceptions of users' comments. On one hand, considering that categorical cues often make salient the group membership people belong to (i.e., ingroup), those cues can trigger ingroup identification, such that people assimilate themselves into the ingroup and internalize its perspectives or norms. In turn, those who identify with their ingroup become susceptible to its influence, consistent with self-categorization theory (Turner, 1985).

While categorical cues embedded in users' comments are likely to cause ingroup influence through identification, the extent to which people identify with their ingroup appears to be context-dependent (e.g., Brewer, Manzi, & Shaw, 1993). In particular, considering that users' comments center on a subject or topic (i.e., proprietor content),

the way individuals perceive a given topic as a context may affect their need for putting themselves in larger social collectives. Specifically, if a topic is perceived as an ingroup-typed topic because it is related more closely to the ingroup than the outgroup, identification with the ingroup may take place because the ingroup is expected to have superior knowledge and experience on that topic, and thus, such identification is likely to enhance self-esteem. Conversely, if group membership's salience varies with its relative rarity in a given context (Mullen, 1991), the converse prediction also is plausible. If the outgroup appears to be the mainstream with respect to an outgroup-typed topic, it would be an outgroup-typed topic that makes ingroup membership distinctive and thus, fosters identification with the ingroup.

Yet, an alternative possibility is that once group membership becomes salient, the influence of users' comments simply may be a function of stereotypical beliefs of each group, rather than identification with the ingroup. Stereotypical beliefs that represent a group as a whole usually help categorize it and thus, contribute to ingroup influence. However, when those beliefs contradict the superiority of one's ingroup, the ingroup's influence over the outgroup may be questionable; if stereotypical beliefs of categorized groups account for which group becomes influential, ingroup influence is likely to be suppressed if the outgroup is believed stereotypically to have greater knowledge about a given topic.

This study investigated whether categorical cues embedded in users' comments trigger ingroup identification and ingroup influence and whether the categorization of a topic that users' comments center on (i.e., ingroup- vs. outgroup-typed topic) alters the degree to which people identify with their ingroup. In addition, as an alternative prediction, this study tested whether a group's stereotypical beliefs, rather than identification processes, account for the influence of categorized groups.

Categorical Cues Embedded in Users' Comments and Ingroup Influence

On a variety of web systems, including social networking sites (e.g., Facebook), video-sharing sites (e.g., YouTube), online news websites, and review-based commercial websites (e.g., Amazon), users are encouraged to leave comments on the messages generated by web pages' proprietors or other users (Barnes, 2015). Such contribution of nonproprietary users is known to exert attitudinal and perceptual influence on viewers. For instance, among the various attributes of users' comments that render perceptual and attitudinal influence on viewers, in reference to valence, Edwards et al. (2007) found that viewing negative (vs. positive) comments about a college professor on a professor rating site resulted in less professor credibility and less attractiveness. On product review sites, as the proportion of negative product reviews increased, viewers reported more negative attitudes toward the product (Lee, Park, & Han, 2008).

As another attribute of users' comments, how viewers evaluate the individuals who generated the comments also matters. Willemsen et al. (2012) found that perceived expertise and trustworthiness of a source of users' comments predicted viewers' attitudes toward the comments. When a source proclaimed his/her expertise on a topic, viewers' attitudes toward the comments (e.g., bad vs. good, useless vs. useful) were affected by viewers' perceptions of the source's expertise; if a source claimed to be layperson, it was the perceived trustworthiness of the source that predicted viewers' attitudes toward users' comment. Winter and Krämer (2012) found that users' comments created by an expert source were likely to be selected more frequently, to be read longer, and to be evaluated in a more positive way, than users' comments created by a non-expert source.

Compared to source or message attributes of users' comments, the influence of categorical cues embedded in users' comments has been relatively overlooked in previous investigations. Users' comments often reveal various types of social identity of users. For instance, a profile picture of an individual wearing a shirt with a university's emblem on it makes his school affiliation salient (Ganster, 2011). User names alone can prompt categorized perceptions pertaining to race or gender (Spottswood, Walther, Holmstrom, & Ellison, 2013). When certain users' comments are categorized as having come from a viewer's ingroup, self-categorization theory predicts that the ingroup comments may exert greater influence than do outgroup comments.

Self-categorization theory and users' comments. Self-categorization theory (Turner, 1985, 1991) posits that the way people perceive themselves can range from being unique individuals (personal identity) to belonging to a group or broader social category (social identity; e.g., gender, ethnicity). When personal identity is salient, people

perceive themselves as idiosyncratic individuals. Conversely, when social identity is salient, people differentiate one group from another based on shared and unshared social categories. As social identity becomes salient, individuals redefine themselves with respect to a social identity. By perceiving themselves as exemplars of the category to which they belong (i.e., ingroup) and accentuating their similarities with their ingroup members, a salient social identity leads people to become susceptible to ingroup influence as they accept a group's perspectives.

The theory suggests that self-categorization is a function of accessibility and fit (Turner, 1985, 1991). Accessibility, which refers to the extent to which group membership is identified as a category, is necessary to elicit categorization. On the other hand, fit refers to the extent to which a given categorization matches social reality. That is, categorical distinction needs to be consistent with social reality, so the given categorization appears to be a reasonable way to organize the world. In particular, self-categorization theory holds that fit operates according to the metacontrast principle, which postulates that people are more likely to perceive their social category as a single unit, entity, or group to the degree that perceived differences between ingroup members are less than those between the ingroup and outgroup. When a certain categorization maximizes inter-category differences and minimizes intra-category differences, that categorization can be perceived as a valid way to organize the world (Turner & Oakes, 1989).

Among various types of social categories, this study tested whether gender cues embedded in users' comments predict ingroup influence. Given that even minimal cues can elicit distinct categorization (Diehl, 1990), and gender is known to be a strong predictor of categorization (Stangor, Lynch, Duan, & Glass, 1992), multiple cues embedded in users' comments that imply a user's gender, such as profile pictures and user names, are likely to cause salient gender-based identity (Spottswood, Walther, Holmstrom, & Ellison, 2013). In addition, following the principle of metacontrast, a group category (gender) was matched with the position a group advocated (i.e., the comments' position) to achieve a distinct ingroup vs. outgroup categorization. Thus, to test whether salient categorical cues embedded in users' comments indeed elicit ingroup influence, the current study maximized inter-category differences and minimized intra-category differences, such that comments on the part of the same gender always expressed similar opinions, while those from the other gender always held opposing opinions.

In summary, the study examined whether the categorical cues embedded in users' comments cause ingroup influence. Self-categorization theory explains that ingroup influence is a function of the degree to which people identify with their ingroup. To test whether the theoretical postulates of self-categorization theory account for the influence of categorical cues embedded in users' comments, the following hypothesis was proposed:

H1: The more viewers identify with their ingroup, the greater ingroup comments affect their attitudes.

Categorization of a Topic and Ingroup Identification

Users write comments in response to a webpage's central content (e.g., videos on YouTube, news articles on news websites). In most cases, central content appears on the same page as users' comments and affects their focus. Given their spatial juxtaposition and relevance in content, if categorical cues elicit salient group membership that distinguishes ingroup from outgroup comments, not only users' comments, but their central content, can be categorized with respect to group identity.

Interestingly, categorizing a central message with respect to group identity is likely to affect the degree to which individuals identify with their ingroup. As affective and evaluative processes, the extent to which the ingroup is incorporated into the sense of self seems to serve various underlying motivations (Brewer, 2001; Brewer et al., 1993). Representatively, identification with, and belonging to, the ingroup enhances self-esteem (for review, see Rubin & Hewstone, 1998). Accordingly, to allocate a valuable resource in the ingroup's favor reflects the need to establish a positive social identity and thus, enhances self-esteem. If belonging to an ingroup serves self-enhancement, a relatively higher status or positive valuation of a group should foster identification, as people can enhance their self-esteem by adopting the superior group identity as an integral part of themselves.

Despite relatively consistent evidence that shows that ingroup identification enhances self-esteem, given the evidence that identification often occurs when the outcomes of identification are not necessarily self-aggrandizing,

prior studies have suggested that distinctiveness is another driving motivation of identification (Brewer, 2001). Specifically, the distinctiveness of a group membership elicits identification, as it achieves two basic human needs: that for inclusion and the opposing need for differentiation. By providing a sense of differentiation (i.e., us vs. them) and satisfying the need for inclusion, identification with a distinctive group serves both needs simultaneously. For example, previous studies have noted that a relatively smaller group fosters identification among its members because it typically draws more attention and makes a given membership salient.

Although serving self-esteem and distinctiveness are not necessarily incompatible, these separate motivations may be contradictory. For instance, the two underlying motivations come into conflict when minority size that makes a group distinctive is confounded with disadvantages in status or power (Brewer et al., 1993). Specifically, in the context of users' comments, an ingroup-typed topic may elicit identification with ingroup members, as well as ingroup bias, when the ingroup (vs. outgroup) is expected to have superior experience and knowledge, and thus serves self-esteem better. Conversely, if distinctiveness drives identification, identification with the ingroup may take place when a central message is perceived as an outgroup-typed topic. Despite the potential disadvantages of knowledge of, and experience with, the given topic, ingroup membership will become distinctive, as an outgroup-typed topic highlights its relative rarity.

To summarize, content that determines the contexts in which users' comments are perceived and assessed is likely to affect the degree to which people identify with their ingroup. However, because of a dearth of research, competing predictions coupled with different underlying motivations seem plausible. Hence, the following research question was proposed:

RQ1: Is identification with an ingroup more pronounced with an ingroup-, rather than an outgroup-typed, topic?

Alternative Prediction: Stereotypical Expertise of Categorized Groups

Based on self-categorization theory, this study predicted that when categorical cues embedded in users' comments distinguish the ingroup from outgroup, the ingroup becomes influential through identification processes. However, an alternative prediction is that when groups are distinguished through categorical membership, each group's stereotypical beliefs, rather than identification with the ingroup, explain which group becomes influential. Social categories, such as ethnicity and gender, often are associated with stereotypes. Examples of such stereotypes are the ideas that Asians are good at math or men are more mechanically adept than are women. When social category becomes salient, unexpected effects of stereotypical beliefs of categorized groups may contradict the influence of the ingroup.

An alternative prediction is that what makes a group influential is whether its stereotypical beliefs are associated with knowledge or expertise about a given topic. Lee (2007) showed that people develop stereotypical expertise expectations using categorical cues in a computer-mediated interaction context. In her study, she arbitrarily assigned gender-marked avatars and gender-typed topics to participants and let them interact with an ostensible partner. She found that people inferred their partners' gender through minimal and arbitrary cues (self-proclaimed expertise in gender-typed topics or randomly assigned gender-marked avatars) and, based on the inference, evaluated their interactants' opinions. For example, when a participant inferred that his/her interactant was male, the participant was more likely to accept the interactant's opinion when the topic was associated with male expertise. Hollingshead and Fraidin (2003) also found that people used gender-based stereotypes to infer their partners' expertise or knowledge. People expected greater knowledge about masculine (vs. feminine) topics from males (vs. females). If stereotypes of social categories affect viewers, ingroup influence may not take place or be mitigated if an outgroup-typed topic is presented. To test this alternative prediction, the following hypothesis was proposed:

H2: Stereotypical expertise of commenters predicts viewers' attitudes toward a topic.

Method

In the main experiment, participants viewed a mock webpage of Yelp.com. Yelp is one of the most popular websites for sharing information about local businesses. Users simply rate businesses or leave comments to share their experiences. The Yelp page mock-ups in the main experiment contained basic information about one local business with four comments from users.

Pilot Test: Stimuli Development

The purpose of the pilot test was two-fold: assessing the masculinity and femininity associated with several local businesses and selecting users' comments for the main study. Participants were instructed to assess nine local businesses in terms of their masculinity and femininity. Then, the participants assessed 10 users' comments that were sampled from Yelp.com in terms of valence, helpfulness, argument quality, masculinity, and femininity. Based on the pilot test, the main experiment selected three target businesses (masculine, feminine, gender-neutral) and four users' comments (two positive and two negative).

Participants. A total of 50 undergraduates from a large university in the U.S. Midwest were invited to participate in the study. Approximately 42% of participants were male and the sample included 72% White/Caucasian, 10% Black/African American, 8% Asian, 2% Hispanic/Latino, and 4% "other." The mean age of the participants was 20.48 ($SD = 1.91$), ranging from 18 to 27.

Masculinity and femininity of a topic. A masculine (or a feminine) topic refers to a topic that is stereotypically perceived as male-oriented (or female-oriented) or a topic that is associated with a typical male (or female) rather than a typical female (or male) (Carli, 2001). To come up with one masculine and one feminine topic, nine types of business, such as an automotive repair shop and a restaurant, were assessed in terms of their masculinity and femininity. Sample items include "not masculine at all (1) vs. very masculine (9)" and "not female-oriented at all (1) vs. very female-oriented (9)". In addition to these items, four items were included as fillers to make less distinguishable the purpose of this measurement. Fillers assessed how appealing, professional, favorable, and pleasant each business appeared and were not further analyzed.

For the main study, one masculine, one feminine, and one gender-neutral target object (topic) were employed. Perceived masculinity was greater for the masculine business (an electric service company), $\alpha = .87$, $M = 7.34$, $SD = 1.46$ than the feminine business (a fabric shop), $\alpha = .83$, $M = 2.32$, $SD = 1.24$. On the other hand, perceived femininity was greater for the feminine business, $\alpha = .81$, $M = 7.48$, $SD = 1.24$, than the masculine business, $\alpha = .88$, $M = 2.89$, $SD = 1.26$. The bivariate correlation between perceived masculinity and femininity was $r(48) = -.58$, $p < .001$ for the masculine business and $r(48) = -.70$, $p < .001$, for the feminine business. The gender-neutral business (a musical instrument store) scored $\alpha = .85$, $M = 5.57$, $SD = 1.11$ for perceived masculinity and $\alpha = .81$, $M = 5.28$, $SD = 0.95$ for perceived femininity. The bivariate correlation between masculinity and femininity of the gender-neutral business was $r(48) = .19$, $p = .19$.

Users' comments. A total of 10 users' comments were sampled from Yelp.com. Participants were asked to review the comments carefully and rate the comments in terms of valence, helpfulness, argument quality, masculinity, and femininity. Valence was measured to select the two most positive and the two most negative comments for the main experiment. Helpfulness and argument quality were measured to avoid any potential confounding influence. If comments vary in these aspects, the influence of users' comments on viewers' attitudes could be a function of helpfulness or of argument quality (Chu & Kamal, 2008; Racherla & Friske, 2012). Lastly, each review was measured in terms of how masculine or feminine it appeared. Given that each review could be associated with both male and female commenters, the main experiment used a review that appeared neither overtly masculine nor feminine.

Used for the main study were the two most positive and two most negative users' comments with equivalent levels of helpfulness and argument quality, without any gender-typicality. Positive comments consisted of, "They are the best around the town. I strongly recommend this place" and "I have been with this place since college and will never leave it." Negative comments included, "So far, the experience has been terrible. I would never recommend this place" and "This place even does not deserve stars. If I could give them negative stars, I would."

The Main Experiment

An online experiment was conducted in April 2014 in which participants viewed one of six mock Yelp.com webpages. Each experimental webpage included basic information about a local business, such as its location and webpage address, as well as four users' comments. Participants were instructed to take sufficient time to view the information about the business and the users' comments, and then answered dependent measure questionnaires.

Participants. After reading brief instructions (e.g., study participation takes 15-20 minutes; survey systems record all questionnaire answers anonymously), a total of 210 undergraduate students in communication courses at two large universities in the Midwestern U.S. joined the study in exchange for course credit. Although the two participant pools were different in their demographics, like gender distribution and mean age, as their responses to the dependent measures and moderators did not differ, the data were collapsed (see Table 1). Specifically, participants from the two universities did not differ in the degree to which they identified with their ingroup, $t = -0.33$, $p = .74$, or the extent to which they adopted their ingroup comments, $t = -0.84$, $p = .41$. Among 210 respondents who volunteered to participate in this study, data from 26 participants were dropped because the participants failed to complete the questionnaire. Thus, for the rest of the analyses, the study used data from 184 participants. Approximately 43% of participants were male, and the sample included 76.1% White/Caucasian, 8.0% Black/African American, 11% Asian, 1.1% Hispanic/Latinx, and 3.6% "other." The mean age of the participants was 21.84 ($SD = 4.17$), ranging from 18 to 50. All participants were thanked and received course credit.

Table 1. *Descriptive Statistics of Demographic and Major Variables: Comparison Between Two Participant Pools.*

Variables	Participant pool A	Participant pool B	<i>t</i>	<i>p</i>
<i>n</i>	151	33		
Age	21.29	24.64	-3.82	< .001
Sex	71 Male, 80 Female	7 Male, 26 Female		
Ingroup expertise	4.15	4.02	-1.45	.15
Ingroup identification	4.94	5.01	-0.33	.74
Attitude toward the topic	4.78	4.79	-0.02	.99
Ingroup influence	5.16	5.45	-0.84	.41

Experimental design. A 3 (gender-typed topic: masculine vs. feminine vs. gender-neutral) x 2 (composition of users' comments: two positive comments from male users and two negative comments from female users vs. two negative comments from male users and two positive comments from female users) between-subject design was used.

Participants viewed a total of four users' comments juxtaposed with information about the target business (see Figure 1). To make social category become salient, a comment that was supposed to have been generated by a male commenter was shown with a picture of a male along with a common male name. A comment that was supposed to be generated by a female commenter was shown with a picture of a female along with a common female name. Following the metacontrast principle, to create distinct ingroup vs. outgroup perceptions, inter-category differences were maximized and intra-category differences were minimized (Turner, 1991). That is, social category (gender) was matched with the position of the comments; the two commenters of the same gender always expressed similar opinions. Conversely, male and female commenters always held opposing opinions.

Measured variables.

Attitude toward the topic. Attitude toward the target business was assessed using six items measured on a 9-point semantic differential scale. Items included: "dislike (1) vs. like (9)," "unappealing vs. appealing," and "unfavorable vs. favorable," $\alpha = .93$, $M = 4.73$, $SD = 1.23$ (Holbrook & Batra, 1987; Mitchell & Olson, 1981). The scores were averaged, so higher scores indicated more positive attitude toward the target business.

Ingroup identification. Participants were instructed to indicate the extent to which they identified with their ingroup on a 7-point Likert scale, using three items ranging from 1 (*strongly disagree*) to 7 (*strongly agree*), $\alpha = .85$,

$M = 4.95$, $SD = 1.10$ (adapted from Leach et al., 2008). Male participants answered items, such as “I have a lot in common with the average man,” and “I identify with other men.” Female participants answered the same items constructed for female.

Stereotypical expertise of male and female. Gender-based expertise expectation regarding the topic was assessed using 10 items measured on a 7-point Likert scale ranging from 1 (*strongly disagree*) to 7 (*strongly agree*) (Ohanian, 1990). The first five items asked about the expectations of expertise of men on a given topic, $\alpha = .97$, $M = 3.88$, $SD = 1.16$ and the next five items asked about the expectations of expertise of women on a topic, $\alpha = .98$, $M = 3.96$, $SD = 1.19$. Sample items include “Men tend to be experts about the topic” and “Women tend to be experienced about the topic.”

Computed variables.

Ingroup influence. The impact of ingroup comments was assessed by calculating congruency between the viewer's own position and his/her ingroup commenters' position, $M = 5.19$, $SD = 1.52$. For instance, when ingroup commenters exhibited positive attitudes about the target business, then the more positive a viewer's assessed the business, the stronger the impact of the ingroup.

Male vs. female commenters' influence. The influence of male vs. female commenters was calculated based on the congruency between the viewer's own position and positions advocated by male or female commenters. For instance, when male commenters exhibited positive attitudes on a given topic, the more positive a viewer's attitude was, the stronger the impact of the male commenters.

Results

Hypothesis Tests

To examine if ingroup influence occurs among those who identified with their ingroup ($H1$), the PROCESS macro was used (Hayes, 2017; Model 1). Specifically, participants' attitudes toward a topic (DV) was regressed on their ingroup position (IV), identification with the ingroup (moderator), and the interaction term, with expertise of the ingroup on a given topic as an additional covariate. To distinguish influence from ingroup (vs. outgroup) comments, experimental conditions were recoded as +1 when ingroup comments (comments from same-gender users) endorsed the topic and -1 when ingroup comments revealed a negative attitude toward the topic. In addition, considering that perceived expertise of ingroup is likely to vary across ingroup-typed, outgroup-typed, and gender-neutral topics, to predict ingroup influence, perceived expertise of ingroup was added as a covariate.

Consistent with $H1$, a significant interaction between ingroup position and identification with the ingroup emerged, $b = 0.45$, $t = 2.21$, $p = .03$, Cohen's $f^2 = .08$. Decomposition of the interaction showed that ingroup comments positively predicted attitude toward the topic, but such a relationship was found only for those who highly identified with their ingroup ($M + 1SD$), $b = 0.89$, $t = 2.86$, $p = .005$, 95 percent bias-corrected 10,000 bootstrap CI [-1.51, -0.28]. For those who moderately (M) or less ($M - 1SD$) identified with their ingroup, the effect of ingroup comments on viewers' attitudes did not occur, $b = 0.40$, $t = 1.83$, $p = .07$, 95 percent bias-corrected 10,000 bootstrap CI [-0.84, 0.03] and $b = -0.09$, $t = -0.29$, $p = .77$, 95 percent bias-corrected 10,000 bootstrap CI [-0.53, 0.71], respectively (see *Figure 2*). Thus, $H1$ was supported; participants adopted their ingroup comments only when they highly identified with their ingroup.

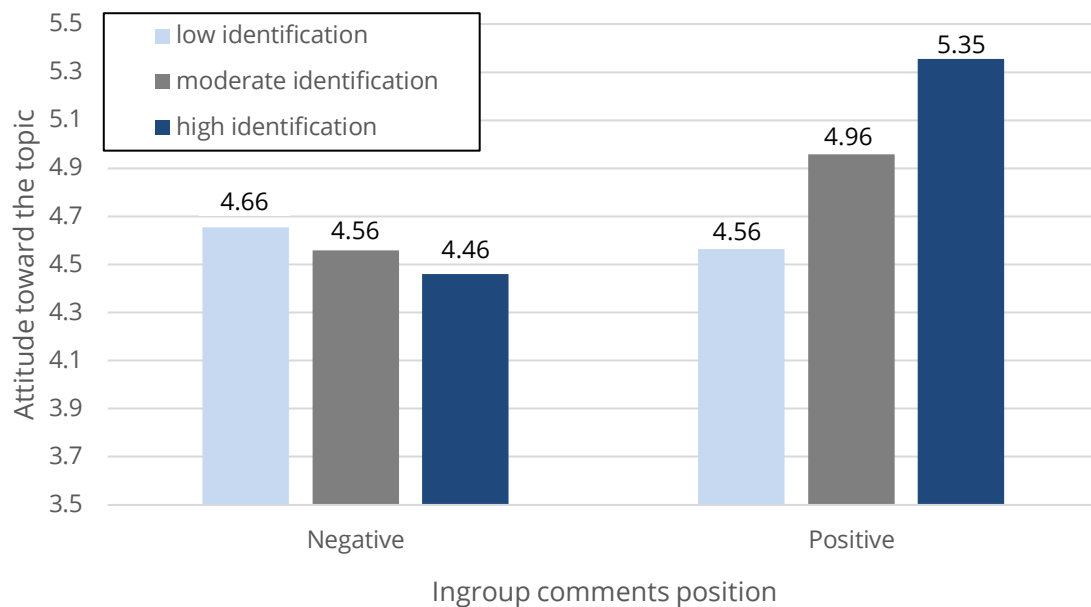


Figure 2. Interaction between ingroup comments and identification on viewers' attitudes.

Next, whether the categorization of topic (ingroup-typed vs. outgroup-typed topic) predicts the extent to which participants identify with their ingroup and ingroup influence (RQ1), PROCESS macro was used (Hayes, 2017; Model 4). Specifically, a series of regression analyses tested the conditional indirect effect of categorized topic (IV; ingroup-typed vs. outgroup-typed topic) on ingroup influence (DV) through identification with the ingroup (mediator). First, category-based topic perception (IV) was set as a predictor of ingroup identification (mediator), with the perceived ingroup expertise as covariate. Second, ingroup influence (DV) was regressed on categorized topic (IV: 0 = *outgroup-typed topic*, 1 = *ingroup-typed topic*) and the control variable to assess the direct effect of the IV, and at the same time, was also regressed on ingroup identification (mediator). The gender-neutral topic was not used for the analyses because it is hard to reason how a gender-neutral topic affects the extent to which people identify with their ingroup. Unlike a gender-typed topic, a neutral topic is unlikely to modify perceived status or distinctiveness of group membership.

The results indicated a significant conditional indirect effect through ingroup identification, indirect effect = -0.07, *bootSE* = 0.05, 95 percent bias-corrected 10,000 bootstrap CI [-0.21, -0.01]. The categorization of topic negatively predicted the extent to which participants identified with their ingroup. That is, it was the outgroup-typed topic, rather than the ingroup topic, that elicited identification with the ingroup, $b = -0.28$, $t = -2.53$, $p = .01$. Once participants identified with their ingroup, they became susceptible to their ingroup, $b = 0.27$, $t = 1.99$, $p = .049$. The direct effect of the categorized topic (ingroup-typed vs. outgroup-typed) on ingroup influence was not statistically significant, direct effect = 0.09, *bootSE* = 0.16, $t = 0.55$, $p = .58$, 95 percent bias-corrected 10,000 bootstrap CI [-0.23, 0.42].

Finally, as an alternative competing explanation, H2 predicted that the stereotypical expertise determines which group becomes influential. The results showed that when the topic was masculine, men ($M = 4.33$, $SD = 1.08$) were expected to have greater expertise than women ($M = 3.32$, $SD = 1.10$), $t(89) = 6.97$, $p < .001$. Conversely, when the topic was feminine, women ($M = 4.67$, $SD = 0.92$) were expected to have greater expertise than men ($M = 3.28$, $SD = 1.05$), $t(89) = 9.63$, $p < .001$. However, gender-based stereotypes failed to account for the influence of male (vs. female) commenters. For the masculine topic, the bivariate correlation between the perceived expertise of male and the influence of male commenter was not significant, $r(58) = -.19$, $p = .14$. For the feminine topic, the perceived expertise of female and the influence of female commenters was not correlated, $r(57) = -.11$, $p = .43$. Furthermore, when the topic was masculine, the influence of male commenters ($M = 4.83$, $SD = 1.62$) was not greater than the influence of female commenters ($M = 5.16$, $SD = 1.62$), $t(59) = 0.80$, $p = .43$. When the topic was feminine, the influence of female commenters ($M = 5.12$, $SD = 1.43$) was not greater than the influence of male commenters ($M = 4.88$, $SD = 1.43$), $t(58) = 0.64$, $p = .53$. Therefore, the alternative prediction was not supported.

Discussion

This study suggests that simple and seemingly trivial categorical cues that are embedded in users' comments allow viewers to identify with other users, which then makes certain comments more influential than others. Overall, the findings offered support for self-categorization theory, which posits that ingroup influence is a function of identification. The ingroup exerted a greater influence on viewers' attitudes when viewers perceived themselves according to social identity and identified with their ingroup. At the same time, a central message that was juxtaposed with users' comments affected the extent to which viewers identified with their ingroup; when the central message presented an outgroup-typed (vs. ingroup-typed) topic, it led to identification with the ingroup, which in turn caused ingroup influence.

These findings demonstrated that identification plays a crucial role in understanding the influence of ingroup users' comments, as viewers adopted their ingroup's comments only when they highly identified with their ingroup. Horwitz and Kovács' (2018) failure to find a relation between ingroup positions and ingroup influence in their web-based experiments on Yelp is particularly relevant to these findings. Potentially, given that the extent to which the ingroup is incorporated into the sense of self varies among individuals, the ingroup comments' influence may occur only among those who identified highly with their ingroup.

Considering that identification may determine ingroup influence, one way to investigate the effect of identification is to test whether identification mediates the relationship between social identity and ingroup influence. Self-categorization theory originally postulates that salient social identity invokes identification, and it is through identification that ingroup influence takes place. However, due to a lack of empirical evidence that identification actually takes place through categorical cues embedded in users' comments, the current study uniformly maximized, instead of varying, the metacontrast ratio for all experimental conditions to make social identity salient. Thus, all participants viewed two comments from their ingroup and two comments from an outgroup while ingroup and outgroup comments always held opposing opinions, making the social identity remain salient across experimental conditions. Given that there was no systematic variance in the salience of social identity across experimental conditions, self-categorization theory was tested by examining whether the influence of ingroup comments on viewers increases as identification increases. The findings are consistent with the theory which posits that intergroup discrimination is a function of identification.

One point that merits note is that in the context of users' comments, a central message that shapes the focus of users' comments affects identification. Although an ingroup-typed topic may contribute to viewers' self-esteem, as it highlights superior experience and knowledge of the viewers' ingroup, the results showed that an outgroup-typed topic elicited identification. Brewer et al. (1993) found that once identification with the ingroup occurs, individuals in a relatively small group, which is perceived to be more distinctive than a larger group, showed greater ingroup bias, even when the smaller group has lower status. That is, once they identified with their ingroup, participants valued distinctiveness of their group membership, regardless of its status. These reports appear to be consistent with the current findings; even if categorization of a central message does not necessarily equate with group size, given that users' comments center on a central message, an ingroup- or outgroup-typed topic determines which group becomes the mainstream in a given context. Consistent with the distinctiveness account, viewers experienced greater identification as their identity became more distinguishable in the presence of mainstream outgroup members.

Overall, this study suggests that the influence of categorical cues embedded in users' comments is a function of identification; ingroup influence occurred only among participants who identified highly with their ingroup. At the same time, by altering the extent to which viewers identified with their ingroup, a central message that was displayed together with users' comments explained the way salient group membership led to ingroup influence in the context of those comments. Finally, rejecting the alternative prediction, although participants associated expertise stereotypes with certain commenters, such beliefs failed to exert a persuasive influence on them.

Limitations and Future Directions

Some issues deserve further attention in future research. First, the current study employed the metacontrast principle to categorize group membership. However, if multiple categorical cues are accessible and multiple

categorization criteria is available, to categorize groups may not be as clear as depicted in the current study. Crisp, Hewstone, and Rubin (2001) argue that when individuals face multiple categorization criteria, ingroup vs. outgroup distinctions become too complex to allow the sorting out of inconsistent information, thus, failing to trigger categorization. On the other hand, other studies point out that when one category becomes more salient than others, it triggers categorized perceptions. For instance, priming one of several alternative categories leads to its activation and inhibition of alternative categories, which sparks categorized perceptions (Macrae, Bodenhausen, & Milne, 1995). Van Rijswijk and Ellemers (2002) explain that even in the presence of other categories, one category may become more salient than others and this depends on a comparative context (i.e., to which one category is mainly compared). Specifically, they point out that when evaluating targets that vary in multiple categories, individuals tend to focus on a category that readily compares the targets and come up with category-based perceptions using the category employed. Together, these findings indicate that the accessibility of multiple categories complicates the way categorical cues affect viewers' attitudes. To extend our understanding of how categorical cues actually affect viewers' attitudes, future research needs to examine 1) how categorical cues affect viewers' attitudes when multiple categorization criteria exist and 2) what makes certain criteria more salient than others.

Second, the findings from this study could be restricted due to the existence of opposing messages (positive and negative users' comments). In order to distinguish groups (ingroup vs. outgroup), the current study adopted the metacontrast principle. Thus, participants were exposed to the two most positive and two most negative comments. However, it is possible that the presence of a counterargument could constrain the possible influence of categorized groups. Meta analyses of one-sided vs. two-sided messages indicate that two-sided messages without refutation lack persuasiveness compared to one-sided persuasive messages or two-sided messages with refutation (Allen, 1991; Hale, Mongeau, & Thomas, 1991). In the present study, opposing arguments were present, though none were refutational. Thus, the presence of the opposing argument could have constrained the possible influence of social categorical cues embedded in users' comments.

Third, although the findings showed that identification is context-dependent, this study did not identify the mechanisms through which an outgroup-typed (vs. ingroup-typed) topic elicited identification. To test whether the distinctiveness explanation indeed accounts for these findings, future research needs to vary distinctiveness systematically and identify the way such manipulation affects the extent to which viewers identify with their ingroup. For example, given that prior studies manipulated proportionate group sizes to generate varying degree of distinctiveness (for review, see Mullen, 1991), future research may examine the way varying the proportion of ingroup to outgroup comments, together with the topic type (i.e., ingroup- vs. outgroup-typed), affects viewers' identification with their ingroup.

Fourth, we used a convenience sample of undergraduate students who are familiar with computer-mediated communication (van Deursen & van Dijk, 2014). Thus, they may have experience detecting categorical cues embedded in users' comments, which would not likely be the case among those who are less skilled in computer-mediated communication. Further, previous research has pointed out age differences in reliance on stereotypes (Mather, Johnson, & De Leonardis, 1999). Given that younger adults generally rely less on gender-relevant stereotypes compared to their older counterparts, because this study included undergraduate participants ($M_{age} = 21.84$, $SD = 4.17$), and found effects of minimal gender-related cues embedded in users' comments among younger adults seems to provide a conservative test of its hypotheses.

Finally, with respect to the findings' practical implications, the persuasive potential of ingroup comments is likely to increase when multiple users' comments contradict one another. That is, when faced with inconsistent (vs. consistent) users' comments, viewers are likely to turn to categorical cues to sort out the inconsistent comments. Review-based commercial websites that encourage their users to evaluate products and services, for instance, may take advantage of pervasive inconsistency among those evaluations. Simple technical arrangements that sort users' comments based on social categories can facilitate the decisions users make on those websites.

This study suggests that viewers may feel connected to users who generate comments on various computer-mediated communication systems. To expand our understanding of this dynamic connection between a user and viewer, future research needs to investigate the cognitive and attitudinal effects of categorical cues embedded in users' comments.

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Appendix

The screenshot displays the Yelp profile for 'McBright Electric Company'. At the top, there is a red navigation bar with the Yelp logo, search fields for 'Find' and 'Near', and links for 'Sign Up' and 'Log In'. Below the navigation bar, the company name 'McBright Electric Company' is prominently displayed, along with a 'Write a Review' button and options to 'Add Photo', 'Share', and 'Bookmark'. A map on the left shows the company's location in Peoria, IL, with a red pin and a 'Get Directions' link. To the right of the map are three images: a glowing lightbulb, a toolbox, and a close-up of hands working on electrical wiring. Below these images is a 'See all 6 photos' link. The 'Recommended Reviews' section is visible, featuring a search bar and a list of four reviews. Each review includes the reviewer's name, profile picture, date, and text, followed by a 'Was this review ...?' section with 'Useful', 'Funny', and 'Cool' buttons.

Reviewer	Date	Review Text
Julie L.	2/10/2014	They are the best around the town. I strongly recommend this place.
Mike S.	2/11/2014	This place even doesn't deserve stars. If I could give them negative stars, I would.
Amanda G.	2/7/2014	I have been with this place since college and will never leave it.
Steve K.	2/10/2014	So far, the experience has been terrible. I would never recommend this place.

Figure 1. Screenshot of the experimental stimuli: the masculine topic and users' comments.

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