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## **Compensation versus halo effects in competitive or cooperative social settings: Mediation effects of social comparison-based emotions**

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Keywords: competition, cooperation, impression formation, compensatory judgment, social comparison-based emotions

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### **Abstract**

The purpose of this study is to investigate how competitive or cooperative social settings influence person perception. More specifically, we explore conditions under which compensatory judgment based on competence and warmth is triggered, with a focus on the mediational role of social comparison-based emotions: admiration, envy, pity, and contempt. We hypothesized that the type of self-target relationship, which is either competitive or cooperative, determines the nature of emotions aroused by a competent or incompetent target person, which in turn influences the evaluation of this target. A total of 124 undergraduates formed impressions of a single target person depicted as academically competent or incompetent under one of three experimental conditions in which they expected to compete, cooperate, or not to interact with the target. We found a typical compensation effect where high-competence targets were judged as less warm than low-competence targets in a one-target situation regardless of the status of the self-target relationship. Moreover, we obtained clear evidence for the mediational role of upward comparison-based emotions: For the high-competence target, envy facilitated the compensation effect but admiration attenuated it. The role of downward comparison-based emotions (i.e., contempt and pity), however, remains unclear. The limitations of the role of self-target relationships and emotions in compensatory judgment are also discussed.

### **I. Introduction**

Profits that we can obtain vary not only with our own but also with others' acts. Therefore, it is essential for us to form ideas about the personal characteristics of others and predict future behaviors that others will perform. Recent work has shed light on how people evaluate others based on two fundamental dimensions of competence and warmth, and there is some controversy over whether these two dimensions are related positively (i.e., a halo effect) or negatively (i.e., a compensation effect; Judd, James-Hawkins, Yzerbyt, & Kashima, 2005; Yzerbyt, Kervyn, & Judd, 2008). Our main purpose was to explore how social settings influence these effects in person perceptions and clarify the mechanism that causes these effects, and to argue that social comparison-based emotions play a key role in their occurrence.

#### *1. Two fundamental dimensions of social judgment and their relationship*

In a recent seminal article, Judd et al. (2005) claimed that social targets (e.g., people, groups, cultures) could be seen to differ along the same two basic dimensions. Although these two dimensions have slightly different names and meanings, there is substantial agreement that one dimension refers to competence (i.e., intellectual and motivational qualities) whereas the other refers to warmth (i.e., social and moral qualities). This remarkable consensus

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on the fundamental dimensions is reflected in the literature on both person perception (e.g., Rosenberg, Nelson, & Vivekananthan, 1968; Wojciszke, Bazinska, & Jaworski, 1998; for a review see Wojciszke, 2005) and group perception (e.g., Fiske, Cuddy, Glick, & Xu, 2002; Phalet & Poppe, 1997; for a review see Cuddy, Fiske, & Glick, 2008).

Considering the importance of these two dimensions, recent studies have begun to place more focus on the relationship between them to resolve the controversy over whether they are positively related, the so-called halo effect, or negatively related, the so-called compensation effect. Judd and his colleagues (2005, 2008) had their participants evaluate pairs of groups or individuals whose information on one of the two dimensions was manipulated as either high or low while that on the other dimension was kept to a minimum or neutral. The results showed the compensatory pattern, that is, whether the targets were groups or individuals and whether competence or warmth was manipulated, the target superior to another target on the manipulated dimension was rated lower on the non-manipulated dimension than the inferior one. This compensation effect has been observed in several studies (e.g., Kervyn, Judd, & Yzerbyt, 2009; Yzerbyt, Provost, & Corneille, 2005).

However, not all targets are evaluated in a compensatory manner in all cases. Judd et al. (2005) demonstrated that, if participants are presented with only one target, the halo effect likely occurs. Namely, a good impression on one dimension leads to a good impression on the other, while a bad impression on one dimension leads to a bad one on the other. They then concluded that the process of comparing two targets on either of the two dimensions is connected with the compensation effect because this evokes a norm of justice or a balanced view that everything must have both virtues and vices (see Kay & Jost, 2003).

One empirical study, however, demonstrated that the compensation effect could be observed when only one target is presented (Ikegami, 2006). This is seemingly not in accordance with the assertion by Judd et al. (2005) that the halo effect would occur in single-target situations. An inspection of the procedure used in Ikegami (2006) provides a clue for resolving this ambiguity. In her study, undergraduates were presented with a target depicted as academically competent or incompetent and asked to compare the target with themselves in terms of competence and warmth. She then observed that the target person was rated as less warm than oneself if the target was perceived as more competent than oneself and vice versa. These findings suggest that the nature of the self-other comparison process may also be an important factor that determines whether the compensation effect or halo effect emerges. But it remains unclear what mechanisms are involved.

## *2. Self-target relationship and social comparison-based emotions*

Our primary concern is to explore under what conditions the compensation or halo effect emerges in impression formation when the self-target comparison process is instigated. To address this issue, we based our research framework on the theory of social comparison-based emotions advocated by Smith (2000). According to his theory, emotional reactions to upward or downward social comparison diverged into assimilative or contrastive ones depending on the nature of interdependence (correspondent vs. non-correspondent) between oneself and the comparison target. In Smith's terminology, "correspondent" means that what is good (bad) for the other person will translate into something pleasant (unpleasant) for oneself. On the other hand, "non-correspondent" means that what is good (bad) for the other person has negative (positive) implications for the self. The former was deemed a cooperative relationship, whereas the latter was considered a competitive one. In upward comparison, where one perceives the target as superior to oneself in some important dimension, he/she experiences admiration (as assimilative reaction) if the perceiver and the target are in a cooperative relation but experiences envy (as contrastive reaction) if they are in a competitive relation. Likewise, in downward comparison, where one perceives the target as inferior to oneself, he/she experiences pity (as assimilative reaction) if in a cooperative relation but experiences contempt (as contrastive reaction) if in a competitive relation.

In support of this view, Fiske and her colleagues (2002, 2007), in their studies on the stereotype content model, demonstrated that target groups higher in terms of socio-economic status elicit admiration or envy depending on whether the status of intergroup relations is cooperative or competitive, respectively. On the other hand, target groups lower in socio-economic status elicit pity or contempt depending on whether the intergroup relation is co-

operative or competitive, respectively. It is important to note that, according to their stereotype content model, the socio-economic status (high vs. low) relates to the degree of perceived competence of the groups and the type of interdependence (cooperative vs. competitive) relates to the degree of perceived warmth of the groups. From these earlier findings, we reasoned that the perceived warmth of a target person who is obviously competent or incompetent might be guided by the social comparison-based emotions evoked by the target one encounters.

### 3. Emotions as a predictor of person perception

The functional approach to emotions views emotions as the interface between social, environmental input and cognitive, behavioral output (Scherer, 1994). Such a function of emotions has developed through evolution, and thus those emotions appear to act adaptively and as quickly as possible in response to stimuli in circumstances (Keltner & Gross, 1999). Haselton and Ketelaar (2006) have also argued that emotions had evolved to support complicated social decision-making. Classical experimental work by Feshbach and Singer (1957) demonstrated that participants in whom fear and anxiety had been induced by electric shocks were likely to perceive another person as fearful and anxious. More recently, Trafimow, Bromgard, Finlay, and Ketelaar (2005) suggested that the degree of negative affect that immoral behaviors induce in observers is largely responsible for those immoral behaviors' attributional weight. In brief, these findings suggest that observers' affective states can be determinants of their impression of target persons.

Thus, both theoretical and empirical studies seem to support the idea that emotions caused by the target person may influence the impression of this target. Therefore, Yada & Ikegami (2012, 2013) discussed the effects of the social comparison-based emotions on forming an impression of others, based on Smith's (2000) characterization of each of the social comparison-based emotions, as described below.

1) *Admiration—upward assimilative emotion* The disadvantaged person who thinks that he/she can also obtain the characteristics attributed to the advantaged person is likely to feel admiration (Smith, 2000). Therefore, one may infer that admiration leads to a positive evaluation of the target because observers idealize the target as a role model. In a study on the impact of a role model on self-evaluation (Lockwood & Kunda, 1997), first-year students, who read a newspaper article about an outstanding graduating student and were inspired by this graduating student, rated themselves and the graduating student more positively than fourth-year counterparts who were less inspired.

2) *Envy—upward contrastive emotion* Envy is an emotion that may motivate one to find reasons to dislike the advantaged person to justify one's own ill will (Smith, 2000). Accordingly, envy is predicted to be associated with a negative evaluation of the target. In fact, Salovey & Rodin (1984) reported that scores of self-reported envy were negatively correlated with evaluations of the comparison target ( $r = -.37$ ).

3) *Contempt—downward contrastive emotion* Contempt involves feelings toward someone whom one wants to consider low and worthless (Smith, 2000). In addition, Harris and Fiske (2006) revealed that people have an inclination to dehumanize a person toward whom they feel contempt. It is thus predicted that contempt leads to derogating the target person in some important attributes.

4) *Pity—downward assimilative emotion* Pity occurs toward a disadvantaged and likeable person and motivates one to help him/her (Rosenhan, Salovey, & Hargis, 1981; Smith, 2000; Thompson, Cowan, & Rosenhan, 1980). Accordingly, those who feel pity may elevate the target person in some important dimension as a sort of remedy.

In sum, admiration and pity (both assimilative) are associated with heightened evaluation of target others, whereas envy and contempt (both contrastive) lead to derogating them. We therefore predicted that these social comparison-based emotions play a significant role in the occurrence of the compensation or halo effect when judging an obviously competent or incompetent target.

In support of this, Yada & Ikegami (2012) found that for the high-competence target, stronger arousal of admiration was linked to a higher evaluation of the target's warmth, while stronger envy led to derogation of the target's warmth. For the incompetent target, although pity had no effect on the evaluation of the target's warmth, stronger arousal of contempt was associated with a lower rating of the target's warmth. In this study, the self-target relationship (competitive vs. cooperative) was also manipulated, but this manipulation yielded no effects on the way of

forming an impression of the targets. One possible reason for this may be the nature of the procedure they employed to manipulate the type of self-target relationship. They had participants just imagine themselves to compete against or cooperate with the target person, and this imaginary setting led to a failure of manipulation. To resolve this problem, in the current study, we actually put participants in a situation where they were to compete against or cooperate with the target person in laboratory settings.

We made the hypotheses described as follows;

#### 4. Hypotheses

1-1 When one encounters a person who appears to be more competent than oneself and expects to be cooperating with this target person, admiration will most likely occur and thus he/she will positively evaluate the warmth of the target.

1-2 When one encounters a person who appears to be more competent than oneself and expects to be competing with the target person, envy will most likely occur and thus he/she will negatively evaluate the warmth of the target.

1-3 When one encounters a person who appears to be less competent than oneself and expects to be cooperating with the target person, pity will most likely occur and thus he/she positively evaluates the warmth of the target.

1-4 When one encounters a person who appears to be less competent than oneself and expects to be competing with the target person, contempt will most likely occur and thus he/she negatively evaluates the warmth of the target.

2-1 When the target appears to be highly competent, the compensation effect rather than the halo effect is more likely to occur when the self-target relation is competitive rather than cooperative.

2-2 When the target appears to be incompetent, the compensation effect rather than the halo effect is more likely to occur when the self-target relation is cooperative rather than competitive.

## II. Method

### 1. Overview

In the present study, participants were asked to form an impression of a single target person depicted as academically competent or incompetent. Prior to this impression formation task, they were told that they would compete against or cooperate with the target on some intellectual task. Participants answered about how they felt toward the target person and how they evaluated the target on competence and warmth.

### 2. Participants and Design

One hundred twenty-four Japanese undergraduates (52 men and 72 women) participated in the study on a voluntary basis. All participants were recruited from students who were enrolled in introductory psychology courses at Osaka City University. Their average age was 19.19 years ( $SD = 3.73$ ). The factorial design of 2 (target's competence: high vs. low)  $\times$  3 (self-target relationship: competitive vs. cooperative vs. control) was employed, and the participants were randomly assigned to one of the six experimental settings.

### 3. Material

Two types of self-introduction sheets, each containing ten behavioral descriptions of a stimulus person, were constructed. In one self-introduction, the target person was depicted as highly competent (High-competence target sheet), while in the other the target was depicted as terribly incompetent (Low-competence target sheet). We conducted a pilot study to select behaviors for use in the self-introduction sheets. Eighty behaviors were generated with reference to Ito and Ikegami (2006) as well as Judd et al. (2005). In the pilot study, forty six Japanese undergraduates (18 men and 28 women) who did not participate in the main study were asked to judge each behavior first on one dimension and then on the other. The first dimension was relevant to competence, and the second to warmth (The order of dimension rated was reversed for half of the participants). Each response was evaluated on a range from -4 (*not competent*) to 4 (*competent*) or -4 (*not warm*) to 4 (*warm*). We calculated the mean for each behavior

on each dimension. Because we wanted to use these behaviors to manipulate one dimension without affecting the other, we identified behaviors that were diagnostic on one dimension (either higher or lower than the neutral point) while being non-diagnostic (kept to minimum or neutral) on the other dimension on the basis of mean ratings. Specifically, we selected behaviors which scored higher than 1 or less than -1 on each dimension. We also identified behaviors whose scores did not differ substantially from the midpoint (i.e., ranged between -1 and 1) on either of the two dimensions. As a result, 4 high- and 4 low-competence behaviors and 2 high- and 2 low-warmth behaviors, as well as 4 neutral behaviors irrelevant to the two dimensions, met the above criteria. The high-competence sheet consisted of 4 high-competence, 2 high- and 2 low-warmth, and 2 neutral behaviors, whereas the low-competence sheet consisted of 4 low-competence behaviors as well as the same 4 warmth-related (2 high- and 2 low-warmth) and 2 neutral behaviors appearing on the high-competence sheet. These behaviors are given in the Appendix, along with their mean ratings on the two dimensions.

#### 4. Procedure

1) *Manipulation of self-target relationship and target's competence*: The experiment was conducted in a group of one to five participants. On arrival at the experiment room, participants drew a lottery and were seated at desks separated by partitions corresponding to the number on the lottery slip they drew. In the competition condition, participants were told that they were involved in a study on the effect of competition on task performance and so they would be competing against another participant in a creativity test. They were led to believe that their opponent was waiting in the adjacent room. They were also told that if they won the task, they would receive some reward. In the cooperation condition, participants were told that they were involved in a study on the effect of cooperation on task performance and so they would be cooperating with another participant in a creativity test. They were led to believe that their partner was waiting in the adjacent room. They were also told that if the totaled score achieved by "you and your partner" were high enough, they would receive some reward. After these introductory instructions, participants in both competition and cooperation conditions were asked to write self-introductions and exchange them with their opponents or partners before the actual interaction. They were told that the experimenter thought that it would be helpful for effective interactions to know each other beforehand. Participants were then given a "self-introduction sheet" in which there were twelve lines with the phrase "I am" at the beginning of each line. They were asked to fill out as many lines as possible. After completion of the self-introduction sheets, the experimenter gathered their sheets and left the room, pretending to exchange those sheets with the ones written by their opponents or partners in another room. Soon after, the experimenter came back with self-introduction sheets ostensibly written by another participant with whom the participants would interact and handed those sheets to them. The participants received a high-competence or low-competence self-introduction sheet according to the experimental condition to which they were assigned. In the control condition, participants were just told that the purpose of this study was to investigate how people form an impression of others based on written self-introductions (they were not given any instruction about the task so that they would not expect either competition or cooperation with another participant). They then were asked to write down the same self-introduction sheet as in the competition and cooperation conditions for use in the next experimental session. After writing down the self-introductions, they were presented with a high-competence or low-competence self-introduction sheet ostensibly written by other participants who had attended the previous experimental session.

2) *Dependent Variables*: After reading the high-competence or low-competence self-introductions, participants answered about their feelings and impressions toward the target person. All of the participants received a booklet that contained materials for the three dependent variables below.

(1) *Emotional reactions*: Participants were provided with a list of 16 emotional words and asked to indicate the extent to which they felt each emotion toward the target on a 9-point scale ranging from 1 (*not at all*) to 9 (*extremely*). The list of emotional words consisted of four types of social comparison-based emotions (admiration, envy, pity, contempt). These emotional words were originally taken from Fiske et al. (2002) and modified for the current research. The words that belong to each type are listed below.

*Admiration* : admiring, respectful, favorable, and yearning

*Envy* : envious, jealous, enviable, and unpleasant

*Pity* : pity, pitiful, unfortunate, and poor

*Contempt* : disgust, contemptuous, scorn, and miserable

(2) Trait ratings: Participants were given 20 trait terms and asked to indicate the extent to which each trait described the target person on a 9-point scale ranging from 1 (*not at all descriptive*) to 9 (*very descriptive*). Of the 20 trait terms, 10 were relevant to competence, where five were positively denoted (efficient, wise, sensible, competent and intelligent) and five were negatively denoted (inefficient, foolish, thoughtless, incompetent, and unintelligent). The remaining 10 trait terms were relevant to warmth, where five were positively denoted (kind, warm, good-natured, considerate, and friendly) and five were negatively denoted (unkind, cold, ill-natured, inconsiderate, and unfriendly). These trait words were taken from the study by Judd et al. (2005) and modified for the current research.

(3) Comparative judgments: Participants completed comparative judgments where they answered the question: “Who do you think is superior with respect to competence and warmth, you or the target?” Four trait terms were provided for this comparative judgment: Two were relevant to competence (excellence, competence), and two were relevant to warmth (goodness, kindness). They indicated their responses on a 7-point scale ranging from 1 (*I am far superior to the target*) to 7 (*the target is far superior to me*). This was done to ensure that upward or downward comparison with respect to competence actually occurred.

After completing their assessments of these dependent variables, participants were fully debriefed and dismissed.

### III. Results

#### 1. Comparative Judgment

Two relevant items for comparative judgment on competence were averaged because they are highly correlated,  $r = .81, p < .001$ . These mean scores were submitted to a 2 (target rated: high vs. low on competence)  $\times$  3 (relationships with targets: competitive vs. cooperative vs. control) ANOVA with both factors varying between participants. This revealed a significant main effect due to the target’s competence,  $F(1, 114) = 205.94, p < .001$ , indicating that the score was higher in the high-competence ( $M = 6.14$ ) than in the low-competence target ( $M = 3.98$ ) condition. No interaction involving the self-target relationship reached a significant level. To examine whether participants perceived the target as more competent than themselves in the high-competence condition and as less competent than themselves in the low-competence condition, we compared this score with the scale midpoint (i.e., 4) for the high- and low-competence target conditions separately. This revealed that participants engaged in upward comparison with the high-competence target ( $t(59) = 20.94, p < .001$ ) but that participants in the low-competence

**Table 1.** Means of Dependent Variables as a Function of Experimental Settings

Relationship	Competition		Cooperation		Control		$\alpha$
	high	low	high	low	high	low	
Comp	7.51 (0.83)	4.67 (1.20)	7.82 (0.68)	5.25 (1.18)	7.25 (0.77)	4.59 (0.89)	.92
Warmth	4.67 (1.25)	5.51 (1.18)	4.84 (0.90)	5.92 (1.05)	3.99 (1.11)	5.47 (0.97)	.89
Admiration	6.19 (1.45)	2.29 (1.28)	6.64 (1.53)	3.46 (1.34)	6.13 (1.62)	2.71 (1.30)	.95
Envy	3.34 (1.51)	1.89 (0.94)	3.84 (1.08)	2.23 (0.84)	4.60 (1.34)	2.06 (1.07)	.75
Contempt	2.10 (1.15)	2.03 (1.21)	1.96 (0.85)	2.04 (1.10)	3.25 (1.80)	2.78 (1.38)	.78
Pity	2.78 (1.27)	3.34 (1.73)	2.65 (1.10)	3.09 (1.75)	3.70 (1.71)	3.73 (1.55)	.79

Note: All means are actual measured values and SDs in parentheses. Comp = Competence.

target condition did not engage in downward comparison ( $t(59) = -0.15, p = .88$ ). Nevertheless, considering the fact that the high-competence target received a higher rating than the low-competence target, one may at least say that upward comparison was more likely in the high-competence than in the low-competence target condition.

## 2. Trait ratings

To analyze the trait ratings given to the target individual, we collapsed the data across the ratings of ten relevant items for each dimension. This was done by making higher ratings indicate more competence or warmth and then averaging these ratings within each dimension. Means for all trait dimensions along with alpha coefficients are presented in the top panel of Table 1. These ratings were standardized and analyzed using a 3 (relationship with target: competitive vs. cooperative vs. control)  $\times$  2 (target rated: high vs. low on competence)  $\times$  2 (dimension rated: competence vs. warmth) mixed-model ANOVA with the first and second factors varying between participants and the third factor within participants. As a result, we generally found a typical compensation effect. The analysis revealed a significant Target  $\times$  Dimension interaction,  $F(1, 114) = 205.95, p < .001$ , indicating that the high-competence target was rated more competent ( $M = 0.81$ ) than the low one ( $M = -0.81$ ),  $F(1, 224) = 144.84, p < .001$ , corresponding to our manipulation, and, more importantly, that participants' ratings on warmth were higher for the low-competence target ( $M = 0.46$ ) than for the high-competence one ( $M = -0.46$ ),  $F(1, 224) = 46.14, p < .001$ . This general tendency was not moderated by the type of self-target relationship. No interaction involving the type of self-target relationship reached a significant level (all  $F_s < 0.77$ , all  $p_s > .10$ ). These results suggested that our manipulation of self-target relationship did not work effectively for trait ratings as expected. The analysis, however, revealed a significant main effect of Type of relationship,  $F(2, 114) = 6.46, p = .002$ . Multiple comparisons indicated that the averaged ratings of competence and warmth were higher in the cooperation condition ( $M = 0.23$ ) than in the control condition ( $M = -0.21$ ). There was no significant difference between the competition ( $M = -0.19$ ) and any other condition. This pattern of results was not inconsistent with our prediction in the sense that both the competence and warmth of the target should be rated in a more favorable manner when the status of the self and target relationship is cooperative rather than otherwise.

## 3. Emotional reactions

The analysis of emotional reactions was conducted in the same way as the analysis of trait ratings. We averaged the ratings across the four relevant items for each type of emotion such that a higher rating indicated a stronger emotion that participants experienced. The means of all emotions along with alpha coefficients are presented in the bottom panel of Table 1. These scores were standardized and then submitted to a 3 (relationship with target: competitive vs. cooperative vs. control)  $\times$  2 (target rated: high vs. low on competence)  $\times$  4 (type of emotion: admiration vs. envy vs. contempt vs. pity) mixed-model ANOVA with the first and second factors varying between participants and the third one within participants. First we examined whether the target's competence and the status of the self-target relationship influenced the nature of emotions participants experienced. A main effect of Target,  $F(1, 114) = 44.31, p < .001$ , was significant but this effect was qualified by a significant Target  $\times$  Emotion interaction,  $F(1, 114) = 39.51, p < .001$ . Consistent with Smith's (2000) theory, upward comparison-based emotions, admiration and envy, were more strongly experienced for the high-competence target than for the low-competence target. However, for the downward comparison-based emotions, contempt and pity, there were no significant differences between the high-competence and low-competence targets. Nevertheless, for the high-competence target, admiration and envy ( $M_s = 0.77, 0.62$ ) were elicited more strongly than contempt and pity ( $M_s = 0.06, -0.11$ ) ( $p_s < .003$ ). In contrast, for the low-competence target, admiration and envy ( $M_s = -0.77, -0.62$ ) emerged less strongly than contempt and pity ( $M_s = -0.06, 0.11$ ) ( $p_s < .003$ ). These results of emotional reactions resembled the findings by Smith (2000) and Fiske et al. (2002) and, in principle, were not inconsistent with our assumption. Unfortunately, the predicted three-way interaction involving the self-target relationship condition did not reach a significant level,  $F(2, 114) = 0.71, p = .50$ .

We found an unpredicted effect of Relationship,  $F(2, 114) = 6.23, p = .003$ , indicating that the emotions were more strongly experienced by participants in the control condition ( $M = 0.24$ ) than those in the competition ( $M =$

-0.18) and cooperation conditions ( $M = -0.06$ ), but there was no difference between the latter two. This effect was, however, qualified by a significant Relationship  $\times$  Emotion interaction,  $F(2, 114) = 3.95, p = .022$ . We further examined the effect of self-target relationship for each emotion separately. It was found that the status of the self-target relationship did not affect the intensity of admiration but did affect that of envy, contempt and pity. Specifically, envy was experienced more strongly in the control condition ( $M = 0.22$ ) than in the competition condition ( $M = -0.25$ ), and contempt and pity were experienced more strongly in the control condition ( $M_s = 0.49, 0.32$ ) than in the competition ( $M_s = -0.22, -0.10$ ) and cooperation ( $M_s = -0.27, -0.22$ ) conditions. Overall, these three types of emotions were more likely to be reported in the control condition than the other two experimental conditions.

4. Mediating effect of social comparison-based emotions

Since our manipulation of the self-target relationship did not produce the expected effects, we collapsed the data across the three conditions to assess the effects of each emotion on warmth ratings by separately conducting a series of multiple regressions. We first tested the effect of targets' competence (with high-competence target coded as 1 and low-competence target as 0) on the perceived warmth and then on each of the four emotions. As predicted, the target's competence had a significant negative effect on the perceived warmth ( $\beta = -.46, t(118) = -5.62, p < .001$ ) and had significant positive effects on admiration and envy ( $\beta_s = .77, .62, t_s(118) = 13.19, 8.55, p_s < .001$ ). However, neither contempt nor pity were predicted by the target's competence ( $\beta_s = .06, -.11, t_s(118) = 0.64, -1.20, p_s > .10$ ).

Second, we conducted a multiple regression analysis to assess simultaneously the effect of the targets' competence and that of each of the four emotions on perceived warmth in a single model. The negative direct effect of the targets' competence on the perceived warmth not only remained significant but actually increased after the mediation variables were included in the model ( $\beta = -.64, t(114) = -5.70, p < .001$ ). Next we examined how each emotion predicted the perceived warmth of the target person. As expected, whereas admiration exerted a positive effect ( $\beta = .45, t(114) = 3.33, p < .01$ ), envy and contempt exerted a negative effect on warmth ratings ( $\beta_s = -.28, -.18, t_s(114) = -2.31, -1.81, p_s = .02, .07$ ). Inconsistent with our notion, the effect of pity on the perceived warmth was negative ( $\beta$

$= -.14, t(114) = -1.70, p = .09$ ). These results of regression analyses indicated that the negative direct effect of targets' competence on perceived warmth may be mediated by admiration as a suppressor "which increases the predictive validity of another variable (or set of variables) by its inclusion in a regression equation (McKinnon, Krull, & Lockwood, 2000, p. 174)" and be partially mediated by envy. That is why the inclusion of mediator variables in the model did not diminish or even strengthened the effect of independent variables on the dependent variables. We should also add that if the model contains both a mediator and a suppressor, these two variables may show indirect effects that cancel out and the increase or decrease in the total indirect effect depends on the relative magnitude of these effects (Preacher & Hayes, 2008). Therefore, these mediation effects of admiration and envy should be tested.

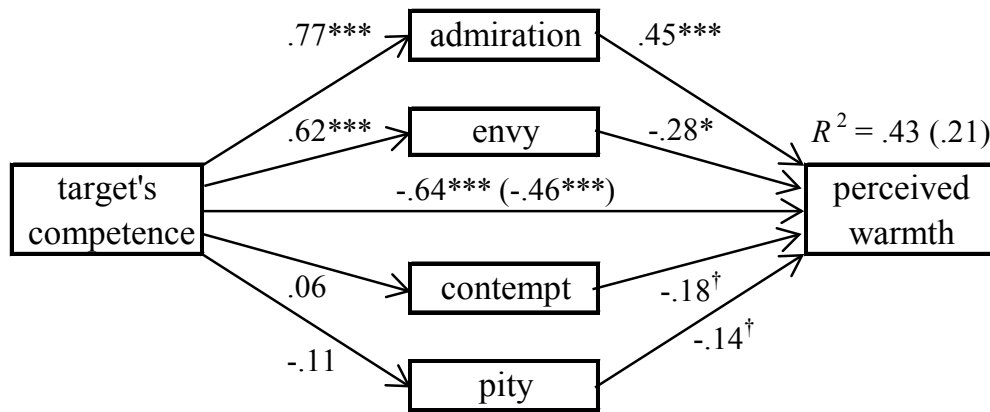
**Table 2.** 95% confidence intervals for indirect effects of each emotion.

	Lower	Upper
TOTAL	-0.05	0.93
Admiration	0.41	1.41 *
Envy	-0.93	-0.05 *
Contempt	-0.17	0.04
Pity	-0.01	0.17

Note: \*  $p < .05$

Finally, to test the significance of the mediation effect of each emotion, we used a bootstrapping procedure (Preacher & Hayes, 2008). This procedure is recommended over other available methods for testing indirect effects with small samples, and it can analyze multiple indirect effects in a single mediation model (Figure 1). The 95% confidence intervals (CI) for the indirect effects of each of the four emotions are shown in Table 2. The 95% CI for admiration and envy did not include zero, indicating that the indirect effects of these emotions were significantly different from zero ( $p < .05$ ). But the indirect effects of contempt and pity did not reach a significant level. The results of this mediation analysis are displayed in Figure 1. Although both admiration and envy were more likely to be experienced toward high-competence targets, these emotions affected the perceived warmth differently. Ad-





**Figure 1.** Mediation model showing the direct effect of a target’s competence on perceived warmth and its indirect effect through each emotion (Numbers in parentheses were results without any mediating variables).

<sup>†</sup>  $p < .10$ , \*  $p < .05$ , \*\*\*  $p < .001$ .

admiration had a positive effect but envy had a negative effect on the judgment of the target’s warmth. In other words, envy increases but admiration attenuates the compensation effect. It is important to note that the direct effect of the target’s competence on the perceived warmth became stronger after the emotions were included in the model. These results provided partial support for our notion regarding the mediational role of social comparison-based emotions in evaluating the warmth of the target.

#### IV. Discussion

This study investigated how a competitive or cooperative social setting (self-target relationship) influences the way in which people form impressions of others on the two fundamental dimensions of social judgment, competence and warmth. Previous findings on the relationship between these two dimensions are somewhat mixed, and the underlying mechanisms are not fully understood. Some literature suggests that there is a negative relationship between them and targets are judged in a compensatory manner. But this is only true of the case when a pair of targets are presented simultaneously and contrasted in one dimension. When only one target is presented, they are positively related, leading to the halo effect (Judd et al., 2005; Yzerbyt et al., 2008). However, an empirical study suggested that the compensation effect might occur even in the single-target situation if a self-target comparison is invoked (Ikegami, 2006). Building on Smith’s (2000) theorizing, we reasoned that social comparison-based emotions (admiration, envy, pity, and contempt) play a significant role in the occurrence of the compensation or halo effect in impression formation.

The present research demonstrated that targets whose information was highly diagnostic in the dimension of competence but ambiguous with respect to warmth were in general judged in a compensatory manner even when only one target was presented. This pattern of findings contradicts the assertion made by Judd and his colleagues (2005, 2008) that the process of comparing two targets was a necessary condition for the occurrence of compensation. The current results strongly support our notion that the compensation effect would occur in the single-target situation as well if the self-target comparison process comes into play.

However, this general tendency was not moderated by the competitive or cooperative social settings. In other words, the pattern of trait ratings was not affected by the type of self-target relationship. We initially predicted that the perceived warmth of the high-competence target would be rated more negatively (in a more compensatory manner) in the competition condition than in the cooperative and control conditions. Likewise, we initially predicted that the perceived warmth of the low-competence target would be rated more positively (in a more compensatory manner) in the cooperative condition than in the competitive and control conditions. The results indicated that our manipulation of the self-target relationship did not produce such predicted effects.

Moreover, results from the analysis of the emotional reactions also indicated that the type of self-target relationship (cooperative vs. competitive vs. control) did not influence the occurrence of the four emotions in the predicted way. We initially predicted that for the high-competence target admiration would be more likely experienced in the cooperative condition than in the competitive and control conditions, whereas envy would be more likely experienced in the competitive condition than in the cooperative and control conditions. We also predicted that for the low-competence target pity would be more likely experienced in the cooperative condition than in the competitive and control conditions, whereas contempt would be more likely experienced in the competitive condition than in the cooperative and control conditions. We could not obtain, however, such predicted between-condition differences at all. Contrary to our predictions, envy, pity, and contempt (but not admiration) were found to be more likely expressed in the control condition than in either the cooperative or competitive condition. This seems to indicate that participants who anticipated a face-to-face interaction with the target became more sensitive to internalized social rules or cultural norms (such as politeness and modesty) and thus refrained from expressing negatively toned emotions toward the target (e.g., Berkowitz & Troccoli, 1990).

Although our manipulation of the self-target relationship did not produce the expected effects, a mediation analysis revealed that these social comparison-based emotions mediated in part the effect of the targets' competence on the perceived warmth of the targets in a predicted direction. From the results of mediation analysis, one may say that envy encourages the compensation effect to emerge, whereas admiration leads to the emergence of the halo effect or at least attenuates the compensation effect. These results are consistent with the functional view of each emotion characterized by Smith (2000) mentioned earlier. They also correspond to the correlational pattern between emotions and evaluations based on competence and warmth observed in Yada and Ikegami (2012). Due to the within-participant experimental design of high vs. low competence targets, Yada and Ikegami (2012) could not directly address the mediational role of social comparison-based emotions, but the current study using a between-participant experimental design successfully provided empirical data for this mediational role.

In our study, we could not obtain clear evidence for the hypothesized processes whereby a high- or low-competence target elicits selectively one of the four types of comparison-based emotions depending on the type of self-target interdependence, which in turn determines the perceived warmth of the target. However, we discovered that social comparison-based emotions come into play when encountering an obviously competent or incompetent person, and consequently influence the likelihood of halo or compensation effects to occur by elevating or degrading the perceived warmth of the target. This certainly contributes to a greater understanding of the mechanisms underlying the compensation effects in person perception.

### *1. Limitations and Future Directions*

However, there remain several unresolved questions in this study. First, in the low-competence target condition, participants actually did not engage in downward comparison with the target. Therefore, we could not obtain clear evidence for the mediation effects of downward comparison-based emotions (pity and contempt) because these emotions hardly ever occurred. We should devise more effective ways to make participants engage in downward comparison in a future study.

Second, because our manipulation of self-target relationship did not work appropriately, the effect of interdependency (cooperative vs. competitive) on the occurrence of emotions and warmth rating remains unclear. As mentioned above, one possible reason for why this occurred is that trait judgments and emotional expressions toward the target were particularly modified by internalized social rules or cultural norms in the conditions where they were led to expect interaction with the target. In order to reduce such social desirability effects, a more subtle procedure, which does not involve explicitly inducing the expectation to compete or cooperate, is needed to manipulate the self-target relationship in a future study. Another reason why the relationship manipulation was less than successful can be attributed in part to uncontrolled individual differences. Yada and Ikegami (2013) demonstrated that individual differences in the degree of competitiveness affected the way of impression formation. They showed that individuals who were highly competitive tended to evaluate the highly competent target person in a compensatory manner such

that they rated the target as high on competence but low on warmth. In addition, such highly competitive individuals also tended to evaluate the incompetent target in a non-compensatory manner such that they rated the target as low both on competence and warmth. Furthermore, highly competitive persons were shown to be more likely to express envy for the competent target. It was probable that the effect of the experimental manipulation of the self-target relationship was muddled by such an individual-difference factor in the current study.

Third, the current findings are correlational in nature, so they could be construed in two ways. On the one hand, people evaluated the other person in a certain manner because of the occurrence of the particular emotion, and on the other hand, people felt the particular emotion because they evaluated the other person in a certain manner. Further research is needed to clarify the causal order of emotional responses and impression judgments.

Fourth, although the current research successfully demonstrated that the social comparison-based emotions play a certain role in the occurrence of the compensation or halo effect, their mediational role was very limited. Overall, the compensation effect (i.e., a negative relationship between competence and warmth) emerged independent of the emotional responses. We may tentatively infer that the process of comparing the target with oneself also evokes a balanced view that everyone must have both advantages and disadvantages, which motivates participants to rely on compensatory judgmental heuristics. Further studies are needed to investigate what factors other than social comparison-based emotions are involved in the emergence of a compensation effect in one target situation. In addition, if a balanced view that everyone has both virtues and vices serves as an instigator of compensatory judgmental heuristics in the context of self-other comparison, we should address whether this judgmental heuristics has the function of creating an illusion of equality and thus justifying the existing social arrangements as complementary stereotypes do (Kay & Jost, 2003; for a review see Kay, Jost, Mandisodza, Sherman, Petrocelli, & Johnson, 2007).

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**Appendix** Pretest Mean Ratings of Stimulus Sentences used in Self-Introduction Sheets

Sentences	Competence		Warmth	
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>
<u>High-Competence</u>				
I'm getting all As but one in college.	2.87	1.13	0.13	0.69
I co-developed a successful computer program with a company.	3.28	0.96	0.17	0.85
I published an article in academic journal while still in college.	3.07	1.50	0.13	0.58
I am set to go to graduate school abroad.	2.72	1.46	0.11	0.48
<u>Low-Competence</u>				
I am always sleeping in class.	-1.63	1.68	-0.24	1.45
I couldn't coherently answer the teacher's question in class.	-1.50	1.59	-0.07	0.90
My electricity was turned off because I often forget to pay the bill.	-2.59	1.13	-0.33	1.35
I did poorly on the exam because of mixing up the chapters that needed to be studied.	-1.91	1.28	0.20	0.81
<u>High-Warmth</u>				
I love to go out with friends.	0.72	1.29	2.15	1.35
I enjoy having conversations with friends.	0.74	1.45	2.28	1.29
<u>Low-Warmth</u>				
I rarely talk with my family even if I am at home.	-0.83	1.37	-2.57	1.49
I'm hardly interested in my friends' troubles.	-0.80	1.15	-2.27	1.18
<u>Neutral</u>				
I often eat curry and rice in the school cafeteria.	-0.04	0.89	0.24	1.23
I frequently drink canned coffee.	0.09	0.55	0.18	0.58