THE INTERACTION OF TRAIT AND GROUP INFORMATION ON IMPRESSION FORMATION

CheongYeul PARK1), Eunsoo CHOI2), Jihye KIM3), and Taekyun HUR3)

1) Seoul School of Integrated Sciences & Technologies, South Korea
2) Center for Happiness Studies, Seoul National University, South Korea
3) Department of Psychology, Korea University, South Korea

The present study examined the interacting effects of trait (central traits of personality: warm vs. cold) and group information (in-group/out-group categorization: we versus other) in impression formation. These effects were investigated using the subliminal multiple-priming technique, in which the four possible combinations of trait and group information (warm-we, cold-we, warm-other, or cold-other) preceded picture stimuli of a person. Participants’ overall impressions of the target person (such as good-bad and likable-dislikable judgments) were then assessed. The results revealed a significant interaction effect of characteristic and group information on the likable-unlikable rating. The prime of we-cold led to a more favorable impression than those of other-cold and we-warm. The findings suggest the dynamic interaction of inconsistent information on impression formation and the implications of the present findings are discussed.

Key words: impression formation, likability, intergroup bias, trait

The everyday contexts in which people form impressions of others are quite different from those in psychological experiments on impression formation. In everyday life, people are usually simultaneously exposed to different kinds of information that are independent of each other (Park, Kim, Kim, Choi, & Hur, 2007). However, most psychological experiments concerning impression formation were limited in two aspects. First, the participants were exposed to very limited information, which was usually related to one another. Especially trait and group information presented in previous studies were hierarchically related to each other (such as stereotypes and traits relevant to that stereotype; e.g., Krueger & Rothbart, 1988). Therefore, the joint effects of information of a trait and group that can be framed as independent, parallel, or coequal to one another (rather than in a superordinate-subordinate relation) on impression formation have been left unquestioned. In addition, studies investigating the interplay between trait and group information have focused primarily on the effects of one on the other. That is, social psychologists have overlooked the potential interaction effects of trait and group information on one’s overall impression of another person.

Given these limitations, the present study aims to examine the influence of independently presented trait and group information on impression formation. In the present research, we selected two dimensions, one from the trait information, the “warm-
cold” dimension, and the other from the group information, the “we-other” dimension. These dimensions are recognized as representative and primary in each information category and are universally thought to represent evaluative connotations (Bell & Stanfield, 1973; Tajfel & Turner, 1986). Multiple-priming technique (procedure of priming two-or-more stimuli sequentially) was used to examine the effects of four possible combinations of trait information (‘warm’ and ‘cold’) and group information (‘we’ and ‘other’) on two types of judgments, good and bad and likable and unlikable.

‘Warm vs. cold’ and ‘we vs. other’ in impression

Previous researchers have investigated various aspects of characteristic information on impression formation (Leyens & Fiske, 1994). Interestingly, it turns out that not all kinds of characteristic information have been found to have the same magnitude of effect. Some type of characteristic information emerges as ‘central traits’ that provide a contextual background and affect the interpretation of other characteristic information. For example, Asch (1946) found that the traits “warm” and “cold,” served as central traits that guided the perceived meanings of other peripheral traits such as “intelligent”, “skillful”, “practical”. The central traits subsequently resulted in divergent impressions from the peripheral traits information. The relatively overwhelming influence of central traits compared to the peripheral traits on impression formation has been universal (Bell & Stanfield, 1973) and has been explained in terms of its survival value in social contexts from an evolutionary perspective (Shackelford & Buss, 2000). Specifically, the positively connoted characteristic of ‘warmth’ has recently been proposed to be so fundamental that it affects all kinds of social judgment processes (Judd, James-Hawkins, Yzerbyt, & Kashima, 2005).

Group information, another important source in impression formation, has often been studied in intergroup bias. People not only have a disposition to distinguish self-related and other-related groups, they also evaluate in-group members more positively than out-group members (Tajfel & Turner, 1986). Previous researchers have reported intergroup bias in social perception, helping, resource allocation, and aggression (see Brewer & Brown, 1998). Furthermore, Perdue, Dovidio, Gurtman, and Tyler (1990) proposed that the presentation of subliminal priming of group-designating pronouns (e.g., us, we, other, them, etc.) could influence the evaluation of neutral nonsense syllables. They found that the neutral nonsense syllables were more positively evaluated when the syllables were paired with in-group designating pronouns compared to when they were paired with out-group designator. Moreover, the responses to positive and negative words were facilitated by priming with in-group and out-group designating words respectively. Such findings indicate that the effects of in-group versus out-group categorization may be one of the fundamental bases of human cognitive processes and social behaviors (Brewer, 1999).

When accuracy of judgment was valued, group information was often regarded as an obstacle to unbiased and accurate cognitive processes (Choi, 2000). Despite the importance of group information in real-life setting, psychological processes associated with group information have mostly been framed negatively due to the undesirable effects such as prejudice or discrimination toward out-group members (Brewer, 1999). In addition, interactions of group and trait information have often been used in experiments to show
how people may be susceptible to intergroup bias. Past studies have primarily focused on how group information, usually manipulated as a predictor, may bias interpretation of the trait information as a dependent variable (e.g., Krueger & Rothbart, 1988; Perdue et al., 1990) rather than the effects that these two different types of information may have in concert.

**Present study**

The present study explored the potential interaction between the group-information (we-other) and the trait-information (warm-cold) on impression formation. Given the absence of directly related findings, the expected effect of the interaction was exploratory in nature. The possible joint impact of the information of these two different dimensions could be cumulative, unilateral, and dynamically interactive. First, the two dimensions of information could have independent effects that are cumulative rather than interactive (Anderson, 1968). Balota and Paul (1996) showed that the multiple priming of semantic stimuli affected response facilitation additively. With similar logic, the priming of the combination of positively designated information (e.g., ‘we and warm’) would lead to a most favorable impression, and the priming of the combination of negatively designated information (e.g., ‘other and cold’) the least favorable impression. The other combinations (e.g., ‘we and cold’ and ‘other and warm’) might yield relatively neutral impressions and fall in between the impressions made from ‘we and warm’ and ‘other and cold’ in terms of the favorability. Second, one kind of information could be so strong that it overshadows the other. For example, group information could be more primary than individual trait information in impression formation, given the generality of in-group favoritism (Brewer, 1979; Tajfel & Turner, 1986), but the reverse might hold given the fundamental values of warmth in interpersonal relationships (Judd et al., 2005). However, given the previous findings demonstrating the central role that both ‘we-other’ and ‘warm-cold’ dimensions play in impression formation, a unilateral hypothesis might be less plausible. Finally, the group and trait information may show integrative interaction effect. From a holistic and motivational cognitive perspective (Asch, 1946; Brewer, 1988), when forming an impression of another person, the inconsistent pieces of information may generate conscious or unconscious cognitive effort to form a consistent impression of a target person (Brewer, 1988; Kunda & Thagard, 1996). Accordingly, in the present study, assuming the existence of integrative interaction, participants who were primed with either ‘we’ or ‘warm’ and inclined to have a positive impression of a target person might utilize extra mental mechanisms to compensate for the influence of the negative primes of ‘cold’ or ‘other’. This psychological tendency toward maintaining affective and cognitive consistency is widely established, supported by many theories including the balance theory (Heider, 1958), cognitive dissonance (Cooper & Fazio, 1984), selective processing (Olson & Zanna, 1979), and causal accounting (Kunda, Miller, & Claire, 1990). In addition, in their experimental studies, Gawronski, Deutsch, and Seidel (2005) found that the multiple-priming of affective stimuli produced interactive (rather than additive) priming effects. Given this theoretical and empirical background, affectively inconsistent pairings such as ‘we and cold’ may result in more favorable impression formation than ‘we and warm’. As
mentioned earlier, since both we-other dimension and warm-cold dimension have been known to be central in impression formation, which type of information among the two (i.e., group information or trait information) would provide the contextual background to influence the other piece of information is an exploratory question. The present study used subliminal multiple-priming procedure since conscious exposure to the information would make the goal of the study obvious. Furthermore, previous researchers (e.g., Perdue et al., 1990) proposed that subliminal priming of in-group and out-group designated pronouns was a suitable method for assessing in-group bias.

**Method**

**Participants and design**

A total of 105 introductory psychology students at Korea University participated in the study in exchange for course credits. However, nine of them were excluded due to the fact that they reported to have seen the subliminal priming stimuli. Therefore, 96 participants (32 males, 64 females) were included in the analyses. The experiment used a 2 (group dimension: we vs. other) × 2 (characteristic dimension: warm vs. cold) between-subjects design.

**Experimental materials and procedure.** Upon arrival, each participant sat facing a monitor controlled by an IBM-compatible computer. Each was informed that the experiment was a part of a project on the processes involved in impression formation. Each was instructed to report an overall impression for each of several pictures of unknown persons presented. Three priming trials were given, on which a picture of a target person was presented, and two questions were asked regarding their impressions of a target person. The first two trials were conducted as practice trials without a priming stimulus to familiarize participants with the procedure. Trial 3 was the main experimental task with subliminal multiple-priming stimuli.

**Priming procedure.** The priming procedure was mainly adapted from the multiple-priming technique (Balota & Paul, 1996; Gawronski et al., 2005) with minor modifications including shorter prime intervals and a brief delay between the first and the second primes. Four priming conditions were constructed for the combination of the stimuli. In each condition, participants were sequentially primed with one piece of trait information (either warm or cold) and one piece of group information (either we or other) in Korean. The four combinations were ‘we and warm’, ‘we and cold’, ‘other and warm’, and ‘other and cold’. Orders of the two priming stimuli were counter-balanced across conditions.

Each priming trial began with a white square box (width 1.3 cm; height 4.8 cm) at the middle of which #### appeared. After 250 ms, the masking #### was replaced with the first priming stimulus (either we, other, warm, or cold) for 10 ms. After appearance of the first prime, the mask #### appeared again for 250 ms. The second priming stimulus then immediately appeared for 10 ms. After the mask #### replaced the second prime for 250 ms, a target picture of a Korean middle-aged male face appeared for 2000 ms. Target persons in the pictures varied from trial to trial but were identical across conditions. The participants were then instructed to rate their impression of the target person on 7-point scales of good-bad and likable-unlikable judgments. The sequence of the experimental priming trial in the “we and warm” condition is illustrated in Fig. 1.

On completion of priming trials, participants were asked whether they were previously acquainted with the target person and whether they saw the priming stimuli. Only if they claimed that they had seen the priming stimuli, were they asked to write what they thought they had seen.

**Results**

None of the participants were previously acquainted with the target person. Nine participants claimed that they had seen the priming stimuli and so were excluded from the
data analyses, even if the report was incorrect. Therefore, data of 96 participants were included in the analyses.

The two impression ratings were analyzed using 2 (group dimension: we versus other) × 2 (trait dimension: warm versus cold) analyses of variance (ANOVAs). First, the main effect of group information on the likable-unlikable was marginally significant, $F(1, 92) = 3.80, p = .054, \eta_p^2 = 0.04$, and that of the trait information was also not significant, $F(1, 92) = .33, p = .568, \eta_p^2 = 0.004$. The interaction between trait and group information was significant, $F(1, 92) = 4.13, p < .05, \eta_p^2 = 0.043$.

Probing this interaction revealed that primes with ‘we’ and ‘other’ were not significant when combined with the priming of ‘warm’ ($M = 4.28$ and $M = 4.29$, respectively); $F(1, 92) = .004, p = .95, \eta_p^2 = 0.00$ (Fig. 2). In contrast, priming with ‘we’ ($M = 4.65$) was
followed by a more likable evaluation than priming with ‘other’ \((M = 4.08)\), when combined with the priming of ‘cold’, \(F(1, 92) = 7.755, p < .01, \eta^2_p = 0.078\). A simple main effect analysis comparing the likability judgment between the we-warm and we-cold condition showed a marginally significant difference, \(F(1, 92) = 3.39, p = .069, \eta^2_p = 0.036\); priming with cold and we led to a more positive impression than priming with warm and we together.

The results of ANOVA on good-bad rating gave no significant main effects of trait information and group information, \(F(1, 92) = 1.42, p = .24, \eta^2_p = 0.015\), and \(F(1, 92) = .46, p = .33, \eta^2_p = 0.005\), respectively, and the interaction was marginally significant, \(F(1, 92) = 2.79, p = .098, \eta^2_p = 0.029\). However, as shown in Table 1, the directions of the mean differences were consistent with those of the likable-unlikable judgment.

**DISCUSSION**

Present results provide clear evidence for the dynamic interaction of group and trait information in impression formation. Specifically, the target person was evaluated more positively when preceded by the subliminal priming of cold and we together than when preceded by that of cold and other together. In contrast, the subliminal priming of warm gave similar impressions across priming with we or other. More interestingly, the priming of we and cold together led to a more positive evaluation than we and warm together. Based on these findings, one may infer that when presented subliminally with certain types of inconsistent combinations of information, people could activate unconscious mental mechanisms not only to maintain, but also to boost their evaluation of others.

Overall, the findings are consistent with the integrative theories suggesting that people tend to make a consistent impression of a target person by integrating different kinds of information about the target person (Kunda et al., 1990; Kunda & Thagard, 1996). That is, people tend to deal with different aspects of information in holistic (rather than independently piecemeal) ways as in traditional Gestalt perspective in impression formation processes (Asch, 1946). As can be explained by the classical psychological theories such as cognitive dissonance theory (Festinger, 1957; Heider, 1958; Cooper & Fazio, 1984), people facing
inconsistent information might experience psychological discomfort and arousal with or without awareness, leading them to engage in additional psychological processes (i.e., justification), and ultimately resulting in changes in attitude. In the present study, participants primed with conflicting information, “we and cold”, might have experienced psychological discomfort and subsequently made them overcompensate by rating the target person more favorably in an effort to reduce the discomfort from inconsistency.

In addition, the fact that the priming of “we-cold”, but not “warm-other”, enhanced the overall evaluation even though both presented inconsistent information suggests that inconsistency might not be a sufficient condition for positive evaluation of others, but additional motivation might be necessary (Goodwin, Fiske, Rosen, & Rosenthal, 2002). Because people are generally more likely to engage in social interactions with ingroup members, it would seem more important to feel positive toward a “cold in-group member” than toward a “warm outgroup member”. Moreover, given that the participants are from the collectivistic Korean culture that has a strong in-group bias, the combination of “we-cold” might cause a heightened psychological discomfort, causing a particularly strong need to compensate the negative impact that “cold” exerts on an “in-group” member’s impression.

Taken together with the nearly significant ($p = .054$) main effect of group information on the “likable-unlikable” judgment, these findings may suggest that the we-other dimension has a stronger motivational effect for additional psychological processes than the warm-cold dimension at least for Korean participants in this study. This speculation is also consistent with the results that the interaction between group and trait information was stronger in the likable-unlikable judgment than in the good-bad judgment. Judging whether someone is good or bad (good-bad dimension) involves cognitive evaluations whereas feeling more favorable toward the person (like-unlikable dimension) is affective response, which can be more easily affected by one’s motivation to compensate the negative implications from the subliminal priming. Affective response have been found to be evoked even with minimal stimulus input and without any cognitive processing (Murphy & Zajonc, 1993). However, since the present study did not examine the underlying mechanisms such as participants’ motivation to enhance the impression of a target person, the exact psychological processes underlying the interaction between group and trait information are still unclear. Future research is required to clarify the mechanisms responsible for the dynamic interaction between group and trait information.

In sum, the main goal of the present study was to examine the interplay between group and trait information on impression formation. Our findings indicate that people integrate diverse, sometimes conflicting, information to form a consistent impression through cognitive processes that may be conscious or unconscious. However, the present study is not without limitations. First, the present study does not propose that the same pattern of interaction would occur in other cases in which different pieces of group and trait information are presented. The words used in the present study, though they were representative in each category, may have resulted in specific findings. Future research using other prime stimuli is necessary to generalize the interactive effects of trait and group information.
Second, the significant effects of “we and cold” priming in the present study may be limited to certain cultural contexts. Korean culture is considered highly collective in which the distinction between in-group and out-group are stronger than in more individualistic cultural contexts such as North America (Triandis, 1995). In addition, the pronoun ‘we’ that was used in this study might activate ‘We-ness’, which has been known as the most fundamental concept in interpersonal relationships in Korean culture (Choi, 2000). ‘We-ness’ in Korean culture serves diverse functions beyond a mere in-group vs. out-group categorization and has implications for interpersonal contexts, including trust, intimacy, and sharing personal history (Park, Hur, & Choi, 2001). Due to this cultural uniqueness, similar investigations in other cultures are necessary in order to generalize the interactive processes in impression formation.

REFERENCES

Anderson, N. H. 1968. A simple model for information integration. In R. P. Abelson, E. Aronson, W. J. McGuire, T. M. Newcomb, M. J. Rosenberg, & P. H. Tannenbaum (Eds.), *Theories of cognitive consistency: A sourcebook* (pp. 731–743). Chicago, IL: Rand McNally.

Asch, S. E. 1946. Forming impressions of personality. *Journal of Abnormal and Social Psychology, 41*, 258–290.

Balota, D. A., & Paul, S. T. 1996. Summation of activation: Evidence from multiple primes that converge and diverge within semantic memory. *Journal of Experimental Psychology: Learning, Memory, and Cognition, 22*, 827–845.

Bell, B. D., & Stanfield, G. G. 1973. An interactionist appraisal of impression formation: The “central trait” hypothesis revisited. *Kansas Journal of Sociology, 9*, 55–68.

Brewer, M. B. 1979. In-group bias in the minimal intergroup situation: A cognitive-motivational analysis. *Psychological Bulletin, 86*, 307–324.

Brewer, M. B. 1988. A dual process model of impression formation. In T. K. Srull & R. S. Wyer (Eds.), *Advances in social cognition* (pp. 1–36). Hillsdale, NJ: Erlbaum.

Brewer, M. B. 1999. The psychology of prejudice: Ingroup love and outgroup hate? *Journal of Social Issues, 55*, 429–444.

Brewer, M. B., & Brown, R. J. 1998. Intergroup relations. In D. T. Gilbert, S. T. Fiske, & G. Lindzey (Eds.), *The handbook of social psychology* (4th ed., Vol. 2, pp. 554–594). New York: McGraw-Hill.

Choi, S. C. 2000. *Psychology of the Korean people*. Seoul, South Korea: Chungang university Press.

Cooper, J., & Fazio, R. H. 1984. A new look at dissonance theory. *Advances in Experimental Social Psychology, 17*, 229–266.

Festinger, L. 1957. *A theory of cognitive dissonance*. Evanston, IL: Row, Peterson.

Gawronski, B., Deutsch, R., & Seidel, O. 2005. Contextual influences on implicit evaluation: A test of additive versus contrastive effects of evaluative context stimuli in affective priming. *Personality and Social Psychology Bulletin, 31*, 1226–1236.

Goodwin, S. A., Fiske, S. T., Rosen, L. D., & Rosenthal, A. M. 2002. The eye of the beholder: Romantic goals and impression biases. *Journal of Experimental Social Psychology, 38*, 232–241.

Heider, F. 1958. *The psychology of interpersonal relations*. New York: John Wiley & Sons.

Judd, C. M., James-Hawkins, L., Yzerbyt, V., & Kashima, Y. 2005. Fundamental dimensions of social judgment: Understanding the relations between judgments of competence and warmth. *Journal of Personality and Social Psychology, 89*, 899–913.

Krueger, J., & Rothbart, M. 1988. Use of categorical and individuating information in making inferences about personality. *Journal of Personality and Social Psychology, 55*, 187–195.

Kunda, Z., Miller, D. T., & Claire, T. 1990. Combining social concepts: The role of causal reasoning. *Cognitive Science, 14*, 551–577.

Kunda, Z., & Thagard, P. 1996. Forming impressions from stereotypes, traits, and behaviors: A parallel-
constraint-satisfaction theory. Psychological Review, 103, 284–308.

Leyens, J., & Fiske, S. T. 1994. Impression formation: From recitals to symphonie fantastique. In P. G. Devine, D. L. Hamilton, & T. M. Ostrom (Eds.), Social cognition: Impact on social psychology (pp. 39–75). San Diego, CA: Academic Press.

Murphy, S. T., & Zajonc, R. B. 1993. Affect, cognition, and awareness: Affective priming with optimal and suboptimal stimulus exposures. Journal of Personality and Social Psychology, 64, 723–739.

Olson, J. M., & Zanna, M. P. 1979. A new look at selective exposure. Journal of Experimental Social Psychology, 15, 1–15.

Park, C., Hur, T., & Choi, S. C. 2001. Psychological sub-categorization of ‘in-group’: Weness versus In-the-same-group. Korean Journal of Psychology, 20, 25–44.

Park, C., Kim, J. H., Kim, M. J., Choi, E. S., & Hur, T. 2007. Active information seeking in impression formation: Generation and gender differences. The Korean Journal of Woman Psychology, 12, 123–146.

Perdue, C. W., Dovidio, J. F., Gurtman, M. B., & Tyler, R. B. 1990. Us and them: Social categorization and the process of intergroup bias. Journal of Personality and Social Psychology, 59, 475–486.

Shackelford, T. K., & Buss, D. M. 2000. Marital satisfaction and spousal cost-infliction. Personality and Individual Differences, 28, 917–928.

Tajfel, H., & Turner, J. C. 1986. The social identity theory of intergroup behavior. In S. Worchel & W. G. Austin (Eds.), Psychology of intergroup relations (2nd ed., pp. 7–24). Chicago, IL: Nelson-Hall.

Triandis, H. C. 1995. Individualism and collectivism. Boulder, CO: Westview Press.

(Manuscript received 5 February, 2016; Revision accepted 22 July, 2017)