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Effects of intergroup upward comparison, trait self-esteem, and identity shift on state self-esteem and affect in upward comparison with in-group members

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The present study investigated factors that protect people low in trait self-esteem (Low-SEs), who may be less skilled at constructing information in self-enhancing manners, from threats after interpersonal upward comparison with in-group members. We hypothesized that even Low-SEs can maintain their state self-esteem under intergroup upward comparison. Furthermore, this study explored the possibility that individuals used identity-shift, a strategy to maintain their personal identity, even in an intergroup upward comparison condition. The results of a quasi-experiment support these hypotheses. We further explored the possibility that individuals might use a twofold strategy to protect/enhance their self-esteem based on an interplay of personal and social identity.
Key words: intergroup comparison, interpersonal comparison, trait self-esteem, identity shift

Introduction

It is well known that social comparisons with those who perform well are likely to be threatening to self-esteem (self-evaluation). However, superior others are not always a threat to self-esteem. According to Festinger (1954), if a person is perceived to be similar to oneself, the interpersonal comparison with him/her would show a greater effect on self-evaluation. Individuals are likely to perceive in-group members as similar to themselves and as informative standards of comparison (Goethals & Darley, 1977), and comparison with in-group members often affects self-evaluation more dramatically than comparison with out-group members (Brewer & Weber, 1994). Indeed, one often defines his/her abilities in relation to the in-group standard (Miller & Prentice, 1996).

Social comparison research has investigated the types of strategies individuals can use to protect the self from the threat brought about by comparisons with superior others. According to Tesser's self-evaluation maintenance model (SEM, Tesser, 1988), individuals maintain/enhance self-evaluation by regulating the perceived importance of the task, perceived level of task performance, and psychological distance from the referent person. This model also argues that psychological distance can lead to two different evaluation processes: A comparison process and a reflection process. In the comparison process, close others are used as standards for self-evaluation, and comparison with superior others (upward comparison) leads to negative affect and a decline in state self-esteem. In contrast, in the reflection process, close others are not perceived as standards for evaluating the self, but are perceived as representations of the self. Thus, when the reflection process is activated, upward comparison does not threaten individuals' self-evaluation, but enhances state self-esteem. Furthermore, whether social comparison leads to the reflection process or the comparison process depends on the self-relevance of the ability domains compared.

What is important here is that the comparison with in-group superior members in high self-relevant ability domains leads to the comparison process. In this situation, individuals generally try to protect themselves from the threat, and the level of the individuals' trait self-esteem is known to affect the type and the frequency of the use of self-protection strategies. Individuals who are high in trait self-esteem (High-SEs, as opposed to those low in trait self-esteem, Low-SEs), are generally more likely to show self-serving biases (Schlenker *et al.*, 1990), and engage in downward comparison (Wheeler & Miyake, 1992). Furthermore, in response to an upward comparison, Low-SEs also report negative affect, but High-SEs report positive affect. This is because Low-SEs readily focus on negative aspects of the comparison with the target. These results suggest that Low-SEs are less skilled at reconstructing information from social comparison in a self-protective way than are High-SEs (Taylor *et al.*, 1996).

However, some studies found that even Low-SEs, who were likely to suffer from social comparison, reported better affect after the experimenter provided them with downward comparison information passively (Gibbons & Boney-McCoy, 1991; Aspinwall & Taylor, 1993). So, our main purpose was to explore conditions that allow Low-SEs to maintain their self-esteem after interpersonal upward comparisons with in-group members.

We conducted a quasi-experimental study, with the condition of lateral interpersonal comparison, which is not threatening to individuals, as a standard of comparison for interpersonal upward comparison. The following two hypotheses are proposed based on the reasoning given before:

Hypothesis 1: In upward interpersonal comparison, an individual's state self-esteem will deteriorate more than in lateral interpersonal comparison;

Hypothesis 2: The effect stated in Hypothesis 1 will be greater for Low-SEs than High-SEs.

Effect of intergroup upward comparison on interpersonal comparison with in-group members

Some studies have identified situations in which upward comparison with in-group members on a highly self-relevant domain does not threaten self-evaluation, regardless of individuals' trait self-esteem (Brewer & Weber, 1994; Schmitt *et al.*, 2000), Blanton *et al.* (2000) also found that in the situation where the in-group is inferior to an out-group, a comparison with a superior in-group member enhances state self-esteem. The intergroup upward comparison used in Blanton *et al*. (2000) is designed to increase the salience of social identity, and motivate in-group members to avoid the threat from the in-group. According to self-categorization theory (Turner, 1987), the transfer of personal to social identity means a qualitative shift in self-perception, which is 'a shift toward the perception of the self as an interchangeable exemplar of some social category, and away from the perception of the self as a unique person.' As a result of an identity shift from 'me' to 'us', the superiority of an in-group member should result in the reflection process, giving rise to a positive effect on self-evaluation. Thus, in-group members are less likely to be threatened by a superior in-group member in an intergroup upward comparison context because they identify with the in-group member more than in the condition where there is no information about intergroup comparison. This reasoning is given in the following hypothesis.

Hypothesis 3: The effect stated in Hypothesis 1 will be less pronounced when intergroup upward comparison is present than when it is absent.

Effect of trait self-esteem on the relation between intergroup upward comparison and interpersonal comparison with in-group members

The effects that the intergroup upward comparison will enhance one's self-esteem will be especially beneficial for Low-SEs who are less skilled at deflecting threats from interpersonal upward comparison with in-group members. This is because the intergroup upward comparisons are likely to enhance the social identity and, at the same time, reduce the psychological distance with the superior in-group members. As a result, even the Low-SEs maintain their self-esteem by activating the reflection process. Low-SEs may have the greatest needs for self-enhancement, but have the fewest or least developed skills to make self-enhancing comparisons (Taylor *et al*., 1996). Concerning this matter, Brown *et al.* (1988) also proposed that although Low-SEs, as well as High-SEs, are motivated to have positive self-images, Low-SEs are likely to fail to enhance self-esteem directly because of their doubt in their competence. Therefore, Low-SEs are likely to be engaged in indirect self-enhancement strategies such as the reflection process (Brown *et al*., 1988).

Based on the above findings, we predict that when the in-group is inferior to an out-group, the in-group members are motivated to avoid threats to the in-group at first. Then, because such a condition would reduce psychological distance from other in-group members as comparison targets, the reflection process is likely to be activated. Consequently, intergroup upward comparison strongly forces individuals to activate the reflection process in interpersonal comparison with superior in-group members. Therefore, even Low-SEs would be able to maintain/enhance self-evaluation indirectly by the use of the reflection process.

In other words, High-SEs can probably avoid deterioration of state self-esteem using various types of cognitive strategies such as the reflection process, regardless of the presence of intergroup upward comparison. That is, High-SEs will be less affected by the presence of intergroup upward comparison. In contrast, for Low-SEs, only under the presence of intergroup upward comparison will it be possible to protect state self-esteem from comparison with superior in-group members, by using the reflection process. That is, Low-SEs will be more likely to deflect deterioration in state self-esteem after interpersonal upward comparison when intergroup upward comparison is present, than when it is absent.

The study by Blanton *et al*. (2000), mentioned above, did not examine the effect of participants' trait self-esteem. In the present study, we examined the effect of trait self-esteem on state self-esteem, besides comparison with a superior in-group member, intergroup upward comparison. Therefore, a hypothesis of three-way interaction is as follows;

Hypothesis 4: The effect of Hypothesis 2 will be more significant in the absence of intergroup upward comparison than in its presence.

Effect of shifting social identity on self-evaluation when intergroup upward comparison is salient

An additional purpose of the present study was to explore the effect of the self-protective mechanism using voluntary categorization as suggested by Mussweile *et al*. (2000). We also explored the possibility that the motivation for maintenance and enhancement of personal identity is compatible with the motivation for maintenance and enhancement of social identity.

As previously described, Blanton *et al*. (2000) showed that intergroup upward comparison positively affected interpersonal upward comparison with an in-group member. However, intergroup upward comparison would also have a negative effect on self-esteem, which is caused by the small psychological distance with in-group members who are the comparison targets. Specifically, when an in-group member is perceived to be close psychologically, the comparison with the in-group member on a highly self-relevant task becomes meaningful. Even if intergroup upward comparison leads to the reflection process in interpersonal upward comparison with an in-group member, their self-esteem may be threatened because of the close distance with the target. Thus, under such a condition, if there are possible means to keep the proper psychological distance from the target, the threat to self-esteem will be reduced. We therefore focus on

'identity shift' as a moderator of negative effects derived from intergroup upward comparison.

Mussweile *et al.* (2000) suggested that the multifaceted nature of identity provides a strategic basis for reducing the threat involved in upward comparison. In their study, High-SEs strategically focused on the category that they didn't share with a superior comparison target, thereby making the target less relevant for self-evaluation. In other words, High-SEs who were motivated to reduce the threat emphasized their social identity that is unshared with the superior target. In contrast, Low-SEs were less likely to use such a strategy.

People have a wealth of social identities on which they can focus. Some research has identified different factors that determine which category is likely to be salient from the perceptions of others (Bodenhausen & Macrae, 1998). For example, contextually salient categories are likely to be particularly influential from the perceptions of others (McGuire & McGuire, 1988; Biernat & Vescio, 1993). Also, category dominance depends on the recentness and frequency of category use (Bargh *et al.*, 1988). Moreover, Mussweile *et al*. (2000) suggested that not only category salience and accessibility, but also motivational factors to fulfill a self-enhancement goal are determinants of social category dominance. That is, when motivation to maintain/enhance personal self-evaluation increases, people focus their identity on a category unshared with the upward comparison target to reduce the relevance to the target and minimize the negative effect of the upward comparison on self-evaluation.

Even if individuals may belong to a category shared with a comparison target, they also belong to various other categories. If there is another category unshared with the in-group member who is a comparison target, by focusing on the unshared category, individuals might be able to deflect the threat to their self-evaluation by enlarging the psychological distance to the comparison target. Thus, the present study examined what effects shared and unshared categories have on self-esteem in the context of interpersonal upward comparison with an in-group member.

In the current study, gender category is used for the manipulation of an unshared category. As chronic accessibility of the gender category is high, it is likely to be salient in some situations (Blanz, 1999). Blanz (1999) suggested that if categorization may vary according to cognitive accessibility (Bruner, 1957), then the categories that are used more often are the ones that are quickly retrieved. Based on the above discussion, the following hypothesis is proposed.

Hypothesis 5: Under intergroup upward comparison, the decline in state self-esteem after interpersonal upward comparison with an in-group member will be more greatly deflected in unshared categories than in shared categories.

Method

Participants

The participants were 95 female and seven male undergraduates from the Department of Nursing at a University in Japan. The mean age was 19.5 years (ranging from 18 to 31, $SD = 1.87$) for females and 23.6 years (ranging from 18 to 46, $SD = 10.16$) for males. Although male participants were needed for the manipulation of category sharing, we did not include their data because their number was too small.

Design

Independent variables. The design was a $2 \times 2 \times 2 \times 2$ factorial, including four independent variables: (i) interpersonal comparison (upward-lateral); (ii) intergroup upward comparison (presence-absence); (iii) trait self-esteem (high-low); and (iv) additional category sharing (shared-unshared). The number of participants in each experimental condition varied from four to nine.

Dependent variables. We used affect as a dependent variable (Buunk *et al*., 1990; Gibbons & Boney-McCoy, 1991; Aspinwall & Taylor, 1993), in addition to state self-esteem, which was measured by the state self-esteem scale (Heatherton & Polivy, 1991). It is expected that affect would change in the same direction as state self-esteem.

Procedure

An experimenter explained the purpose of this experiment to participants: 'In this experiment, we will investigate the relationship between space perception ability and interpersonal relationships.' Following this explanation, participants were asked to fill out the Self-Esteem Scale (Rosenberg, 1965), translated into Japanese by Yamamoto *et al.* (1982). Then, in order to manipulate intergroup upward comparison and interpersonal comparison, participants were asked to perform a task. The task was a type of space perception test, and was a section from an IQ test (Kyoto University NX intelligence questionnaires for those over 15 years old, Osaka & Umemoto, 1973). After the explanation, all participants took the test together for one minute. Following the test, the experimenter read the correct answers aloud, and each participant marked and filled out their scores themselves. Participants were then asked to carefully read further instructions concerning the space perception test. The first half of the description was aimed at enhancing participants' self-relevance for the task: 'This task is called "a space perception test". It is a type of intelligence test that can assess one's space perception ability. It is said that those who get high scores on this test are talented in recognizing a large amount of information intuitively.' In the second half, intergroup upward comparison was manipulated. In the upward comparison present condition, it was stated that: 'We have been investigating this perception ability test for undergraduates in the Department of Nursing not only at X University, but also at Y University. Last year's data showed that students of Y University scored much higher than those of X University.' In the absent condition, it was stated that: 'We have been investigating this perception ability test for graduates in the Department of Nursing at X

University. There were no differences between the mean performances on the test last year and 2 years ago.' We chose Y University for the manipulation of intergroup upward comparison because it is located near X University and is also known to be superior to X University.

For both the intergroup upward comparison present and absent conditions, interpersonal comparison and additional category sharing were manipulated with the use of four different descriptions. The sentences instructed participants to imagine the following situation: 'A *female* (or *male*) undergraduate student, "A", who belongs to the Department of Nursing at X University and is taking the same lecture as you, took the space perception test with you. A got *9 points*, so A's space perception ability was excellent (or A got the *same score as you*).' The information about A's score was used to manipulate the interpersonal comparison. Participants assigned to the interpersonal upward comparison condition were informed, 'A got 9 points' (9 points was used because few students scored 9 points in the pretest.). In contrast, for those participants assigned to the interpersonal lateral comparison condition, 'Same score' was used instead of '9 points'. Gender category information was also used to manipulate the additional shared category. As only the female participants' data were analyzed, those who were assigned to the condition of additional category sharing were informed that 'A was female', and those who were assigned to the condition of an unshared category were informed that 'A was male'. After these manipulations, participants were asked to answer a questionnaire, and they were then debriefed.

Questionnaires

Affect. We used the General Affect Scale (Ogawa *et al.*, 2000), which consisted of 24 items (with ratings from 1 (not at all) to 4 (extremely)) and had three subscales: positive affect, negative affect and affective calmness.

State Self-esteem Scale. We used the 17-item state self-esteem scale (Heatherton & Polivy, 1991) translated into Japanese by Tachi and Uno (2000) with ratings from 1 (disagree) to 5 (agree). We removed three items in the appearance dimension from the Japanese version, because this dimension was irrelevant to our purpose.

Manipulation checks. Finally, some questions were asked to check the validity of the experimental manipulations. First, two items checked the validity of the interpersonal comparison manipulation (with ratings from 1 (*not excellent at all*) to 5 (*very excellent*)): 'How excellent are you at space perception ability?' and 'How excellent is A at space perception ability?' Two items checked the validity of the intergroup upward comparison manipulation (with ratings from 1 (*not excellent at all*) to 5 (*very excellent*)): 'How excellent is your department at X University?' and 'How excellent is the department at Y University?' The latter item was asked in the intergroup upward comparison present condition, whereas in the intergroup upward comparison absent condition, participants were asked: 'How excellent were X University students last year and the year before last?'

To check whether the space perception test was relevant to participants' self-esteem, they were also asked about the importance of the task (with a rating from 1 (*very important*) to 5 (*not important at all*)): 'How important is it for you to get a good score on this space perception test?' To check the normative fit between sex and space perception ability, the following question was asked (with a rating from 1 (*strong relationship*) to 4 (*no relationship*)): 'Do you think there is a relationship between being male and having strong space perception ability?' The last question was (*yes* or *no*): 'Did you imagine that A is a real person?'

Results

Preliminary analyses

Trait self-esteem. The reliability of the trait self-esteem scale proved to be high (*alpha* = 0.85). Participants were divided into a High-SEs group ($N = 45$, $M = 3.77$) and a Low-SEs group ($N = 50$, $M = 2.62$) based on the mean score ($M = 3.17$, $SD = 0.71$). There was a significant difference in the trait self-esteem score between High-SEs and Low-SEs ($t(93) = 13.64$, $p < 0.001$).

Affect. This scale was divided in three dimensions as Ogawa *et al*. (2000) found, and the mean scores were calculated for each dimension: positive affect (eight items, *alpha* = 0.86), negative affect (eight items, *alpha* = 0.83), and affective calmness (eight items, *alpha* = 0.88).

State self-esteem. A factor analysis conducted on the remaining 12 items, excluding three items in the appearance dimension and two items not loaded on the factors, confirmed the two factors reported by Heatherton and Polivy (1991): social state self-esteem (six items, *alpha* = 0.77) and performance state self-esteem (six items, *alpha* = 0.73)

Confirmation of experimental manipulations

Interpersonal comparison. The average score of participants' performance on the IQ test was 5.01 (the range of scores was from 2 to 9 points). Although two participants scored 9 points, they were in the lateral comparison condition, so they were included in the sample

data for analysis. Additionally, to check the validity of the manipulation of interpersonal comparison, we calculated the difference in scores by subtracting the assessment rating of the participants' performance from A's performance and conducted interpersonal comparison × intergroup upward comparison × trait self-esteem × additional category sharing ANOVAs on the difference score. The main effect of interpersonal comparison was significant ($F_{1,79} = 100.48$, $p < 0.001$). The difference in scores was higher for interpersonal upward comparison ($M = 2.10$) than interpersonal lateral comparison ($M = 0.41$).

Intergroup upward comparison. To check the validity of the manipulation of intergroup upward comparison, we calculated the difference in scores by subtracting the assessment rating of X University's general performance from Y University's performance, or subtracting the assessment rating of X University's general performance this year from X University's performances of last year and the year before last. We then performed a 2 × 2 × 2 × 2 ANOVA on the difference score. The main effect of intergroup upward comparison was significant ($F_{1,79} = 38.24$, $p < 0.001$), with a higher rating in the intergroup upward comparison present condition ($M = 0.84$) than in the absent condition ($M = 0.00$).

Examination of confounding variables. The mean score of task importance was 3.17 ($SD = 1.03$). We examined the effects of task importance on state self-esteem in order to see whether the use of cognitive strategies varying in task importance influenced the dependent variables.

Mussweile *et al*. (2000) proposed that category salience depends on a motivational factor to reduce the threat from social comparison. It is known that perceived normative fit (Oakes *et al.*, 1991) influences category salience. If participants perceived a normative fit between task ability and gender, results on the effect of category sharing should reflect category salience.

Thirty-eight participants answered that they imagined the target as a real person, and 57 participants answered that they did not. We needed to examine whether the social comparison with the target could take on more meaning when the target was imagined to be a real person.

To examine these possibilities, 2 × 2 × 2 × 2 ANCOVAs were performed on each dependent measure, using each rating as a covariance; task importance rating, the relevance rating, or image versus no image (a categorical variable). No main effect of the covariate was significant, and these ratings were not used in subsequent analyses.

Examination of hypotheses

To examine the hypotheses[1], we performed interpersonal comparison (upward-lateral) × intergroup upward comparison (presence-absence) × trait self-esteem (high-low) × additional category sharing (shared-unshared) ANOVAs on each rating.

Interpersonal comparison with an in-group member. A main effect was found for affective calmness ($F_{1,79} = 7.85$, $p < 0.01$). The mean for interpersonal upward comparison ($M = 1.67$) was lower than that in lateral comparison ($M = 2.10$). The result supported Hypothesis 1.

Effect of trait self-esteem on interpersonal comparison with an in-group member. A two-way interaction between interpersonal comparison and trait self-esteem was significant on the performance dimension of state self-esteem ($F_{1,79} = 12.20$, $p < 0.001$; Figure 1). A test of simple main effect revealed that for interpersonal upward comparison, this performance dimension was higher for High-SEs than for Low-SEs ($F_{1,79} = 29.59$, $p < 0.001$). The mean score for High-SEs was higher for upward comparison than for lateral comparison ($F_{1,79} = 5.38$, $p < 0.05$), and the mean score for Low-SEs was higher for lateral comparison than for interpersonal upward comparison ($F_{1,79} = 6.87$, $p < 0.05$). Thus, Hypothesis 2 was also supported.

Effect of intergroup upward comparison on interpersonal comparison with an in-group member. The interaction of intergroup upward comparison × interpersonal comparison was not significant for any rating. Hypothesis 3 was not supported.

Effect of trait self-esteem on the relation between intergroup upward comparison and intragroup interpersonal comparison. A three-way interaction of intergroup upward comparison × interpersonal comparison × trait self-esteem was significant on affective calmness ($F_{1,79} = 5.99$, $p < 0.05$; Figure 2), and on the performance dimension of state self-esteem ($F_{1,79} = 6.38$, $p < 0.05$; Figure 3).

On the mean score of affective calmness, the simple interactions were significant. As expected, the simple interaction between interpersonal comparison and trait self-esteem was significant only for the absence of intergroup upward comparison ($F_{1,79} = 4.65$, $p < 0.05$). The simple interaction between intergroup upward comparison and interpersonal comparison for High-SEs ($F_{1,79} = 4.74$, $p < 0.05$), and between intergroup upward comparison and trait self-esteem for interpersonal lateral comparison ($F_{1,79} = 6.99$, $p < 0.01$) were also significant. As shown in Figure 2, in the absence of intergroup upward comparison, the mean score of affective calmness for Low-SEs was lower for interpersonal upward comparison than for interpersonal lateral comparison ($F_{1,79} = 4.03$, $p < 0.05$). However, in the presence of intergroup upward comparison, this tendency was not significant. High-SEs unexpectedly reported the highest calmness in interpersonal lateral comparison under intergroup upward comparison.

On the performance dimension of state self-esteem, the simple interactions were significant. The simple interaction between interpersonal comparison and trait self-esteem was significant only in the absence of intergroup upward comparison ($F_{1,79} = 18.11$, $p < 0.001$). The simple interactions between intergroup upward comparison and interpersonal comparison for both the High-SEs and Low-SEs (High-SEs: $F_{1,79} = 3.07$, $p < 0.10$, Low-SEs: $F_{1,79} = 3.31$, $p < 0.10$) and between intergroup upward comparison and trait self-

esteem in interpersonal upward comparison ($F_{1,79} = 6.99$, $p < 0.01$) were also significant. The mean score of the performance dimension of state self-esteem for Low-SEs was lower for upward interpersonal comparison than for lateral interpersonal comparison in the absence of intergroup upward comparison ($F_{1,79} = 9.86$, $p < 0.01$). However, in the presence of intergroup upward comparison, this tendency was not significant. Subsequent to interpersonal upward comparison, the performance dimension of state self-esteem for Low-SEs was higher in the presence of intergroup upward comparison than in its absence ($F_{1,79} = 4.02$, $p < 0.05$). Unfortunately, the mean score of the performance state for self-esteem for High-SEs was higher than that for Low-SEs in interpersonal upward comparison regardless of whether or not intergroup upward comparison was present (present condition, $F_{1,79} = 9.70$, $p < 0.01$; absent condition, $F_{1,79} = 30.99$, $p < 0.001$). Additionally, High-SEs reported a higher state self-esteem for the performance dimension for upward rather than lateral interpersonal comparison in the absence of intergroup upward comparison ($F_{1,79} = 8.29$, $p < 0.01$).

These results supported Hypothesis 4. The intergroup upward comparison situation temporarily lessened the threat of comparison with a superior in-group member. However, in this condition, the state self-esteem of Low-SEs was lower than that of High-SEs. Thus, we cannot say that Low-SEs were able to protect their esteem to the same degree as were High-SEs.

Effect of identity-shift on intergroup upward comparison. With regard to positive affect, the three-way interaction of interpersonal comparison × intergroup upward comparison × additional category sharing was marginally significant ($F_{1,79} = 2.86$, $p < 0.10$; Figure 4). The simple interaction between intergroup upward comparison and additional category sharing in interpersonal upward comparison ($F_{1,79} = 3.83$, $p < 0.06$) and the simple interaction between intergroup upward comparison and interpersonal comparison in additional category sharing ($F_{1,79} = 5.21$, $p < 0.05$) were significant. The upward comparison target who shared another category had a greater decrease in positive affect in the presence of intergroup upward comparison than in its absence ($F_{1,79} = 3.10$, $p < 0.09$). It was also found that with intergroup upward comparison, participants who shared another category with the target of upward comparison showed lower positive effect than those who shared another category with the target of lateral comparison ($F_{1,79} = 3.62$, $p < 0.07$). However, under intergroup upward comparison, in the condition of an additional unshared category, the difference between interpersonal comparison conditions was not significant.

Despite that a manipulation check showed that the additional category did not become salient due to a perceived normative fit (Oakes *et al*., 1991), Hypothesis 5 was supported. Even if social identity became salient (not for the gender category but for the department category) by the intergroup upward comparison, individuals having another unshared category with a superior in-group member could reduce the deterioration of positive affect. In this case, it was assumed that individuals could maintain a proper psychological closeness, so they could maintain a self-evaluation based on their personal identity.

The four-way interaction was not significant on any of the dependent variables.

Discussion

First, the present findings suggested that in the intergroup upward comparison condition, even Low-SEs could decrease the threat from upward interpersonal comparison. Creating an artificial situation where the in-group was inferior to an out-group encouraged Low-SEs to reconstruct information for social comparison. As self-categorization theory (Turner, 1987) asserts, this result suggests that the salience of intergroup contexts leads individuals to enhance the concern for their social identity. Second, the present study illustrated the self-protective mechanism for personal identity using voluntary categorization as suggested by Mussweile *et al*. (2000).

The present study also supported the use of a twofold strategy to protect/enhance self-esteem, because only in the presence of intergroup upward comparison could participants avoid threats to personal identity from interpersonal upward comparison. Our result showed that the department category, which might be relatively low in chronic accessibility, was more salient than the gender category, which should be relatively high in chronic accessibility, in the presence of intergroup upward comparison. This pattern was probably caused by the high motivation to enhance one's social identity in the presence of intergroup upward comparison. If the gender category was more salient than the department category, participants with a shared gender category, compared to those who did not share this category, could have avoided threats from upward interpersonal comparison by the use of activated reflection. However, this tendency was not significant. Therefore, we suggest that in the intergroup upward comparison and the lack of an additional shared category condition, individuals involved in intergroup upward comparison would be more motivated to enhance their social identity.

Our results were obtained with Japanese persons, and cross-cultural psychology has emphasized the distinction between collectivistic societies and individualistic societies (Triandis, 1995). There are some cross-cultural studies showing that individualism-collectivism is related to intra-intergroup behavior (Smith & Bond, 1999; McAuliffe *et al.*, 2003; Yuki, 2003). It will be necessary to examine our findings in light of cross-cultural psychology.

Our results also suggest the possibility that High-SEs could enhance their self-esteem, even in the absence of intergroup upward comparison, by reflecting on comparison targets. Furthermore, High-SEs reported a higher state self-esteem in interpersonal upward comparison than in lateral comparison in the absence of intergroup upward comparison. One reason this was possible was that High-SEs were more skilled in reconstructing feedback concerning social comparison (Taylor *et al*., 1996). When intergroup upward comparison was absent, High-SEs were more motivated to avoid threats from interpersonal upward comparison than from lateral comparison, so that they reported a higher state self-esteem as a consequence of the active use of various strategies, including the reflection process. Another reason is that High-SEs might regard self-improvement to be possible by facing a superior in-group member (Buunk *et al*., 1990), so they could feel a higher state self-esteem. These processes should be examined in the future.

Limitation and future research directions

The current study, as is the study by Blanton *et al*. (2000), was based on the assumption that participants felt a higher social identity under intergroup upward comparison, and concluded that participants could maintain/enhance self-evaluation after interpersonal upward comparison. However, this study did not consider group size (Brewer & Weber, 1994) or the level of trait social identity (Schmitt *et al*., 2000). The importance of these two factors has been shown in the study of social comparison with in-group members, and they need to be taken into account in future research.

We have to note the limitations concerning quasi-experiments. The feedback was not fully controlled as a manipulation of interpersonal comparison, and different participants may vary in the perceived difference with the target. Future research can employ a laboratory experiment for better control of the feedback.

Finally, the effect of independent variables were not consistent across the dependent variables. Future research needs to replicate our results.

End notes

1. Although we did not provide hypotheses of main effects of trait self-esteem, some effects were significant. The main effects of trait self-esteem were significant on negative affect ($F_{1,79} = 8.22$, $p < 0.01$), the social dimension of state self-esteem ($F_{1,79} = 17.70$, $p < 0.001$), and the performance dimension of state self-esteem ($F_{1,79} = 17.64$, $p < 0.001$). Low-SEs ($M = 1.82$) were higher than High-SEs ($M = 1.47$) in negative affect. Similarly, High-SEs were higher than Low-SEs ($M = 1.82$) in the social dimension (High-SEs; $M = 3.26$, Low-SEs; $M = 2.57$) and performance dimension (High-SEs; $M = 2.84$, Low-SEs; $M = 2.27$) of state self-esteem.

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Figures

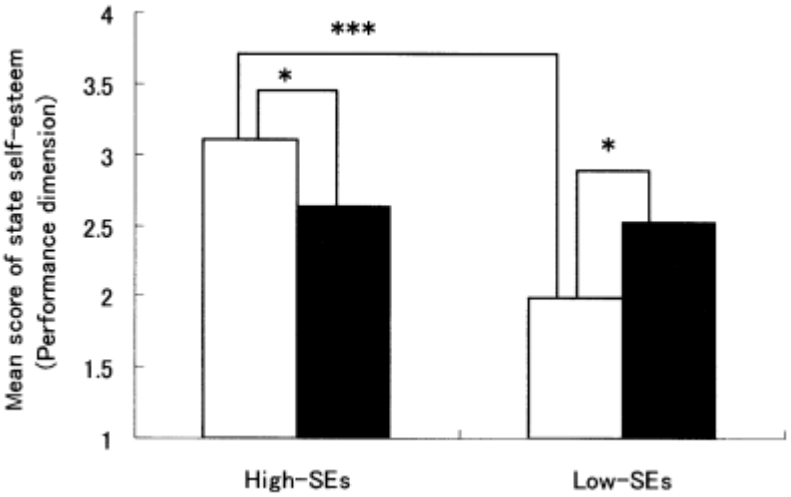

Figure 1 Mean score of state self-esteem (performance dimension) as a function of interpersonal comparison and trait self-esteem. SEs, trait self-esteem. Interpersonal comparison: □, Upward; ■, lateral. *$p < 0.05$, ***$p < 0.001$.

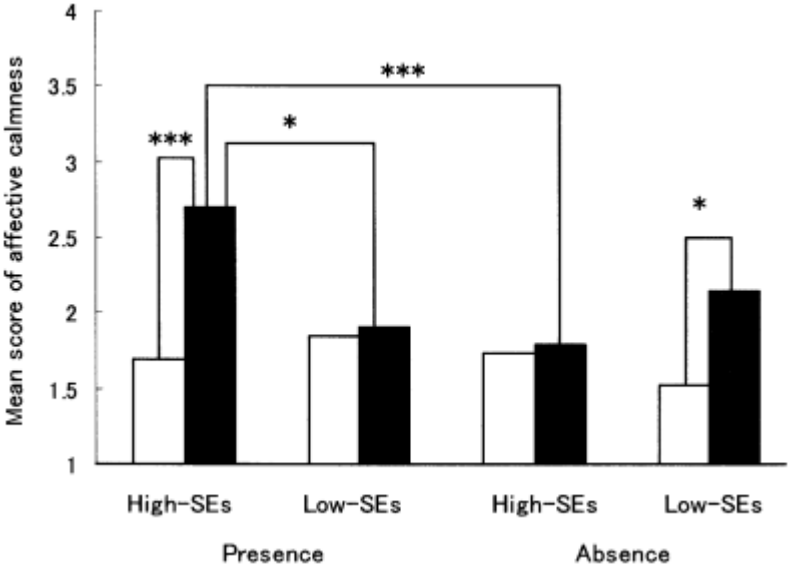

Figure 2 Mean score of affective calmness as a function of interpersonal comparison, intergroup upward comparison, and trait self esteem. SEs, trait self-esteem. Interpersonal comparison: □, Upward; ■, lateral. *$p < 0.05$, ***$p < 0.001$. 'Presence' or 'Absence' indicates whether intergroup upward comparison was present or absent, respectively.

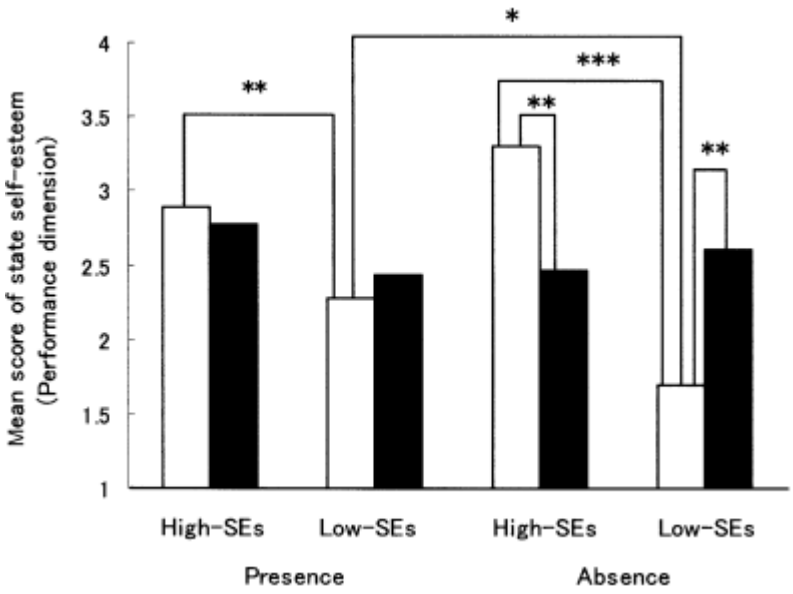

Figure 3 Mean score of state self-esteem (performance dimension) as a function of interpersonal comparison, intergroup upward comparison, and trait self-esteem. SEs, trait self-esteem. Interpersonal comparison: □, Upward; ■, lateral. *$p < 0.05$, **$p < 0.001$, ***$p < 0.0001$. 'Presence' or 'Absence' indicates whether intergroup upward comparison was present or absent, respectively.

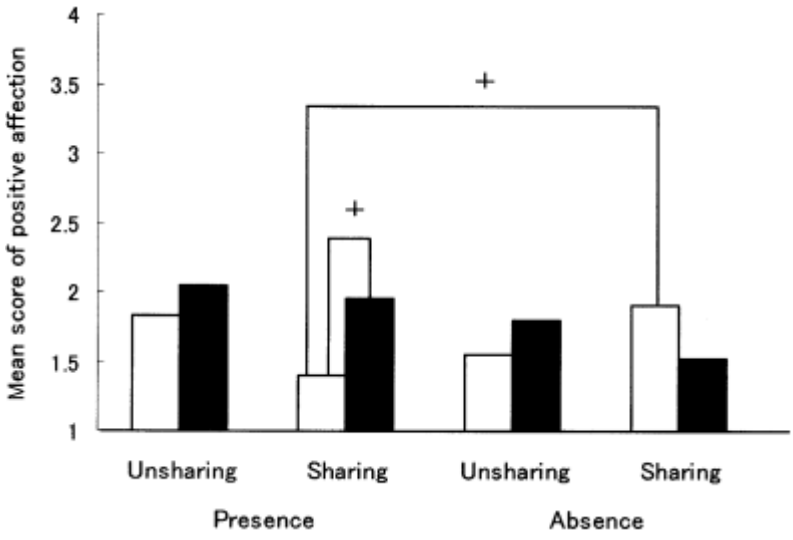

Figure 4 Mean score of positive affection as a function of interpersonal comparison, intergroup upward comparison, and additional category sharing. Interpersonal comparison: □, Upward; ■, lateral. +$p < 0.10$. 'Unshared' or 'Shared' indicates whether or not participants share another category with the comparison standard (in-group member). 'Presence' or 'Absence' indicates whether intergroup upward comparison was present or absent, respectively.