

## The Ups and Downs of Social Comparison: Mechanisms of Assimilation and Contrast

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Social comparisons influence self-evaluations in multiple ways. Sometimes self-evaluations are assimilated toward a given standard. At other times, they are contrasted away from the standard. On the basis of the selective accessibility model (T. Mussweiler, 2003a), the authors hypothesized that assimilation results if judges engage in the comparison process of similarity testing and selectively focus on similarities to the standard, whereas contrast occurs if judges engage in dissimilarity testing and selectively focus on differences. If these alternative comparison mechanisms are indeed at play, then assimilative and contrastive social comparisons should be accompanied by diverging informational foci on similarities versus differences. Results of 5 studies support this reasoning, demonstrating that assimilation results under conditions that foster similarity testing, whereas contrast occurs under conditions that foster dissimilarity testing. Furthermore, assimilative social comparisons are accompanied by a general informational focus on similarities, whereas contrastive comparisons are accompanied by a focus on differences.

Life confronts people with an endless stream of social comparison opportunities. No matter whether they go to school, church, or the Oktoberfest, the other people who surround them exhibit vast amounts of information indicating how smart, wealthy, or brave they are. Neighbors may brag about the amount of money they earn, or—more subtly—convey this information by buying a gas-guzzling sport utility vehicle. High school friends may show off with their grades, or—more subtly—mention the Ivy League colleges that have offered them scholarships. No matter how shrewdly such intimidating details are conveyed, people as egocentric social information processors tend to process, comprehend, and evaluate such news by relating the details to themselves (Dunning & Hayes, 1996). In evaluating the bravery of a 16-year-old who is lining up for a ride on the latest roller coaster at the Oktoberfest, people typically use themselves as social comparison standards. To what effect? How do such social comparisons influence the way people see themselves? Will they feel richer, smarter, and braver when

confronted with sport-utility-vehicle-driving neighbors, prospective Ivy League students, and daring youngsters? Or will such exposures shed doubt on their own qualities? Social comparison research provides a clear answer to these questions: It depends.

In fact, it depends on a great many things. Social comparisons have their ups and downs and yield diverging effects on the self (for reviews, see, Blanton, 2001; Collins, 1996; Mussweiler, 2003a, 2003b; Mussweiler & Strack, 2000a; Taylor, Wayment, & Carrillo, 1996; Wood, 1989). Sometimes the self is assimilated toward a given standard so that more positive reactions result from comparisons with high rather than low standards (e.g., Lockwood & Kunda, 1997; Mussweiler & Strack, 2000b; Pelham & Wachsmuth, 1995). At other times, however, comparisons lead to the opposite effect, namely contrast, so that more negative evaluations are given after a comparison with a high rather than a low standard (e.g., Morse & Gergen, 1970). Which of these opposing evaluative consequences prevails depends on a host of moderators.

One critical factor is psychological closeness (e.g., Brewer & Weber, 1994; Brown, Novick, Lord, & Richards, 1992; Lockwood & Kunda, 1997; Pelham & Wachsmuth, 1995; Tesser, Millar, & Moore, 1988). Specifically, assimilation seems more likely if target and standard are close, whereas contrast appears to occur when they are not. Consistent with this assumption, it has been demonstrated that participants who are exposed to photographs of very attractive individuals who are psychologically close to them because they share a specific characteristic (e.g., the same birthday) evaluate themselves to be more attractive (an assimilation effect). Participants who do not share this characteristic, on the other hand, rate themselves to be less attractive (a contrast effect; Brown et al., 1992). Similarly, comparing oneself with another

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who is psychologically close because of a joint membership in a minority group leads to assimilation, whereas a comparison with another who is not a member of this group leads to contrast (Brewer & Weber, 1994).

Furthermore, comparison consequences depend on whether the relative position of self and standard is static or flexible. Differing effects result, for example, if the standard is attainable or unattainable (e.g., Buunk, Collins, Taylor, VanYperen, & Dakof, 1990; Lockwood & Kunda, 1997; Taylor et al., 1996). Exposure to an upward comparison standard that is highly competent on a valued dimension may be inspiring for those who assume that they can still attain a similar degree of excellence. Consequently, they may assimilate their self-evaluations to the high competence of the standard. Such inspiration, however, is unlikely to result for those who perceive themselves as unable to reach the standard, so that for them the comparison is likely to yield a contrast effect (Lockwood & Kunda, 1997). In much the same way, the mutability of people's self-views (Stapel & Koomen, 2000) critically influences comparison consequences. If people see themselves as mutable so that their relative position to the standard is flexible, self-evaluations are likely to be assimilated toward the standard. If people see themselves as immutable, however, so that their relative standing is more static, they are more likely to contrast self-evaluations away from the standard.

In much the same way, the direction of social comparison consequences depends on a number of other variables, such as self-esteem (e.g., Aspinwall & Taylor, 1993; Buunk et al., 1990) and category membership (e.g., Blanton, Crocker, & Miller, 2000; Mussweiler & Bodenhausen, 2002; Mussweiler, Gabriel, & Bodenhausen, 2000). Taken together, these findings demonstrate that the consequences of comparison are rather complex and multifaceted.

Social comparison may not only influence self-evaluation in opposing directions. Whether the self is assimilated toward or contrasted away from a given standard is determined by a host of moderators (for a discussion of additional factors, see Taylor et al., 1996). Not only do the individual moderators seem unrelated to one another, some of them also seem unrelated to the critical dimension. Whether one does or does not share one's birthday with the standard, for example, has little to do with one's physical attractiveness. Still, a shared birthday critically determines how the presence of an attractive other influences perceptions of one's own attractiveness and thus shapes comparison outcomes (Brown et al., 1992). To date, this body of evidence stands as a disintegrated puzzle. To remedy this shortcoming, we have recently developed a theoretical framework that provides a unified account for comparison consequences and attempts to integrate the diverse findings (Mussweiler, 2003a).

### Selective Accessibility Mechanisms of Similarity and Dissimilarity Testing

The fundamental assumption of this selective accessibility model is that to understand how social comparisons influence self-evaluations, one must examine their informational underpinnings (for a more detailed discussion of the model, see Mussweiler, 2003a). Like any judgment, postcomparison self-evaluations are based on the implications of the judgment-relevant knowledge that is accessible at the time the judgment is made (for

an overview, see Higgins, 1996). Thus, comparisons with others may effect self-evaluations because they influence what knowledge about the self is rendered accessible and is consequently used as a basis for self-evaluation. From this perspective, understanding what self-knowledge is sought and activated during the comparison process is crucial to understanding the self-evaluative consequences.

The critical question, then, is what self-knowledge is rendered accessible during a social comparison. The selective accessibility model conceptualizes these informational comparison consequences as the product of a hypothesis-testing process by which judges actively seek and generate self-related information during the comparison. In principle, there are two alternative hypotheses that can build the basis of this process. In particular, judges can either engage in the process of similarity testing by testing the hypothesis that their standing on the judgmental dimension is similar to that of the standard or, alternatively, they can engage in the process of dissimilarity testing by testing the hypothesis that their standing is different from that of the standard. Because hypothesis testing typically focuses on information that is consistent with the tested hypothesis (Klayman & Ha, 1987; Snyder & Swann, 1978; Trope & Bassok, 1982; Trope & Liberman, 1996), the two alternative comparison mechanisms involve a selective search for and activation of different subsets of self-knowledge. Judges who engage in similarity testing selectively focus on information indicating that their standing on the judgmental dimension is similar to that of the standard. Judges who engage in dissimilarity testing, on the other hand, selectively focus on information indicating that their standing is different from that of the standard.

Conceivably, the informational and evaluative consequences of these two alternative comparison mechanisms of similarity and dissimilarity testing go in opposite directions. Because a comparison increases the accessibility of the knowledge it primarily engages, similarity testing selectively renders accessible information indicating that the self's standing on the judgmental dimension is similar to that of the standard. Dissimilarity testing, on the other hand, selectively renders accessible knowledge indicating that the self's standing is different from that of the standard. Self-evaluations that are primarily based on the implications of these different sets of self-knowledge are likely to go in opposite directions. In particular, similarity testing yields assimilation whereas dissimilarity testing yields contrast. For example, if you engage in similarity testing in comparing yourself with a brave youngster who is lining up for a scary roller coaster ride, you would do so by selectively generating information indicating that you are pretty brave as well. You may, for example, bring to mind a recent attempt to challenge your boss, the fact that you are a daring skier, and that last summer you protected your 3-year-old daughter from a vicious bee attack. Doing so increases the accessibility of this self-knowledge so that it is likely to build the basis of subsequent evaluations of your bravery. Because all of this information implies that you are brave, self-evaluations are likely to indicate high levels of bravery so that you assimilate toward the brave standard. If you engage in the alternative process of dissimilarity testing, on the other hand, knowledge indicating that you are more on the hesitant side will be rendered accessible. As a consequence, self-evaluations will be based on the implications of this less favorable knowledge so that you are likely to evaluate yourself

to be less brave and thus contrast self-evaluations away from the standard.

From this perspective, whether judges engage in the alternative comparison processes of similarity or dissimilarity testing critically determines the self-evaluative consequences of social comparisons. The informational focus judges take during the comparison—whether they focus on similarities or differences—critically determines whether they assimilate toward or contrast away from the standard.

An earlier study directly manipulated participants' informational focus during social comparison (Mussweiler, 2001). This provided initial support for the critical role played by judges' informational focus on similarities versus differences in the direction of comparison consequences. In particular, the study used directly manipulated participants' informational focus during social comparison. More specifically, the study used a procedural priming task to manipulate whether judges focus on similarities to or differences from the standard (Mussweiler, 2001). Prior to a social comparison, participants worked on an unrelated task in which they compared sketches of two scenes. About half of the participants were asked to list all the similarities they could find between the two scenes. The other half were asked to list all the differences they could find. In both cases, the respective informational focus on similarities or differences should become proceduralized (Smith, 1994) and carry over to the subsequent comparison. That is, searching for similarities or differences between the two scenes should set participants' minds on either processing style and should induce them to search for the same kind of evidence in the subsequent social comparison. Pretesting revealed that this was indeed the case. Consistent with a selective accessibility perspective on comparison consequences, subsequent self-evaluations critically depended on whether participants were induced to focus on similarities or differences. Judges who were primed to focus on similarities and to thus engage in similarity testing assimilated self-evaluations toward the standard. Judges who were primed to focus on differences and to thus engage in dissimilarity testing, on the other hand, contrasted self-evaluations away from the standard.

These findings reveal that the direction of social comparison consequences does indeed depend on the nature of an induced informational focus. In this respect, they demonstrate that the two selective accessibility mechanisms of similarity and dissimilarity testing produce diverging comparison outcomes. Supportive evidence for this core assumption of the selective accessibility model thus exists.

### An Integrative Perspective on Social Comparison Moderators

Our claim, however, goes much further. The selective accessibility model not only assumes that inducing judges to focus on similarities versus differences leads to assimilation and contrast, respectively. Rather, in its attempt to provide a unifying principle for an integrated understanding of comparison consequences, the model assumes that similarity and dissimilarity testing are core mechanisms underlying assimilative and contrastive comparison consequences. More specifically, we suggest that many of the moderators that influence the direction of comparison consequences are closely connected to the mechanisms of similarity

versus dissimilarity testing (for a more detailed discussion, see Mussweiler, 2003a).

The moderator of psychological closeness between the self and the standard may serve as a first case in point. Judges may assimilate toward a comparison standard that is psychologically close to them and contrast away from a standard that is psychologically more distant because they engage in similarity testing in the first case and in dissimilarity testing in the latter. A shared birthday, for example, as one established boundary condition leading to assimilation (Brown et al., 1992), may induce judges to focus on additional shared attributes and thus to engage in similarity testing. In fact, the rather rare commonality in birthdays is likely to stand out and gear judges' attention toward further similarities. Sharing membership in a minority group (Brewer & Weber, 1994) may influence judges' attentional focus in much the same way by inducing them to engage in the comparison process of similarity testing.

The flexibility of the relative position of self and standard may also be linked to the two alternative processes of similarity and dissimilarity testing. If the relative position of self and standard is flexible—either because the standard is attainable (Lockwood & Kunda, 1997) or because participants' self-views are mutable (Stapel & Koomen, 2000)—then the comparison provides judges with sufficient leeway to engage in similarity testing. If, however, the relative position of self and standard is more statically defined—either because the standard is unattainable or because judges hold immutable self-views—then similarity between self and standard is more difficult to construe, so that dissimilarity testing leading to contrast is more likely to be engaged.

From this perspective, the differentiation between similarity testing and dissimilarity testing as an initial step in the comparison process promises to be a unifying principle. On theoretical grounds (for a more detailed discussion, see Mussweiler, 2003a), those factors that have been found to moderate the consequences of comparison can be related to the two alternative comparison processes of similarity and dissimilarity testing. On empirical grounds, however, direct support for this assumption has not yet been obtained. To date, the core assumption of a selective accessibility perspective on comparison consequences thus remains speculative. In the present research, we set out to build the empirical foundation for this speculation and to provide for an empirical test of the role similarity and dissimilarity testing play in assimilative and contrastive social comparison consequences.

### The Present Research

In particular, we examined whether assimilative versus contrastive comparison consequences are indeed accompanied by those informational foci that characterize the two alternative comparison processes of similarity and dissimilarity testing. If our reasoning is correct and assimilation results from similarity testing whereas contrast results from dissimilarity testing, then both comparison consequences should be accompanied by diverging informational foci on similarities versus differences. If judges assimilate toward a given standard because they selectively focus on similarities between self and standard, then this similarity focus should become apparent. In addition, if judges contrast away from a standard because they selectively focus on differences, then this dissimilarity focus should become apparent.

To show these diverging informational foci that we assume to accompany assimilative and contrastive social comparisons, we again applied a procedural priming logic. Previous research (Mussweiler, 2001) has demonstrated that the informational focus judges take during an initial comparison carries over to a subsequent comparison, even if the two are completely unrelated. Specifically, judges who focused on similarities when comparing two pictures subsequently focused on similarities when comparing themselves with the social comparison standard. Judges who focused on differences during the picture comparison, however, applied this informational focus on differences to the social comparison. This procedural link between subsequent comparisons allows assessment of the informational focus judges take during a social comparison by analyzing their informational focus in a subsequent unrelated comparison. More specifically, whether judges primarily focus on similarities versus differences when comparing two pictures indicates whether they primarily focused on similarities or differences between the self and the standard in a preceding social comparison. Following this logic, we engaged our participants in a picture comparison task to assess their informational focus on similarities versus differences in a preceding assimilative versus contrastive social comparison. If our reasoning is correct and assimilative versus contrastive comparison consequences are accompanied by foci on similarities versus differences, then these diverging informational foci should be apparent in the picture comparison task.

To establish conditions that lead to assimilation and contrast as a comparison consequence, we systematically varied the relative position of the self and the standard. Previous research has demonstrated that similarity along the judgmental dimension critically determines important aspects of social comparison processes, such as standard selection. In particular, people often appear to select for comparison those who are similar to them on the critical dimension (Festinger, 1954; Gruder, 1971; Wheeler, 1966). Extending these original findings, we suppose that the relative positions self and standard assume along the critical dimension influence not only standard selection but also the direction of comparison consequences. Suggestive evidence in support of this assumption comes from outside of the social comparison domain. Studies on person perception (Herr, 1986), for example, have demonstrated that evaluations of an ambiguously described target person are assimilated toward moderate standards of aggressiveness (e.g., the former boxer Joe Frazier) and contrasted away from extreme standards (e.g., Adolf Hitler). Given that by definition moderate standards are closer to the target than extreme standards, this suggests that the relative position along the judgmental dimension may also determine the direction of social comparison consequences.

In principle, there are two strategies that can be used to manipulate the relative standing of self and standard: One can either vary the position of the standard or one can manipulate the position of the self. We applied both strategies. In Studies 1 and 2, we manipulated the relative position of self and standard by varying standard extremity. Participants were either confronted with a moderate or with an extreme comparison standard. In light of previous findings on person perception (Herr, 1986), assimilation is more likely to result from comparisons with moderate standards, whereas contrast is more likely to result from comparisons with extreme standards. In Studies 3–5, we manipulated the position the

self assumes on the critical dimension via a false feedback manipulation. Before engaging in a comparison with a social comparison standard who assumed a high versus a neutral position on the dimension of scholastic ability, participants received either positive or negative false feedback about their performance on an intelligence test. Positive feedback moves participants' momentary self-views closer to the high standard so that assimilation is likely to result. Negative feedback, on the other hand, moves participants' momentary self-views further away from the high standard so that contrast is likely to result.

## Study 1

We designed our first study to examine whether standard extremity does indeed influence the direction of social comparison consequences. Would participants indeed assimilate self-evaluations toward a moderate standard and contrast away from an extreme standard, as the findings from the social perception literature (Herr, 1986) suggest? Such a demonstration of diverging comparison consequences is particularly impressive if it is obtained on a self-evaluative dimension that is embedded in a rich basis of self-knowledge and that is central to judges' self-definition. To fulfill these criteria, we asked professional athletes to evaluate their athletic abilities. More specifically, we had professional water polo players compare themselves with either a moderately high or an extremely high standard of performance and subsequently asked them to evaluate their athletic abilities.

## Method

*Participants.* We recruited 17 male professional water polo players as participants. All of them were members of a team of the first German water polo division. Participants were approached prior to a training session and were asked to fill out a brief questionnaire examining how people evaluate their abilities.

*Materials and procedure.* In this questionnaire, participants were first informed that people frequently need to evaluate their abilities in their daily routines and that in order to do so they often use information about others. The purpose of the questionnaire was then introduced as examining how people use information about others to evaluate themselves. To do this, we explained that we would ask them to carefully study a brief paragraph describing the athletic abilities of another person and to form an impression of him and that after they had done so, we would ask them a series of questions concerning their own athletic abilities.

For about half of the participants, the standard person was described as a moderately high standard of comparison on the critical dimension of athletic abilities. In particular, he was introduced as a professional athlete who was among the better members of his team and typically made a good impression during competition. Occasionally the coach would approach him after a successful competition to praise him by emphasizing that he had made an important contribution to his team's success. During his school years he was among the most athletic students of this school. Furthermore, time permitting, he followed a series of additional athletic activities such as bike riding, running, and working out in the gym.

For the other half, the standard person was described as an extremely high standard of athletic ability. In particular, he was introduced as a professional athlete who was clearly the best member of his team. After every competition the coach would thank him for his critical contribution to the team's success, and in some cases, it even seemed that he was exclusively responsible for the team's victory. During his school years, he clearly was the most athletic student in his area. Furthermore, he regularly followed a series of additional athletic activities. He ran about 15 km a day,

rode his bike several hundred kilometers per week, and worked out intensively in the gym.

After forming an impression of the respective standard person, participants were asked a series of questions assessing their own athletic abilities. The critical abilities were closely related to participants' qualities as water polo players and were assessed using objective judgment scales (Manis, Biernat, & Nelson, 1991). In particular, participants were asked to indicate how fast they could swim 100 and 1,500 m and their average contribution (in percent) to a victory of their team. Finally, participants were fully debriefed, thanked for their participation, and dismissed.

### Results and Discussion

We expected that our participating professional athletes would be more likely to assimilate self-evaluations toward the moderately high comparison standard and contrast self-evaluations away from the extremely high standard. As a consequence, participants who had been exposed to the moderate standard should have evaluated themselves to be more athletic than those who had been exposed to the extreme standard.

One participant provided unrealistic estimates of his athletic abilities (e.g., 26 s for swimming 100 m freestyle, which is 20 s below the world record) and was excluded from the analysis. To combine the remaining self-evaluations into one single score, estimates for the three critical dimensions were  $z$  transformed and recoded so that higher values indicate higher levels of athletic ability. As expected, participants did indeed evaluate their own athletic abilities to be better if they had been confronted with the moderately high ( $M = .34$ ) rather than the extremely high ( $M = -.34$ ) standard,  $t(14) = 2.0, p < .03, d = .99$ .<sup>1</sup>

This finding has a number of notable implications. For one, it attests how strongly people's self-evaluations and self-perceptions depend on comparisons with others. Our professional athletes evaluated themselves with respect to abilities that constitute a core aspect of their quality as water polo players. Furthermore, swimming short (100 m) and long (1,500 m) distances is a regular part of water polo training, so participants had received rich and frequent feedback about their abilities on the critical dimensions. Still, their self-evaluations were strongly shaped by the nature of the social comparison standard to which they had been exposed. The direction of this influence is generally consistent with our hypotheses. Participants who were exposed to a moderately athletic standard evaluated themselves to be more competent than participants who were exposed to an extreme superathlete. This suggests that participants may have assimilated toward the moderate standard and contrasted away from the extreme standard. Because the scarcity of professional athletes who are willing to contribute to psychological research prevented us from realizing a full design including moderate and extreme high as well as low standards, however, this conclusion remains somewhat speculative. Study 2 was designed to provide less ambiguous evidence for the hypothesized assimilative and contrastive evaluative consequences of comparisons with moderate versus extreme standards.

### Study 2

To do this, we asked student participants to compare their athletic abilities with those of celebrities who constituted high versus low comparison standards that were either moderate (the former race car driver Nicki Lauda vs. Bill Clinton) or extreme

(Michael Jordan vs. Pope John Paul II). On the basis of the initial evidence provided by Study 1, we expected participants to assimilate self-evaluations toward the moderate standards and contrast away from the extreme standards.

Furthermore, the selective accessibility perspective suggests that these diverging self-evaluative consequences are accompanied by diverging informational foci on similarities versus differences. Assimilation results because judges selectively focus on the ways in which they are similar to the comparison standard, whereas contrast results because judges selectively focus on the ways in which they are different from the comparison standard. In Study 2, we set out to assess these diverging informational foci. Specifically, we used the picture comparison task that has previously been applied to induce similarity versus dissimilarity testing (Mussweiler, 2001) as a measure of these diverging informational foci. Subsequent to the social comparison, judges were asked to compare sketches of two scenes and to judge their similarity. If assimilation is indeed accompanied by an informational focus on similarities, then this informational focus should carry over to the picture comparison task so that judges who assimilated toward the standard would see the two pictures as more similar. If contrast is accompanied by a focus on differences, then judges who contrasted away from the standard should see the pictures as more different.

### Method

**Participants.** We recruited 52 students at the University of Würzburg as participants. They were approached in the university cafeteria and were offered a chocolate bar as compensation for participation in two brief psychological studies. On agreement to participate, they were led to a separate room where they worked on the experimental materials in groups of up to 4.

**Materials and procedure.** On arrival, participants were greeted by the experimenter and led to an individual cubicle. While handing out the materials, the experimenter pointed out that both studies were completely unrelated and were only administered together for efficiency reasons. Participants received two folders, one including the materials of the social comparison task and the other the materials of the similarity focus assessment. To further emphasize the unrelatedness of the two studies, the materials of each were printed in different fonts.

In the instructions of the social comparison task, participants were first informed about the ostensible purpose of this study, which was introduced as a pretest of materials that would be used in future studies on self-evaluation processes. To obtain normative data for these studies, participants were told they would be asked a number of questions concerning their self-evaluation on the critical dimension of athletic abilities but that before evaluating themselves, they would be asked to compare themselves with a celebrity. Specifically, they were asked to bring this person to their mind and to compare themselves with this person with respect to their athletic abilities. Participants were encouraged to take some time to make this comparison. They were either asked to compare themselves with a moderately athletic standard (the former race car driver Nicki Lauda), a

<sup>1</sup> The reported  $t$  test in Study 1 involved hypothesized differences and is thus one-tailed. Although we had clear directional hypotheses, and many authorities recommend the use of one-tailed significance tests in such cases, this practice is controversial (e.g., Abelson, 1995). We adopted Abelson's (1995) recommended compromise between the two extreme positions in this debate, constructing a null hypothesis rejection region of 5.0% in the theoretically expected tail and 0.5% in the unexpected tail.

moderately unathletic standard (the former U.S. president Bill Clinton), an extremely athletic standard (basketball player Michael Jordan), or an extremely unathletic standard (Pope John Paul II). The moderate standards have been used in previous research (Mussweiler & Strack, 2000b), where pretesting established that both are indeed moderately high versus low comparison standards for the participant population. To ensure that participants did indeed engage in the respective comparisons, they were asked to indicate how difficult it was for them to make the comparison along a 9-point scale ranging from 1 (*very easy*) to 9 (*very difficult*). Subsequent to the comparison, participants answered the two critical questions assessing self-evaluations of athletic abilities. Specifically, participants estimated the maximum number of sit-ups they could perform and the time they would need to run 100 m.

In the instructions of the similarity focus assessment, participants were first informed about the ostensible purpose of this task, namely to pretest two pictures that would be used in future studies on visual perception. Participants were asked to carefully inspect and compare these pictures and were instructed to allow themselves a few minutes to do so. The pictures were taken from previous research (Mussweiler, 2001) in which they had been used to induce a focus on similarities versus differences via a procedural priming manipulation. The pictures consisted of sketches of two scenes that were taken from Markman and Gentner (1996). The first sketch depicted a woman leaning over a table while holding a cup of coffee, a Christmas tree with a few presents underneath, and a fireplace. The second sketch depicted a man standing in front of a table and reaching for a bowl placed in the middle of the table, a bottle and a few glasses that were also placed on the table, and a fireplace. Subsequent to comparing both pictures, participants indicated how similar they were to one another using a 9-point rating scale that ranged from 1 (*not at all similar*) to 9 (*completely similar*). After completion of both tasks, participants were fully debriefed, thanked for their participation, and offered their candy.

In sum, Study 2 was based on a 2 (extremity: moderate vs. extreme)  $\times$  2 (standard: high vs. low) factorial design. Both factors were manipulated between participants.

## Results and Discussion

We expected that participants would assimilate evaluations of their athletic abilities toward the moderate standards and contrast them away from the extreme standards. Thus, participants should have evaluated themselves as more athletic after comparing with the moderately athletic standard Nicki Lauda rather than the moderately unathletic standard Bill Clinton. However, they should have evaluated themselves as less athletic after comparing with the extremely athletic standard Michael Jordan rather than the extremely unathletic standard Pope John Paul II. Furthermore, the selective accessibility perspective suggests that these diverging comparison consequences are accompanied by a general focus on similarities versus differences. If assimilation in social comparison results because judges selectively focus on similarities, then this informational focus should carry over to the picture comparison task. If, on the other hand, contrast results because judges selectively focus on differences, then this informational focus should influence the picture comparison. As a consequence of these divergent foci, participants who had compared themselves with moderate standards should judge the target pictures to be more similar than those who had compared themselves with extreme standards.

*Self-evaluations.* Four participants provided unrealistic estimates of their athletic abilities (e.g., a personal best of 7 s for a 100 m run, which is 3 s below the world record) and were excluded from the analysis. Furthermore, to control for the influence of

outliers, all estimates that deviated by more than 3 standard deviations from the question mean were excluded from the analysis. The remaining estimates were  $z$  transformed, recoded so that high values indicated high levels of ability, and combined into a single score.

Participants' self-evaluations of their athletic abilities strongly depended on the preceding comparisons. Consistent with our expectations, self-evaluations were assimilated toward the moderate standards so that participants evaluated themselves as more athletic after comparing with the moderately high ( $M = .35$ ) rather than the moderately low ( $M = -.13$ ) standard. However, self-evaluations were contrasted away from the extreme standards so that participants evaluated themselves as less athletic after comparing with the extremely high ( $M = -.35$ ) rather than the extremely low ( $M = .12$ ) standard. In a 2 (extremity: moderate vs. extreme)  $\times$  2 (standard: high vs. low) analysis of variance (ANOVA) using the combined self-evaluation score as the dependent measure, this pattern was borne out in a significant interaction effect,  $F(1, 44) = 5.58, p < .02$ , partial  $\eta^2 = .11$ . In this analysis, none of the remaining effects proved to be significant ( $F < 1.3$ ).

*Similarity focus.* Participants' judgments about the similarity of the two target pictures were also consistent with our hypotheses. As expected, participants who had compared with one of the moderate standards judged the two pictures to be more similar ( $M = 5.96$ ) than participants who had compared with one of the extreme standards ( $M = 5.04$ ). In a 2 (extremity: moderate vs. extreme)  $\times$  2 (standard: high vs. low) ANOVA using participants' similarity judgments as the dependent measure, this pattern was borne out in a significant main effect of extremity,  $F(1, 44) = 4.04, p < .05$ , partial  $\eta^2 = .08$ . None of the remaining effects proved to be significant ( $F_s < 1.1$ ).

These results support our reasoning in important ways. First, they supplement the results of Study 1 by demonstrating more clearly that comparisons with moderate standards do indeed lead to assimilation whereas comparisons with extreme standards lead to contrast. More importantly, these findings provide initial support for the assumption that assimilative and contrastive comparison consequences are accompanied by diverging informational foci. Participants who had engaged in an assimilative comparison with a moderate standard judged two scenes that were entirely unrelated to the social comparison to be more similar than those who had engaged in a contrastive comparison with an extreme standard. We conclude that the same informational foci that are apparent in the picture comparison task were also at work during the social comparison. In fact, the respective foci on similarities versus differences that accompany assimilative versus contrastive social comparisons appear to be so strong that they carry over to a completely different task involving a target and standard that has little to do with the critical social comparison. Consistent with the core assumption of a selective accessibility perspective on comparison consequences, these findings suggest that similarity versus dissimilarity testing may indeed be the mechanisms that are responsible for assimilation and contrast.

## Study 3

To provide further evidence for the diverging informational foci that underlie assimilative versus contrastive social comparisons, in Studies 3–5 we used the second strategy to manipulate the relative position of self and standard. Rather than varying the standards'

position on the critical dimension, we influenced participants' own position via a false feedback manipulation. Before comparing their performance in college with either a high standard or a neutral control standard, participants received false feedback about their performance on an intelligence test. False positive feedback shifts participants' position toward the high standard. False negative feedback shifts their position away from the high standard. Thus, relative to the neutral standard control, participants who receive positive feedback should assimilate self-evaluations toward the high standard. Participants who receive negative feedback, on the other hand, should contrast self-evaluations away from this standard. In Study 3, we first examined the self-evaluative consequences of these comparisons. Studies 4 and 5 then took a closer look at participants' informational focus on similarities versus differences in the respective comparisons.

### Method

**Participants.** We recruited 54 students at the University of Würzburg as participants. They were approached in the university cafeteria and asked to participate in a set of two brief psychological studies and were offered a chocolate bar as a compensation. On agreement to participate, they were led to a separate room where they worked on the experimental materials in groups of up to 4.

**Materials and procedure.** On arrival, participants were greeted by the experimenter and led to an individual cubicle. They were informed that the experimental session would consist of two independent studies that were being administered together solely for efficiency reasons. To emphasize the unrelatedness of the two studies, each was printed in a different font and handed to participants in a separate folder. At the end of these verbal introductory instructions, the experimenter handed participants the first folder.

This folder included the false feedback task. Instructions to this task pointed out that the purpose of this first study was to update existing norm data. The test was introduced as one of the most widely used and accepted assessments of nonverbal intelligence that had been developed by two renowned psychologists and was known for its reliability and its ability to accurately predict future performance. The test consisted of two different tasks taken from the Intelligence Structure Test (Amthauer, Brocke, Liepmann, & Beauducel, 1999). In the first part of the test, participants were confronted with five geometrical figures along with 10 sets of figure fragments, which were all presented on one page. Participants' task was to find the corresponding geometrical figure for each set of figure fragments by determining which of the five geometrical figures would result if all of the fragments of each critical set were combined. To illustrate this task, four concrete examples were given in the instructions. Participants were further informed that they would be given 3 min to find the corresponding geometrical figures for the 10 sets of figure fragments. After reading the instructions, participants started working on the critical task and were timed by the experimenter. After 3 min, the experimenter asked them to stop working on the figure fragment task and to proceed with the next task.

In this second task, participants were confronted with depictions of two sets of dice: 10 critical dice and 5 target dice. For each die, three of the total of six sides were visible, whereas the other three sides were hidden. Instructions pointed out that each of the 10 critical dice was a rotated version of one of the 5 target dice and that participants' task was to find the corresponding target die. Again, an example was given to illustrate this task, and participants were informed that they would have 4 min to find the 10 matching dice. After reading the instructions, participants started working on the second task until the experimenter asked them to stop when 4 min had elapsed. The experimenter then collected participants' answer sheets and took them to a separate booth to evaluate their performance on the intelligence test. After about 1 min, she came back with the results

sheet, which informed participants about their ostensible performance. About half of the participants were given false positive feedback about their performance by informing them that their score corresponded to the 85th percentile, so that 15% of their age group had performed better than they had. The other half were given false negative feedback by informing them that their score corresponded to the 30th percentile, so that 70% of their age group had performed better than they had. Participants were given ample time to process the information on the feedback sheet before the experimenter handed them the second folder that included the social comparison task.

Instructions for the social comparison task informed participants that this task consisted of two parts. Specifically, participants were told that they would first be asked to compare themselves with a briefly described standard person along the critical dimension of academic performance and then would answer a series of questions about their own academic performance. Participants then read the brief description of the target person of the same gender (Eva or Andreas) who was either described as a high or a neutral standard.

The high standard was introduced as a law student in her or his 4th year who had long been eager to study law. Already in her 1st year Eva (or Andreas) had done an internship in a renowned law firm. Because she was one of the better students, her friends often asked her for advice prior to the exams. Often she would go to the library to read additional journal articles and books on the topics covered in the lectures and seminars, even if these topics were not immediately relevant for the exams. Because she was a research assistant for one of her professors she also had good prospects to participate in an academic exchange program that would allow her to study in the United States. With these credentials, Eva (Andreas) could be fairly certain to get the job as an attorney to which she aspired. The neutral control standard was also introduced as a 4th-year law student but was described in less ambitious terms. By now Andreas (Eva) had come to like his studies and was typically content with his academic performance. He would skip a lecture every now and then and was sometimes happy not to further discuss juridical issues after school. At other times, however, he would also engage in juridical discussions with his fellow students. His prospects of getting a job after finishing school currently seemed to be reasonable, although he was not certain what kind of job he was looking for.

After reading one of these descriptions, participants were asked to compare themselves with the standard person with respect to their academic performance. They were instructed to consider whether their academic performance was better or worse than that of the standard and to allow themselves a few minutes to do so. To ensure that participants did indeed engage in this comparison, they indicated how difficult it was for them to make this assessment along a 9-point rating scale that ranged from 1 (*very difficult*) to 9 (*very easy*).

Subsequent to the comparison, participants answered two self-evaluative questions about their own academic performance. In particular, they estimated (a) what percentage of their fellow students were better students than they were and (b) how many seminars and lectures they had missed during the last semester.

At the end of the experimental session, the experimenters thoroughly debriefed participants and were especially careful to make it understood that the nature of the false feedback manipulation and the participants' scores were in no way related to their actual nonverbal intelligence. Participants were then thanked for their participation and offered their compensation.

In sum, Study 3 was based on a 2 (feedback: positive vs. negative)  $\times$  2 (standard: high vs. neutral) experimental design. Both factors were manipulated between participants.

### Results and Discussion

To control for the influence of outliers, all estimates that deviated by more than 3 standard deviations from the question mean

were excluded from the analysis. The remaining estimates were  $z$  transformed, recoded so that high values indicated high levels of ability, and combined into a single score.

We expected participants to assimilate self-evaluations toward the high comparison standard after positive feedback and contrast self-evaluations away from the high standard after negative feedback. This is exactly what we found. In fact, participants who had received positive feedback evaluated their academic performance more positively after comparing with the high standard ( $M = .34$ ) rather than the neutral control standard ( $M = -.08$ ). Participants who had received the negative feedback, however, evaluated themselves more negatively after comparing with the high standard ( $M = -.37$ ) rather than the neutral control standard ( $M = .16$ ). This pattern produced a significant interaction effect in a 2 (feedback: positive vs. negative)  $\times$  2 (standard: high vs. neutral) ANOVA using participants' self-evaluations as the dependent measure,  $F(1, 50) = 4.56, p < .04$ , partial  $\eta^2 = .08$ . In this analysis, none of the main effects reached significance ( $F_s < 1.2, p_s > .28$ ).

Using a different strategy to manipulate the relative position of self and standard, these findings show that the direction of comparison consequences critically depends on how close the self and the standard are along the judgmental dimension. If false positive feedback moved participants' self-views closer to the superior position of the high comparison standard, then the self was assimilated toward the standard. If, however, false negative feedback moved participants' self-views further away from the position of the standard, then the self was contrasted away from the standard. Thus, the direction of social comparison effects may not only be influenced by changing the position of the comparison standard. Rather, comparisons with the very same standards may have opposing consequences depending on the momentary position the self assumes on the critical dimension.

#### Study 4

Study 4 attempted to extend these findings in two ways. For one, we applied a broader measure of the self-evaluative consequences of the respective comparisons. Specifically, to assess self-evaluative consequences, we used two independent measures—self-descriptions and self-evaluative judgments. Subsequent to the social comparison, participants first described their own performance in college and then explicitly evaluated their performance with a series of judgments. Going beyond the mere self-evaluative comparison consequences, the results of Study 2 suggest that these diverging evaluative consequences may be accompanied by diverging informational foci. Again, we used the picture comparison task to measure these foci. We expected that relative to the neutral standard control, participants in the assimilative positive feedback condition would see the two scenes as more similar than those in the contrastive negative feedback condition.

#### Method

*Participants.* We recruited 54 students at the University of Würzburg under the same circumstances specified in Study 3.

*Materials and procedure.* The materials were highly similar to those of Study 3, so that participants again received positive versus negative false feedback before comparing themselves with a high versus neutral standard. We made two main alterations. First, we included a broader measure of the

self-evaluative comparison consequences. Second, we assessed participants' informational focus on similarities versus differences subsequent to the comparison using a picture comparison task similar to the one described in Study 2.

To assess self-evaluative comparison consequences, we first asked participants to describe themselves with respect to their academic performance after they had compared themselves with the respective social comparison standards. Specifically, we instructed participants to take a few minutes to think about their own academic performance and to describe themselves along this dimension in a few sentences. Participants then proceeded with the third part of the social comparison task by answering four self-evaluative questions about their academic performance. In particular, they estimated (a) what percentage of their fellow students were better students than they were, (b) how many seminars and lectures they had missed during the last semester, (c) how likely it was that they would graduate, and (d) how often they had engaged in academic discussions with their fellow students during the last semester.

After completion of this task, participants received a separate folder that included the similarity focus assessment task, which was similar to the one used in Study 2. We used the same pictures and general instructions as before but applied a different measure of participants' similarity focus. Rather than explicitly judging the similarity of the two pictures, this time participants described these pictures in writing. In particular, they were instructed to allow themselves a few minutes to describe the two pictures by comparing them.

At the end of the experimental session, the experimenters thoroughly debriefed participants and were especially careful to make sure that the nature of the false feedback manipulation and the fact that participants' score was in no way related to their actual nonverbal intelligence was understood. Participants were then thanked for their participation and offered their compensation.

In sum, Study 4 was based on a 2 (feedback: positive vs. negative)  $\times$  2 (standard: high vs. neutral) factorial design. Both factors were varied between participants.

#### Results

On the basis of the results of Study 3, we expected that participants whose position on the critical dimension had been shifted toward the high standard by receiving positive feedback would assimilate toward this standard. Participants whose position had been shifted away from the high standard by negative feedback, however, should have contrasted away from this standard. These comparison outcomes should have been apparent on self-descriptions as well as on self-evaluative judgments. More important, we expected these diverging comparison consequences to be accompanied by diverging informational foci on similarities versus differences. If assimilative comparisons are accompanied by an informational focus on similarities and contrastive comparisons are accompanied by a focus on differences, as we assume, then these diverging foci should have influenced participants' responses in the subsequent picture comparison task. In particular, relative to the neutral standard control, participants who received positive feedback and assimilated to the high standard should have seen the two pictures as more similar. On the other hand, participants who received negative feedback and contrasted away from the high standard should have seen the two pictures as less similar.

*Self-descriptions.* Participants' self-descriptions of their academic performance were rated by two independent raters who were blind to experimental conditions. Raters judged the level of academic performance that was apparent from the self-descriptions along a 9-point rating scale that ranged from 1 (*very poor*) to 9

(*very good*). The two raters showed high agreement ( $r = .79, p < .01$ ), so their ratings were combined into one single score.

Participants' self-descriptions strongly depended on the nature of the comparison standard and the feedback condition. In particular, participants in the positive feedback condition assimilated self-descriptions toward the high standard so that they described their academic performance in more positive terms if they had compared themselves with the high ( $M = 6.23$ ) rather than the neutral control ( $M = 4.79$ ) standard. Participants in the negative feedback condition, however, contrasted self-descriptions away from the high standard and described their academic performance more negatively if they had compared themselves with the high ( $M = 5.4$ ) rather than the neutral ( $M = 6.68$ ) standard. This pattern produced a significant interaction effect in a 2 (feedback: positive vs. negative)  $\times$  2 (standard: high vs. neutral) ANOVA using the combined ratings of participants' self-description as a dependent variable,  $F(1, 50) = 5.7, p < .02$ , partial  $\eta^2 = .10$ . None of the main effects reached significance ( $F_s < 1$ ).

*Self-evaluations.* We controlled for outliers by excluding values that deviated by more than 3 standard deviations from the question mean,  $z$  transformed the remaining responses, recoded them so that higher values indicated better performance, and combined them into a single score.

Self-evaluative judgments were clearly influenced by the nature of the feedback participants had received as well as the standard they had used for comparison. In particular, participants who had received positive feedback about their performance in the intelligence test assimilated self-evaluations toward the high standard so that they judged their academic performance to be better after comparison with the high ( $M = .08$ ) rather than the neutral ( $M = -.27$ ) standard. However, participants who had received negative feedback contrasted self-evaluations away from the high standard and judged their academic performance to be worse after the comparison with the high ( $M = -.12$ ) rather than the neutral ( $M = .31$ ) standard. This pattern produced a significant interaction effect in a 2 (feedback: positive vs. negative)  $\times$  2 (standard: high vs. neutral) ANOVA using the combined self-evaluative judgments as a dependent variable,  $F(1, 50) = 7.76, p < .01$ , partial  $\eta^2 = .13$ . In this analysis, none of the main effects reached significance ( $F_s < 2, p_s > .17$ ).

*Similarity focus.* Two independent raters who were blind to experimental condition rated participants' descriptions of the two target pictures with respect to two qualities. First, they counted the number of times participants explicitly mentioned a similarity between the two pictures. Second, they judged the overall similarity of the two pictures that was apparent in the description along a 9-point rating scale ranging from 1 (*not at all similar*) to 9 (*completely similar*). Both raters showed high agreement with respect to the number of explicit mentions of similarity ( $r = .86, p < .01$ ) as well as the overall similarity judgment ( $r = .72, p < .01$ ), so their ratings were combined. As with the other measures, we controlled for outliers in the number of mentioned similarities by excluding one response from the analysis that was more than 3 standard deviations above the mean. To further combine the two measures into a single similarity score, we  $z$  transformed them so that high values indicated higher levels of similarity.

The mean similarity scores indicate that participants who had assimilated themselves toward the high standard focused relatively more on similarities than those who had contrasted away from this

standard. More specifically, participants who had received positive feedback before comparing with the high standard described the two pictures as more similar ( $M = .41$ ) than participants who had been exposed to the neutral standard ( $M = -.47$ ). Participants who had received negative feedback before comparing with the high standard, however, described the pictures as less similar ( $M = -.06$ ) than those who compared with the neutral standard ( $M = .25$ ). This pattern produced a significant interaction effect in a 2 (feedback: positive vs. negative)  $\times$  2 (standard: high vs. neutral) ANOVA using the combined similarity score as a dependent variable,  $F(1, 50) = 7.63, p < .01$ , partial  $\eta^2 = .13$ . In this analysis, none of the main effects reached significance ( $F_s < 1.7, p_s > .2$ ).

### Discussion

These findings provide substantial support for the selective accessibility perspective on comparison consequences. First, replicating the results of Study 3, they show that the direction of comparison consequences critically depends on how close the self and the standard are along the judgmental dimension. The resulting assimilative and contrastive comparison consequences were apparent on self-descriptions and self-evaluative judgments alike. Furthermore, these differences in the self-evaluative consequences of social comparison were accompanied by the predicted differences in informational focus. As in Study 2, participants who engaged in assimilative social comparisons showed a stronger focus on similarities in a subsequent picture comparison task that was unrelated to the social comparison. Participants who engaged in contrastive social comparison, on the other hand, showed a stronger focus on dissimilarities. This suggests that assimilative and contrastive comparison consequences are indeed accompanied by an informational focus on similarities and differences, respectively. Again, these induced differences in informational focus were even apparent on a task that was completely unrelated to the critical social comparison.

At first sight, the fact that self-evaluations and similarity focus after comparison with the neutral control standard were also influenced by the feedback manipulation seems to stand in contrast to the results of Study 3, where changes were primarily apparent in the high standard condition. It is important to note, however, that this difference in the baseline condition is extraneous to the questions under consideration here. Because *assimilation* and *contrast* are relative terms, and our hypotheses pertain to differences between the high and neutral standard conditions, changes in the baseline of the neutral control standard are of secondary importance.

### Study 5

The previous studies demonstrate that assimilative and contrastive social comparisons are accompanied by a generalized informational focus on similarities versus differences. In Studies 2 and 4, the respective informational focus was assessed after participants had evaluated themselves on the critical dimension. In our final study, we set out to demonstrate that the diverging informational foci on similarities versus differences are immediately apparent as soon as the comparison has been made. To do this, we assessed participants' informational focus on similarities versus

differences right after the social comparison, with no intervening self-evaluation.

### Method

*Participants.* We recruited 54 students at the University of Würzburg under the same conditions specified in Study 3.

*Materials and procedure.* The materials and procedures were mostly identical to those of Study 4. Participants were given the same false feedback and social comparison materials. Thus, participants were either given positive or negative false feedback in the nonverbal intelligence test and were then asked to compare their own academic performance with a high or a neutral social comparison standard.

To assess participants' similarity focus right after the social comparison, the picture comparison immediately followed the social comparison. After indicating how difficult they found it to make the comparison, participants proceeded with comparing the two sketches used in Study 4. This time, instead of describing the two sketches, they explicitly judged their similarity along a 9-point rating scale (1 = *not at all similar*; 9 = *completely similar*).

In sum, Study 5 was thus based on a 2 (feedback: positive vs. negative)  $\times$  2 (standard: high vs. neutral) experimental design. Both factors were varied between participants.

### Results and Discussion

On the basis of the results of the previous study, we expected that relative to the neutral standard control condition, participants who had compared themselves with the high standard would judge the similarity of the two pictures to be higher if they had received positive rather than negative feedback about their performance in the intelligence test.

The results are consistent with these predictions. Clearly, participants' similarity focus depended on the nature of the feedback and the social comparison standard. Participants who had received positive feedback about their performance in the intelligence test judged the pictures to be more similar if they had compared themselves with the high ( $M = 5.54$ ) rather than the neutral ( $M = 4.36$ ) standard. Participants who had received negative feedback, however, judged the two pictures to be less similar if they had compared themselves with the high ( $M = 4.67$ ) rather than the neutral ( $M = 5.78$ ) standard. In a 2 (feedback: positive vs. negative)  $\times$  2 (standard: high vs. neutral) ANOVA using participants' similarity rating as a dependent variable, this pattern was borne out in a significant interaction effect,  $F(1, 50) = 5.71, p < .02$ , partial  $\eta^2 = .10$ . In this analysis, none of the main effects reached significance ( $F_s < 1$ ).

These findings demonstrate that the diverging informational foci on similarities versus dissimilarities that accompany assimilative and contrastive comparison consequences are apparent as soon as the critical comparison has been made. Immediately after participants had compared themselves with the social comparison standard, they selectively focused on similarities versus differences in an unrelated task. Engaging in assimilative versus contrastive social comparisons thus appears to immediately induce the corresponding informational focus, even if no explicit self-evaluation is carried out.

### General Discussion

Social comparisons shape the self in important and variable ways. Self-evaluations are sometimes assimilated toward and

sometimes contrasted away from a given standard. Which of these opposing consequences prevails appears to depend on a host of moderating factors, such as self-esteem, psychological closeness, category membership, the mutability of the self, and the attainability of the standard. We examined the psychological mechanisms that underlie the diverging consequences of social comparison. On the basis of the selective accessibility model (Mussweiler, 2003a), we hypothesized that assimilation results if judges engage in the comparison process of similarity testing by selectively focusing on the ways in which they are similar to the standard, whereas contrast occurs if judges engage in the comparison process of dissimilarity testing by selectively focusing on the ways in which they are different from the standard. If these alternative comparison mechanisms are indeed at play, then assimilative and contrastive comparisons should be accompanied by diverging informational foci on similarities versus differences.

Our results provide ample support for this hypothesis. First, they demonstrate that assimilation results under conditions that foster similarity testing, whereas contrast occurs under conditions that foster dissimilarity testing. In particular, the direction of social comparison consequences critically depends on the relative positions the self and the social comparison standard assume on the judgmental dimension. If both are relatively close, so that similarity testing is more likely to be engaged, assimilation results; if both are relatively distant, however, so that dissimilarity testing is likely to be engaged, contrast prevails. Notably, this is the case no matter whether the position of the standard is manipulated via changes in standard extremity or whether the position of the self is manipulated via a false feedback manipulation. These findings indicate that conditions that foster similarity testing also foster assimilation, whereas conditions that foster dissimilarity testing foster contrast.

In addition, these results further demonstrate how variable social comparison consequences are. In fact, a comparison with the exact same standard may yield opposing judgmental consequences depending on the momentary position the self assumes in relation to the standard. Whether participants see themselves as farther away or closer to the standard critically determines whether they assimilate toward or contrast away from it.

More important, our findings demonstrate that the diverging self-evaluative consequences of social comparison are accompanied by diverging informational foci. Assimilative social comparisons induce a generalized focus on similarities, whereas contrastive social comparisons induce a focus on differences. Notably, these diverging foci are rather general in nature in that they are not restricted to the specific social comparison task. Rather, they extend to completely unrelated tasks that involve different targets and standards. No matter whether assimilation versus contrast is induced by changing the position of the standard or the self, judges who assimilated toward the standard selectively focused on similarities in a subsequent picture comparison task, whereas judges who contrasted away from the standard selectively focused on differences. This suggests that focusing on similarities versus differences plays a core role in the genesis of assimilative and contrastive comparison consequences.

Notably, the link between a general informational focus on similarities versus differences and assimilative versus contrastive comparison consequences appears to be bidirectional in nature. Previous research has demonstrated that inducing judges to focus on either similarities or differences in social comparison leads

them to assimilate self-evaluations toward a standard or to contrast self-evaluations away from this standard (Mussweiler, 2001). The present findings demonstrate that inducing judges to assimilate toward a standard or to contrast away from a standard leads them to focus on either similarities or differences. This bidirectionality demonstrates how intimately the respective informational foci on similarities versus dissimilarities and assimilative and contrastive comparison consequences are connected.

In this respect, the present findings provide empirical support for the core assumption of a selective accessibility perspective on comparison consequences (Mussweiler, 2003a). Within this theoretical framework, comparisons can take one of two alternative forms. Similarity testing involves a selective focus on similarities between the self and the standard and leads to assimilation. Dissimilarity testing involves a selective focus on differences between the self and the standard and leads to contrast. Consistent with this perspective, the present studies demonstrated that assimilative and contrastive comparison consequences are indeed accompanied by the respective informational foci.

From a selective accessibility perspective, these respective informational foci influence which subset of self-knowledge judges activate during a social comparison. Specifically, judges who focus on similarities to the comparison standard are assumed to selectively seek and activate knowledge indicating that their standing on the judgmental dimension is indeed similar to that of the standard. Judges who focus on dissimilarities, however, are assumed to selectively seek and activate knowledge indicating that their standing on the judgmental dimension is different from that of the standard. Similarity and dissimilarity testing are thus assumed to lead to a selective increase in the accessibility of different subsets of self-knowledge. We see this differential accessibility of self-knowledge as the crucial mediator of social comparison consequences. Judges who have a standard-consistent subset of self-knowledge selectively accessible will assimilate self-evaluations toward the standard. Judges who have a standard-inconsistent subset of self-knowledge selectively accessible, however, will contrast self-evaluations away from the standard. Previous findings (Mussweiler & Bodenhausen, 2002; Mussweiler & Strack, 2000b) directly showed these critical selective accessibility effects in participants' self-knowledge. Using lexical decision tasks to assess the accessibility of different subsets of self-knowledge, these studies demonstrated that assimilative social comparisons do indeed involve a selective increase in the accessibility of standard-consistent self-knowledge (Mussweiler & Strack, 2000b). Contrastive social comparisons, however, involve a selective increase in the accessibility of standard-inconsistent self-knowledge (Mussweiler & Bodenhausen, 2002). In combination with these earlier findings, the present results suggest that differential foci on similarities versus dissimilarities that lead to a selective increase in the accessibility of standard-consistent versus standard-inconsistent self-knowledge are indeed responsible for the diverging self-evaluative consequences of social comparison.

The proposed differentiation between two alternative modes of comparison with opposing self-evaluative outcomes has the potential to provide an integrative framework for the diverse moderators of comparison consequences. At first sight, these moderators appear disconnected. From a selective accessibility perspective, however, they can be related to the two alternative comparison mechanisms of similarity and dissimilarity testing (for a more detailed

discussion, see Mussweiler, 2003a). In the present research, we have examined whether the respective foci on similarities versus differences accompany assimilative versus contrastive social comparisons that are triggered by differences in the relative position self and standard assume on the critical dimension. Our data clearly demonstrate that assimilative social comparisons are accompanied by an informational focus on similarities, whereas contrastive social comparisons are accompanied by an informational focus on differences. Assuming that similar informational foci also accompany the effects of other moderators clearly remains speculative to some extent. At the same time, however, it has considerable integrative potential and allows relation of a host of previously disconnected moderators to one another.

### *Relation to Other Models of Social Comparison Consequences*

The selective accessibility framework that we put to a test in the present research shares some of its core assumptions with alternative perspectives on the self-evaluative consequences of social comparison. One particularly prominent framework is the self-evaluation maintenance model developed by Tesser and his colleagues (e.g., Tesser, 1988; Tesser et al., 1988). From a broad perspective, the selective accessibility and self-evaluation maintenance (often abbreviated as "SA" and "SEM") models converge on the assumption that psychological closeness is a critical determinant of comparison outcomes. From a self-evaluation maintenance perspective, closeness determines whether comparisons influence self-evaluation. From a selective accessibility perspective, psychological closeness is one core factor that influences whether comparisons involve similarity or dissimilarity testing and thus determines how comparisons influence self-evaluation. In this respect, the role closeness plays in both models is quite distinct. In SEM, closeness is primarily important for processes that are related to standard use, processes that determine whether social comparison information is used for self-evaluation. SA, on the other hand, is not concerned with standard use and focuses on the way in which standard information that is selected for comparison influences the self. Although SEM and SA thus agree that psychological closeness shapes social comparisons in important ways, they focus on its influences on different comparison stages.

This central role that target-standard similarity plays for the direction of social comparison consequences is also consistent with Collins's (1996, 2000) integrative perspective on the self-evaluative consequences of upward comparisons. In fact, both perspectives converge on the assumption that high levels of self-standard similarity lead to assimilation. This general agreement on the role of similarity notwithstanding, the mechanisms that are assumed to underlie comparison consequences are quite different. Building on Manis's work on expectancy effects in social judgment (e.g., Manis et al., 1991), Collins attributed the assimilative consequences of comparisons with similar upward standards to "expectations that other attributes, such as high levels of ability, will also be shared" (Collins, 1996, p. 62). In contrast, the SA perspective holds a selective search for and activation of standard-consistent knowledge about the self responsible for assimilative comparison consequences.

From a more general perspective, the selective accessibility model thus takes an informational perspective on comparison

consequences. To understand the variable consequences social comparisons produce, we propose, one has to examine their informational underpinnings. Such an informational approach that is derived from the basic tenets of social cognition research (Higgins, 1996; Wyer & Srull, 1989) has also been taken by two recent perspectives on comparison consequences. Stapel and Koomen (2000) as well as Blanton (2001) applied social cognition models of how accessible knowledge is used to form a target evaluation to social comparison. In particular, building on the inclusion–exclusion model of Schwarz and Bless (1992), these researchers assumed that social comparisons would yield assimilation if information about the standard was included in the representation of the self, whereas contrast would result if standard information was excluded from the self. From this perspective, the direction of comparison consequences critically depends on how participants use accessible information about the standard. In contrast, the SA perspective focuses on knowledge about the self rather than the standard by examining what type of self-knowledge is searched for, activated, and rendered accessible in comparison with the given standard knowledge. Both approaches thus focus on different types of knowledge (self-knowledge vs. standard knowledge) and different types of processes (the search for and activation of knowledge vs. the use of given knowledge).

Notably, previous research has suggested that the primary determinant of comparison consequences is the specific self-knowledge that is activated during the comparison process, not the accessible standard knowledge. A first fact pointing in this direction is the finding that comparison consequences are often specific to the self and do not generalize to other targets to which standard information is equally applicable (Mussweiler & Strack, 2000c). For example, comparing one's own knowledgeability to a given standard only influences subsequent descriptions of the self but not descriptions of a close other. If the accessible standard knowledge were the crucial factor influencing self-descriptions, then this influence should also be apparent in the description of a close other to which this standard knowledge is equally applicable. The fact that this is not the case suggests that the self-evaluative comparison consequences are produced by the more specific self-knowledge that was activated during the comparison. Because this self-knowledge specifically pertains to the self, it cannot be used to describe the other, so these descriptions remain uninfluenced by the comparison. This interpretation is further supported by the finding that social comparisons primarily change the accessibility of knowledge that specifically pertains to the self rather than more general knowledge (Mussweiler & Bodenhausen, 2002; Mussweiler & Strack, 2000b). These findings suggest that the mechanisms of activating self-knowledge during social comparison that are captured in the selective accessibility model may be the more critical determinant of self-evaluative comparison consequences.

### *Beyond Self-Evaluation: Consequences of Similarity and Dissimilarity Focus*

The present research was specifically designed to shed additional light on the mechanisms that underlie the self-evaluative consequences of social comparison. We have demonstrated that the direction of social comparison consequences depends critically on the informational focus judges take during the comparison. If they engage in similarity testing and selectively focus on the ways

in which they are similar to the standard, then assimilation results. If, however, they engage in dissimilarity testing and selectively focus on the ways in which they are different from the standard, then contrast occurs. Recent evidence suggests that the influence of these two alternative informational foci is not restricted to self-evaluations. Rather, behavioral comparison consequences appear to be shaped by a focus on similarities versus differences in much the same way. Consistent with this assumption, it has been demonstrated that judges who were induced to focus on similarities assimilated their behavior toward the standards, whereas judges who were induced to focus on differences contrasted behavior away from the standards (Haddock, Macrae, & Fleck, 2002; see also Schubert & Häfner, 2003). More specifically, judges who focused on similarities among a set of supermodels behaved unintelligently (an assimilation effect), whereas those who focused on differences behaved intelligently (a contrast effect; Haddock et al., 2002). This suggests that differentiating between the alternative processes of similarity and dissimilarity testing may not only integrate the diverse literature on the self-evaluative consequences of comparison. Rather, comparison consequences in general, including self-evaluation, behavior, and affect, may all be linked to the same mechanisms of similarity and dissimilarity testing. Clearly, further empirical evidence must be collected to support this speculation.

### *Conclusion*

Social comparisons are a primary influence on how people define, see, and evaluate themselves. Whether they think of themselves as smart or stupid, wealthy or poor, brave or gutless appears to be primarily a function of how they measure up to others. In this respect, whom people select as comparison standards critically determines their self-perceptions and thus who they think they are. The ways in which social comparisons shape the self, however, are so variable and multifaceted that even comparisons with the exact same standards may have diverging and sometimes opposing consequences. To understand the ways in which social comparisons shape self-evaluations, we argue, one must examine their informational underpinnings. Distinguishing between the two alternative comparison mechanisms of similarity and dissimilarity testing and the informational foci they entail may be a first step toward a more encompassing understanding of the ups and downs of social comparison.

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