

## **BONDS OF FRIENDSHIP: COMPARATIVE SELF-EVALUATIONS EVOKE THE USE OF ROUTINE STANDARDS**

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Recent evidence suggests that people compare themselves with routine standards—such as their best friend—during self-evaluations (Mussweiler & Rüter, 2003). In these past studies, the best friend was more accessible than a former friend subsequent to self-evaluations. We therefore concluded that the best friend was used as a routine standard. However, spreading activation from the self to the more closely associated best friend would provide an alternative explanation. In the present research, we want to rule out this possibility and demonstrate that comparison processes are responsible for the best friend's increased accessibility. In Study 1, we contrasted comparative self-evaluations with absolute ones. In Study 2, participants engaged either in comparative self-evaluations or in self-descriptions. Afterwards the accessibility (Study 1) or the facilitation of judgments (Study 2) of the best friend was assessed. Both studies support the assumption that the best friend was used as a routine standard during comparative self-evaluations.

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The present research was supported by a grant from the German Science Foundation (DFG). We would like to thank Kai Epstude and the other members of the Emmy Noether Research Group on Comparison Processes and the Würzburg Social Cognition Group for stimulating discussions of this work. We are particularly indebted to Lysann Damisch, Tanja Hundhammer, Martina Walter, Romy Weiland, and Sebastian Werner for their help in preparing the stimulus materials and collecting the data. Our special thanks goes to Christina Anderson for her help in preparing the manuscript. Correspondence concerning this article should be sent to Katja Rüter, Dept. of Psychology, Northwestern University, 2029 Sheridan Rd., Chicago, IL 60208. E-mail may be sent to k-rueter@northwestern.edu.

Self-evaluation and social comparison are inextricably intertwined (Festinger, 1954). Even though objective criteria and temporal comparisons (Albert, 1977; Wilson & Ross, 2000) are alternative sources of self-knowledge, comparisons with other people remain of utmost importance in the process of evaluating the self (Festinger, 1954; Gilbert, Giesler, Morris, 1995; Klein, 1997; Mussweiler, Rüter, & Epstude, 2004; Mussweiler & Strack, 2000; for a critical discussion see Wood & Wilson, 2003). This prevalence of social comparison processes entails a particular need for efficiency. If people frequently engage in comparisons with others, they have to do this in a quick and efficient manner. People's cognitive resources are limited (Taylor, 1981) and arduous and effortful comparison processes could hardly be integrated in people's busy lives.

We have recently suggested (Mussweiler & Rüter, 2003) that one possibility for increasing the efficiency of comparison processes is the use of routine standards. Thereby people repeatedly use the same person as a comparison standard to evaluate themselves. What are the advantages of routine standards? Firstly, by routinely comparing oneself with the same standard, an elaborate standard selection process (see e.g., Goethals & Darley, 1977) could be skipped altogether. Furthermore, comparison-relevant information may be readily accessible because it has already been used in previous comparisons so it does not have to be searched for nor to be constructed. Finally, the comparison process of relating this standard-knowledge to self-knowledge may be particularly efficient because it has been practised extensively in previous comparisons (Rüter & Mussweiler, 2004; Smith, 1989, 1994). Therefore, the routinely use of the same standard on all different kinds of comparisons provides the potential for simplifying social comparison in important ways and for making the comparison process more efficient.

However, this efficiency might imply a methodological problem for researchers studying comparison processes. As comparisons with routine standards are well practiced, they are likely to be unconscious and automatic to a large extent and are therefore difficult to detect. So far, social comparison research has mostly concentrated on rather deliberate standard selections (see e.g. Wood, 1989), which could be directly observed or reported by the

comparers themselves. Several research paradigms, such as the rank order paradigm (Wheeler, 1966) or the narrative approach (Wheeler & Miyake, 1992; Wood, Taylor & Lichtman, 1985), have been established to successfully examine different strategies in standard selection (Wood, 1996). These established research paradigms, however, offer little insight into more automatic and efficient comparisons during self-evaluation. The rank order paradigm only observes intended and obvious standard selections. The narrative approach, on the other hand, is confined to social comparisons that are accessible to self-reflection. But people do not have direct access to their own cognitive processes and therefore tend to depend on lay theories if they are asked to describe them (Nisbett & Wilson, 1977; Ross, 1989, Wood 1996). Thus, it could be questioned whether reported social comparisons always reflect peoples' cognitive activities, especially in the case of rather automatic and unconscious comparisons.

What alternative methods can be applied to study standard use during comparative self-evaluations? In our previous work (Mussweiler & Rüter, 2003), we suggested that social cognition methods are better suited to examine such automatic and efficient comparison processes. We chose an indicator for standard use, which is based on the recency effect for concept accessibility (see e.g., Higgins, 1996). As is true for other concepts (Higgins, Rholes & Jones, 1977; Srull & Wyer, 1980), the accessibility of a standard increases if it has been used recently. Therefore, after people have compared themselves with the routine standard during a self-evaluation, this particular standard should be more accessible than a standard that has not been used.

How did we operationalize this method in our experiments? Because our participants are mostly university students, we choose the students' best friend as the routine standard and a good school friend, to whom they had lost contact (exfriend), as a control standard. The initial years at the university constitute an important life transition (Compas, Wagner, Slavin, & Vannatta, 1986) and are a time during which peers with similar experiences become particularly important for self-evaluation (Hays & Oxley, 1986; Hirsch, 1980). Consequently, students' best friends will likely be used often for social comparisons and will constitute important routine standards. Thus, we hypothesized

(Mussweiler & Rüter, 2003) that participants use their best friends as routine standards such that the best friend is more accessible than the exfriend subsequent to self-evaluation. In a control condition, participants did not evaluate themselves but somebody else. Which standards did we expect them to use in that condition? Typically, people engaging in such an other-evaluation use the self as a comparison standard (Dunning & Hayes, 1996) and not the routine standard. Therefore, contrary to the self-evaluation condition, in the control condition the best friend should not be rendered more accessible than the exfriend because neither was used as a standard in the other-evaluation.

To assess the accessibility of the routine standard and the control standard subsequent to a self- or an other-evaluation, we used a lexical decision task (Neely, 1977) in one study (Mussweiler & Rüter, 2003, Study 1). In this task, participants had to decide whether a letter string did or did not constitute a name. The response latencies for these decisions thereby depend on the accessibility of the persons identified with the names. The names of highly accessible persons can be classified faster than names of less accessible persons. As expected, we found that participants reacted faster to the name of their best friend than to the name of the exfriend if they had previously evaluated themselves concerning several personal attributes, but not if they had previously evaluated somebody else. We therefore concluded that participants' best friends were more accessible because of their use as routine standards during self-evaluation. But is this conclusion valid? Could we unequivocally claim that in the self-evaluation condition the accessibility of the best friend was increased because participants had compared themselves with him or her? In retrospect, we have to acknowledge at least one further plausible explanation.

This alternative explanation is based on a spreading activation assumption. Associative network theories hold that the activation of one knot in a network spreads to associated knots (e.g., Anderson, 1983; Anderson & Pirolli, 1984; Collins & Loftus, 1975). The amount of activation reaching a second knot depends on (a) the amount of activation of the initial knot, (b) the number of knots associated with the initial knot, and (c) the strength of the association between the initial and the second knot. The strength

of an association thereby increases with repeated simultaneous activation of two knots (Collins & Loftus, 1975). Now think again about the two friends, which we opposed to each other as two possible standards during the self-evaluation in our experiment (Mussweiler & Rüter, 2003). One was the best friend. A best friend is a person to whom people feel especially close, with whom they interact frequently, and with whom they share time, activities, and thoughts. Consequently, the knowledge of the self and of the best friend greatly overlaps (Aron & Farelly, 1999). Exfriends, on the other hand, do not play such an important role in peoples' present lives. Even if people know their exfriends well based on past experiences, by definition they have lately not interacted with them. This different frequency of interactions leads to a predictable difference in the association strength between the self and these two friends: relative to the association between the self and an exfriend, the association between the self and the best friend should be stronger.

Thus, there is a closer associative bond between oneself and one's best friend than between oneself and an exfriend. How may this disparity in the bonds of friendship shed doubt on the conclusions we drew from our previous work? Note that we contrasted a self-evaluation to an other-evaluation condition (Mussweiler & Rüter, 2003). Even if we assume that participants use the self as a standard to evaluate the other person in the other-evaluation condition (Dunning & Hayes, 1996), we nevertheless expect the self to be more involved and more activated in the self-evaluation condition. Because of the closer association between the self and the best friend relative to the self and exfriends, mere spreading activation would therefore likewise predict higher accessibility for the more closely associated best friend subsequent to a self-evaluation. On the other hand, evaluating another person activates the self to a lesser extent and the difference in the accessibility of the two standards due to spreading activation would be less pronounced. By this means, we can explain our results without assuming comparison processes. Therefore, the interpretation of the data pattern remains to be ambiguous. It is possible that the accessibility of the routine standard subsequent to the self-evaluation was increased because participants had compared themselves with

this standard, but it is also possible that spreading activation caused this effect.

### THE PRESENT RESEARCH

So far, it remains unclear whether the increased level of accessibility for the routine standard observed in our previous research (Mussweiler & Rüter, 2003) does indeed indicate that this standard had been used for comparison. In the present research, we set out to address this ambiguity. We conducted two new experiments to demonstrate more clearly that our previous data are produced by comparison processes between the self and the routine standard rather than by spreading activation. Again, we interpret high accessibility of a standard subsequent to a self-evaluation as an indicator that participants compared themselves with this person. However, this time we circumvent the possibility that mere spreading activation from the self to the closely associated best friend would produce similar results even if participants had not used him or her as a comparison standard. To ensure that comparison processes are necessary to render the routine standard accessible, in Study 1, we contrasted comparative self-evaluations with absolute ones. Afterwards we assessed the accessibility of the standards with a lexical decision task. Both types of evaluation activate the self in a similar way, but the latter one is likely to involve comparison processes to a lesser degree. In Study 2, we examined response latencies for judgments of friends subsequent to either comparative self-evaluations or self-descriptions. In the self-description condition, participants can describe themselves without necessarily engaging in social comparison processes; while in the self-evaluation condition, they have to compare themselves with another person. These comparisons, which are more likely during the self-evaluation, activate specific knowledge about the standard and thus facilitate the subsequent judgments. In sum, these two studies attempt to demonstrate more convincingly the use of routine standards in comparative self-evaluations.

## STUDY 1

In Study 1, the participants engage either in absolute or comparative self-evaluations. Absolute self-evaluations are evaluations on absolute scales such as height in centimeters, speed in seconds per meter, or frequencies of habits (e.g., going to the movies) in incidents per unit of time. Comparative self-evaluations, on the other hand, are typically given on relative rating scales anchored such as *small* – *tall*, *slow* – *fast*, or *rarely* – *often*. Both types of evaluation activate the self, but only the comparative self-evaluation requires social comparison processes (Biernat & Manis, 1994; Biernat, Manis & Kobryniewicz, 1997; Biernat, Manis & Nelson 1991; Mussweiler & Strack, 2000). If you are asked how tall you are in centimeters, you might answer 182. This answer is based on a comparison with an absolute scale, i.e. a tape measure, and thus no comparison with another person is necessary. On the other hand, if you are asked how tall you are on a scale from small to tall, you have to engage in a social comparison to give an answer. The meaning of adjectives such as *small* and *tall* are relative and always depends on the standards to which the adjectives are anchored. A large dog is very likely to be smaller than a small elephant because the adjective *large* for a dog usually means *large compared to other dogs*. Therefore, to evaluate oneself on a relative rating scale, one first has to define the meaning of the scale's poles by social comparison.

This suggests that whether participants engage in absolute or in comparative self-evaluation influences the extent of their social comparison activities. Even though we cannot rule out any social comparison processes in the case that participants give their answers on absolute scales, the likelihood and the extent of such processes should be significantly reduced compared to participants who give their answers on relative scales. However, what we kept constant between both conditions was the activation of the self. The self has to be activated regardless of whether participants engage in absolute or comparative self-evaluations. Therefore, if the activation level of the routine standard is entirely due to spreading activation from the self to the best friend, it should make no difference whether participants evaluate themselves on relative or on absolute scales. On the other hand, if we find that

there is higher accessibility of the best friends subsequent to comparative self-evaluations but not to absolute self-evaluation, than this would indicate that the accessibility is at least partly due to comparison processes. Such a data pattern would strengthen the hypothesis that the best friend was indeed used as a routine standard during self-evaluation. As in our previous research (Mussweiler & Rüter, 2003, Study 1), we implemented a lexical decision task to assess the accessibility of possible standards.

## METHOD

*Participants.* We recruited 63 students of the University of Würzburg to participate in this study as part of a 1-hr experimental session. All participants received € 6 as a compensation.

*Materials and Procedure.* We started the 1-hr session with the first block of this study. In this block, we collected the name of the routine standard—participants' best friend—and the name of a good school-friend to whom they had lost contact (exfriend). In the cover story, we pretended to be interested in the influence of names on the occurrence and duration of friendships. Therefore, the participants listed the names of five friends and indicated afterwards how much they liked these names as well as how much they liked three additional names. Subsequently, the participants worked on further, unrelated experiments, which lasted for approximately 15 minutes.

In the second block of the experiment, the participants engaged in self-evaluations, which implied more or less social comparison processes. Subsequently, we assessed the accessibility of the potential standards. In the instructions, we informed the participants that we wanted to examine the influence of habits on cognitive abilities. Participants would first answer some questions about several habits and then work on a reaction time task evaluating their ability to concentrate. In the self-evaluation task, the participants thought about and judged the frequencies of eight habits such as sports, watching television, or going to the movies. For instance, participants were asked "How often do you go to the movies?" To manipulate the extent to which participants engaged in social comparison processes during this self-evaluation, we used two different answer formats. Approximately half of the participants gave their answers on

9-point rating scales ranging from 1 (e.g., *very rarely*) to 9 (e.g., *very often*). As outlined above, an evaluation on such a relative scale requires social comparison because the scales have to be anchored. To judge oneself as a person who goes to the movies very rarely means to go very rarely compared to other people. Although there may be a few rare cases in which an answer can be given without any comparison, such as for individuals who have never been to a movie, these rare cases will be outweighed by the evaluations that do lead to social comparison processes. Therefore, we hypothesized that judgments on these relative scales in the comparative self-evaluation would evoke the activation of the best friend if participants indeed based their judgments on comparisons with their routine standard.

The other half of the participants received the same questions, but used an absolute answer format like incidences per month. To judge the frequency of the habit *going to the movies* the answer was for example posted as \_\_\_\_\_ *times per month*. Participants can evaluate themselves on such absolute scales without comparing the self with other people. To decide how often per month one goes to the movies, one just has to observe oneself and no one else. Therefore, the extent to which the participants engage in social comparison processes is lower in the group using the absolute answer format compared to the group using the relative answer format. Consequently, it should be less likely that the best friend as a routine standard would be rendered accessible during those absolute self-evaluations.

Subsequent to the self-evaluation the participants worked on a lexical decision task in which they had to decide as fast as possible whether a letter string did or did not constitute a name. The stimuli included the name of the current best friend (routine standard) and the name of the exfriend. If the best friend had been rendered accessible in the preceding self-evaluation task, then participants should have been able to classify her or his name faster than the name of the exfriend.

In the lexical decision task, the letter strings appeared on a computer screen immediately after a one-second presentation of a fixation point (*X*). The participants responded by pressing either the "Z"-key with the left index finger or the "/"-key (on an American keyboard) with the right index finger. The assignment of the keys (left = name, right = no name) was indicated on the screen during the whole task.

Altogether, the participants responded to 15 letter strings. Five of those were same–sex names, five opposite–sex names, and five no names. The names of a participant’s best friend and exfriend appeared at the fourth and the seventh position (this order was counterbalanced). We randomized the presentation of the remaining stimuli with the limitation that no other same–sex name appeared before the two critical trials. After completing the lexical decision task the participants continued to work on further, unrelated experiments. At the end of the 1–hr session they were thanked, fully debriefed, paid, and dismissed.

In summary, Study 1 is based on a 2 (self–evaluation: comparative vs. absolute)  $\times$  2 (lexical decision: best friend vs. exfriend) mixed–factorial design. The answer format of the self–evaluation was varied between participants. Half of the participants rated their habits on relative rating scales, whereas the other half answered in an absolute format. Subsequently, all participants classified the name of their best friend and the name of their exfriend in the lexical decision task. Hence, this variable was varied within participants.

## RESULTS

Our dependent variables are the response latencies in the lexical decision task. We hypothesized that participants would react faster toward the name of the best friend than toward the name of the exfriend only if they had previously evaluated themselves on relative scales but not on absolute ones. Such relative scales force participants to engage in comparative self–evaluations and we expect participants to use their best friend as a routine standard in this social comparison process. Doing so would render the best friend’s name more accessible so that it could be classified faster in the lexical decision task. Self–evaluations on absolute scales, however, can take place without any comparison and, hence, the best friend is less likely to be activated during that task.

We excluded five response latencies from the analyses because they deviated more than two standard deviations from the group mean (Ratcliff, 1993)<sup>1</sup>. To reduce the skewedness of the data we

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1. Including the outliers does not change the obtained pattern of results.

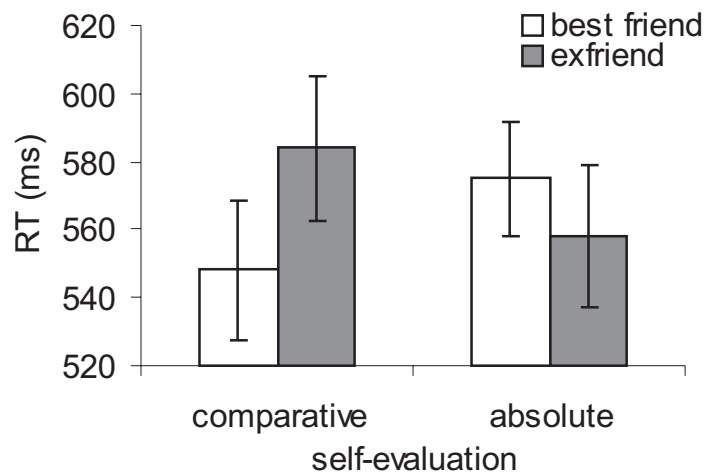


FIGURE 1. Mean response latencies and standard errors for the lexical decisions (best friend vs. exfriend) subsequent to comparative versus absolute self-evaluation (Study 1). RT = reaction time.

further performed logarithmic transformations ( $\ln$ ) of the response latencies (Fazio, 1990). Our analyses are based on these transformed latencies, but we will report the untransformed means (in milliseconds) for ease of interpretation.

As is apparent from Figure 1, the participants indeed reacted faster toward the name of the best friend ( $M = 548$  ms) than toward the name of the exfriend ( $M = 584$  ms) subsequent to comparative self-evaluations,  $t(26) = 1.96$ ,  $p < .03^2$ . However, if the participants had previously evaluated themselves on absolute

2. Unless otherwise noted, all reported  $t$ -tests involving hypothesized differences are one-tailed. Although we had clear directional predictions 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 recommended compromise between the two extreme positions in this debate, constructing a null-hypothesis rejection region of 5% in the theoretically expected tail and 0.5% in the unexpected tail.

scales where social comparison processes are less likely, no such difference in the response latencies occurred (best friend:  $M = 575$  ms, exfriend:  $M = 558$  ms,  $t(30) = -1.26$ , *ns*). This pattern of means produces a significant interaction effect in a 2 (self-evaluation: comparative vs. absolute)  $\times$  2 (lexical decision: best friend vs. exfriend) mixed-model analysis of variance (ANOVA) using the logarithmic transformations of response latencies in the lexical decision task as the dependent measure,  $F(1, 56) = 5.27$ ,  $p < .03$ ,  $\eta^2 = 0.09^3$ . None of the main effects proves to be significant in this analysis, all  $F_s < 1$ .

## DISCUSSION

The results of Study 1 are consistent with our hypothesis that people activate their best friend as a routine standard while evaluating themselves. As expected, participants were faster in responding to the name of their best friend than to the name of an exfriend subsequent to comparative self-evaluations. Because faster lexical decisions typically indicate higher levels of accessibility, these findings demonstrate that evaluating oneself in a comparative manner does indeed put one's best friend on the top of one's mind. Importantly, this effect did not occur subsequent to absolute self-evaluations.<sup>4</sup> Thus, compared to the baseline, which is the accessibility of the control standard, the accessibility of the best friend was only increased in the experimental condition. If we assume a stronger association between the self and the best friend than between the self and the exfriend, the difference in response latencies subsequent to comparative self-evaluations could also be due to spreading activation from the self to the friends. However, spreading-activation would cause a similar effect after absolute self-evalua-

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3. All  $\eta^2$  reported in this manuscript are partial  $\eta^2$ .

4. One may wonder, why we haven't observed a higher activation of the best friend than the exfriend in the control condition. However, asking participants to name an exfriend may have rendered this person's accessibility to a similar degree as the chronological accessibility of the best friend. Importantly, this assumed influence works against our hypothesized effects in the comparative self-evaluation condition.

tions because the activation of the self should be comparable in both conditions. This was clearly not the case. The main difference between comparative and absolute self-evaluations is that comparison processes are more likely to occur during the former than during the latter. Therefore, the observed interaction effect strongly supports the interpretation that the higher accessibility of the best friend, relative to the exfriend, subsequent to comparative self-evaluation is actually based on comparison process in which the best friend is used as a routine standard.

In the next study, we set out to replicate the results of Study 1 and to thereby look at the activation of comparison-relevant information during self-evaluations more specifically. The short response latencies toward the standard's name in the lexical decision task used in Study 1 indicate the activation of this standard in general. To conduct a social comparison, however, specific knowledge about the standard has to be made accessible. If I compare myself with my best friend concerning my eating habits, I have to think about her eating habits as well as about mine in order to come to a decision. In other words, while comparatively evaluating oneself one simultaneously evaluates the standard. Therefore, judgments of the standard should be facilitated subsequent to comparative self-evaluations because those judgments are based on already activated knowledge.

However, activated knowledge is not the only source for an expected facilitation of the judgments after comparative self-evaluations. In addition, the cognitive processes involved in these two tasks are highly similar. Take into account that the self serves as a default standard if one evaluates another person (Dunning & Hayes, 1996). While we suggest that participants use their best friend as a standard during self-evaluations, Dunning and Hayes (1996) demonstrated that people use the self as a standard to judge another person (e.g., the best friend). In other words, we expect self-best friend comparisons to occur during the self-evaluation and best friend-self comparisons during the judgment of the best friend. Even if the direction of the comparisons is reversed, these two processes should be highly similar, involving similar kinds of information and procedures. Therefore, if the best friend is used as a routine standard then self-evaluation is a procedural

prime for the subsequent judgment of the best friend in the judgment task.

## STUDY 2

In Study 2, the dependent measure to detect standard use was based on these considerations. Participants should be faster in judging a person they had previously used as a standard during the corresponding self-evaluation than a person they had not used.

In addition to this variation of the dependent measure, we also used another control condition to activate the self without comparison. Instead of distinguishing between two different answer formats in the self-evaluation task, this time in one condition the participants' task was a comparative self-evaluation and in the other a self-description. In the comparative self-evaluation, the participants were asked to evaluate their eating habits concerning their health on a free answer format. While evaluating one's own eating habits one might retrieve some absolute criteria (like *Don't eat sugar*), but in addition social comparison processes will likely to be conducted. Even if one does not completely do without sugar, one may nevertheless judge one's eating habits as healthy as long as one eats less than others. Therefore we expected participants to compare themselves with others to come to a decision. In contrast, to describe your eating habits, by illustrating for example where and what you eat, you do not have to compare yourself with other people. Thus, during the self-description the mere activation of the self is sufficient to fulfil the task. Certainly, it is possible that participants in the self-description condition also engage in social comparisons, but it should be to a lesser extent than in the self-evaluation condition. If we therefore find faster judgments of the routine standard compared to a control standard subsequent to a self-evaluation but not subsequent to a self-description, this would conceptually replicate the results of Study 1.

## METHODS

*Participants.* Thirty-six students of the University of Würzburg participated in Study 2. As in the previous study we offered € 6 as

a compensation for an 1-hr experimental session in which Study 2 was embedded.

*Materials and Procedure.* The general procedure was similar to the one in Study 1. We used the same cover story to collect the name of the routine standard (participants' best friend) and the name of the control standard (exfriend). Following the first block, the participants worked on two unrelated experiments that lasted for more than 30 minutes.

The cover story of our main experiment predicated again that we wanted to assess the relationship between specific living habits and cognitive abilities. For that reason the participants were asked to answer some questions about their habits and in between to work on two reaction time tasks that would ostensibly measure specific cognitive abilities.

The first habit the participants thought about was their eating habits. Thereby we realized two conditions. In one condition, the participants were instructed to evaluate their eating habits concerning their health. We gave them one minute to think about this question thoroughly and to come up with an accurate judgment. Afterwards the participants wrote down their evaluation in a few sentences. Because of the free answer format and the difficulty to come up with absolute criteria, we expected participants in this condition to engage in social comparison processes while evaluating their eating habits. For these comparisons, the participants needed a standard and we suggested that they would use their best friend as a routine standard.

In the other condition, the participants also had to think about their eating habits. In this condition, however, they were only asked to describe them. Therefore, we gave the participants one minute to think about what and where they usually ate and who prepared the meals. Afterwards, the participants described their eating habits in a few sentences. In this condition, we did not ask the participants for an evaluation and therefore no social comparison processes were necessary to fulfill the task. It is important to notice, however, that in both conditions the participants thought about themselves and their eating habits for approximately one minute and wrote down their thoughts. Therefore, the self should be activated to similar degrees in both conditions.

The first reaction time task to assess cognitive abilities was our dependent measure and immediately followed the question about the eating habits. We introduced this task as a measurement of judgment ability and judgment speed. The participants were instructed to position their fingers on the number keys on the top row of the keyboard and to make responses with these keys. We explained that their task was to judge on a six-point scale ranging from 1 (*very little*) to 6 (*very much*) how healthy other people's eating habits were. We asked the participants to answer as fast as possible but nevertheless accurately. In order to stress accuracy, we announced some follow-up questions. Altogether, the participants rated the eating habits for eight persons, whereby the second and the fourth judgments were the critical ones. The remaining six people included celebrities such as Steffi Graf (former tennis player) and Joschka Fischer (German foreign minister), as well as participants' parents and themselves. About half of the participants rated their best friend first and the exfriend second. The order was reversed for the other half.

The following questions about other living habits and the second reaction time task were not relevant for this study. At the end of the 1-hr session the participants were thanked, fully debriefed, paid, and dismissed.

In sum, this experiment is based on a 2 (self-thoughts: evaluation vs. description)  $\times$  2 (judgments: best friend vs. exfriend) mixed-factorial design. Half of the participants evaluated and half described their eating habits before judging their best friend's and their exfriend's eating habits.

## RESULTS

The response latencies for the judgments of participants' best friend and exfriend constitute our central dependent measure. Three of the untransformed response latencies deviated more than two standard deviations from the group mean and were excluded from the analyses.<sup>1</sup> We conducted logarithmic transformations ( $\ln$ ) of the remaining response latencies prior to analysis

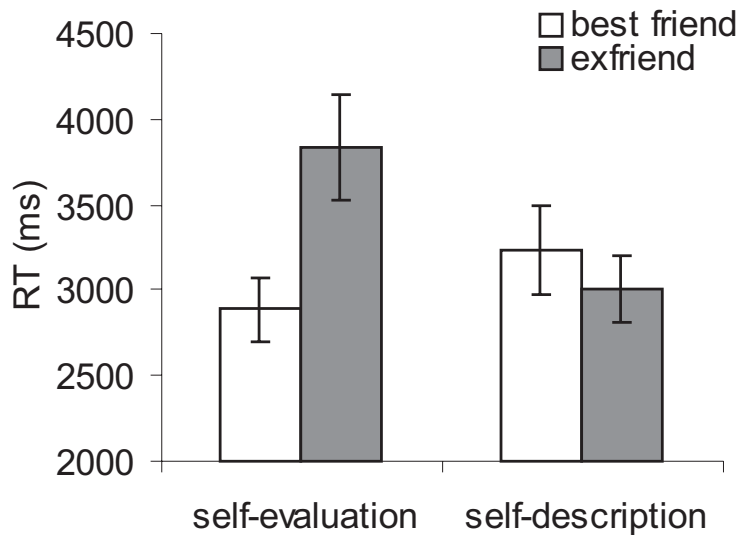


FIGURE 2. Mean response latencies and standard errors for the judgments (best friend vs. exfriend) subsequent to self-evaluation versus self-description (Study 2). RT = reaction time.

but nevertheless will present the untransformed means (in milliseconds) for ease of interpretation.

Similar to our predictions in Study 1, we expected participants to be faster in judging their best friend than their exfriend subsequent to a comparative self-evaluation. Such a self-evaluation depends on comparison processes, which involve the activation of specific knowledge about the self and the standard. Therefore, having previously used the best friend as a routine standard should facilitate participants' judgment of their best friend. On the other hand, during a self-description no comparisons are necessary and, hence, no differences in the speed of the judgments were expected.

As is apparent from Figure 2, the data are consistent with this hypothesis. Subsequent to a comparative self-evaluation the participants judged the healthiness of their best friend's eating habits

faster ( $M = 2,888$  ms) than the healthiness of their exfriend's eating habits ( $M = 3,837$  ms),  $t(13) = 2.61, p < .02$ . On the other hand, if the participants had described and not evaluated their own eating habits, the judgment concerning the best friend was not facilitated relative to the exfriend ( $M = 3,234$  ms and  $M = 3,003$  ms, respectively),  $t(18) = 0.57, ns$ . This pattern was borne out in a significant interaction effect in a 2 (self-thoughts: evaluation vs. description)  $\times$  2 (judgments: best friend vs. exfriend) mixed-model ANOVA using the ln-transformed response latencies in the judgment task as the dependent variable,  $F(1, 31) = 5.76, p < .03, \eta^2 = 0.163$ . None of the main effects proved to be significant,  $F_s < 2.78, p > .10$ .

## DISCUSSION

These findings provide additional support for the assumption that people compare themselves to the routine standard during comparative self-evaluations. As hypothesized, the participants judged their best friend faster than their exfriend on the dimension they had previously evaluated themselves. The use of the best friend as a routine standard involves the activation of comparison-relevant information about the self and the standard as well as a relative judgment of both. Later on, this specific activation and comparison ease the judgment of the best friend. More interestingly, this facilitation effect is specific to the self-evaluation condition and is not apparent in the self-description condition. Even if a self-description activates the self too, this is not sufficient to facilitate subsequent judgments of the best friend. These judgments were solely facilitated if comparisons between the self and the standard could be assumed in the preceding task. As in Study 1, this pattern reinforces our interpretation that the data indicate a comparison between participants and their routine standard (see also Mussweiler & Rüter, 2003) and can hardly be brought into accordance with a spreading activation explanation.

## GENERAL DISCUSSION

In two studies, we have demonstrated again that participants rendered their best friend accessible during a comparative self-eval-

uation and activated knowledge about him or her on the dimension on which participants evaluated themselves. These effects could be explained by the use of the best friend as a comparison standard in the self-evaluation process. Thus, with these experiments we replicated the results of our prior work (Mussweiler & Rüter, 2003) and extended them in an important way.

Whereas in our previously published studies (Mussweiler & Rüter, 2003, Studies 1–3) spreading activation could have likewise explained our results, we now obliterate this weak spot in our experiments. Instead of contrasting self-evaluations to other-evaluations, we opposed comparative self-evaluations with control conditions, in which the self is activated equally but comparison processes are less likely to occur. Even though there still may be some spreading activation from the self to closely related others, there should be even more activation if the closely related other was involved in the comparison processes. Under these circumstances a higher activation of the routine standard relative to the control standard in the experimental condition compared to the control condition indicates the use of the routine standard during the comparative self-evaluation. And this was indeed the case. Only if participants had engaged in comparative self-evaluations was the best friend rendered more accessible than the exfriend and were judgments about him or her facilitated. This effect does not occur if participants have to engage in absolute self-evaluations (Study 1) or in self-description (Study 2), in spite of the fact that in these control conditions the self was likewise activated.

Though we have now ruled out a spreading activation explanation, further sources of ambiguity still remain. For one, in both studies, the manipulation does not exclude any social comparison processes in the control conditions and, likewise, does not guarantee that participants exclusively engage in social comparison processes in the comparative self-evaluation condition. However, this is not a significant problem because the differences in social comparison standard use that exist between the self-evaluation and control conditions are sufficient to elicit the expected effect. Furthermore, there may be differences between the experimental condition and the control conditions that have not

yet been discussed. However, across all different kinds of manipulations and depended variables, the amount of comparison processes between the self and the routine standard is the only reliable distinction between the conditions. We contrasted comparative self-evaluation to comparative other-evaluations, to absolute self-evaluation, and to self-description and the pattern was always the same. Therefore, comparison processes seem to be the driving force behind the activation of the best friend. These results suggest that the best friend indeed plays a crucial role in comparative self-evaluations and that people do compare themselves with this routine standard.

#### THE BEST FRIEND AS A ROUTINE STANDARD

Our data give convincing evidence that people use their best friend as a comparison standard during self-evaluations. But is the best friend the only routine standard we can think of? Routine standards are by definition standards people use on a routine basis. The more often a comparison with a particular person is carried out, the more accessible and efficient the process of relating one's attributes to this standard becomes, and the more likely one is to further engage in this specific comparison. Because of these frequent comparisons, we assume that people are in close contact with their routine standards. In addition, they might have broad knowledge about their routine standards to be able to compare with them on many different dimensions. However, one's best friend is clearly not the only possible routine standard. Other possible routine standards could be one's partner, close relatives, or colleagues. We chose the best friend in our experiments because this is a particularly likely routine standard for our participant population of university students. As outlined above, students may often compare themselves with their peers at this stage of life and especially the comparison with their best friend might thus become a routine.

#### AUTOMATICITY IN SOCIAL COMPARISON

The routine use of a specific standard entails a particular advantage: efficiency. People engage in comparisons to gain

self-knowledge throughout their daily life so frequently that they have to be highly efficient. Otherwise they would waste too much of their limited cognitive resources. By comparing themselves with a routine standard people engage in a well-practiced process and thereby act as “cognitive misers” (Taylor, 1981). Our research draws attention to rather automatic standard selection processes and contrasts with research about deliberate standard selection focusing on involved goals and motives (Taylor, Wayment & Carrillo, 1996; Wood, 1996; Wood & Taylor, 1991). At the same time, the present research is consistent with recent work on automatic and spontaneous social comparisons in general (Dunning & Hayes, 1996; Gilbert et al., 1995; Mussweiler, 2003; Mussweiler et al., 2004). In addition to fulfilling specific self-evaluative or self-enhancing goals, social comparisons also seem to emerge in situations in which comparison standards offer little valuable information (Gilber et al., 1995) or in which people are exposed to standards only very briefly or even subliminally (Mussweiler et al., 2003). Taken together this research emphasizes that people often engage in social comparisons in a spontaneous and automatic fashion. This particular quality of social comparison processes holds the promise that social comparison plays a ubiquitous role in people’s mental lives.

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