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Comparison Processes in Social Judgment: Mechanisms and Consequences

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This article proposes an informational perspective on comparison consequences in social judgment. It is argued that to understand the variable consequences of comparison, one has to examine what target knowledge is activated during the comparison process. These informational underpinnings are conceptualized in a selective accessibility model that distinguishes 2 fundamental comparison processes. Similarity testing selectively makes accessible knowledge indicating target–standard similarity, whereas dissimilarity testing selectively makes accessible knowledge indicating target–standard dissimilarity. These respective subsets of target knowledge build the basis for subsequent target evaluations, so that similarity testing typically leads to assimilation whereas dissimilarity testing typically leads to contrast. The model is proposed as a unifying conceptual framework that integrates diverse findings on comparison consequences in social judgment.

Human judgment is comparative in nature. When people evaluate a given target, they don't do so in a vacuum. Rather, such evaluations are made within and in relation to a specific context. In fact, any evaluation is relative in that it refers to a comparison of the evaluated target with a pertinent norm or standard. To characterize oneself as athletic, for example, implies that one is more athletic than others and is thus, in essence, a comparative statement (Huttenlocher & Higgins, 1971). In this respect, targets of all levels of complexity—ranging from simple psychophysical objects (e.g., D. R. Brown, 1953; Helson, 1964) to complex social stimuli as the self (Festinger, 1954)—are evaluated in a comparative manner (Kahneman & Miller, 1986). Recent evidence even suggests that comparative modes of evaluation may be so deeply rooted in our psyche that stimuli that are not consciously perceived because they are presented subliminally are compared with a salient standard (Dehaene et al., 1998).

This fundamental relativity of human judgment has always figured prominently in social psychological theory and research. In fact, comparative evaluation forms a core mechanism in areas as diverse as attitudes (Sherif & Hovland, 1961; Vallone, Ross, & Lepper, 1985), person perception (Herr, 1986; Higgins & Lurie, 1983), decision making (Kahneman & Miller, 1986; Sherman, Houston, & Eddy, 1999; Tversky & Kahneman, 1974), affect (Higgins, 1987, 1989), and the self (Festinger, 1954; Higgins, Strauman, & Klein, 1986; Miller & Prentice, 1996). The outcome of any judgment process, it seems, depends on the comparisons it involves, whether these are explicitly asked for or whether they occur spontaneously. How hostile someone perceives another person to be depends on whether he or she is judged in comparison with Pope John Paul or with Adolf Hitler (Herr, 1986). Similarly, how competent people perceive themselves to be depends on whether self-evaluation takes place in the context of a competent or an incompetent other (Morse & Gergen, 1970).

Thus, there is little doubt that evaluations of a wide range of targets depend on the pertinent contexts, norms, and standards relative to which the targets are judged. Less clarity, however, exists about the direction of this comparative influence. Sometimes comparisons produce contrast effects in target evaluations. For example, the same target person is judged to be less hostile in the context of extremely hostile others (e.g., Adolf Hitler) than in the context of extremely peaceful others (e.g., the pope; Herr, 1986), or the self is judged to be less competent in the context of a competent person than in comparison with an incompetent standard (Morse & Gergen, 1970). At other times, however, comparisons yield the opposite outcome so that target evaluations are assimilated toward the context or standard. The same target quantity of the length of the Mississippi river, for example, is judged to be longer if compared with a high rather than a low numeric standard (Jacowitz & Kahneman, 1995). Similarly, the self may be judged to be more competent after a comparison with a competent rather than an incompetent other (Brewer & Weber, 1994; Pelham & Wachsmuth, 1995). Thus, comparisons may have assimilative as well as contrastive consequences.

Furthermore, whether assimilation or contrast is the result of comparison depends on a host of moderators such as the extremity of the standard (Herr, 1986; Herr, Sherman, & Fazio, 1983), the ambiguity of the target (Herr et al., 1983; Pelham & Wachsmuth, 1995), or category membership (Brewer & Weber, 1994; J. D. Brown, Novick, Lord, & Richards, 1992; Mussweiler & Bodenhausen, 2002). In fact, even factors that appear trivial at first influence whether the target is assimilated toward or contrasted away from a given standard. In the realm of self-evaluative comparisons, for example, it has been demonstrated that whether self-evaluations of physical attractiveness are assimilated toward or contrasted away from a social standard critically depends on

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whether participants believe that they were born on the same day as the standard (J. D. Brown et al., 1992).

Not only may comparisons yield assimilation or contrast, however, and not only may their emergence depend on seemingly trivial factors, but these opposing consequences may even be parallel results of the same comparison (Biernat, Manis, & Kobrynowicz, 1997; Mussweiler & Strack, 2000b). In one study, for example, comparing the magnitude of participants' drug consumption with either the high standard Frank Zappa[1] or the low standard Steffi Graf produced—depending on the judgment type—assimilation and contrast in participants' self-evaluations (Mussweiler & Strack, 2000b). Participants judged the absolute number of times that they use drugs per month to be higher after a comparison with the high rather than the low standard (an assimilation effect). However, if asked to judge the magnitude of their drug consumption on a subjective judgment scale ("How high is the magnitude of your drug consumption on a scale from 1 to 7?"), participants showed the opposite result and judged their drug consumption to be lower after a comparison with the high rather than the low standard (a contrast effect). Thus, depending on the type of judgment that is used to assess comparison consequences, the very same comparison may, in parallel, yield opposing effects.

Taken together, these findings attest that the ways in which comparisons shape target evaluations are multifaceted. How can these diverging consequences be explained? Why are target evaluations sometimes contrasted away from a standard and sometimes assimilated toward it? Why does the direction of the influence depend on such trivial things as a shared birthday? Why does the same comparison sometimes produce assimilation and contrast at the same time? What are the psychological mechanisms that are responsible for these effects? To date, these important questions remain largely unanswered. No unifying theoretical model that is able to integrate the diverse consequences of comparisons exists. In the present article, I attempt to remedy this shortcoming and present such a model.

An Informational Perspective on Comparison Consequences

The guiding idea behind this model is the assumption that to understand the consequences of comparative evaluation, one has to take a close look at the informational underpinnings of the comparison process. Comparisons do not exist in an informational vacuum. Rather, they fulfill a specific epistemic goal and are made to obtain judgment-relevant knowledge about the comparison target. From such an informational perspective, comparison processes and consequences can be conceptualized within the broader context of the general principles that guide the acquisition and use of knowledge (see Higgins, 1996; Trope & Liberman, 1996). Most important, such an informational perspective suggests that the variable evaluative consequences of comparisons reflect differences in the accessibility of knowledge about the judgmental target. As is true for any judgment, postcomparison target evaluations do not come out of some mythical ether but reflect the implications of judgment-relevant target knowledge. To evaluate a given target, judges need to consult knowledge that helps them to make this evaluation. It is one of the fundamental tenets of social cognition research that such judgments are not equally based on all the judgment-relevant knowledge that is potentially available. Rather, the degree to which a particular knowledge unit influences a given judgment depends on its accessibility (Higgins, 1996). The more accessible a given piece of information is, the more likely it will be used in the judgment process and the more likely it is to influence judgment. That is, differences in knowledge accessibility lead to differences in judgment. Conversely, differences in judgment hint at the existence of differences in knowledge accessibility and use.

From this perspective, that the very same target is judged dramatically different subsequent to a comparison with one standard than when compared with another standard suggests that the respective comparisons render different aspects of target knowledge accessible. Furthermore, that apparent trivialities—such as a shared birthday—critically determine the direction of comparison consequences suggests that these trivialities influence the accessibility of target knowledge. Finally, that the very same comparison may produce opposite consequences (i.e., assimilation and contrast) depending on the type of judgment that is used to assess these consequences suggests that different sets of knowledge with opposing implications are rendered accessible during the comparison process.

In this article, I adopt this informational perspective on comparison consequences. In particular, I examine what target knowledge is sought during a comparison process, what knowledge is rendered accessible, how this knowledge is used, and how this ultimately influences comparison consequences. The suggested selective accessibility model specifies the informational underpinnings of comparisons. The informational perspective I adopt can be applied to any comparison that is based on the activation and use of target knowledge. Especially in the social domain in which researchers' primary interest is judgments about people, most comparisons fall into this category. Such informational or noetic comparisons, however, can be distinguished from experiential comparisons, which are more directly based on sensory input (Strack, 1992). That lukewarm water feels relatively cold in comparison with hot water (Helson, 1964), for example, appears to be primarily a sensory phenomenon that does not lend itself to an informational analysis. The current perspective on comparison processes thus explicitly focuses on noetic comparisons—comparisons that make use of mostly semantic knowledge about the comparison target and standard.

The Process of Comparative Evaluation: Selection, Comparison, and Evaluation

Before developing such an informational perspective on comparisons, however, the different stages of comparative evaluation have to be differentiated. What are the major steps in which judges engage? What do judges have to do to obtain judgment-relevant target knowledge via comparison? There appear to be at least three major stages involved in processes of comparative evaluation: standard selection, target–standard comparison, and evaluation.

As an illustration of these stages, assume that you were to evaluate your athletic abilities. How would you arrive at such an

[1] Using Frank Zappa as a high standard of course is not to imply that he did indeed use a lot of drugs. Although the contrary may well be the case, pretesting revealed that the participant population perceived him to be a high social standard for the critical dimension of drug consumption.

evaluation? What role might comparisons play in this self-evaluative process? Following the assumption that any judgment is comparative in nature in that it is made relative to a given context, norm, or standard, such self-evaluation is likely to be heavily influenced by comparison processes. In particular, to evaluate your athletic abilities, you are likely to compare yourself with a pertinent judgmental standard. This, of course, requires that you first find a relevant standard with which you can then compare yourself to acquire judgment-relevant information. For any judgment, a host of potential standards exists from which judges can choose. To evaluate your athletic abilities, for example, you could compare yourself with various objective or social standards (Festinger, 1954), with social standards likely to assume a particularly prominent role (Klein, 1997). Thus, in the process of self-evaluation you may compare yourself with your best friend, your tennis partner, your spouse, or your 5-year-old niece. This stage of standard selection is likely to be the first step of any comparative evaluation.

Notably, the principles that guide standard selection have long been the major theoretical and empirical focus of comparison research (Festinger, 1954; Goethals & Darley, 1977; Kahneman & Miller, 1986; Miller & Prentice, 1996). From this literature, at least three standard selection mechanisms emerge. For one, conversational inferences (Grice, 1975; Schwarz, 1994) may influence standard selection. Specifically, judges may select a standard that is explicitly or implicitly suggested because they assume their communicational partners to be informative in making this suggestion (e.g., Northcraft & Neale, 1987). Alternatively, judges may select a particular standard because it is highly accessible in memory. In searching for a relevant standard, the higher the accessibility, the more likely a standard is to come to mind and the higher the chances are that it will be selected (e.g., Herr, 1986; Wilson, Houston, Etling, & Brekke, 1996). Finally, the selection process may be guided by normative concerns to select a relevant or diagnostic standard. Much of the literature on the selection of social comparison standards (e.g., Festinger, 1954; Goethals & Darley, 1977; Wheeler, Martin, & Suls, 1997), for example, has focused on the diagnostic advantages of selecting similar standards for comparison. In fact, similarity has been suggested as the driving force behind standard recruitment in social judgment in general (E. R. Smith & Zárate, 1994).

Once a standard has been selected for comparison, judges further have to determine on which particular features of the standard and the target the comparison is to be based. To compare your athletic abilities to those of the selected standard, for example, you have to determine which athletic abilities are to be taken into account. Should you focus on your tennis or your running skills? That is, subsequent to standard selection, the featural focus of the comparison has to be determined. This process appears to be akin to the process of determining the similarity of two objects. Just as similarity comparisons require judges to identify the specific features with respect to which similarity is to be assessed, comparisons in general require judges to identify the critical features that carry weight in the comparison. The cognitive literature on similarity comparisons suggests that the featural focus of a comparison is determined by matching individual features of the target and the standard (Tversky, 1977) and by aligning more complex structures among these features (Gentner & Markman, 1994, 1997; Medin, Goldstone, & Gentner, 1993; Ritov, 2000).

From the current perspective, these processes of selecting a standard and determining its critical features influence comparative evaluation in important ways because they determine the referent information that is used to generate the target knowledge, which ultimately produces comparison consequences. Specifically, these processes are likely to determine which aspects of the target are activated during the comparison. In this respect, standard selection and featural focus set the informational stage for comparison consequences.

Still, once judges have selected a standard and determined the critical features for comparison, comparative evaluation is far from being complete. In fact, the comparison of the features of the target and the standard that ultimately yields the information needed for target evaluation still has to be carried out. For example, once you have selected a comparison standard against which to evaluate your athletic abilities, you still have to compare your standing with that of the standard. Are your athletic abilities similar to those of the standard? Are you better or worse than he or she is? To date, this stage of comparative evaluation has received relatively little attention. In marked contrast to this neglect, it is one of the major objectives of the current analysis to demonstrate that the processing stage in which the actual comparison is carried out critically determines the outcome of comparative evaluation. In fact, it is this stage of the comparison process in which the judgment-relevant knowledge that is required to evaluate the target is activated, and the informational foundation of comparison consequences is thus laid. The target knowledge that drives the evaluative consequences of comparison is activated during the process of relating the characteristics of the target to the critical features of the standard.

Subsequent to the comparison, the target-relevant knowledge that has been obtained has to be integrated into a target evaluation. Once a self-evaluative comparison with a social standard is completed, for example, the obtained self-related knowledge has to be integrated into an evaluation of one's abilities. Because integrating accessible knowledge into a target evaluation is a basic process that underlies any judgment and is thus not specific to comparative evaluation, the principles that operate at this stage are well researched. In fact, how accessible knowledge is integrated into a target evaluation is one of the central questions examined in social cognition research (e.g., Higgins, 1996; Strack, 1992; Wyer & Srull, 1989), in which the basic assumption is that by default accessible knowledge is used as a basis for subsequent target judgments. As a consequence, target evaluations are typically consistent with the implications of accessible knowledge. If, for example, comparing your athletic abilities to those of a friend primarily brings to mind instances of poor performance, you are likely to evaluate yourself as relatively unathletic.

In summary, the process of comparative evaluation involves the three stages of standard selection, comparison, and evaluation. Notably, only the first and the last of these stages have received considerable attention to date. The stage that arguably builds the core of comparative evaluation—the actual comparison—has been mostly neglected. It is this stage, however, in which the knowledge that builds the basis for target evaluation is activated. To understand the process of comparative evaluation as well as its variable consequences, I argue that the psychological mechanisms that operate at this comparison stage are of crucial importance.

To develop this perspective, I first describe the basic processes that I assume underlie the stage of target–standard comparison. I present empirical evidence supporting the critical characteristics of the proposed comparison process and then discuss auxiliary mechanisms that supplement it. Subsequently, I consider auxiliary processes that operate at the stage of evaluation. Finally, I discuss the implications of the proposed conceptualization for comparison phenomena in specific and social judgment in general.

The Selective Accessibility Mechanism

Within the current framework, it is the comparison stage that critically determines the consequences of comparative evaluation. In particular, the target knowledge that drives the evaluative effects of comparison is activated during the process of relating the characteristics of the target to the critical features of the standard. Whatever target knowledge is primarily sought and activated in this process is rendered accessible and will consequently influence target evaluations. From the current perspective, the main process that underlies the search for and activation of judgment-relevant knowledge during a comparison is the selective accessibility mechanism (see Figure 1).

To carry out a comparison, judges have to obtain specific judgment-relevant information about the target and the standard that allows for an evaluation of the target and the standard relative to one another. This specific knowledge is best obtained by an active search for judgment-relevant information through processes of hypothesis testing in which judges relate their stored knowledge regarding the target to the judgmental task at hand (Trope & Liberman, 1996). Such hypothesis-testing processes are often selective in that they focus on one single hypothesis that is then evaluated against a specific criterion (Sanbonmatsu, Posavac, Kardes, & Mantel, 1998; see also Klayman & Ha, 1987; Trope & Liberman, 1996). Rather than engaging in an exhaustive comparative test of all plausible hypotheses, judges often limit themselves to the test of a single focal hypothesis. In fact, selective hypothesis testing seems especially warranted when a large number of plausible hypotheses exist (Sanbonmatsu et al., 1998), which is typically true for comparative judgments. In this situation, a comparative test of all plausible hypotheses is impossible, so that judges are likely to limit themselves to the selective test of a single focal hypothesis (Sanbonmatsu et al., 1998).

Given this propensity for selective hypothesis testing, the critical question is, of course, which concrete hypothesis will be tested. In principle, two hypotheses can be distinguished. Judges can test either the possibility that the target is similar to the standard or the possibility that the target is dissimilar from the standard. Which of these hypotheses is tested, I assume, depends on the overall perceived similarity of the target and the standard. As an initial step in the selective accessibility mechanism, judges engage in a quick holistic assessment of the target and the standard (E. E. Smith, Shoben, & Rips, 1974) in which they briefly consider a small number of features (e.g., category membership, salient characteristics) to determine whether both are generally similar or dissimilar. The outcome of this initial screening is a broad assessment of perceived similarity. Although such an assessment is by itself too general to be used as the basis for target evaluation, it is sufficient to determine the specific nature of the hypothesis that is then tested in more detail. The hypothesis-testing mechanism is thus assumed to focus on the possibility that is suggested by the initial holistic assessment. If this assessment indicates that the target is generally similar to the standard, judges will engage in a process of similarity testing and test the hypothesis that the target is similar to the standard. If the initial assessment indicates that the target is dissimilar from the standard, however, judges will engage in a process of dissimilarity testing and test the hypothesis that the target is dissimilar from the standard.

The literature on hypothesis testing further suggests that once a hypothesis is selected it is often tested by focusing on hypothesis-consistent evidence (Klayman & Ha, 1987; Snyder & Swann, 1978; Trope & Bassok, 1982; Trope & Liberman, 1996). Applied to the case of hypothesis testing in comparative judgment, this suggests that judges selectively generate information that is consistent with the focal hypothesis of the comparison. If judges test the hypothesis that the target is similar to the standard, for example, they will do so by selectively searching for standard-consistent target knowledge—evidence indicating that the target's standing

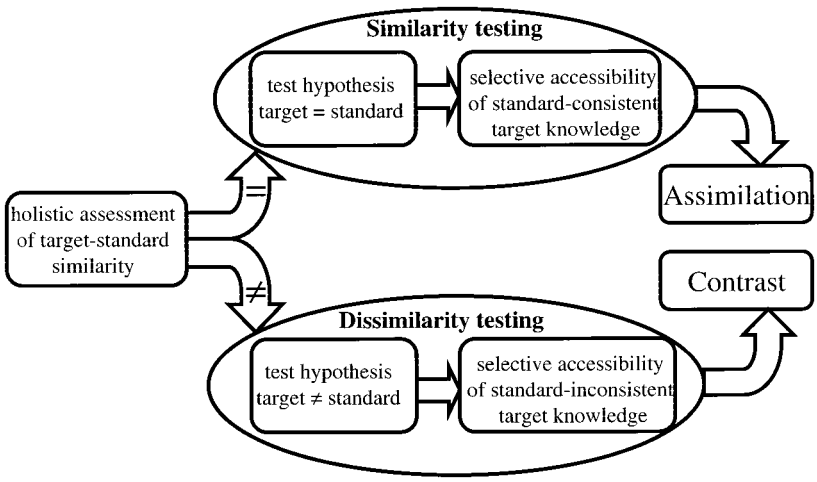

Figure 1. The selective accessibility process.

on the judgmental dimension is indeed similar to that of the standard. By the same token, if judges test the hypothesis that the target is dissimilar from the standard, they do so by selectively searching for standard-inconsistent target knowledge—evidence indicating that the target's standing differs from that of the standard. This selectivity in the acquisition of judgment-relevant knowledge about the target has clear informational consequences. The mechanism of similarity testing selectively increases the accessibility of standard-consistent target knowledge, whereas dissimilarity testing selectively increases the accessibility of standard-inconsistent target knowledge. Within the current framework, this selective accessibility effect constitutes the core informational consequence of comparison.

To the extent that judges use the target knowledge that became accessible during the comparison as a basis for target evaluations, their subsequent judgment will reflect the implications of this knowledge. Basing target evaluations on the implications of standard-consistent knowledge indicating that the target's standing on the judgmental dimension is similar to that of the standard will thus move evaluations closer to the standard. Basing target evaluations on the implications of standard-inconsistent knowledge indicating that the target's standing on the judgmental dimension is dissimilar from that of the standard, conversely, will move evaluations further away from the standard. This suggests that the default evaluative consequence of similarity testing is assimilation, whereas dissimilarity testing typically leads to contrast.

Empirical Support for the Selective Accessibility Mechanism

This conceptualization of the core mechanism of comparison is supported by a host of studies that have examined comparison processes in the paradigms of social comparison (Festinger, 1954) and judgmental anchoring (Tversky & Kahneman, 1974). In the standard anchoring paradigm, judges are first asked to compare the target with a numeric standard (the anchor) and then give an absolute estimate of this target (Mussweiler & Strack, 1999a). This absolute estimate assesses the consequences the preceding comparison has for subsequent target evaluations. In this respect, anchoring effects are essentially comparison effects, so that anchoring research can further inform our understanding of comparison processes.

Initial Holistic Target–Standard Assessment

The starting point for the selective accessibility mechanism is a holistic assessment of target–standard similarity. As suggested before, it is assumed that judges initially assess how similar the target and standard are to determine whether to engage in similarity or dissimilarity testing. It can further be assumed that this initial assessment is based on a brief consideration of a small number of particularly salient features of the target and the standard. This suggests that in carrying out a comparison, judges should initially be tuned toward salient features of the target and the standard that allow them to quickly assess target–standard similarity. One example of a characteristic that particularly lends itself to such a holistic assessment is category membership. If the target and the standard belong to two categories that typically differ with respect to their standing on the judgmental dimension, then the initial holistic assessment can be primarily based on such categorical information. If, for example, a Caucasian American compares his or her mathematical skills with the mathematical skills of an Asian American, then consulting his or her stereotypic knowledge about Caucasians and Asians is sufficient to determine that target–standard similarity is low, and subsequently, the Caucasian American engages in dissimilarity testing.

Consistent with this reasoning, recent evidence demonstrates that categorical information indeed assumes a prominent role in the comparison process (Mussweiler & Bodenhausen, 2002). In this study, Mussweiler and Bodenhausen (2002) examined comparisons with standards who belonged to the same versus a different category as the target. The results demonstrate that subsequent to a comparison with an extracategorical standard, information about the target's category membership is more accessible. After a comparison with a female standard, for example, male judges were faster in indicating their gender than after a comparison with a fellow male. As is implied by the current framework, a salient characteristic that allows for a holistic assessment of similarity or dissimilarity indeed assumes a central role in the comparison process.

At the same time, ample evidence suggests that by itself this initial assessment is not sufficient to produce the variable evaluative consequences of comparisons. I have suggested that the assessment of similarity is too general to produce specific evaluative consequences in and of itself. To bring about these effects, the selective accessibility model suggests, judges have to generate specific target knowledge via a process of testing the hypothesis that is suggested by the initial similarity assessment.

This notion that the initial similarity assessment is an important but by itself insufficient determinant of comparison consequences is supported by a host of studies demonstrating the core role that the activation of specific target knowledge plays in the production of comparison consequences (e.g., Mussweiler & Strack, 2000c; Strack & Mussweiler, 1997). Furthermore, it has been demonstrated that the magnitude of comparison effects depends on the amount of available target knowledge (Chapman & Johnson, 1999). Increasing the availability of health-related knowledge before making a comparison in this domain, for example, leads to more pronounced comparison effects. If it were the similarity assessment itself rather than the target knowledge that was generated during the hypothesis test that determines comparison consequences, then their magnitude should be independent of the amount of available target knowledge. That this is not the case further emphasizes the core role the activation of target knowledge plays for comparison consequences.

A final piece of evidence pointing in the same direction is provided by one of Mussweiler and Strack's (1999b) studies on judgmental anchoring in which they examined the effects of time pressure on comparison processes and consequences. In particular, Mussweiler and Strack allowed half of their participants unlimited time to compare the target quantities with the numeric standards and gave the other half a maximum of 5 s to do so. Whereas 5 s is ample time to carry out the quick holistic assessment of target–standard similarity, it is not sufficient to generate all the target knowledge that is necessary to subsequently evaluate the target. If it were the quick holistic similarity assessment itself that builds the basis of subsequent target evaluations, then time pressure should not influence the process of generating this evaluation. If, how-

ever, this judgment is based on the target knowledge that was activated during the comparison, as I assume, then judges may compensate for the time pressure they experienced during the comparison by allowing themselves extra time to generate the missing information while generating the target evaluation. Consistent with the latter perspective, participants who were put under time pressure while making the comparison did indeed take longer to generate the subsequent target judgment.

Active Hypothesis Testing in Comparison

The active process of hypothesis testing that I assume operates in comparative evaluation can be distinguished from more passive processes of knowledge activation by excitation transmission (e.g., A. M. Collins & Loftus, 1975; for a discussion, see Higgins, 1996). Such passive processes increase the accessibility of a particular concept via the transmission of excitation from the activated knowledge unit to associatively linked concepts. This spread of activation occurs automatically, outside of awareness, and even if the priming event is not consciously perceived (e.g., Bargh & Pietromonaco, 1982). Clearly, as in any judgment situation that involves the encoding and processing of stimulus information, such passive processes of knowledge activation also operate during comparative evaluation. At the same time, however, their accessibility consequences can be distinguished from those of the active process of hypothesis testing that is at the core of the selective accessibility mechanism.

At least two important differences between both modes of knowledge activation exist. The first has to do with the specificity of the activated information. A spreading activation mechanism increases the accessibility of general semantic concepts that can be applied to a multitude of different targets. For example, in the classic study by Higgins, Rholes, and Jones (1977), the accessibility of a broad semantic concept of recklessness was increased and it influenced subsequent evaluations of the target person, Donald. Here, and in most other studies on the effects of priming on social judgment (e.g., Srull & Wyer, 1979, 1980; Stapel, Koomen, & van der Pligt, 1997), the activated concept is not specifically linked to the target and can thus be used to characterize other targets. The hypothesis-testing process that is involved in the selective accessibility mechanism, however, focuses on knowledge that relates specifically to the target of the comparison. As a consequence, the accessibility of specific target knowledge rather than general semantic knowledge is increased.

Consistent with this assumption, a host of studies have demonstrated that comparisons indeed activate knowledge that specifically applies to the target of judgment (Mussweiler & Bodenhausen, 2002; Mussweiler & Strack, 2000b, 2000c; Strack & Mussweiler, 1997). In one of these studies (Mussweiler & Strack, 2000c), for example, participants compared their own factual knowledge with a series of numeric standards (e.g., "Can you name more or less than 12 operas?") and subsequently described either themselves or another person with respect to the critical dimension. The results indicated that only descriptions of the self, not those of the other person, were influenced by the preceding comparison. This suggests that the knowledge that was activated in the preceding comparison indeed applied specifically to the comparison target.

The second difference between the two modes of knowledge activation pertains to the degree to which the processes are flexible and sensitive to contextual changes. A passive spreading activation mechanism implies that knowledge that is associated with a given standard is rendered accessible in any situation in which the standard is processed. As a consequence, any comparison that involves the same standard activates the same knowledge. This, however, does not follow from an active hypothesis-testing mechanism. Here, the nature of the tested hypothesis determines which knowledge is activated. An anchoring study by Mussweiler and Strack (1999b) illustrates this influence. Here, Mussweiler and Strack manipulated the nature of the tested hypothesis by changing the wording of the initial comparative judgment. Judges were asked either whether the target was larger than the given anchor value (e.g., "Is the mean temperature in the Antarctic higher than 68 °C?") or whether the target was smaller than this value (e.g., "Is the mean temperature in the Antarctic lower than 68 °C?"). In both cases, the anchor values were identical, so that on the basis of a spreading activation mechanism, the comparisons should yield identical effects. This, however, was not the case. Instead, absolute estimates of the target critically depended on the direction that was suggested by the wording of the comparative question. Higher estimates were given if judges indicated whether the target was larger than the anchor.

The specificity and flexibility in knowledge activation that are apparent in these findings indicate that comparisons do indeed involve an active search for target knowledge that is tuned toward contextual influences on the nature of the initially tested hypothesis.

Selective Accessibility in Comparison

The selective accessibility model further holds that the focal hypothesis of the comparison is tested by selectively generating hypothesis-consistent knowledge. In testing the similarity hypothesis, judges are thus assumed to selectively seek and activate standard-consistent knowledge—knowledge indicating that the target's standing on the judgmental dimension is similar to that of the standard. In testing the dissimilarity hypothesis, conversely, judges are assumed to seek and activate standard-inconsistent knowledge—knowledge indicating that the target's standing differs from that of the standard. As a consequence of this process of hypothesis-consistent testing, the accessibility of the respective type of knowledge is selectively increased. That is, similarity testing selectively increases the accessibility of standard-consistent target knowledge, whereas dissimilarity testing increases the accessibility of standard-inconsistent target knowledge. This selective accessibility effect has been demonstrated in a series of studies (Dijksterhuis et al., 1998; Mussweiler & Bodenhausen, 2002; Mussweiler & Strack, 2000b, 2000c) that examined the nature of activated target knowledge under conditions that foster similarity versus dissimilarity testing.

A first series of studies (Mussweiler & Bodenhausen, 2002) exploited the fact that similarity testing is more likely to occur if the target and the standard belong to the same category, whereas dissimilarity testing is more likely to be engaged if both belong to different categories. Heeding this dependency, the process of selective hypothesis testing should lead to divergent informational consequences for intracategorical versus extracategorical compar-

isons. Social comparisons with an in-group standard, for example, should be more likely to involve similarity testing so that standard-consistent self-knowledge is rendered accessible. Comparisons with an out-group standard, alternatively, should involve dissimilarity testing so that standard-inconsistent self-knowledge is rendered accessible.

To test this assumption, Mussweiler and Bodenhausen (2002) had male participants engage in a spontaneous comparison with a standard person who was described as very tidy and clean. This standard either belonged to the same or the opposite gender category as the participants. Subsequent to the comparison, Mussweiler and Bodenhausen assessed the accessibility of standard-consistent versus standard-inconsistent self-knowledge with the use of a special type of lexical decision task (Dijksterhuis et al., 1998). Mussweiler and Bodenhausen found standard-consistent self-knowledge to be more accessible after a spontaneous comparison with an in-group member than after a comparison with an out-group member. This finding suggests that under conditions that promote similarity testing, the accessibility of standard-consistent target knowledge is increased. Under conditions that promote dissimilarity testing, however, standard-inconsistent knowledge becomes more accessible.

Additional demonstrations of this selective accessibility effect are provided by studies examining the informational consequences of comparisons with moderate versus extreme standards (Dijksterhuis et al., 1998; Mussweiler & Strack, 2000b, 2000c). The initial assessment of target–standard similarity is more likely to indicate similarity for moderate than for extreme standards, so that comparisons with moderate standards are likely to involve similarity testing and lead to a selective increase in the accessibility of standard-consistent target knowledge. Comparisons with extreme standards, however, are likely to involve dissimilarity testing and lead to a selective increase in the accessibility of standard-inconsistent knowledge.

In what is probably the clearest demonstration of the informational selective accessibility effect (Mussweiler & Strack, 2000c, Study 2), participants compared the average price of a German car with either a moderately high standard of 40,000 marks (about U.S. $24,000 at the time) or a moderately low standard of 20,000 marks (about U.S. $12,000 at the time). In a subsequent lexical decision task, participants were faster in responding to words associated with expensive cars (e.g., *Mercedes*, *BMW*) than words associated with inexpensive cars (e.g., *VW*) after the comparison with the high standard. After the comparison with the low standard, however, the opposite was the case, thus indicating that standard-consistent target knowledge was rendered accessible by the preceding comparison. Similar effects have been found in other paradigms, such as self-evaluative comparisons with objective and social standards. After comparing themselves with a moderately high social standard of athletic performance, for example, participants' responses in a lexical decision task that specifically assessed the accessibility of self-related knowledge demonstrated that knowledge indicating high levels of athletic ability was more accessible than knowledge indicating low levels of athletic ability (Mussweiler & Strack, 2000b, Study 1). Similarly, subsequent to a comparison with a moderately high objective standard of athletic ability, participants described themselves as more athletic than after a comparison with a low standard. These studies demonstrate that comparisons with moderate standards indeed lead to a selective increase in the accessibility of standard-consistent target knowledge.

In contrast, comparisons with extreme standards, which are likely to involve the process of dissimilarity testing, appear to produce a selective increase in the accessibility of standard-inconsistent target knowledge. In the realm of social comparison, for example, it has been demonstrated that comparing one's own intelligence with the extreme standard Albert Einstein rendered self-knowledge indicating low intelligence (i.e., standard-inconsistent self-knowledge) more accessible (Dijksterhuis et al., 1998). In a lexical decision task that assessed the specific accessibility of self-related knowledge, judges who had compared themselves with Albert Einstein responded faster to words associated with low intelligence (e.g., *stupid*, *dumb*). Comparisons with extreme standards thus appear to produce a selective increase in the accessibility of standard-inconsistent target knowledge.

Assimilation and Contrast in Comparison

The selective accessibility model further specifies how this informational selective accessibility effect will influence subsequent target evaluations. Consistent with the basic notion of social cognition models of knowledge accessibility effects (e.g., Higgins, 1996; Wyer & Srull, 1989), it can be assumed that judges use the knowledge that was rendered accessible during the comparison as a basis for subsequent target evaluations. In this respect, the consequences of comparisons are essentially knowledge accessibility effects.

If this is indeed the case, then the time judges need to generate an evaluation will depend on the amount of target knowledge that has been rendered accessible during the comparison. If the comparison is extensive and thus provides judges with sufficient target knowledge for evaluation, then judges will be relatively fast in giving their judgment. If, however, the comparison was relatively brief so that only a limited amount of target knowledge is activated, judges will have to search for additional information during evaluation. As a consequence, they will require more time to generate their judgment. Consistent with this reasoning, much of the research on comparison processes in judgmental anchoring demonstrates that response latencies for target–standard comparison and subsequent target evaluations are inversely related. The longer judges take to compare the target with the standard and the more knowledge they consequently activate, the faster they are in subsequently evaluating the target (Strack & Mussweiler, 1997).

In addition to this evidence that speed of evaluation reflects amount of target knowledge that is accessible, much of social cognition research demonstrates that by default accessible knowledge is used as a judgmental basis so that the judgment is typically consistent with the evaluative implications of this knowledge (e.g., Higgins et al., 1977; Srull & Wyer, 1979, 1980). Although under specific circumstances judges may try to work against and correct for this basic influence, these conditions are rarely met in comparative evaluation, so that the evaluative consequences of comparison are typically consistent with their informational consequences. Target evaluations are thus assimilated to the standard if the comparison rendered standard-consistent target knowledge accessible and are contrasted away from the standard if the comparison rendered standard-inconsistent knowledge accessible.

The most direct support for the assumed influence that the nature of the initial hypothesis has on the evaluative consequences of comparisons stems from a recent study in which participants' proclivity to test for similarity or dissimilarity with a social comparison standard was manipulated by inducing judges to either focus on similarities or dissimilarities in an unrelated preceding comparison (Mussweiler, 2001c). Participants then compared themselves with a standard who was either very competent or very incompetent in adjusting to college and subsequently indicated the quality of their own adjustment in a series of objective judgments (how many friends they have in college, etc.). Participants who were primed to focus on similarities during the comparison judged their adjustment to college to be better after a comparison with the high rather than the low standard. Those primed to focus on differences, however, judged their adjustment to be worse after a comparison with the high rather than the low standard. Consistent with the core assumption of the selective accessibility model, these data suggest that the evaluative consequences of comparison depend on the nature of the hypothesis that is tested during the comparison process.

Building on these findings, a second series of studies (Mussweiler & Bodenhausen, 2002) examined the evaluative consequences of comparisons for which the target and the standard belong to the same category versus different categories. The previously presented data demonstrate that comparisons with in-group members involve similarity testing, whereas comparisons with out-group members involve dissimilarity testing. This suggests that self-evaluations should be assimilated toward in-group standards and contrasted away from out-group standards. Our data demonstrate that this is indeed the case. Male participants assimilated objective judgments of how caring and understanding they are (e.g., "What percentage of your friends come to you with their personal problems?") to a highly caring male and contrasted them away from a highly caring female.

Summary

Taken together, data from a number of studies provide strong support for the core aspects of the selective accessibility mechanism. In fact, each of the steps that we assume to underlie comparison processes is backed by considerable empirical evidence. In comparing a target with a given standard, judges engage in an initial holistic assessment of target–standard similarity, the outcome of which determines the nature of the hypothesis that is tested in the comparison process. If this assessment indicates that the target is generally similar to the standard with respect to the judgmental dimension, judges engage in the process of similarity testing. If the initial assessment indicates that the target is generally dissimilar from the standard, however, they engage in dissimilarity testing. In both cases, the focal hypothesis is tested by seeking hypothesis-consistent evidence. As a consequence, judges who engage in similarity testing selectively generate knowledge indicating that the target is similar to the standard, whereas judges who engage in dissimilarity testing selectively generate knowledge indicating dissimilarity. These respective subsets of target knowledge are rendered accessible and thus build the basis for subsequent target evaluations. This typically leads to assimilation as a consequence of similarity testing and contrast as a consequence of dissimilarity testing.

Auxiliary Processes and Considerations in Comparison

These basic processes of selective accessibility are supplemented by a set of auxiliary mechanisms that further determine how a comparison is carried out and what consequences it yields. Given the central role the alternative processes of similarity and dissimilarity testing assume in comparative evaluation, their relative prevalence becomes particularly important.

The Primacy of Similarity Testing

One critical question in this context is whether similarity and dissimilarity as outcomes of the initial assessment of target–standard similarity are equally likely or whether there exists a default outcome of this assessment and a default hypothesis for the comparison process. In fact, considerable evidence suggests that similarity testing constitutes the default. The initial target–standard assessment occurs on-line while the critical evidence is sought, so that it is heavily influenced by the structural requirements of the judgment. One structural requirement in similarity assessment is that an alignable structure between the target and the standard has to be established. Such a system of interconnected features is necessary to define the focus of the comparison and to guide judges' attention to the critical attributes (Gentner & Markman, 1997; Medin et al., 1993). To establish structural alignment, judges initially focus on fundamental ways in which the target and the standard are similar (e.g., Gentner & Markman, 1994, 1997; Medin et al., 1993). This similarity focus is also suggested by ample evidence demonstrating that shared features play a prominent role in the comparison process (Srull & Gaelick, 1983; Tversky, 1977).[2] Thus, in most comparison situations, judges are likely to initially focus on fundamental ways in which the target and the standard are similar. The structural requirements of the initial similarity assessment thus gear judges toward similarity testing. This tendency is further strengthened because judges typically select standards that are similar to the target for comparison (Festinger, 1954; Goethals & Darley, 1977; E. R. Smith & Zárate, 1992; Suls, Gastorf, & Lawhon, 1978; Wheeler, 1966; Zanna, Goethals, & Hill, 1975).

Consistent with these theoretical considerations, empirical evidence suggests that similarity testing is engaged under most circumstances. Research on judgmental anchoring and social comparison, for example, demonstrates that judges initially focus on similarities between the target and the standard. In studies by Chapman and Johnson (1999), for example, judges examined information pertaining to attributes in which the target and the standard were similar more closely than information pertaining to attributes in which they differed. Social comparison research provides further evidence suggesting an initial focus on similarities in

[2] Although this focus on similarities appears to be in place in most domains, one exception is judgments of preference and choice (Houston & Sherman, 1995; Houston, Sherman, & Baker, 1989; Sherman et al., 1999). Because features that are shared by two alternatives do not help to decide between them, judges tend to focus more on their distinguishing features. This focus on dissimilarities, however, appears to be borne out by the specific requirements of choice and are thus likely to be limited to this domain. Outside of this domain, there appears to be a strong tendency to focus on similarities.

the comparison process (Lockwood & Kunda, 1997; Miyake & Zuckerman, 1993; Nosanchuk & Erickson, 1985; see also R. L. Collins, 1996). In line with our assumptions as well as theoretical arguments made in the realms of both similarity comparison (Gentner & Markman, 1997) and social comparison (Festinger, 1954; Goethals & Darley, 1977), these findings suggest that in comparing a target with a given standard, judges often initially focus on the ways in which the target is similar to the standard and thus most often engage in similarity testing.

Conditions for Similarity and Dissimilarity Testing

Although an initial focus on similarities appears to be the default in most situations, it may not always be the starting point in the comparison process. In some situations, judges may be confronted with comparison standards for whom the initial assessment indicates that the target is dissimilar from the standard. This is the case because comparisons do not always afford a choice of the standard. Judges may be forced to use a particular standard for comparison because it is highly accessible, particularly salient for the critical domain, or simply the only standard available. For such forced comparisons, the initial assessment of target–standard similarity may at times indicate that both are dissimilar, so that instead of the default similarity hypothesis, a dissimilarity hypothesis is tested.

As has already been discussed, the initial similarity assessment is conceptualized as a quick holistic screening of salient features, primarily influenced by characteristics of the target and the standard (such as category membership and extremity) that are salient, easy to process, and have immediate implications for target–standard similarity. An additional factor that is likely to influence the initial assessment is the motivational underpinnings of the comparison situation. What stands out in a particular situation depends not only on qualities of the target and the context but also on characteristics of the judge. Consistent with Bruner's (1957) claim that "the accessibility of categories . . . must not only reflect the environmental probabilities of objects that fit these categories, but also reflect the search requirements imposed by my needs, my ongoing activities, my defenses, etc." (p. 132), judges' motivation has been demonstrated to influence social perception in important ways. Participants who were motivated to enhance their feelings of self-worth because they had just failed an IQ test, for example, activated information about a target person's category membership with self-protective value even under circumstances that typically preclude category activation (i.e., cognitive busyness; Spencer, Fein, Wolfe, Fong, & Dunn, 1998). In much the same way, judges' motivation in a comparison situation may influence which features of the target and the standard influence the initial assessment of target–standard similarity. If judges' foremost motivational concern is best served by emphasizing dissimilarities from the standard, for example, then these features are likely to become salient so that dissimilarity testing will be engaged. If self-protective concerns to preserve or restore a positive self-image is the foremost concern during a comparison with a downward standard, for example, the motivational benefits of seeing oneself as different from this standard may guide the initial assessment of target–standard similarity.

The Generality of the Selective Accessibility Mechanism

Comparisons constitute a ubiquitous process in human judgment. Any judgment, it seems, involves some kind of comparison of the judgmental target with a pertinent norm, standard, or context. In most judgment situations, comparison standards are not provided to the judge and comparisons are not explicitly asked for. Rather, comparisons often occur spontaneously and the critical standards are identified, retrieved, or constructed on the spot. Do such spontaneous comparisons involve the described mechanisms of selective accessibility? Or are these mechanisms limited to more explicit comparisons in which a standard is directly provided to the judge? Furthermore, comparisons often have to be made under suboptimal conditions in which judges only have limited capacities available. Does the relatively elaborate selective accessibility mechanism also play a role under such suboptimal conditions? Or is it limited to comparisons in ideal processing situations? Finally, comparisons can be made with different types of standards (e.g., objective vs. social). Is the selective accessibility process limited to comparisons with a specific type of standard? Or is it a more general process that is involved in any comparison?

Selective Accessibility in Spontaneous Comparisons

On theoretical grounds, there seems no reason to limit the generality of the selective accessibility mechanism to explicit comparison processes. This is primarily the case because the spontaneous versus explicit comparison distinction pertains to the stage of standard selection not the stage of target–standard comparison at which selective accessibility operates. Whether a comparison standard is explicitly or implicitly provided or whether such a standard initially has to be selected, retrieved, or constructed is extraneous to the subsequent process of comparing the target to this standard. Whatever the source of a standard, judges have to relate its features to those of the target to carry out a comparison. There is no a priori reason to believe that this comparison takes different forms depending on the source of the standard. No matter whether you are explicitly asked to compare your athletic abilities with those of your friend Don or whether Don simply comes to your mind in the process of evaluating your athletic abilities, you face the same task of comparing yourself with Don. Heeding this distinction between standard selection and target–standard comparison, selective accessibility is thus likely to play a role in explicit as well as spontaneous comparisons.

Consistent with this reasoning, much of the previously described empirical support for the selective accessibility mechanism actually stems from spontaneous comparison paradigms (e.g., Mussweiler, 2001c; Mussweiler & Bodenhausen, 2002). In these studies, judges were not explicitly asked to compare themselves with a given standard but were simply instructed to form an impression of these standards and to judge them along the critical dimension. Still, the findings in this spontaneous comparison paradigm clearly show traces of selective accessibility. Furthermore, some of the more recent findings (Mussweiler, 2001d) even demonstrate that comparisons produce selective accessibility effects in situations in which standards are provided subliminally, outside of judges' awareness.

Selective Accessibility Under Suboptimal Conditions

Given the central role comparison plays in human judgment and the frequent necessity to make judgments fast, efficient, and under suboptimal conditions, another important consideration regarding the ubiquity of selective accessibility mechanisms revolves around the mental capacities they consume. At first, the selective accessibility mechanism appears to be rather elaborate. The outcome of its quickest component, namely the initial assessment of target–standard similarity itself, however, is too unspecific to yield the specific evaluative consequences comparisons produce. Whereas this holistic screening leads to a general assessment of similarity that is sufficient to determine whether similarity or dissimilarity testing is engaged, it is not sufficient to determine the target's exact standing on the judgment dimension. For judges to arrive at such a specific judgment, the outcome of the similarity assessment has to be fed into the selective accessibility mechanism. Consistent with this proposition, the presented empirical evidence suggests that comparison consequences are produced by the hypothesis-testing mechanism of selective accessibility. Is this relatively elaborate process thus limited to judgment situations in which judges have sufficient mental capacity? Or, does it also play a role in judgments that are generated in more heuristic modes?

Again, there are substantial theoretical as well as empirical reasons suggesting that selective accessibility is a rather general mechanism. Clearly, the active processes involved in the selective accessibility mechanism require some minimal amount of cognitive resources. At the same time, however, its hypothesis-testing nature may considerably reduce the complexity of any judgment by focusing judges' attention on a particular subset of target knowledge. Engaging in a selective accessibility mechanism in the course of evaluating your athletic abilities, for example, considerably reduces complexity by focusing attention on those aspects of self-knowledge that are consistent with the focal hypothesis of the comparison (i.e., either standard-consistent or standard-inconsistent self-knowledge). This focusing characteristic of the selective accessibility mechanism is likely to have considerable heuristic value in reducing the complexity of comparative evaluation. Furthermore, as any other psychological process that is repeatedly carried out, the selective accessibility mechanism is likely to become proceduralized so that it can be carried out in relatively automatic ways that require little capacity (Bargh, 1997; E. R. Smith, 1994). In fact, given that comparisons are involved in basically every judgment, they are carried out so often that proceduralization is particularly likely. Thus, there is ample theoretical reason to believe that selective accessibility processes form a crucial part of comparisons even under suboptimal conditions that provide judges with limited cognitive capacity.

Consistent with this notion, empirical evidence demonstrates that comparisons that are carried out under optimal versus suboptimal conditions yield similar consequences and both show distinct traces of the selective accessibility mechanism (Mussweiler & Strack, 1999b). In one study, participants solved an anchoring task in which they compared a number of target stimuli with a series of moderate standards. Half of the participants were given ample time to make the comparison, whereas the other half had to do so under time pressure. In both cases, the subsequent target evaluations were assimilated toward the standards, as would be the consequence of the selective accessibility mechanism. Furthermore, under both conditions judges took longer to evaluate the target subsequent to a comparison that involved a limited activation of judgment-relevant target knowledge (i.e., comparison with implausible standards) than under conditions that involved the activation of more knowledge (i.e., comparison with plausible standards). This suggests that the activation of judgment-relevant target knowledge plays a crucial role in comparisons under suboptimal conditions.

Selective Accessibility in Comparisons With Different Types of Standards

Comparative evaluation can make use of different types of standards. The preceding discussion has implicitly assumed that the processes that are involved in comparison do not depend on the nature of the standard. No matter whether a comparison involves an objective standard as is true in judgmental anchoring or whether it involves a social standard, for example, research has demonstrated that the same selective accessibility mechanism operates. Despite this pervasiveness, however, comparisons with specific types of standards may involve auxiliary processes that supplement the basic selective accessibility mechanism.

Comparison standards differ with respect to how complexly they are represented themselves. At the one extreme of this continuum are numeric standards such as those used in judgmental anchoring. At the other extreme are social comparison standards that may be represented in multifaceted ways. These different levels of complexity are likely to influence the degree to which the selective accessibility mechanism will alter the representation not only of the judgmental target but also of the comparison standard. The focus of analysis so far was on how the accessibility of knowledge about the comparison target is altered through the comparison process. In principle, however, the selective accessibility mechanism may well be a two-sided sword. That is, a comparison may well change the accessibility of knowledge about the comparison target and the standard in similar ways. Engaging in the process of similarity testing may thus not only move the representation of the target toward the standard but rather move both representations toward one another. By the same token, dissimilarity testing may move the representations of the target and the standard away from each other. The degree to which the standard representation may be altered by the comparison, however, depends on how richly and flexibly it is represented. The representation of a numeric standard is likely to offer little leeway to be changed by the comparison. Social standards, however, are typically multifaceted and ambiguous to some extent, so that judges can focus on different aspects of their knowledge about the standard in the comparison process. This suggests that a comparison may influence judgments about the comparison target and the comparison standard in similar ways.

Comparison standards may also differ with respect to whether they constitute one value on a continuous dimension or a more concrete and isolated entity. The numeric standards used in judgmental anchoring, for example, represent one value on a continuous dimension, whereas social standards are more specific and concrete entities. This distinction is particularly influential in the processing of extreme standards. The preceding discussion suggests that comparisons with an extreme standard involve processes of dissimilarity testing so that they typically lead to contrast.

Recent research on the consequences of comparisons with extreme social standards supports this assumption (Mussweiler, Rüter, & Epstude, 2003).

Comparisons with extreme numeric standards, however, appear to involve a mechanism that combines processes of similarity testing and insufficient adjustment (Mussweiler & Strack, 2001), as is apparent from research on comparisons with implausible anchor values (Chapman & Johnson, 1994; Strack & Mussweiler, 1997). Rather than testing for dissimilarity to the extreme anchor, judges appear to determine a more moderate standard by adjusting from the extreme standard until the first plausible value for the target is reached (Epley & Gilovich, 2001; Tversky & Kahneman, 1974). This plausible standard is then used for similarity testing. Judges who are asked whether Mahatma Gandhi was younger or older than 140 years, for example, first determine a self-set standard by adjusting downward from this high value until the first plausible value is reached (e.g., 90 years). Judges who are asked whether Mahatma Gandhi was younger or older than 9 years, conversely, adjust upward from this anchor until the first plausible value is reached (e.g., 50 years). Because adjustment terminates at the first plausible value for the target, it is insufficient, so that largely disparate self-set standards are used for similarity testing. This leads to the observed assimilation effect (for an elaborate discussion, see Mussweiler & Strack, 2001).

In the case of continuous standards (e.g., numeric anchors) that can easily be adjusted until a more appropriate value is found, comparisons with extreme standards thus appear to involve a mechanism that combines insufficient adjustment and similarity testing. Judges may engage in this alternative process because it is easy to adjust a standard that merely constitutes one value on a continuum until the first plausible value is found. This, however, is not true for concrete standards that do not form a continuum. If you compare your athletic abilities to those of Michael Jordan, for example, it is more difficult to adjust until you reach the standard that represents the boundary of a distribution of plausible values. In fact, because continuously sliding down the judgmental dimension is not possible, no appropriate standard may exist at all. In this respect, insufficient adjustment as a continuous process can only be engaged for comparisons with extreme continuous standards. Comparisons with extreme concrete standards, alternatively, involve the process of dissimilarity testing, as recent research attests (Mussweiler et al., 2003). Most important, however, these findings demonstrate that selective accessibility contributes to comparisons with continuous and concrete standards.

Auxiliary Processes and Considerations in Evaluation

As is true for the stage of target–standard comparison, a set of auxiliary considerations also applies to the subsequent stage of evaluation. Once a comparison has been carried out and judgment-relevant target knowledge has been obtained, this knowledge has to be integrated into a target evaluation. As I have pointed out before, the principles that underlie this stage of comparative evaluation are well researched. Much of social cognition research has focused primarily on this very question of how accessible knowledge is integrated into a target evaluation. The basic principles that have been established by this work (for an overview, see Higgins, 1996) are likely to also operate on the target knowledge that is activated during comparative evaluation.

Determinants of Knowledge Use

Research on knowledge accessibility effects (e.g., Higgins et al., 1977; Srull & Wyer, 1979, 1980) has repeatedly demonstrated that although under specific conditions judges may forgo the use of accessible knowledge (Martin & Achee, 1992; Schwarz & Bless, 1992; Strack, 1992; Wegener & Petty, 1997), by default, accessible knowledge is used as a basis for target evaluations. As a consequence, target evaluations are typically consistent with the implications of accessible knowledge. Consistent with this basic notion, the preceding discussions of the evaluative consequences of similarity versus dissimilarity testing have assumed that target evaluations are consistent with the knowledge that has been rendered accessible during the comparison. The mere accessibility of knowledge, however, is not the only determinant of its judgmental effects. Rather, how accessible knowledge influences a given judgment depends on whether and how this knowledge is used in the judgment process. That is, knowledge use determines the judgmental consequences of accessible knowledge.

Applicability. A first important determinant of knowledge use that is suggested by the priming literature (see Higgins, 1996; Strack, 1992; Wyer & Srull, 1989) is applicability, which determines the extent to which accessible knowledge influences a given judgment (e.g., Higgins & Brendl, 1995; Higgins et al., 1977). For example, an easily accessible trait construct is only used to characterize an ambiguous behavior if the trait is applicable to this behavior (Higgins et al., 1977). This fundamental dependency suggests that the degree to which a comparison influences subsequent target evaluations depends on how applicable the activated target knowledge is to the critical target evaluation. Knowledge pertaining to your athletic abilities, for example, is applicable to evaluations of athletic abilities and should consequently influence them. The same knowledge, however, is inapplicable to evaluations of intellectual abilities, so that they should not be influenced. Applicability may thus determine the magnitude of comparison effects (Strack & Mussweiler, 1997).

Social comparison research also provides evidence that is suggestive of the role of applicability. Here, it has been demonstrated that the consequences of social comparison critically depend on how self-relevant this comparison is (e.g., Lockwood & Kunda, 1997; Salovey & Rodin, 1984; Tesser, 1988). In one study, for example, self-evaluations proved to be affected by a comparison with an upward standard only if the standard's domain of excellence was relevant to the self (Lockwood & Kunda, 1997). This may have been the case because comparing oneself with a standard from a different field involves the generation of peripheral self-knowledge that has little relevance for self-evaluation. As a consequence, the applicability of accessible knowledge is low, so that self-evaluations remain uninfluenced.

Representativeness. It has been suggested (e.g., Martin & Achee, 1992; Strack, 1992) that people do not invariably use knowledge that is accessible and applicable to the current judgment. Rather, they engage in a representativeness check (Strack, 1992) and determine whether using easily accessible knowledge is appropriate to reach an accurate judgment. To the extent that the accessible knowledge is closely related to the judgmental target (Strack, 1992), it is likely to be seen as representative for the judgment. Representative knowledge is used as a judgmental basis, so that judgments are consistent with the implications of this

knowledge. Nonrepresentative knowledge, however, may be excluded from the judgment (Martin, 1986; Schwarz & Bless, 1992), so that judgments are inconsistent with the implications of accessible knowledge.

For comparative evaluation, this dependency suggests that the direction of a comparison effect may, in principle, depend on how representative the accessible knowledge is for the target. It is important to note, however, that although representativeness is generally important in understanding the judgmental consequences of accessible knowledge (for a discussion, see Strack, 1992), it plays less of a role in comparative evaluation. In particular, because the critical judgment pertains to the exact same target as the knowledge that was generated during the comparison, the critical accessible knowledge is maximally related to the target. As a consequence, accessible target knowledge is also maximally representative for the judgment, so that it will be used as a judgmental basis. This suggests that, as I have assumed throughout this article, target evaluations are typically consistent with the implications of the target knowledge that was rendered accessible during the comparison.

Reference Point Use and Selective Accessibility

The preceding discussions establish that selective accessibility mechanisms contribute critically to the informational and evaluative consequences of comparison. In addition to this selectively accessible target knowledge, however, a comparison also renders an additional piece of potentially judgment-relevant information accessible. In particular, it suggests a reference point against which the implications of accessible target knowledge can be evaluated. Comparing your athletic abilities with those of your athletic friend Don, for example, not only may make you consider ways in which you are athletic but also provides you with a reference point that is even more athletic. Such reference points often produce contrast in target evaluations because they may be used to anchor the given response scale (Ostrom & Upshaw, 1968; Upshaw, 1969, 1978). For example, judges who compare their athletic abilities with those of a high standard are likely to use this high reference point to anchor the upper end of the response scale. Specifically, they may assume that the upper scale labels refer to a level of ability that is comparable with that of their friend. Including such a high standard shifts the response scale in its direction (Biernat, Manis, & Nelson, 1991; Ostrom & Upshaw, 1968) so that the value ascribed to one's own level of ability is lower (a contrast effect).

Although in principle differences in response scale use can also lead to assimilation effects (e.g., Upshaw, 1978), the mechanisms that are responsible for these effects are unlikely to play a role in the context of comparative evaluation. In marked contrast with selective accessibility effects, the assimilative as well as the contrastive consequences of differences in scale use are often seen as response effects that do not reflect changes in stimulus representation (Biernat et al., 1991; Upshaw, 1978). The judgmental effects of selective accessibility that we have examined, however, are produced by changes in the accessibility of target knowledge and are thus representational in nature. The effects of reference point use are thus clearly distinguishable from those of selective accessibility. At the same time, however, reference point use may well constitute an additional mechanism that influences the evaluative consequences of comparison independently of selective accessibility. In fact, under specific conditions both mechanisms may operate in parallel and may jointly contribute to comparison consequences.

This observation about the joint effects of selective accessibility and reference point mechanisms has one notable and counterintuitive implication. Unlike previous conceptualizations (e.g., J. D. Brown et al., 1992; Herr et al., 1983; Tesser, 1988), it suggests that assimilation and contrast are not necessarily mutually exclusive consequences of comparison. Rather, the same comparison may involve both the assimilative tendencies of selective accessibility and the contrastive tendencies of reference point use. To the extent that both tendencies can be assessed with separate measures (e.g., objective vs. subjective judgments; Biernat et al., 1991), the very same comparison may thus produce assimilation and contrast at the very same time (see Mussweiler & Strack, 2000b, for a demonstration).

Relation to Models of Knowledge Accessibility Effects

The preceding discussion indicates that the basic principles that underlie the judgmental effects of accessible knowledge also operate on the knowledge that was rendered accessible during comparative evaluation. In this respect, the selective accessibility mechanism operates in tandem with those mechanisms that have been specified by previous social cognition models of assimilation and contrast. In examining the relation between these different perspectives on assimilation and contrast, one must keep in mind the basic distinction between the different processing stages that are at the focus of theoretical attention. The selective accessibility mechanism focuses on the process of generating target knowledge in the light of and in comparison with accessible context knowledge. Social cognition models of assimilation and contrast effects (e.g., Martin & Achee, 1992; Schwarz & Bless, 1992; Stapel & Koomen, 2001; Strack, 1992; Wegener & Petty, 1997), alternatively, focus on the use of accessible context knowledge in the process of forming a target evaluation. In applying social cognition models of knowledge accessibility effects to the domain of comparative evaluation, researchers must bear this fundamental distinction in mind: The main objective of the selective accessibility model is to describe the mechanisms that underlie the activation of target knowledge during a comparison. The main objective of social cognition models of knowledge accessibility effects, conversely, is to describe how knowledge that is accessible is used to form the judgment.

This focus on different processing stages may stem from a primary interest in different types of knowledge. Whereas the selective accessibility model deals with knowledge that pertains directly to the judgmental target itself, previous models have mostly focused on the use of context knowledge that, although related to or relevant for the target, does not directly pertain to the target itself. Recent research (Mussweiler & Strack, 2000b) has demonstrated that the primary determinant of comparative evaluation consequences is the specific target knowledge (e.g., self-related knowledge) that is generated in comparison with accessible context knowledge (e.g., a social comparison standard) rather than this context knowledge itself. This is, for example, apparent in the fact that the consequences of comparative evaluation do not generalize to judgmental targets to which context knowledge would be applicable but that were not directly involved in the comparison

process (Mussweiler & Strack, 2000b). It is further apparent in the fact that comparisons primarily change the accessibility of knowledge that specifically relates to the target (Mussweiler & Bodenhausen, 2002; Mussweiler & Strack, 2000b). For comparative evaluation processes, the changes in the accessibility of target knowledge that are conceptualized in the selective accessibility mechanism are thus clearly the driving force behind the obtained evaluative effects, whereas the use of accessible context knowledge that is conceptualized in previous models is of relatively minor importance.

An Integrative Perspective on Assimilation and Contrast as Comparison Consequences

A central goal of the current analysis is to provide an integrative framework for assimilation and contrast as a consequence of comparison in general. The informational perspective I have taken in the preceding sections identifies the comparison stage as the critical determinant of the consequences of comparative evaluation. In the following section, I outline how the selective accessibility mechanisms of similarity versus dissimilarity testing can be applied to the existing literature on comparison consequences.

Before relating the critical processes to this literature, however, I have to consider some analytical ambiguities of the existing evidence. Most of the accumulated evidence on the consequences of comparison has been obtained using subjective judgments (Biernat et al., 1991) for target evaluation. Such subjective judgments are the joint product of two independent mechanisms, selective accessibility and reference point use, which by default influence target evaluations in opposite directions. Selective accessibility typically produces assimilation, whereas reference point use leads to contrast. As a consequence, the final subjective judgment depends on the relative strength of these opposing influences. This perspective on subjective judgments as the product of two independently operating mechanisms is supported by ample evidence on the judgmental consequences of priming (for overviews, see Stapel & Koomen, 2001; Wyer & Srull, 1989). As a consequence, the net outcome that a comparison has on subjective judgments depends on the relative strength of the selective accessibility and the reference point mechanism. If the assimilative selective accessibility effect is stronger than the contrastive reference point effect, then assimilation will be the net outcome. If the reverse is true, however, contrast is likely to ensue. For data that were obtained on subjective judgments, it is thus difficult to identify the exact mechanism that is responsible for the effect.

This is especially true for contrast as a judgmental outcome because contrast on a subjective judgment scale could be attributed to two different mechanisms. A first possibility is that contrast occurred because using the standard as a reference point for scale anchoring had a stronger effect than the selective accessibility mechanism of similarity testing and thus compensated for its assimilative effects. Alternatively, contrast could be the consequence of the selective accessibility mechanism of dissimilarity testing. If subjective judgments are the only data available, these two possibilities are difficult to distinguish. Assimilation, however, is more clearly attributable to the mechanism of similarity testing. In fact, if assimilation is obtained on a subjective judgment scale, this suggests that the effects of selective accessibility were particularly strong and compensated for the contrastive effects of reference point use. Despite these interpretational ambiguities, however, the existing data provide important insights into the multifaceted and variable consequences of comparisons as well as their dependency on a number of central boundary conditions.

To reveal these insights, one has to dissect the subjective judgmental outcome and identify the relative contribution of both mechanisms. In the subsequent section, I attempt such an analytic dissection. In doing so, I focus on the selective accessibility mechanism. Selective accessibility captures the informational consequences of comparisons and thus represents actual changes in target representation that have robust (e.g., Wilson et al., 1996) and long lasting (Mussweiler, 2001a; Srull & Wyer, 1979) evaluative effects. Reference point effects, conversely, are more transient and partly communicational in nature. The reference point effect may thus be seen as a contrastive influence that superimposes the actual representational consequence of selective accessibility. If this contrastive layer is removed, the actual representational consequences of comparison become apparent. Empirically, this may be done by incapacitating reference point influences via experimental manipulations. Analytically, the dissection may be achieved by identifying manipulations that differentially influence both mechanisms.

From the current perspective, the main fork en route to assimilation versus contrast is the distinction between similarity and dissimilarity testing. Most of the factors that are associated with the occurrence of assimilation versus contrast as comparison consequences can be related to this basic distinction. The established moderators of comparison consequences may thus yield their effects by inducing judges to test for either similarity or dissimilarity. Because the nature of the tested hypothesis depends on the outcome of the initial assessment of similarity, any factor that affects the perceived similarity of the target and the standard may influence whether a comparison yields assimilation or contrast.

Consistent with the previous discussion of factors influencing the initial holistic assessment of similarity, a first case in point is the extremity of the comparison standard. Contrast is more likely to result from comparisons with extreme rather than moderate standards (Herr, 1986; Herr et al., 1983). In a classic study (Herr, 1986), for example, judging an ambiguous target person in the context of an extremely hostile standard produced contrast on subjective judgments such that the target was judged as less hostile in the context of Adolf Hitler (an extremely hostile standard) than in the context of Shirley Temple (an extremely kind standard). Judging the same target person in the context of moderately hostile standards (e.g., Joe Frazier vs. Billie Jean King), however, produced assimilation. This may be the case because a given target is more likely to be seen as similar to a moderate standard than to an extreme standard. Consequently, and consistent with the previously discussed informational consequences of comparisons with extreme versus moderate standards (Dijksterhuis et al., 1998; Mussweiler & Strack, 2000b), judges are likely to test for similarity in the first case, so that the resulting assimilation may be strong enough to compensate for the contrastive influence of reference point use and may produce a net assimilation effect even on subjective judgments. In comparisons with extreme standards, however, they may test for dissimilarity so that contrast resumes. As pointed out before, however, it is difficult to decide whether contrast is the result of dissimilarity testing or of reference point use.

Furthermore, the occurrence of assimilation versus contrast depends on the ambiguity of the judgmental target. Whereas evaluations of ambiguous targets are likely to be assimilated toward a standard, evaluations of unambiguous targets are likely to be contrasted away from the standard (e.g., Herr et al., 1983; Stapel et al., 1997). For example, judgments about the size of actually existing animals (e.g., wolf) were contrasted away from moderate context stimuli, whereas judgments of fictitious and thus highly ambiguous animals (e.g., jabo) were assimilated toward the same standard (Herr et al., 1983). Similarly, self-evaluations are more likely to be assimilated toward a social comparison standard if people see themselves as mutable (Stapel & Koomen, 2000). If people see themselves as immutable, however, they are more likely to contrast self-evaluations away from a standard. In light of the current analysis, this may be the case because similarity to the standard is easier to assume with an ambiguous or mutable target. Because an ambiguous target offers a lot of interpretational leeway, it is easier to construe it as similar to any given standard. An unambiguous target, alternatively, is too restrictively defined to allow for such a flexible construal, so that here judges may be more likely to test for dissimilarity.

In addition to these rather general characteristics of the target and the standard that can be broadly related to any judgmental domain, a multitude of additional moderators of assimilative versus contrastive comparison consequences has been identified in the specific realm of social comparison. As is true for standard extremity and target ambiguity, these factors can also be related to the basic distinction of similarity versus dissimilarity testing (for related discussions, see R. L. Collins, 1996; Mussweiler & Strack, 2000a). The factor that is most directly linked to the tested hypothesis is the perceived similarity to the standard. Conceivably, judges are more likely to test for similarity to the standard if they initially see themselves as similar to it. As a consequence, assimilation is more likely to occur if judges see themselves as similar rather than dissimilar to the standard (Mussweiler, 2001b).

A host of other factors that are more indirectly related to target–standard similarity may influence comparison outcomes in much the same way. Most factors that have been established as moderators of the self-evaluative consequences of social comparison are related to the psychological closeness between the self and the standard. As a series of studies attests, judges are likely to assimilate self-evaluations to the standard if they feel psychologically close to him or her. If experienced closeness is low, however, contrast is likely to occur (e.g., Brewer & Weber, 1994; J. D. Brown et al., 1992; Pelham & Wachsmuth, 1995).

From the current perspective, this may be the case because judges are more likely to test the hypothesis that they are similar to the standard when the other seems close. Recall the previously described study by J. D. Brown et al. (1992) as a first illustration. Here, it was demonstrated that participants' subjective self-evaluations of their physical attractiveness were contrasted away from the standard if there was no specific link between them. Given that self-evaluations were assessed with subjective judgments, this contrast effect is likely to be caused by mechanisms of reference point use. Specifically, because there was no indication that the target and the standard were particularly dissimilar, judges are likely to have tested the default similarity hypothesis as a starting point of the selective accessibility mechanism. Apparently, however, the resulting assimilation effect was too weak to compensate for the contrastive consequence of reference point use. If participants were made to believe that they shared the same birthday with the standard, however, comparisons with the exact same standards produced the opposite outcome. Here, participants assimilated self-evaluations to the standard and judged themselves to be more attractive after exposure to an attractive rather than an unattractive standard. This may be the case because the rather rare commonality in birthdays is likely to be particularly salient so that it strongly influences the holistic assessment of similarity. As a consequence, judges are likely to engage more strongly in the process of similarity testing. That is, because judges are similar to the standard with respect to a rare characteristic, they are likely to seek similarities to a stronger degree. Apparently, the resulting assimilation effect was sufficiently strong to compensate for the contrastive effect of reference point use that is also likely to operate under these conditions. Thus, if researchers heed the implications the normatively trivial question of whether the self and the standard were born on the same day has for the nature of the initially tested hypothesis in the social comparison process, they can explain its dramatic and counterintuitive self-evaluative consequences.

A second striking demonstration of the variability of self-evaluative comparison outcomes may be explained in much the same way. It has been demonstrated (Brewer & Weber, 1994) that within a minimal group context the self-evaluative consequences of a comparison with an in-group member depended critically on whether the in-group was in the numerical majority or minority. If participants and their comparative standard belonged to a group that was in the majority, self-evaluations on subjective judgments were contrasted away from the standard. Paralleling the explanation for contrast in the studies by J. D. Brown et al. (1992), this is likely to be the case because the reference point mechanism compensated for the assimilative consequences of the presumably operating mechanism of similarity testing. If, however, the participants' group was in the minority, the participants assimilated self-evaluations toward the in-group standard. From the current perspective, this is likely to result because being a member of a minority group again is a particularly salient characteristic that strongly influences the initial similarity assessment. In fact, minority status is likely to become particularly influential in a minimal group setting in which information about the implications of group membership is scarce. Under minority conditions, participants are thus likely to seek similarities with the standard to a stronger extent, so that the resulting assimilation effect may even compensate for the contrastive influence of the reference point mechanism that is also operating.

The effects that other factors related to psychological closeness have on the self-evaluative consequences of social comparison can be explained along similar lines. The attainability of the standard's standing on the judgmental dimension is one further case in point. A series of studies has demonstrated that the self-evaluative consequences of comparison differ for standards whose performance seems attainable from those whose performance seems unattainable (e.g., Buunk, Collins, Taylor, VanYperen, & Dakof, 1990; Lockwood & Kunda, 1997; Taylor, Wayment, & Carrillo, 1996). For example, exposure to an upward comparison standard who 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 performance of the standard. Such inspiration, however, is unlikely to result for those who perceive themselves as unable to reach the standard, in which case the comparison is likely to yield a contrast effect (Lockwood & Kunda, 1997). Similarly, a comparison with a downward standard may produce adverse affective consequences if the comparison target assumes that he or she may reach the inferior state of the standard (Taylor et al., 1996). This seems especially likely if the critical dimension is uncontrollable. Consistent with this assumption, Buunk et al. (1990) demonstrated that for these conditions negative reactions to downward comparisons prevail. From the current perspective, assimilation may occur for attainable standards because judges are likely to test for similarity if the standard's level of performance is attainable. If the standard is not attainable, however, they are likely to test for dissimilarity.

Relative group membership of the self and the standard is another important determinant of the evaluative consequences of social comparison. As I have suggested before, similarity testing is more likely to be engaged if the self and the standard belong to the same group than if they belong to different groups. My own research with Bodenhausen supports this assumption (Mussweiler & Bodenhausen, 2002). For category membership to influence the outcome of the initial holistic assessment of target–standard similarity, however, it has to be salient in the comparison situation. The distinctiveness of category membership (Brewer, 1991; Brewer & Weber, 1994) is likely to play an important role here. In particular, distinctive category memberships will stand out and capture judges' attention so that they are more likely to lead to dissimilarity testing. This dependency helps explain another puzzling social comparison finding. Brewer and Weber (1994) found the self-evaluative consequences of a social comparison with an out-group standard to depend on the numerical distinctiveness of participants' minimal group. If participants were in the minority so that their group membership was highly distinctive, they contrasted their self-evaluations away from an out-group standard. If, however, participants were members of the majority group so that their group membership was indistinctive, no contrast occurred. From the current perspective, the minority versus majority manipulation influences the consequence of comparison in such drastic ways because it determines whether judges test for dissimilarity to the out-group standard. The distinctive minority status is more salient and consequently influences the initial similarity assessment to a stronger degree so that judges engage in dissimilarity testing.

From this integrative perspective, many of the factors that have been found to determine whether a comparison produces assimilation or contrast may be linked to the same mechanism, namely similarity versus dissimilarity testing. My research has demonstrated that testing for similarities produces assimilation whereas testing for dissimilarity produces contrast (Mussweiler, 2001c). Consequently, any factor that influences the nature of the initial hypothesis is likely to have an effect on comparison consequences. This allows factors that—on the surface—appear to be unrelated such as standard extremity, target ambiguity, psychological closeness, and shared birthdays to be related to one unifying principle. In this respect, the present conceptualization provides an integrated understanding of the conditions that produce assimilation versus contrast in comparisons.

Conclusion

Comparisons are important. They constitute a fundamental aspect of our psychological functioning. This importance has long been acknowledged, and some core aspects of the comparison process have been examined. One crucial aspect, however, has received relatively little attention. Until now, relatively little was known about how the actual comparison of the target and the standard is carried out. Once a standard has been selected and the features that are relevant for the comparison have been determined, how are the features of the target and those of the standard compared? What are the psychological mechanisms that underlie this stage of comparative evaluation processes, and how do these mechanisms relate to the consequences of comparison? These important questions have long been neglected. To understand the complex pattern of consequences comparisons produce, however, one has to closely examine the psychological mechanisms that underlie the stage of target–standard comparison. In this article, I have attempted to do so by examining the informational underpinnings of comparisons. Taking a selective accessibility perspective on comparison consequences has allowed me to explain the full spectrum of comparison consequences.

My colleagues' and my research findings (e.g., Mussweiler & Bodenhausen, 2002; Mussweiler & Strack, 2000b) have demonstrated that comparisons involve a selective increase in the accessibility of a specific subset of target knowledge that then yields the broad array of comparison consequences. These findings cannot be explained by focusing exclusively on standard selection and evaluation mechanisms. Rather, they emphasize that to understand how comparisons influence target evaluations, one has to examine what target knowledge is sought and rendered accessible in the comparison process. Adopting this informational perspective has enabled me to integrate much of the evidence on the consequences of comparisons into one conceptual framework. A variety of seemingly unrelated factors with dramatic effects on comparison consequences can all be related to the same basic mechanisms of similarity and dissimilarity testing. In this respect, the selective accessibility perspective is able to provide an integrative understanding of what was previously a set of puzzling findings. Examining comparison processes from an informational perspective may thus prove to be a fruitful path in the quest for a more complete understanding of the essential relativity of the human psyche.

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