Communication Research

http://crx.sagepub.com

When and How Does Depersonalization Increase Conformity to Group Norms in Computer-Mediated Communication?

Eun-Ju Lee Communication Research 2006; 33; 423 DOI: 10.1177/0093650206293248

The online version of this article can be found at: http://crx.sagepub.com/cgi/content/abstract/33/6/423

> Published by: SAGE http://www.sagepublications.com

Additional services and information for Communication Research can be found at:

Email Alerts: http://crx.sagepub.com/cgi/alerts

Subscriptions: http://crx.sagepub.com/subscriptions

Reprints: http://www.sagepub.com/journalsReprints.nav

Permissions: http://www.sagepub.com/journalsPermissions.nav

Citations http://crx.sagepub.com/cgi/content/refs/33/6/423

Communication Research Volume 33 Number 6 December 2006 423-447 © 2006 Sage Publications 10.1177/0093650206293248 http://crx.sagepub.com hosted at http://online.sagepub.com

When and How Does Depersonalization Increase Conformity to Group Norms in Computer-Mediated Communication?

Eun-Ju Lee University of California at Davis

The experiment reported herein examined how depersonalization, operationalized as the lack of individuating information, affects conformity to a group norm in anonymous computer-mediated communication. Participants made a decision about choice dilemmas and exchanged their decisions and supporting arguments with three ostensible partners via computer, who unanimously endorsed the position opposite of the participant's. As predicted, depersonalization led to a more extreme perception of the group norm, better recall of the interactants' arguments, and more positive evaluations of the interactants' arguments through group identification, albeit only for women. Moreover, depersonalization was more likely to facilitate conformity to group norms among those with higher need for public individuation and among women. A test of indirect effects showed that group identification and extremity of the perceived group norm mediated the effects of depersonalization on conformity.

Keywords: depersonalization; social identity model of deindividuation effects (SIDE); conformity; need for public individuation; group identification

A lthough it may seem to be counterintuitive, the notion that computer-mediated communication (CMC) can accentuate, rather than attenuate, social influence has received consistent empirical support (Postmes, Spears, & Lea, 1998; Spears, Postmes, Lea, & Watt, 2001). According to the social identity model of deindividuation effects (SIDE), interaction via a computer network can actually heighten group salience and, hence, conformity to a group norm because of the scarcity of individuating information that interferes with identification with group members (Lea & Spears, 1991; Reicher, Spears, & Postmes, 1995; Spears & Lea, 1992). From this perspective, physical isolation and visual anonymity of CMC obscure within-group interpersonal differences and, thereby, depersonalize self-perception and the perception of other interactants (Postmes, Spears, Sakhel, & de Groot, 2001). Combined with a salient social identity, the SIDE model suggests that people come to perceive themselves and others as representatives of social groups rather than idiosyncratic

individuals and subsequently become more susceptible to group influence and ethnocentrism (Postmes et al., 1998; Turner, 1987).

In support of this paradoxical claim, studies have shown that depersonalization, when coupled with a salient group identity, enhances conformity to experimentally induced group norms in CMC (e.g., Postmes et al., 2001; Spears, Lea, & Lee, 1990). For example, when the participants were instructed to view themselves as group members, greater polarization of opinion occurred toward group norms in the depersonalization than the personalization conditions. By contrast, when personal identity was salient as a result of stressing individual differences and personal styles, depersonalization led to greater opinion change away from the group norms (Spears et al., 1990). Similarly, when group members were primed with a certain type of social behavior (i.e., efficiency vs. prosocial norms) by means of a preexperimental task, anonymous groups displayed prime-consistent behavior in the following experimental session, whereas identifiable groups did not (Postmes et al., 2001).

The current experiment focused on how depersonalization amplifies social influence in CMC in relation to underlying psychological processes. In doing so, and based on the SIDE model, it entailed a conception of depersonalization as diminished awareness of interpersonal differences and increased attention to one's social, as opposed to personal, self-identity (Postmes, Spears, & Lea, 1999; Reicher, 1987; Spears et al., 2001; Tajfel, 1978). Although the terms deindividuation and depersonalization have been used interchangeably in previous studies, I chose depersonalization for the following reasons. First, whereas deindividuation denotes "loss of self-awareness, dissolution of identity, and diminished capacity for self-regulation" (Prentice-Dunn & Rogers, 1980, p. 104), depersonalization does not imply reduced self-awareness or subsequent disinhibition. Instead, depersonalization entails the shift of attentional focus from personal to social self-identity (Postmes et al., 1999; Spears et al., 2001), such that when depersonalized, people become more focused on their group membership shared with others (social identity) than on idiosyncratic characteristics that distinguish them from others (personal identity; Tajfel, 1978). In this view, increased attention to the group does not necessarily lead people to lose contact with their inner thoughts and feelings as deindividuation theory states (Diener, 1979; Diener, Lusk, DeFour, & Flas, 1980; Zimbardo, 1969), but does make the social dimension of self more salient and predisposes them to behave in terms of the group membership.

Second, in the deindividuation literature, the object of interpersonal differentiation (or lack thereof) has been defined inconsistently. In some studies, *deindividuation* referred to the failure to differentiate among others, measured by, for example, the ability to identify behavior of specific group members and perceived anonymity of group members (Johnson & Downing, 1979). In other studies, *deindividuation* has referred to "a state in which the person feels indistinguishable from other people and objects" (Maslach, Stapp, & Santee, 1985, p. 730), which highlights the self–other distinction. *Depersonalization*, however, denotes reduced salience of interpersonal differences due to the deficiency of individuating cues, which fosters within-group similarity in its entirety.

The purpose of the current study was to extend the SIDE model in two important respects. First, it explored the cognitive changes that potentially mediate the effects of depersonalization on group conformity. So far, SIDE theorists have claimed that it is through stronger group identification that depersonalization increases conformity to group norms. Specifically, the model assumes that (a) depersonalization dilutes interpersonal differences within a group, which thereby fosters identification with the partners and (b) this enhanced attachment to the group accounts for increased social influence (Lea, Spears, & de Groot, 2001; Postmes et al., 1999). Consistent with this notion, Postmes et al. (2001) demonstrated that group salience, as measured by group identification, mediated the effect of anonymity on social influence. Moreover, when depersonalization was induced by means of uniform graphical representation, it led to stronger group identification, which, in turn, apparently induced greater conformity to the majority opinion (Lee, 2004). Still, there remain several alternative explanations, albeit not necessarily ones incompatible with the group identification account, for why depersonalization amplifies social influence.

One possibility pertains to the participants' perception of group norms. In Lee's (2004) studies, even though the participants received the identical sets of decisions and arguments of their partners, it is possible that depersonalization altered the way they processed and registered interaction content, which, in turn, led to different responses. For example, Mackie (1986) predicted and confirmed that when individuals focused on their group membership, they perceived group norms as more extreme. In contrast, when their individual performance was emphasized, the perception of group norms did not become more extreme, and attitudes shifted to a more neutral position. Given that depersonalization fostered group identification (Lee, 2004), an indicator of group salience, it might also have led to a more extreme perception of group norms by obscuring differences among individual group members. Subsequently, increased discrepancies in opinions might have prompted a shift toward the perceived group norm, to reduce the gap. In fact, referent informational influence theory postulates that when people categorize themselves as group members, their perceptions of group norms become more extreme, and opinion polarization occurs as they conform to polarized group norms (McGarty, Turner, Hogg, David, & Wetherell, 1992; Turner, Wetherell, & Hogg, 1989). By directly measuring perceptions of group norms, the current study entailed an attempt to determine if, and if so, how depersonalization influences cognitive representation of the group norm and how such representation is related to group conformity.

- *Research Question 1:* Do individuals with little individuating information in otherwise anonymous CMC perceive group norms as more extreme than those having more individuating information?
- *Research Question 2:* Do more extreme perceptions of group norms increase conformity to group norms?

Another possibility is that depersonalization accentuates group influence by removing potential distractors and thereby helps people to concentrate on the messages exchanged during a discussion. In fact, researchers studying computersupported cooperative work (CSCW) have suggested that anonymity and physical isolation in CMC not only allows group members to separate authors from specific ideas (Jessup, Connolly, & Tansik, 1990) but also "serves to focus individuals' attention on the task to glean the most possible information from the text-only medium" (Coleman, Paternite, & Sherman, 1999, p. 61). Consistent with this view, when compared to face-to-face discussion groups, CMC participants rated themselves as more immersed in a discussion and composed more statements directly related to the topic at hand (Coleman et al., 1999). In fact, Postmes, Spears, and Lea (2002) reported that participants were better able to identify the source of statements exchanged during a discussion when personally identifiable via portrait pictures than when identified by a group label and personal identification number only. However, there was no significant difference between the anonymous and nonanonymous conditions in identifying from which group the messages originated. Although the findings suggest that depersonalization does not necessarily reduce recall memory, they focused on identification of the *source*, which left the question of how depersonalization influences the message recall unanswered.

Research Question 3: Do individuals with little individuating information in anonymous CMC better recognize their discussion partners' arguments, compared to those having more individuating information?

Even if depersonalization draws individuals' attention to the task at hand, greater task focus may or may not facilitate conformity to group norms. On the one hand, task orientation might increase conformity by highlighting the rational basis for the group norm articulated in group members' arguments. If attitude change occurs as group members become exposed to novel and persuasive arguments during group discussion and modify their positions accordingly (Burnstein & Vinokur, 1977; Hinsz & Davis, 1984), as persuasive arguments theory posits, such change would be more likely to follow when people pay close attention to the arguments exchanged. On the other hand, more detailed and extensive message processing can result in decreased, rather than increased, message acceptance (Chaiken, 1980; Petty & Cacioppo, 1979). According to dual-process theories, such as elaboration likelihood model (Petty & Cacioppo, 1986) and heuristic-systematic model (Chaiken, 1987), when the arguments contained in a persuasive message predominantly elicit refutation and counterarguments (i.e., weak arguments), message elaboration tends to evoke less favorable attitudes toward the advocated position. In fact, Petty and Cacioppo (1979) reported that although high involvement enhanced argument recall for strong and weak messages, it decreased persuasion for the weak messages, which suggests that message

recall per se might not serve as a good predictor of message acceptance.¹ Therefore, the following research question addressed how task orientation, as indexed by recognition memory of the discussion partners' arguments, relates to conformity to group norms in anonymous CMC.

Research Question 4: Do individuals become more likely to endorse a group norm as they pay greater attention to the discussion partners' arguments exchanged during anonymous CMC?

Finally, depersonalization might increase conformity to group norms by affecting the participants' evaluations of their interactants' arguments. As noted previously, the SIDE model postulates that the lack of individuating information fosters group identification with the interactants and this self-categorization as a group member makes people more susceptible to social influence (Lea et al., 2001; Postmes et al., 1999). However, the effects of group identification on conformity might take an indirect route, for example, through a more positive assessment of arguments' quality. Although some researchers investigated the effects of shared group membership on attitude change and found that in-group members were more persuasive than othergroup members (Mackie & Cooper, 1984; Mackie, Worth, & Asuncion, 1990), they did not measure perceived arguments' quality as an intervening variable that potentially mediates the effects of group membership on persuasion.

Still, in one study an in-group writer received more favorable evaluations than did an out-group writer (Gerard & Hoyt, 1974), and in another study people were more likely to ascribe positive attributes to the in-group product than the out-group's (Wenzel & Mummendey, 1996). In such a case, it seems reasonable to suspect that members of a group might perceive other interactants' arguments to be more persuasive and valid when they identify with the source, and this colored perception of argument quality might, in turn, prompt them to endorse the majority opinion. To determine whether group identification varies as a function of the availability of individuating cues and evokes more positive ratings of the other members' arguments, the current study measured perceived homogeneity within the group as an index of group identification (Mackie, 1986). Although group (social) identity has several distinctive aspects, namely, cognitive (awareness of one's group membership), evaluative (perceived values of the group membership), and affective (emotional commitment to the group) components (Ellemers, Kortekaas, & Ouwerkerk, 1999), the current study focused on the cognitive element of group identification, for it was unrealistic to expect that participants would exhibit significantly varying degrees of emotional involvement with or group-esteem toward an ad-hoc group arbitrarily assigned by the experimenter. Moreover, because introducing the notion of group was likely to suppress the variability in spontaneous group identification, masking the potential effect of individuating information, no explicit "group" label

was imposed. Rather, participants were asked to what extent they felt their partners shared their beliefs and thought like themselves. In sum, the following research questions were derived to explore whether depersonalization improves subjective assessments of arguments quality through group identification and if such assessments increase acceptance of group norms.

- *Research Question 5:* Do individuals with little individuating information in anonymous CMC show greater group identification with discussion partners, and subsequently, evaluate their arguments more positively than those having more individuating information?
- *Research Question 6:* Do more positive evaluations of the discussants' arguments lead to greater conformity to group norms?

In addition to elucidating the psychological processes through which depersonalization amplifies social influence, the second aim of the current experiment was to explore how personal dispositions interact with a paucity of individuating information in CMC. To date, SIDE theorists have focused almost exclusively on what happens when the state of depersonalization is induced, with relative disregard for individual dispositions that might trigger different reactions to the restrictions of the medium. However, the assumption that depersonalizing contextual "input" conditions, such as anonymity and sensory input overload (Zimbardo, 1969), will have the same effects on all individuals seems questionable. For example, research concerning public individuation has reported a stable individual difference in "the willingness to engage in behaviors that publicly differentiate themselves from others" (Maslach et al., 1985, p. 729). In addition, Snyder and Fromkin (1977) showed that after listening to the target's self-introduction, high need for uniqueness individuals, characterized by a sense of independence, anticonformity, and self-esteem, rated themselves as more different from the target person than did low-uniqueness individuals.

Given that individuals with a high need for uniqueness are less responsive to conformity pressures and more willing to manifest their uniqueness than those with a low need for uniqueness (Snyder & Fromkin, 1977), scarcity of individuating cues might evoke different reactions for the two types. For example, those with high needs for individuation might exhibit greater psychological reactance, as their need to be recognized as a distinctive individual is threatened. Or, those with low needs for individuation might not be as sensitive to the situational variation, personalization versus depersonalization, as those with high needs for individuation; that is, the lack of individuating information might have greater impact on those who are chronically motivated to ascertain their individuality than those less concerned about publicly proclaiming their uniqueness. By investigating if and how the effects of depersonalization vary depending on a person's level of need for public individuation, the current study aimed to illuminate the potential interplay between the paucity of individuating information and personal traits. *Research Question 7:* Does individuals' need for public individuation moderate the effects of individuating information on conformity? If so, how?

In addition to the need for public individuation, the current study also investigated participant sex as a potential source of individual differences that moderate depersonalization effects on conformity. There are several reasons to suspect such a possibility. First, research has shown that there is a reliable sex difference in influenceability, with women being more susceptible to social influence than men (Eagly & Carli, 1981; Burgoon & Klingle, 1998). If the sex difference stems from "men's intractability across topics, situations, and time" (Burgoon & Klingle, 1998, p. 275), men will be less influenced by the variation in the amount of individuating information than will women; that is, men will exhibit less conformity than women, whether they receive personal information about their interactants or not. However, if men are less conforming than women only under public surveillance (Eagly, Wood, & Fishbaugh, 1981), men might exhibit greater conformity when depersonalized than when personalized, for sharing individuating information likely heightens perceived presence of others and makes the interaction context more public. Second, women reportedly have a lower threshold for elaborating on message cues than men, such that women not only process more extensively the message cues that command only limited amount of attention but also make greater use of such cues in evaluating products (Meyers-Levy & Sternthal, 1991). If women are more prone to process incoming stimuli carefully, even those with little consequences, and utilize the information, the provision of individuating cues might exert greater effects on women's evaluations and acceptance of the partners' arguments. Finally, Guadagno and Cialdini (2002) reported that although women showed less agreement with e-mail than with face-to-face persuasive messages, men did not exhibit such differences. Moreover, having a brief interaction with the influence agent prior to receiving the e-mail message increased conformity only among women, which suggests that the availability of social cues plays a more important role in inducing conformity for women than for men. In such a case, sharing personal profiles with other group members might serve a similar function as interpersonal contact and elicit greater conformity to group norms among women, but not among men. In combination, sex differences in influenceability, information processing strategies, and sensitivity to interpersonal cues suggest that the lack of individuating information might have different effects on men and women, although not all the accounts predict the same pattern of interaction. Hence.

Research Question 8: Does the deficiency of individuating information exert differential effects on men's and women's conformity to group norms? If so, how?

Method

Participants

The participants in the current study were 217 (92 male, 125 female) college undergraduates enrolled in communication classes (age M = 20.86, SD = 2.36). They received extra credit for taking part in the study.

Procedure

On arrival at the laboratory, participants were told that they would interact with three other participants from different universities via computer. Specifically, they learned that they would exchange their opinions concerning several hypothetical choice-dilemma scenarios, which posed a choice between actions of high risk (more rewarding but lower likelihood of attainment) and low risk (less rewarding but higher likelihood of attainment; Kogan & Wallach, 1967; Lee, 2004). In fact, the entire interaction was preprogrammed to ensure experimental control of the content of interaction across conditions.²

Before they started the interaction, those in the personalization condition had the opportunity to introduce themselves to their ostensible partners by revealing some personal profiles, such as their major, age, hobby, favorite television show, favorite color, and favorite music genre, without disclosing identifying information. After providing this information, they saw their interactants' input (see Figure 1). The depersonalization condition excluded this and, thus, had no individuating information about the partners.

To help the participants feel comfortable with the experimental procedure, the experimenter guided them through a practice round. First, the participants read a hypothetical scenario on a computer screen. For example,

Amy and John are college students who have been living together in an apartment near campus. John's allowance buys food and they are sharing the rent. Amy has told her parents that she is rooming with another girl, and now her parents are coming to visit their daughter. They have never seen the apartment. Amy is considering asking John to move out for the time that her parents are in town.

Along with the scenario, they had six response options from which to choose: "Definitely should do A (e.g., tell her parents)," "Should do A," "Probably should do A," "Probably should do B (e.g., ask him to leave)," "Should do B," "Definitely should do B." They were to type a short argument to support their own preference.

When the participants finished creating a rationale for their decisions, they went to the next screen where their presumed partners' decisions and arguments were shown, as well as their own (see Figure 2). To create an opportunity to exert conformity pressure, the partners always endorsed the decisions opposite of the participant's initial choice. More specifically, for Scenario 1, if the participant chose





"(Definitely/Probably) Should do A," the partners advocated for "Probably should do B," "Probably should do B," and "Should do B." Likewise, when the participant endorsed A for Scenario 2, the partners argued for "Should do B," "Should do B," and "Definitely should do B." Along with the decisions, short arguments for their decisions appeared on the computer screen.³ For the roommate scenario, one of the arguments was: "She should tell her parents the truth because she is going to have to tell more lies to cover up her first lie." After reading the partners' decisions and supporting arguments, the participants indicated how convincing and valid the overall arguments were. To ensure anonymity, no identifiers were attached to each argument in either the depersonalization or personalization conditions. In addition, the position in which the participants' argument was displayed varied from scenario to scenario, which made it impossible to associate each argument with a particular individual.



Figure 2 Screen Snapshot of the Decisions and Arguments Page

After the practice round, participants repeated the procedure for two different scenarios. When the interaction was over, the experimenter asked the participants to complete a questionnaire and assured them that their responses would not be seen by the partners.

Measures

Group identification was defined in terms of perceived homogeneity within the discussion group (Mackie, 1986). Specifically, participants indicated how well each of the following words described their partners in general on a 10-point scale, which ranged from *describes very poorly* (1) to *describes very well* (10): "similar to me," "think like me," "share my belief" ($\alpha = .97$). The ratings were then summed to create the group identification index (M = 14.90, SD = 6.60).

Participants next received a summary of the choice-dilemma scenarios and the same six response options they had used during the discussion to indicate what they

thought best represented the opinion of the group as a whole. Because the partners always disagreed with the participants, the extremity of the perceived group norm was rated to reflect the extent to which they thought the group norm differed from their initial standing; that is, if the participant chose A and thought the group in general supported "Probably should do B," 1 was assigned; if the participant believed the group norm was "Should do B," 2 was assigned; if the participant thought "Definitely should do B," as assigned. For those who reported that the group norm was in the same direction as their own initial position, 0 was assigned. The sum of the scores was the index of the extremity of group norms ($\alpha = .72$, M = 2.97, SD = 1.42).

After indicating their perceptions of the group norm, the participants indicated their own decisions for each of the scenarios. Conformity referred to the extent to which the participant's postdiscussion decision moved toward the group norm, which was preprogrammed to be the opposite of the participant's initial decision. For example, if the participant changed from "Probably should do A" to "Probably should do A," 1 was assigned; if the decision moved from "Definitely should do A," to "Probably should do A," 2 was assigned. If the participant's decision did not change after discussion or moved in the opposite direction of the group norm, 0 was assigned. The scores were summed across the scenarios ($\alpha = .61$, M = .97, SD = 1.43).

To assess perceived quality of arguments, participants rated how convincing and valid the partners' arguments were on a 10-point scale that ranged from *not at all convincing/valid* (1) to *very convincing/valid* (10). The ratings were then averaged ($\alpha = .81, M = 5.71, SD = 1.86$).

For message recall, the participants received a total of eight different arguments, four of which were actually shown during the staged interaction. If the participants correctly identified whether they had seen the argument or not, 1 was assigned; otherwise, they received 0. A message recall score was computed by summing the scores across the eight arguments ($\alpha = .60$, M = 5.99, SD = 1.74).

Finally, need for public individuation was measured by 12-item public individuation scale (Maslach et al., 1985) that assesses individual differences in the "willingness to engage in behaviors that would publicly differentiate themselves from others" (p. 729). Sample items are: "Raise your hand to ask a question in a lecture," "Present a personal opinion, on a controversial issue, to a group of strangers," "When asked to introduce yourself, say something more personal about yourself than just your name and occupation." Participants indicated how willing they were to take each of the 12 actions on a five-point scale ranging from *not at all willing* (1) to *very much willing* (5) ($\alpha = .87$, M = 3.35, SD = .70).

Results

In sum, four variables were proposed as potential mediators of depersonalization effects on conformity: extremity of perceived group norm (Research Question 1,

Research Question 2), message recall (Research Question 3, Research Question 4), group identification (Research Question 5), and perceived quality of the partners' arguments (Research Question 6). To establish whether depersonalization significantly influences each of these variables, a series of hierarchical multiple regression analyses was conducted. First, participant sex (0 = male, 1 = female), individuating information (0 = no individuating information, 1 = individuating information), and the need for public individuation were entered in the first block. Then the two-way interaction terms, sex by individuating information, sex by the need for public individuation, were entered in the second block. To reduce potential problems with multicollinearity, the need for public individuation was transformed into *z* scores prior to the formation of the interaction terms (Cohen & Cohen, 1983). Finally, the three-way interaction term was added to the equation.

To answer Research Question 1, which pertained to whether depersonalization would polarize the perceptions of group norms, the multiple regression analysis was performed with extremity of perceived group norms as the criterion variable. Neither the second, $R^2_{\text{change}} = .002$, $F_{\text{change}}(3, 210) = .16$, p = .92, nor the third block, $R^2_{\text{change}} = .002$, $F_{\text{change}}(1, 209) = .37$, p = .54, significantly increased the variance accounted for. Therefore, a separate regression was run only with the three independent variables: participant sex, individuating information, and the need for public individuation, $R^2 = .06$, F(3, 213) = 4.16, p < .008. The results revealed that the provision of individuating information ($\beta = -.16$, t = -2.31, p < .03) led to less extreme perceptions of a group norm, and those with higher needs for public individuation thought the group norms were less extreme ($\beta = -.14$, t = -2.04, p < .05). The effect of participant sex was not statistically significant ($\beta = -.09$, t = -1.33, p > .18).

Research Question 2 concerned whether more extreme perceptions of a group norm would facilitate conformity to it. As suspected, the bivariate correlation revealed that the more extreme participants perceived the group norm to be, the more likely were they to endorse the majority opinion, r = .23, p < .002.

Answering Research Question 3 involved the use of multiple regressions analysis with message recall as the criterion variable. When message recall was regressed on the three independent variables and their interaction terms, the addition of interaction terms did not significantly increase the variance accounted for, $R^2_{\text{change}} = .02$, $F_{\text{change}} (3, 210) = 1.31$, p = .27, for the two-way interactions; $R^2_{\text{change}} = .002$, $F_{\text{change}} (1, 209) = .48$, p = .48 for the three-way interaction. A regression analysis of the reduced model with only the main effect terms showed that participant sex ($\beta = .19$, t = 2.81, p < .005) and the availability of individuating information ($\beta = -.15$, t = -2.25, p < .03) significantly affected the recognition memory for the arguments exchanged during the discussion, $R^2 = .06$, F(3, 213) = 4.52, p < .005. Specifically, women recognized their discussion partners' decision rationale better than did men, and the participants, regardless of sex, recognized the arguments better when they did not receive individuating information about the partners than when they did.

Research Question 4 raised an issue of how message recall is related to conformity to group norms. Although depersonalization enhanced message recall, the bivariate correlation between message recall and conformity was near zero (r = -.01), which suggests that the conformity-inducing effect of depersonalization did not stem from increased task orientation.

To address Research Question 5, which concerned if depersonalization would lead to a more positive evaluation of the discussion partners' arguments through stronger group identification, the multiple regression analysis was first conducted for group identification. Because the addition of two-way interactions, $R^2_{\text{change}} = .015$, $F_{\text{change}}(3,210) = 1.15$, p = .33, or the three-way interaction, $R^2_{\text{change}} = .005$, $F_{\text{change}}(1, 209) = 1.17$, p = .28, did not reveal a significant increase in the variance accounted for, only the main effect terms were included in the model, $R^2 = .08$, F(3, 213) = 6.05, p < .001. When participants received no individuating information concerning their discussants, they perceived their partners to have more in common with themselves than did those presented with personal profiles of the partners ($\beta = -.27$, t = -4.10, p < .001). Neither participant sex ($\beta = .07$, t = .99, p = .33) nor the need for public individuation ($\beta = -.003$, t = -.05, p = .96) proved to be a significant predictor of group identification.

Next, perceived argument quality was regressed on the three independent variables and their interaction terms. Because the interaction between participant sex and individuating information proved to be significant ($\beta = -.27$, t = -4.10, p < .001), follow-up analyses were conducted for men and women separately. The results showed that individuating information did not significantly affect men's assessments of their partners' arguments ($\beta = .13, t = 1.20, p > .23$), nor did the need for individuation ($\beta = -.06$, t = -.57, p > .56), $R^2 = .02$, F(2, 89) = .80, p > .45. By contrast, depersonalization led to more positive evaluations of the partners' arguments for women $(\beta = -.22, t = -2.47, p < .02)$, although the need for public individuation was not a significant predictor of perceived arguments quality ($\beta = -.07, t = -.79, p > .42$), $R^2 = .06$, F(2, 122) = 3.54, p < .04. When group identification was added to the equation ($\beta = -.07$, t = -.79, p > .42), however, not only did the variance accounted for significantly increase, $R^2_{\text{change}} = .06$, $F_{\text{change}} (1, 121) = 8.31$, p < .006, but also the effect of individuating information became nonsignificant ($\beta = -.13, t = -1.38, p > .17$). Taken together, these findings suggest that depersonalization created a positive bias in women's perceptions of the partners' arguments through stronger group identification.

With respect to Research Question 6, the bivariate correlation was computed between perceived quality of arguments and conformity (r = .30, p < .001). This finding suggests that the acceptance of group norms stemmed at least partly from the positive evaluations of the rationale behind the majority decision.

Research Question 7 and Research Question 8 concerned if and how the need for public individuation and participant sex moderate the effects of individuating information on conformity. A regression analysis revealed that the addition of the two-way interactions in the second block significantly increased the variance accounted for, $R^2_{\text{change}} = .07$, F_{change} (3, 210) = 5.56, p < .002, whereas the three-way interaction

8	·		e	
Variable	β	t	Incremental R ²	$F_{\rm change}$
Step1				
Sex (female = 1)	.12	1.76		
Need for Individuation	16*	-2.40		
Individuating Info	15*	-2.27	.07**	5.01
Step2				
Sex \times Need for Individuation	.05	.52		
Sex \times Individuating Info	43***	-3.61		
Need for Individuation × Individuating Info	22*	-2.33	.08***	6.83
Step 3				
Sex × Need for Individuation × Individuating Info	.04	.30	.001	.09
Final			.15***	5.24

 Table 1

 Hierarchical Regression Analysis of Conformity

Note: N = 217. Betas refer to standardized regression coefficients prior to entry.

p < .05. p < .01. p < .001.

did not, $R^2_{\text{change}} = .001$, $F_{\text{change}}(1, 209) = .09$, p > .76. Because the need for public individuation by participant sex interaction was not statistically significant ($\beta = .05$, t = .52, p > .60), a reduced model included the three independent variables and two significant interaction terms, the participant sex by individuating information interaction ($\beta = -.37$, t = -3.07, p < .003) and individuating information by the need for public individuation interaction ($\beta = -.21$, t = -2.34, p < .03), $R^2 = .14$, F(5, 211) = 6.76, p < .001. Although the main effect for participant sex was significant ($\beta = .32$, t = 3.40, p > .002), it should be interpreted in the context of the interaction with the need for public individuation.

To account for the pattern of the interactions more fully, a $2 \times 2 \times 2$ (Individuating Information × Dichotomized Need for Public Individuation × Participant Sex) analysis of variance (ANOVA) was computed for conformity. Replicating the regression analysis, a significant interaction between individuating information and the need for public individuation emerged, F(1, 209) = 4.52, p < .04, $\eta^2 = .02$. Decomposition of the interaction indicated that those with the high need for public individuating information (M = 1.19, SD = 1.48) than when presented with personal profiles of the interactants (M = .42, SD = .69), t(60) = 3.32, p < .003. By contrast, the amount of individuating information did not make any significant difference in conformity among the low need for individuation participants, t(99) = .11, p = .92. In addition, the need for public individuation participants exchanged personal profiles with their partners, high need for individuation participants (M = .42, SD = .69) were less likely to conform to the group norm than were the lows (M = 1.23, SD = 1.69), t(58) = 3.13, p < .004, whereas no such difference

was observed between high (M = 1.19, SD = 1.48) and low need for individuation participants (M = 1.26, SD = 1.65) under depensionalization, t(98) = .23, p = .82.

Similarly, when the participant sex by individuating information interaction was decomposed, F(1, 209) = 7.41, p < .008, $\eta^2 = .03$, women (M = 1.59, SD = 1.83) displayed greater conformity than did men (M = .74, SD = .94), t(90) = -3.03, p < .004, but only when depersonalized. There was no significant sex difference in conformity when individuating information was shared, t(115) < .50, p = .61. When the interaction was decomposed for each sex, women conformed more when no individuating cues were available (M = 1.59, SD = 1.83) than when they exchanged personal profiles with the partners (M = .70, SD = 1.33), t(102) = 3.06, p < .004. Men, on the other hand, did not respond differently to such situational variation, t(90) = -.36, p = .72.

Finally, to decipher the mediation process, the significance of indirect effects was tested following the procedure proposed by Preacher and Hayes (2004, 2005). Unlike the Baron and Kenny (1986) method most commonly used for testing mediation hypotheses, Preacher and Hayes's procedure focuses on the direction and size of the indirect effects (i.e., the difference between the total effects and the direct effect of an independent variable on a dependent variable after controlling for mediating variables). Because interpretation is based on fewer inferential tests, the test of indirect effects has greater statistical power to detect the mediation effect and reduces the likelihood of a Type I error (Preacher & Hayes, 2004, 2005). Moreover, the test of indirect effects allows examining simultaneous mediation by multiple variables, as opposed to performing several separate mediation analyses for each of the potential mediators. This has several advantages (Preacher & Hayes, 2005). First, it tests the total indirect effect of X (independent variable) on Y (dependent variable), determining whether a set of variables mediates the effect of X on Y. Second, it enables one to assess to what extent a specific mediator transmits the effect of X on Y, above and beyond other mediators. Third, it allows for pairwise comparisons between mediators to determine which mediators are more successful than others. Therefore, I used the Preacher and Hayes method to examine the role of extremity of perceived group norms and group identification in mediating the effects of individuating information on conformity. Message recall and perceived quality of arguments were not included in the model as a result of their near-zero correlations with the dependent (r = -.01) and independent variables (r = -.07), respectively.

Table 2 shows that taken as a set, group identification and extremity of group norms mediated the effects of individuating information on conformity. Specifically, although the total (simple) effect of individuating information on conformity was statistically significant (b = -.48, t = -2.48, p < .02), when the mediators were controlled for, the direct effect of individuating information became nonsignificant (b = -.19, t = -.99, p > .32), suggesting "perfect mediation" (Preacher & Hayes, 2004, p. 717). When the significance of the difference between the total and direct effects of individuating information (i.e., indirect effects) was assessed, the total indirect effect through the two mediators was statistically different from zero

Table 2

Indirect Effects of Individuating Information on Conformity through Group
Identification and Extremity of Perceived Group Norms

	b	$t(Z)^{\mathrm{a}}$	р
Effects of individuating information on mediators			
Group identification	-3.38	-3.88	.0001
Extremity of perceived norms	48	-2.51	.01
Direct effects of mediators on conformity			
Group identification	.05	3.73	.001
Extremity of perceived norms	.22	3.38	.001
Total effect of individuating information on conformity	48	-2.48	.01
Direct effect of individuating info on conformity, controlling for mediators	19	99	.32
Indirect effects of individuating info on conformity			
through mediators			
Total	29	-3.38	.001
Group identification	18	-2.70	.007
Extremity of perceived norms	11	-2.02	.04

Model fit: $R^2 = .13$, F(3, 213) = 10.41, p < .0001

a. Z values are reported for the test of indirect effects.

(b = -.29, Z = -3.38, p < .001). Moreover, an examination of the specific indirect effects indicated that group identification (b = -.18, Z = -2.70, p < .007) and extremity of perceived group norms (b = -.11, Z = -2.02, p < .05) were statistically significant mediators and controlled for each other. The pairwise contrast of the indirect effects revealed that the specific indirect effect through group identification was not statistically greater than the indirect effect through extremity of group norms (Z = .88, p > .37).⁴

Additional Analyses

Given that participants without individuating information outperformed their counterparts in cued-message recall, one might suspect that those with individuating information exhibited lower conformity because of their less accurate recollection of the group norm; that is, although no direct relationships between message recall and conformity emerged, the possibility cannot be ruled out that some participants failed to recognize the overall consensus among their interactants and, thus, did not change their opinions or may even have polarized their initial views. In such a case, lack of conformity would have more to do with the failure to read the opinion climate within the group than with the psychological resistance to the normative pressure. To address this possibility, subjective conformity scores were created based on the perceived

group norm. First, the magnitude of opinion change was recorded. For example, if the participant moved from "Definitely should do A" to "Probably should do A," 2 was assigned; if the participant's opinion shifted from "Should do A" to "Should do B," 3 was given, and so on. Second, if the participant's choice moved *toward* the perceived group norm, regardless of the preprogrammed actual group norm, a plus sign was assigned, whereas a minus sign was given when the participant moved *away* from the perceived group norm.

A regression analysis yielded results virtually identical to the earlier findings. Significant interactions emerged between participant sex and individuating information ($\beta = -.40$, t = -3.42, p < .002) and between individuating information and the need for public individuation ($\beta = -.21$, t = -2.35, p < .03), such that women and those with higher needs for public individuation exhibited greater sensitivity to the varying amounts of individuating information and were more likely to endorse the group norm, as they perceived it, under depersonalization. Although women showed greater conformity to the perceived group norm than did men ($\beta = .35$, t = 3.75, p < .0001), the effect should be viewed in light of the interaction with individuating information on conformity, which operated in conjunction with the need for public individuation and the participant's sex, cannot be accounted for by the inaccurate cognitive representation of the group norm.

Another variable that might have contaminated the results was the extremity of the participant's initial position. On one hand, because the partners unanimously disagreed with the participant, the more extreme the participant's initial standing was, the greater the opinion discrepancy became between the participant and the rest of the group, which increased the room for opinion change in the direction of the majority (Mackie, 1987). On the other hand, given the way the response options were worded (e.g., "Definitely should do A," "Probably should do B"), the extremity of opinion seemed to reflect how confident the participant was of his or her own decision. In such a case, those holding more extreme opinions would have been less likely to change their opinions because of greater self-confidence in their initial decision. To determine whether extremity of the participant's initial opinion moderated conformity, pertinent scores were computed, such that "Definitely should do" was assigned 3, "Should do" was given 2, and "Probably should do" received 1, regardless of the direction of the decisions.

Although extremity of the initial opinion proved to be a significant predictor of conformity ($\beta = .33$, t = 5.06, p < .0001 for Scenario 1; $\beta = 15$, t = 2.27, p < .03 for Scenario 2), controlling for its effect did not significantly alter the findings; that is, the interaction between individuating information and the need for public individuation remained significant ($\beta = -.21$, t = -2.44, p < .02 for Scenario 1; $\beta = -.23$, t = -2.51, p < .02 for Scenario 2). Likewise, the participant sex by individuating information interaction was significant for Scenario 1 ($\beta = -.42$, t = -3.76, p < .0001), but not for Scenario 2 ($\beta = -.23$, t = -1.94, p < .06). Collectively, the results suggested that the magnitude of opinion discrepancy between the participant's initial opinion and the group norm does not explain away the effects of depersonalization on conformity.

Discussion

Conclusions

The current study addressed the matter of when and how depersonalization amplifies group influence by examining the role of perceived group norm, message recall, group identification, and the evaluation of interaction partners' arguments exchanged during a discussion on choice-dilemma scenarios. As the SIDE model predicts, depersonalization diluted within-group differences and fostered perceived homogeneity. Moreover, the current study showed that depersonalization also led to a more extreme perception of group norms and directed the participants' attention to the message. The finding that extremity of the perceived group norm served as a significant mediator of the effects of individuating information on conformity, after controlling for group identification, suggests that increased attachment to the group does not fully account for why people become more susceptible to group influence in the absence of individuating information; that is, depersonalization amplified group influence not only by elevating in-group feelings but also by modifying cognitive representation of the group norm. To date, SIDE theorists have mostly relied on the normative explanation (group identification) for conformity-enhancing effects of depersonalization; however, the current finding underscores the role of cognitive changes in mediating depersonalization effects.

Another significant contribution of the current study is that it demonstrated how personal dispositions moderate individuals' responses to the restrictions of the interaction context. Specifically, whereas participants with high need for individuation exhibited greater conformity when depersonalized than when personalized, participants with low need for individuation did not show such differentiation. What makes this finding interesting is that the need for public individuation did not moderate depersonalization effects on other variables, such as perceived group norm, group identification, and subjective arguments quality. In other words, participants with high and low need for individuation experienced similar perceptual and cognitive changes evoked by the lack of individuating information; however, their behavioral reactions to the psychological state of depersonalization diverged. When all the individuating cues were stripped away, those chronically motivated to differentiate themselves from others were no less likely to conform to the majority than those less concerned about public differentiation. When their individuality was highlighted through the exchange of minimal personal information, however, the need for public individuation manifested itself in the form of greater resistance to the conformity pressure. Collectively, the fact that the need for public individuation, or more precisely, its

behavioral manifestation in the form of anticonformity, was aroused only under personalization suggests that personalization serves as a "precipitating" condition that makes self-presentational concerns more salient and may lead people to behave in a more self-expressive, personality-consistent way (Maslach, Santee, & Wade, 1987, p. 1088).

In addition, depersonalization effects were more pronounced among women, in respect to subjective arguments quality and conformity. Possibly, women were more involved in the experiment and, thus, more responsive to the situational variations (individuating information vs. no individuating information) than were men. Although this account comports well with the finding that women exhibited better recall of message than men, it remains a matter of speculation without a direct measure of task involvement. No matter what the source of this sex difference may be, however, the finding indicates that "the assumption that deindividuating circumstances have similar effects on all individuals may not be valid" (Nadler, Goldberg, & Jaffe, 1982, p. 1127).

It also merits note that the need for public individuation and the participant sex accounted for additional variance in conformity under different conditions; that is, participants with high need for individuation displayed less conformity than those with low needs only when personalized, whereas women showed greater conformity than men only when depersonalized. A plausible explanation for these effects pertains to the level of self-identity rendered salient in each condition. As evidenced in the finding that depersonalization fostered group identification, the lack of individuating information appears to have emphasized social identity, whereas individuating information made personal identity more salient. When social identity was salient, men and women were more likely to behave in a manner consistent with their category membership, with women being more susceptible to social influence than men. On the other hand, need for public individuation, a personality trait that varies from person to person, exerted greater influence on conforming behavior when the situation stressed individual differences.

Another explanation for why participant sex and the need for public individuation emerged as significant moderators under different conditions involves the extent to which the situation was perceived as public. Especially given that the need for public individuation represents the need for the "differentiation that can be seen and evaluated by others" (Maslach et al., 1985, p. 731), sharing personal information might have activated this personality trait by making the presence of other participants more salient and thus reminded them of the public nature of the interaction. In other words, although anonymity was held constant, participants might have felt less anonymous after exchanging personal profiles and became more likely to act on the need for social differentiation. One problem with this account, however, is that it does not explain why there was no sex difference under personalization when previous research has reported greater sex differences in conformity in public than private contexts (e.g., Eagly et al., 1981) Some features of the current study make the findings even more compelling. First, unlike the classic minimal group paradigm, in which the group membership was the only information revealed about other members (e.g., Billing & Tajfel, 1973), participants in the current study were exposed to their partners' decisions and supporting arguments, which supposedly reflected the partners' values, personalities, and beliefs. Second, there was no explicit group label imposed on the participants, which often renders the minimal group paradigm susceptible to a demand characteristics explanation. Instead, they believed that their partners were other university students. Nonetheless, absent a clear reminder of interpersonal differences, the lack of individuating cues facilitated group identification. Finally, partners' decisions were clearly shown along with their arguments, which left little room for subjective interpretation. Even though the display of other interactants' decisions removed ambiguity in inferring the group norm, depersonalization led to a more extreme perception of the group norm, presumably by masking interpersonal differences within the group.

Depersonalization encouraged group identification while polarizing the perception of group norms; that is, when interpersonal differences were obscure, the participants perceived the group norm to be more extreme, and yet they felt their partners were more similar to them. On one level, this finding implies that the similarity judgment was not based on the interaction content. Had the participants judged similarity with the partners based on their opinions, the more extreme the perception of the group norm, the less similarity they should have attributed to the partners, as discrepancy in opinion between the participant and the rest of the group increased. On another level, this finding suggests that the judgment of self-other similarity and that of between-others similarity operates independently. Deprived of any clear cues indicating interpersonal differences, not only did people attribute greater similarity to the unknown partners but they also overestimated the similarity among the partners, which resulted in a more extreme perception of the group norm.

Consistent with the notion that "CMC affords the opportunity to concentrate more narrowly on the task at hand" (Coleman et al., 1999, p. 64), depersonalization significantly improved message recall. Although the current study did not compare CMC with face-to-face interaction, even within the context of CMC, variation in the amount of individuating information made a significant difference in recognition accuracy. Greater task orientation, however, did not increase conformity to the group norm. Possibly, such null effects were due to the fact that the arguments used in the current study were neither weak nor strong. Considering that effortful processing of information amplifies the effects of argument strength on message acceptance (Chaiken, 1980; Petty & Cacioppo, 1979), had strong arguments been used, message recall might have been positively associated with conformity. Conversely, if weak arguments had been shown, better message recall might have led to decreased conformity.⁵ At any rate, this finding suggests that although the task becomes the primary focus of attention in the

absence of competing interpersonal information, the adoption of a group norm entails more than mere awareness of other group members' opinions.

Limitations

Although the finding that group identification served as a significant mediator of the depersonalization effects on conformity comports well with previous findings (Lee, 2004; Postmes et al., 2001), some features of the current study might have contributed to the emergence of such effect by fostering heuristic (Chaiken, 1980) or peripheral route (Petty & Cacioppo, 1979) information processing. Given that heuristic processing promotes source-mediated, as opposed to content-mediated, opinion changes (Chaiken, 1980), the effects of group identification, operationalized as perceived homogeneity, might have been exaggerated because of less effortful message processing. Two particular aspects of the current study seem to have fostered nonsystematic processing. First, the hypothetical choice-dilemma scenarios were not personally important or did not have significant consequences to the participants. Considering that low issue involvement invokes heuristic (Chaiken, 1980) or peripheral processing (Petty & Cacioppo, 1979), the use of hypothetical scenarios of little personal relevance likely amplified the effect of group identification on the acceptance of the majority position. Second, participants were confronted with three interactants who unanimously opposed their opinion. According to Nemeth (1986), in contrast to minority influence that stimulates message-relevant thoughts and consideration of alternatives, majority influence invites less analytic message processing; that is, when exposed to opposing majority views, people are "less likely to consider the quality of the message and more affected by persuasion cues or by such schemas as 'the majority is most likely to be correct'" (Nemeth, 1986, p. 28). Therefore, it would be interesting to examine if the mediating role of group identification diminishes as people engage in more effortful message processing.

Another limitation of the current research pertains to the contrived nature of the situation. The format of CMC implemented in the current study involved a zero-history group discussing hypothetical scenarios with no real-life consequences, as well as allowed for only one-time exchange of opinions. Moreover, there was no real-time interaction; even though the arguments were derived from real participants' opinions who took part in a previous study, the interaction itself was preprogrammed. Although it was necessary to hold the interaction content constant to sort out how depersonalization alters individuals' perception of the group norm and in-group feelings, greater experimental control came at the cost of limited ecological validity.

Implications for SIDE

In sum, the current experiment extended the SIDE model in two important respects. First, depersonalization was found to increase conformity not only by elevating normative concerns associated with group identification (i.e., "I am a part of the group, so I must go along with the group") but also by modifying an individual's understanding of the group norm (i.e., "Everyone strongly believes A, so A must be the right thing to do."). So far, SIDE research has highlighted the role of group identification as a mediator of depersonalization effects on group oriented behavior. When depersonalization amplifies the effects of experimentally imposed group (vs. personal) identity, however, it can be just seen as augmenting the identity manipulation; that is, participants are more likely to "buy" the group identity assigned by the experimenter and act as a group member when there is less individuating information. In the current study, even though no shared group identity was externally imposed, depersonalization nonetheless significantly modified people's cognitive representation of the opinion climate in a small group, which invites SIDE researchers to reexamine if salient group identity is a necessary condition for depersonalization to amplify social influence (Postmes et al., 1998) and to explore what perceptual and cognitive changes, beyond group identification, might accompany depersonalization. Second, the current study also found an interaction between personality (need for public individuation) and situational variables (individuating information) and showed that certain individuals were more or less sensitive to the varying amount of individuating information. Although SIDE was not originally proposed as a theory of individual differences, by identifying how stable dispositional differences, such as personality traits and cognitive styles, interact with the lack of interpersonal cues in CMC to shape individuals' social perceptions and group dynamics, and incorporating such provisos into its theoretical framework, it will surely enrich our understanding of the impact of this relatively new medium. The current study offers a glimpse of such mechanism.

Notes

1. Although it would have been desirable to vary the argument quality systematically and examine how the message factor interacts with the depersonalization manipulation, as the primary purpose of the current study was to identify psychological mediators of depersonalization effects on conformity, an identical set of arguments was used across the conditions. In fact, one-sample *t* test showed that perceived argument quality (M = 5.71, SD = 1.86) was not significantly different from the scale midpoint (5.5), t(216) = 1.70, p > .09, indicating that the arguments were neither particularly strong nor weak.

2. This necessary deception was thoroughly debriefed after the experiment. Of 229 students, 12 (5.2%) expressed suspicion about the presence of their partners when asked about the purpose of the experiment following the interaction. Their data were not included in the analysis.

3. Because depending on the participant's initial choice, one of the two sets of arguments was used, some idiosyncratic attributes of the arguments might have systematically biased the participant's reactions by confounding the effects of depersonalization manipulation. To examine this possibility, a series of $2 \times 2 \times 2 \times 2$ ANOVAs was computed with the participant's sex, depersonalization, dichotomized need for public individuation, and the participant's initial position (A vs. B) as independent variables. The results showed no significant main or interaction effects involving the initial position on extremity of the perceived group norm (Fs < 2.20, ps > .14 for Scenario 1; Fs < 2.02, ps > .15 for Scenario 2), perceived arguments quality (Fs < 2.60, ps > .10 for Scenario 1; Fs < 2.22, ps > .13 for Scenario 2), and conformity

(Fs < 1.95, ps > .16 for Scenario 1; Fs < 2.18, ps > .14 for Scenario 2). In addition, there was no significant difference between those who chose A and those who chose B in terms of sex and the need for public individuation (ts < 1.51, ps > .13 for Scenario 1; ts < .44, ps > .66 for Scenario 2). Thus, the participants' initial position was not included in the analyses.

4. Because the assumption that the distribution of indirect effects follows a normal distribution under the null hypothesis is often violated, Preacher and Hayes (2004, 2005) have suggested bootstrapping the sampling distribution of the indirect effects and deriving a confidence interval from it. As expected, an additional test with 5,000 bootstrap samples yielded identical results. Moreover, controlling for participant sex and the need for public individuation did not substantially alter the findings. The point estimates of specific indirect effect of group identification (b = -.17) and extremity of perceived norms (b = -.10) remained virtually the same. Although the Preacher and Hayes method does not provide a formal significance test of indirect effects with covariates, the 95% bootstrap Confidence Interval (CI) of group identification (-.36 < CI < -.07) and that of extremity of perceived norms (-.21 < CI < -.02) did not contain zero, which indicated that both served as statistically significant mediators, controlling for each other and individual differences.

5. Thanks to an anonymous reviewer for pointing out this possibility.

References

- Baron, R. M., & Kenny, D. A. (1986). The moderator-mediator variable distinction in social psychological research: Conceptual, strategic, and statistical considerations. *Journal of Personality and Social Psychology*, 51, 1173-1182.
- Billing, M., & Tajfel, H. (1973). Social categorization and similarity in intergroup behavior. *European Journal of Social Psychology*, 3, 27-52.
- Burgoon, M., & Klingle, R. S. (1998). Gender differences in being influential and/or influenced: A challenge to prior explanations. In D. J. Canary & K. Dindia (Eds.), Sex differences and similarities in communication: Critical essays and empirical investigations of sex and gender in interaction (pp. 257-285). Mahwah, NJ: Lawrence Erlbaum.
- Burnstein, E., & Vinokur, A. (1977). Persuasive argumentation and social comparison as determinants of attitude polarization. *Journal of Experimental Social Psychology*, 13, 315-332.
- Chaiken, S. (1980). Heuristic versus systematic information processing and the use of source versus message cues in persuasion. *Journal of Personality and Social Psychology*, *39*, 752-766.
- Chaiken, S. (1987). The heuristic model of persuasion. In M. P. Zanna, J. M. Olson, & C. P. Herman (Eds.), Social influence: The Ontario Symposium (Vol. 5, pp. 3-39). Hillsdale, NJ: Lawrence Erlbaum.
- Cohen, J., & Cohen, P. (1983). Applied multiple regression/correlation analysis for the behavioral sciences (2nd ed.). Hillsdale, NJ: Lawrence Erlbaum.
- Coleman, L. H., Paternite, C. E., & Sherman, R. C. (1999). A reexamination of deindividuation in synchronous computer-mediated communication. *Computers in Human Behvavior*, 15, 51-65.
- Diener, E. (1979). Deindividuation, self-awareness, and disinhibition. Journal of Personality and Social Psychology, 37, 1160-1171.
- Diener, E., Lusk, R., DeFour, D., & Flas, R. (1980). Deindividuation: Effects of group size, density, number of observers, and group member similarity on self-consciousness and disinhibited behavior. *Journal of Personality and Social Psychology*, 39, 449-459.
- Eagly, A. H., & Carli, L. L. (1981). Sex of researchers and sex-typed communications as determinants of sex differences in influenceability: A meta-analysis of social influence studies. *Psychological Bulletin*, 90, 1-20.
- Eagly, A. H., Wood, W., & Fishbaugh, L. (1981). Sex differences in conformity: Surveillance by the group as a determinant of male nonconformity. *Journal of Personality and Social Psychology*, 40, 384-394.

- Ellemers, N., Kortekaas, P., & Ouwerkerk, J. W. (1999). Self-categorization, commitment to the group and group self-esteem as related but distinct aspects of social identity. *European Journal of Social Psychology*, 29, 371-389.
- Gerard, H. B., & Hoyt, M. F. (1974). Distinctiveness of social categorization and attitude toward ingroup members. *Journal of Personality and Social Psychology*, 29, 836-842.
- Guadagno, R. E., & Cialdini, R. B. (2002). Online persuasion: An examination of gender differences in computer-mediated interpersonal influence. *Group Dynamics: Theory, Research, and Practice*, 6, 38-51.
- Hinsz, V. B., & Davis, J. H. (1984). Persuasive arguments theory, group polarization, and choice shifts. *Personality and Social Psychology Bulletin*, 10, 260-268.
- Jessup, L. M., Connolly, T., & Tansik, D. A. (1990). Toward a theory of automated group work: The deindividuating effects of anonymity. *Small Group Research*, 21, 333-348.
- Johnson, R. D., & Downing, L. L. (1979). Deindividuation and valence of cues: Effects on prosocial and antisocial behavior. *Journal of Personality and Social Psychology*, 37, 1532-1538.
- Kogan, N., & Wallach, M. A. (1967). Risky-shift phenomenon in small decision-making groups: A test of the information-exchange hypothesis. *Journal of Experimental Social Psychology*, 3, 75-84.
- Lea, M., & Spears, R. (1991). Computer-mediated communication, deindividuation, and group decisionmaking. *International Journal of Man-Machine Studies*, 34, 283-301.
- Lea, M., Spears, R., & de Groot, D. (2001). Knowing me, knowing you: Anonymity effects on social identity processes within groups. *Personality and Social Psychology Bulletin*, 27, 526-537.
- Lee, E.-J. (2004). Effects of visual representation on social influence in computer-mediated communication: Experimental tests of the social identity model of deindividuation effects. *Human Communication Research*, 30, 234-259.
- Mackie, D. M. (1986). Social identification effects in group polarization. *Journal of Personality and Social Psychology*, 50, 720-728.
- Mackie, D. M. (1987). Systematic and nonsystematic processing of majority and minority persuasive communications. *Journal of Personality and Social Psychology*, 53, 41-52.
- Mackie, D. M., & Cooper, J. (1984). Attitude polarization: Effects of group membership. Journal of Personality and Social Psychology, 46, 575-585.
- Mackie, D. M., Worth, L. T., & Asuncion, A. G. (1990). Processing of in-group messages. Journal of Personality and Social Psychology, 58, 812-822.
- Maslach, C., Santee, R. T., & Wade, C. (1987). Individuation, gender role, and dissent: Personality mediators of situational forces. *Journal of Personality and Social Psychology*, 53, 1088-1093.
- Maslach, C., Stapp, J., & Santee, R. T. (1985). Individuation: Conceptual analysis and assessment. Journal of Personality and Social Psychology, 49, 729-738.
- McGarty, C., Turner, J. C., Hogg, M. A., David, B., & Wetherell, W. S. (1992). Group polarization as conformity to the prototypical group member. *British Journal of Social Psychology*, 31, 1-20.
- Meyers-Levy, J., & Sternthal, B. (1991). Gender differences in the use of message cues and judgments. Journal of Marketing Research, 28, 84-96.
- Nadler, A., Goldberg, M., & Jaffe, Y. (1982). Effects of self-differentiation and anonymity in group on deindividuation. *Journal of Personality and Social Psychology*, 42, 1127-1136.
- Nemeth, C. J. (1986). Differential contributions of majority and minority influence. *Psychological Review*, 93, 23-32.
- Petty, R. E., & Cacioppo, J. T. (1979). Issue involvement can increase or decrease persuasion by enhancing message-relevant cognitive responses. *Journal of Personality and Social* Psychology, 37, 1915-1926.
- Petty, R. E., & Cacioppo, J. T. (1986). Communication and persuasion: Central and peripheral routes to persuasion. New York: Springer-Verlag.
- Postmes, T., Spears, R., & Lea, M. (1998). Breaching or building social boundaries? SIDE-effects of computer-mediated communication. *Communication Research*, *25*, 689-715.
- Postmes, T., Spears, R., & Lea, M. (1999). Social identity, normative content and "deindividuation" in computer-mediated groups. In N. Ellemers, R. Spears, & B. Doosje (Eds.), *Social identity: Context, commitment, content* (pp. 164-183). Oxford, UK: Blackwell.

- Postmes, T., Spears, R., & Lea, M. (2002). Intergroup differentiation in computer-mediated communication: Effects of depersonalization. *Group Dynamics: Theory, Research, and Practice*, 6, 3-16.
- Postmes, T., Spears, R., Sakhel, K., & de Groot, D. (2001). Social influence in computer-mediated communication: The effects of anonymity on group behavior. *Personality and Social Psychology Bulletin*, 27, 1243-1254.
- Preacher, K. J., & Hayes, A. F. (2004). SPSS and SAS procedures for estimating indirect effects in simple mediation models. *Behavior Research Methods, Instruments, and Computers*, 36, 717-731.
- Preacher, K. J., & Hayes, A. F. (2005). Asymptotic and resampling strategies for assessing and comparing indirect effects in simple and multiple mediator models. Unpublished manuscript, University of North Carolina.
- Prentice-Dunn, S., & Rogers, R. W. (1980). Effects of deindividuating situational cues and aggressive models on subjective deindividuation and aggression. *Journal of Personality and Social Psychology*, 39, 104-113.
- Reicher, S. D. (1987). Crowd behavior as social action. In J. C. Turner, M. A. Hogg, P. J. Oakes, S. D. Reicher, & M. S. Wetherell (Eds.), *Rediscovering the social group: A self-categorization theory* (pp. 171-202). Oxford, UK: Blackwell.
- Reicher, S. D., Spears, R., & Postmes, T. (1995). A social identity model of deindividuation phenomena. In W. Stroebe & M. Hewstone (Eds.), *European review of social psychology* (Vol. 6, pp. 161-198). Chichester, UK: Wiley.
- Snyder, C. R., & Fromkin, H. L. (1977). Abnormality as a positive characteristic: The development and validation of a scale measuring need for uniqueness. *Journal of Abnormal Psychology*, 86, 518-527.
- Spears, R., & Lea, M. (1992). Social influence and the influence of the "social" in computer-mediated communication. In M. Lea (Ed.), *Contexts of computer-mediated communication* (pp. 30-65). Hemel Hempstead, UK: Harvester Wheatsheaf.
- Spears, R., Lea, M., & Lee, S. (1990). De-individuation and group polarization in computer-mediated communication. *British Journal of Social Psychology*, 29, 121-134.
- Spears, R., Postmes, T., Lea, M., & Watt, S. E. (2001). A SIDE view of social influence. In J. P. Forgar & K. D. Williams (Eds.) Social influence: Direct and indirect processes. The Sydney symposium on Social Psychology Series (Vol. 3, pp. 331-350). New York: Psychology Press.
- Tajfel, H. (1978). Interindividual behavior and intergroup behavior. In H. Tajfel (Ed.), Differentiation between groups: Studies in the social psychology of intergroup relations (pp. 61-76). London: Academic Press.
- Turner, J. C. (1987). A self-categorization theory. In J. C. Turner, M. A., Hogg, P. J. Oakes, S. D. Reicher, & M. S. Wetherell (Eds.), *Rediscovering the social group: A self-categorization theory* (pp. 42-67). Oxford, UK: Basil Blackwell.
- Turner, J. C., Wetherell, M. S., & Hogg, M. A. (1989). Referent informational influence and group polarization. British Journal of Social Psychology, 28, 135-147.
- Wenzel, M., & Mummendey, A. (1996). Positive-negative asymmetry of social discrimination: A normative analysis of differential evaluations of in-group and out-group on positive and negative attributes. *British Journal of Social Psychology*, 35, 493-507.
- Zimbardo, P. G. (1969). The human choice: Individuation, reason, and order versus deindividuation, impulse and chaos. In W. Arnold & D. Levine (Eds.), *Nebraska Symposium on Motivation* (Vol. 17, pp. 237-307). Lincoln: University of Nebraska Press.

Eun-Ju Lee (PhD, Stanford University) is an assistant professor in the Department of Communication, University of California at Davis. Her research centers on social cognition and social influence, especially in the context of computer-mediated communication and human-computer interaction.