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# Subjective Assessments and Evaluations of Change: Some Lessons from Social Cognition Research

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**Subjective Assessments and Evaluations of Change:**

**Some Lessons from Social Cognition Research**

In recent years, there has hardly been a day that our attention has not been drawn to rapid social, political, and economic change. The end of communism in eastern Europe, the emergence of new political states, often accompanied by civil war, or the unification of Germany mark a period of dramatic social change that affects the living conditions of most Europeans. Less spectacular at the moment, but perhaps more dramatic in the long run, we face rapid declines in the quality of our environment and the threat of global warming. Not surprisingly, these changes have spurred considerable research efforts in the social sciences. How do people perceive these changes and their implications? How do they deal with them? How do the changes affect social institutions? And, most importantly, how can social change be managed?

In addressing these questions, social scientists rely on objective as well as subjective social indicators. Whereas objective indicators, such as the gross national product, the rate of unemployment and inflation, or measures of migration reflect actual changes, subjective indicators reflect citizens' evaluation of these changes. Typically, survey respondents are asked whether things have changed for the better or the worse, how satisfied they are with their current living conditions, or how optimistic or pessimistic they are with regard to the future. Despite the extensive use of survey questions of this type, little is known about how people answer them. How is it that we assess if things got better or worse? And how do we determine if they are likely to improve or to deteriorate in the future?

Based on a research program that explored the cognitive processes that underlie judgments of life-satisfaction (see Schwarz & Strack, 1991a, for a review), we may safely assume that subjective evaluations of change do <u>not</u> show a close correspondence to actual change. Rather, subjective evaluations are shaped by the cognitive processes that respondents employ, and they reflect a number of transient influences and biases. In the present paper, we summarize some of the key insights into these processes. Given that little systematic work has been done on subjective assessments of change (see Silka, 1988), our approach is necessarily eclectic. Throughout, we draw on social and cognitive research into related issues to offer educated guesses, to identify gaps in our knowledge, and to highlight issues for future research.

## Systematic and Heuristic Processing in Subjective Assessments of Change

On first glance, one might assume that the assessment of change in one's living conditions poses few problems. Presumably, we simply compare one situation in time to another one and note the difference. Thus, we may compare the present to the past, the present to the future, or the past to the future. Such a feature comparison process, however, offers many degrees of freedom and allows for many different outcomes. Which features of the past, present, or future are we to select? Which weight do we want to assign to different features? And which criteria are we to use in evaluating any emerging differences? As these questions indicate, the outcome of any feature comparison process depends on the mental representations that we construct of the respective targets (e.g., Schwarz & Bless, 1992).

Moreover, we may not always rely on the relatively effortful process of feature comparison, but may resort to the use of more simplistic heuristics, or to subjective theories. As has been shown for many domains of social judgment (e.g., Brewer, 1988; Chaiken, Liberman, & Eagly, 1989; Fiske & Neuberg, 1990; Petty & Cacioppo 1986; Schwarz & Strack, 1991a), individuals' choice of a systematic or heuristic processing strategy depends on their motivation, their cognitive capacity at the time of judgment, the complexity of the judgmental task, and the availability of diagnostically relevant information. Specifically, systematic processing of the type involved in feature comparisons requires sufficient motivation and processing capacity, as well as the availability of information that is considered diagnostic for the task at hand. If any of these prerequisites is not met, or if the complexity of the task renders systematic processing overly burdensome, individuals are likely to employ heuristic processing strategies. In the case of assessments of change, these heuristics include subjective theories of stability and change (Ross, 1989) and the use of one's affective state as a basis of judgment (Schwarz & Clore, 1988).

In the following sections, we first address the cognitive processes involved in systematic feature comparison. Specifically, we explore how individuals construct mental representations of the past, present, or future, weight the relevant features, and evaluate their implications. Subsequently, we turn to heuristic processing strategies, explore the nature of different heuristics used in the assessment of change, and address the conditions that give rise to heuristic processing strategies. Whereas these sections bear on global assessments and evaluations of change, researchers are not only interested in respondents' assessment of whether things have changed for the better or worse, but may also want to assess the perceived impact of some specific event. We address this aspect in the final section.

## Systematic Processing Strategies:
## Constructing and Comparing the Past, the Present, and the Future

### Constructing Mental Representations:
### Features and Boundaries

An assessment strategy that is based on a comparison of two time periods requires mental representations of both targets. These representations depend crucially on the boundaries chosen for each period and the features included in the respective constructions (see Griffin & Ross, 1991; Ross & Nisbett, 1991; Schwarz & Bless, 1992, for discussions of mental construction in social judgment). In comparing the present and the past, for example, we need to determine how far the "past" extends and where the "present" begins. What are the units that we want to compare? In what year, or with which event does the relevant period of the past begin, and where does it end? In the case of dramatic changes, this problem may be easy to solve because some outstanding events may serve as salient markers. But even in that case, several events may compete as appropriate markers. For example, which event marks the end of the "past" for East Germans? The opening of the wall in November 1989; or the introduction of the Deutschmark in July 1990; or perhaps the unification in October 1990? And how far back does the past extend? Is the present to be compared to the last few years of relative affluence or to the post-war years of relative scarcity? To a large degree, the selection of relevant boundaries is likely to depend on what happens to be salient at the time of judgment, which may depend on individuals' personal or collective history as well as features of the research situation. On the one hand, we may expect that the prominence of specific events reflects individuals' personal experiences, suggesting, for example, that different cohorts are likely to draw on different boundary markers. In line with this assumption, Schuman and Scott (1989) observed pronounced cohort effects in how Americans parse and organize the stream of historical events. Moreover, in a survey conducted in Lithuania, Russians living in Lithuania emphasized different recent events in their recollections than ethnic Lithuanians (Schuman, Rieger, & Gaidys, in press), indicating the impact of group membership on the organization of collective experiences. Similarly, we may assume, for example, that East Germans are likely to draw on different boundary markers than West Germans when they think of German unification. On the other hand, features of the research situation, such as preceding questions in a questionnaire, may draw attention to different aspects (Schwarz & Strack, 1991b; Strack & Martin, 1987), potentially overriding respondents' spontaneous organization principles.

In addition to determining the boundaries of the past and the present, comparisons of the two require that we decide which of the many potentially relevant features of the selected time period are to be included in our representations of the past and the present. Some features will be chronically accessible in memory and will come to mind under most circumstances, whereas others will only be temporarily accessible, for example, because they were addressed in preceding questions (e.g., Schwarz & Strack, 1991b; Strack & Martin, 1987), or because our attention was recently drawn to them by other fortuitous events, such as the television news (e.g., Iyengar, 1987). Given that individuals rarely retrieve all information that may be relevant to a judgment, but truncate the search process as soon as "enough" information has come to mind (Bodenhausen & Wyer, 1987), the features most likely to be considered are again the ones that are most accessible at the time of judgment. In summary, assessments and evaluations of change should depend on the boundaries that we select for the respective time periods and on features that we include in their mental representation.

Experimental research into judgments of life-satisfaction illustrates the impact of these variables. For example, Strack, Schwarz, and Gschneidinger (1985, Experiment 1; for conceptual replications see Tversky & Griffin, 1991) asked subjects to report three positive or three negative events that happened to them either recently or at least five years ago. Subsequently, subjects reported their current life-satisfaction. When subjects had to report three recent events, they reported higher current life-satisfaction when this task brought positive rather than negative recent events to mind, as shown in Table 1.

**Table 1: The Impact of Present and Past Events on Current Well-Being**

| | Valence of Event | |
|---|---|---|
| | Positive | Negative |
| Time Perspective | | |
| Present | 8.9 | 7.1 |
| Past | 7.5 | 8.5 |

Note. Mean score of happiness and satisfaction questions; range is 1 to 11, with higher values indicating reports of higher well-being. Adapted from Experiment 1 of Strack, F., Schwarz, N., & Gschneidinger, E. (1985). Happiness and reminiscing: The role of time perspective, mood, and mode of thinking. Journal of Personality and Social Psychology, 49, 1460-1469. Reprinted by permission.

This reflects that they used the highly accessible events in constructing a representation of the present, which resulted in an assimilation effect. Subjects who had to recall three events that happened to them in the past, however, reported lower current life-satisfaction when the preceding task brought positive events to mind, and higher life-satisfaction when it brought negative events to mind. Apparently, they used the highly accessible past events in constructing their representation of the past and used this representation as a standard of comparison when asked to evaluate their current situation, resulting in a contrast effect.

In general, the inclusion of a given feature in the representation of the target of judgment (in the present study, the inclusion of the highly accessible events in the construction of the present) will result in assimilation effects. If the highly accessible features are used to construct a representation of a different target (in the present study, a representation of the past), however, this representation may serve as a standard of comparison, resulting in contrast effects (see Schwarz & Bless, 1992, for a general inclusion/exclusion model of assimilation and contrast effects). Whereas the use of accessible events in the construction of the present or the past was determined by the temporal distance of events in the Strack et al. (1985) study, salient boundary markers may result in similar effects, even under conditions where temporal distance per se is held constant.

In a follow-up study, Schwarz and Hippler (unpublished data) asked first-year students to report a positive or a negative event that happened to them "two years ago". This instruction resulted in assimilation effects, suggesting that subjects included the recalled events in the mental representation of the current period of their life. For other subjects, however, we increased the salience of a major role-transition that could serve as a boundary marker. Specifically, we asked them to report an event "that happened two years ago, <u>that is, before you entered university</u>". In that case, the pattern reversed and subjects reported higher life-satisfaction after recalling a negative rather than positive event. Similarly, Strack, Schwarz, and Nebel (1987) asked students to report three positive or three negative things that they expected to happen to them in the future, that is "five years from now". For half of the subjects, we again increased the salience of a major role transition that would occur in the meantime. Specifically, we reminded subjects that they would be out of school "in five years from now". As expected, subjects reported higher current life-satisfaction when they dwelt on positive rather than negative expectations, provided that the role-transition was <u>not</u> brought to their attention. This suggests that they constructed an extended representation of the present that included the expected events, hence resulting in an assimilation effect. When their attention <u>was</u> drawn to the fact that they would no longer be students by that time, this pattern again reversed. Under this condition, subjects reported <u>lower</u> current life-satisfaction when they dwelt on positive rather than negative expectations, reflecting a contrast effect.

In combination, these studies indicate that the mental construction of the past, present and future is a function of the features and the boundary markers that are highly accessible at the time of judgment. Even if the same features are called to mind, the pattern of evaluations may reverse, depending on how the boundaries of a subjective time period are constructed. In general, a given feature will result in an assimilation effect in the evaluation of the target category if it is included in the mental representation formed of that category, but will result in a contrast effect if it is excluded from the representation of the target category (see Schwarz & Bless, 1992, for a general inclusion/exclusion model of assimilation and contrast effects). Whereas the results of our experimental manipulations testify to the power of these processes, we know little about how people spontaneously parse the stream of life-events into discrete chunks. Exploring this issue seems to provide a promising avenue for research into autobiographical memories, with far reaching implications for the assessment of subjective change in the social sciences.

**Mental Representations of the Duration of Episodes**

Common sense suggests that the evaluation of episodes in our lives is not only influenced by the episode's hedonic features, but also by its duration. Presumably, misery that lasts for years is worse than misery that lasts only for a few days. Whereas this seems true for concurrent evaluations (Coombs & Avrunin, 1977), recent research suggests that it may not hold for retrospective evaluations. In evaluating the overall (un)pleasantness of a past episode, people largely neglect the duration of the episode, focusing instead on two discrete data points, namely its most intense hedonic moment and its ending (e.g., Fredrickson & Kahneman, in press; Varey & Kahneman, 1992). This results in some highly counterintuitive phenomena, as Kahneman and his colleagues demonstrated.

For example, Kahneman, Fredrickson, Schreiber, and Redelmeier (in press) exposed each subject to two aversive experiences of differential duration: in a "short trial", subjects had to immerse one hand in 14 C water for 60 seconds, and in a "long trial" they had to immerse the other hand in 14 C water for 60 seconds, keeping it in the water for an additional 30 seconds, during which the water's temperature increased to 15 C. Thus, both trials were characterized by 60 seconds of intense pain, and the long trial by an additional 30 seconds of somewhat reduced pain, which was still experienced as distinctly unpleasant in concurrent evaluations. Obviously, common sense would suggest that the long episode is more aversive than the short episode, and when given a choice, the short episode should be preferred. When asked to provide retrospective evaluations of the overall unpleasantness of the episodes, however, subjects rated the longer episode as less unpleasant than the former. More important, when given an actual choice which of the two episodes to repeat, a majority of the subjects chose the longer episode, thus preferring 60 seconds of intense plus 30 seconds of less intense pain over a mere 60 seconds of intense pain.

This and related findings suggest that episode duration is largely neglected in retrospective evaluations. Rather, retrospective evaluations seem to reflect a "peak and end" rule (Kahneman et al., in press). Apparently, people focus on two discrete moments, namely the peak of the experience and its end, and average the hedonic values of these moments to arrive at an overall evaluation of the complete episode. Because this averaging procedure is restricted to the peak and the end, adding some moderate pain at the end results in a less negative evaluation because the overall duration of experienced pain is not taken into account (see also Varey & Kahneman, 1992). In line with this "peak and end" assumption, Fredrickson (1991) observed that the hedonic value of a given moment of an episode had more impact on the overall evaluation of the episode when subjects assumed that this moment represented the end of the episode, than when they assumed that the episode would continue. Thus, the choice of boundaries does not only determine which features we include in our representation of an episode, as we have seen above, but it also determines how much weight we assign to different moments of the episode. Although the available data are restricted to episodes that lasted only a few seconds (e.g., Kahneman et al, in press) or minutes (e.g., Fredrickson, 1991; Fredrickson et al., in press), it is tempting to speculate about the possible impact of duration neglect on the evaluation of social change.

Most obviously, the assumption that the peak and the end are the primary data points considered in the evaluation of an episode implies that the episode's duration is largely irrelevant. Thus, five years of economic hardship may not seem much worse in retrospect than two years of economic hardship, provided that the peak and end values of both episodes are comparable. In addition, we may speculate that the level of hardship at points <u>other</u> than the peak and the end may prove irrelevant as well. Thus, temporary improvements in the middle of the episode under consideration, for example, may have little impact. By the same token, the degree of variation within an episode should prove largely irrelevant because it is not reflected in the sampled peak and end data points. This should be particularly likely if the changes occur gradually and are not marked by salient events. If the changes are pronounced, or are marked by some salient event, on the other hand, the episode may be broken down into a series of shorter episodes, with each one having its own peak and end. Which level of variation is necessary to induce such chunking, however, is an open issue.

Moreover, retrospective evaluations should crucially depend on the hedonic value experienced at the <u>end</u> of the respective episode. Thus, a period of 40 years of scarcity may benefit from some improvement in the final year to a much larger extent than the relative durations would seem to justify, whereas a decline at the end may cloud longer periods of relative well-being. Assuming some variation over time, the hedonic value of the end of the episode is likely to depend on the specific boundary chosen, which may be a function of other, rather fortuitous events, including the context provided in the research situation. Accordingly, the choice of category boundaries may not only determine what we include in the representation of the respective episode, as we discussed above.

Rather, the chosen end of the episode may also determine what will be given special weight in evaluating the episode as a whole.

In summary, the observation that the duration of an episode is largely neglected in retrospective evaluative judgments is reminiscent of the novelist Milan Kundera's (1991, p. 314) suggestion that "memory does not make films, it makes photographs," as Frederickson et al. (in press) noted. The resulting snapshots do not draw attention to duration information -- in particular if we do indeed consider only two of them. On the other hand, duration information may presumably be used if it is explicitly brought into focus, assuming that we can recover a few additional snapshots to fill the gaps. Unfortunately, the limited data available do not allow us to identify the conditions under which duration information is used or to evaluate the viability of our speculations, which await further research. Next, we turn to the processes involved in comparing our mental snapshots of the present and the past.

**Making Comparisons**

Having constructed mental representations of the past and the present, respondents face the task of comparing the two. The outcome of this comparison will depend on the features that are included in these representations, as we have seen above. However, the outcome is also likely to be affected by the <u>direction</u> of comparison chosen. Although formal logic would suggest that the outcome should be the same when we compare the present to the past as when we compare the past to the present, psychological theorizing suggests otherwise. As a large body of research on similarity judgments indicates (see Tversky, 1977; Tversky & Gatti, 1978), the direction of comparison determines which of the accessible features are likely to be considered.

Suppose that a respondent's representation of the past includes features A to F, as shown in Figure 1, whereas her representation of the present includes features D to K. According to Tversky's (1977) model of similarity judgments, a comparison of the past to the present would involve the respondent checking if features A to F are also part of the present. The features G to K, which are part of the present but not of the past, are likely to receive little attention in this case. Conversely, a comparison of the present to the past would be based on the features D to K. However, the features A to C, which characterize the past but not the present, would go largely unnoticed. As a result, the outcome of the comparison process would differ, depending on whether we compared the past to the present or the present to the past.

**Figure 1: Asymmetries in Feature Comparison**

| Past | | Present |
|---|---|---|
| A | -----------> | |
| B | -----------> | |
| C | -----------> | |
| D | -----------> | D |
| E | -----------> | E |
| F | -----------> | F |
| | | G |
| | | I |
| | | K |

Such judgmental asymmetries are particularly pronounced when the to-be-compared targets are represented in differential detail. For example, Srull and Gaelick (1984) assumed that people know more about themselves than about their friends. If so, comparing the self to a friend should draw attention to a larger number of unique features of the self than would the reverse comparison of a friend to the self. In line with this prediction, derived from Tversky's (1977) feature-matching model, Srull and Gaelick's subjects perceived less similarity when they compared the self to a friend than when they compared a friend to the self, concluding that a friend is more similar to them than they are to a friend. This finding has important implications for the comparison of different periods of our life, as Dunning, Madey, and Parpal (1991) noted.

Specifically, Dunning et al. (1991) suggested that people "possess a rich array of information about the present that they have forgotten about the past" (p. 7). If so, our representation of the present should include a larger set of unique features than our representation of the past. Accordingly, we should detect more unique features when comparing the present to the past, than when comparing the past to the present. As a result, we should conclude that more change has occurred in the former than in the latter case. In line with this assumption, Dunning et al. (1991, Experiment 3) observed that Stanford students inferred more change when they compared their life on campus to their high school days, rather than vice versa. Thus, the direction of comparison determined the degree of change inferred, as predicted by Tversky's (1977) feature-matching model of similarity judgment. In general, comparing a target that is represented in more detail to a target that is represented in less detail will result in an inference of less similarity, or more pronounced change, than would the reverse comparison of the same targets.

That the direction of comparison determines which features respondents focus on has several important methodological implications for social research. It not only implies that question wordings that elicit different directions of comparison will result in different reports of change, as the Dunning et al. (1991) study illustrates. Rather, different question wordings may also be differentially likely to tap into changing representations of a given target, as unpublished survey data suggest (Institut für Demoskopie Allensbach, IfD 4098, 5003). Specifically, Elisabeth Noelle-Neumann and colleagues asked representative samples of West German citizens in 1987 and 1988 to compare the foreign policy of the United States to the foreign policy of the Soviet Union, or vice versa, and to report which is more ethical. In 1987, 17% of the respondents considered the foreign policy of the USSR to be ethically superior when asked to compare the USSR to the USA, and 19% did so when asked to compare the USA to the USSR. One year later, however, the percentage of respondents of a comparable sample who considered the foreign policy of the USSR to be superior declined from 17% in 1987 to only 8% in 1988, when respondents were asked to compare the USSR to the USA. Conversely, when asked to compare the USA to the USSR, this percentage showed a small increase from 19% in 1987 to 23% in 1988. As a result, the question that elicited comparisons of the USA to the USSR suggests that Germans' comparative evaluation of the foreign policy of the superpowers remained largely stable over time, whereas the question that elicited the reverse comparison suggests that these evaluations underwent considerable change. Although it is difficult to reconstruct what features respondents may have considered, the differential change of responses over time suggests that the rapid changes that occurred in Soviet foreign policy were more likely to be reflected when the wording of the question induced respondents to focus on features of the USSR, rather than on features of the USA. This suggests that changes in a target may be more likely to be reflected in comparative judgments when the target is the subject rather than the referent of comparison. Moreover, the observation that the direction of comparison resulted in pronounced differences in one year, but not in the other, emphasizes that any prediction of direction of comparison effects requires insight into the features of the underlying representations (see Wänke, in press; Wänke & Schwarz, 1992, for a more detailed discussion).

As the impact of the direction of comparison on the evaluation of the foreign policy of the superpowers illustrates, the direction of comparison may not only determine how much change is detected, as we have seen in the Dunning et al. (1991) study, but may also influence the outcome of evaluative comparisons. Several studies illustrate the generality of asymmetric comparison effects, which reflect that the respective evaluations are based on different features when we compare A to B, rather than B to A, as predicted by Tversky's (1977) feature-matching model. For example, Wänke and Schwarz (1992; see also Schwarz, Scheuring, & Wänke, 1990) observed that subjects estimated the standard of living in Denmark to be higher when the wording of the question induced them to compare Denmark to Greece, rather than Greece to Denmark. Similarly, when asked to think of their high school teachers, they evaluated their female teachers as being more empathetic when told to compare their female to their male teachers, rather than their male to their female teachers. To predict the specific outcome of spontaneous evaluative comparisons, we need to know which features respondents use in constructing representations of the targets and which direction of comparison they choose. In experimental studies, both of these issues are easy to resolve: We can ask subjects to evaluate targets for which we taught them the relevant features in the first place, and we can word the question to reflect the direction of comparison we are interested in ( e.g., Agostinelli et al., 1986; Schwarz & Scheuring, 1989; Wänke & Schwarz, 1992). In making their own spontaneous assessments, on the other hand, people are free to use the comparison direction of their own choice. We may assume, however, that in most cases, our spontaneous attempts to assess the quality of our life are triggered by some current problem. If so, the current problematic situation is likely to be in the focus of attention and will hence serve as the subject of comparison. That is, we are likely to compare our current problematic situation to some previous state of affairs. Due to the logic of the comparison process, the outcome of this enterprise is likely to be negative: Chances are that our current problem is not a feature of our past. Other problems that we had in the past, however, are unlikely to be considered because the consideration of features of the past is constrained by the features that make up our representation of the present. Accordingly, the problems of the past may escape our attention, contributing to the impression that the past was the time of the "good old days".

Applied to recent changes in eastern Europe, for example, these considerations suggest that comparisons of the present to the past are likely to be based on salient current concerns, such as unemployment and rising inflation -- problems that are not part of citizens' representations of the past. Moreover, those problems of the past that have been successfully resolved may not be very salient aspects of our representation of the present either. Hence, recent accomplishments may be less likely to enter into the set of salient features than recent difficulties. As a result, comparisons of the present to the past are likely to reveal the shortcomings rather than the accomplishments of the present, while the distinct problems of the past may go largely unnoticed. This suggests that comparisons of the present to the past are likely to result in lower life-satisfaction than would comparisons of the past to the present. Unfortunately, it is the former rather than the latter comparison that we are likely to make spontaneously.

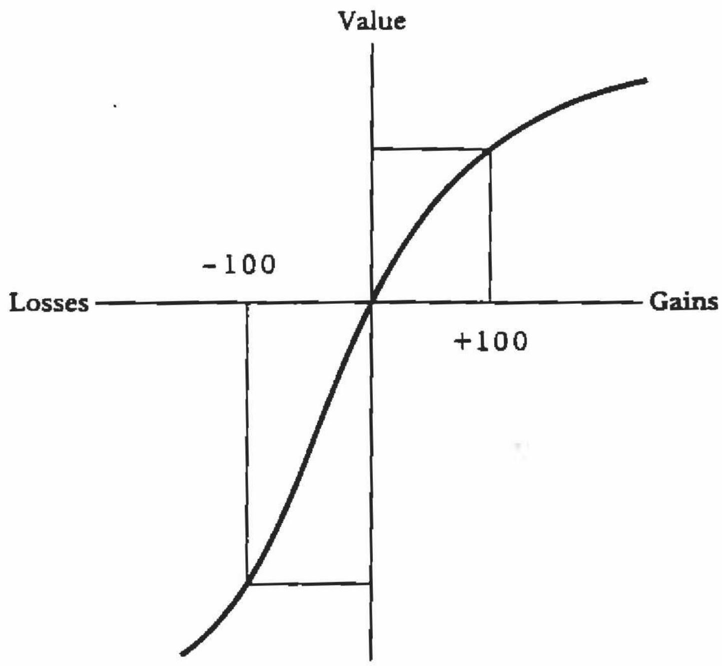
**The Relative Impact of Losses and Gains**

The gloomy implications of the assumption that our spontaneous comparisons are likely to emphasize negative aspects of the present are further compounded by our tendency to give more weight to losses than to gains, as described by Kahneman and Tversky's (1979) prospect theory (see

**Figure 2**

**A Hypothetical Value Function**

**According to Prospect Theory**



Plous, 1993, for an introduction). According to prospect theory, outcomes are evaluated relative to a reference point, with outcomes that exceed the reference point constituting a gain, and outcomes that fall short of the reference point constituting a loss. Losses, however, loom larger than gains, reflecting that the value function for losses is steeper than the value function for gains. Thus, losing DM 100, for example, is felt more than winning DM 100, reflecting the differential value functions of losses and gains, as shown in Figure 2. This differential value function has several important implications for the evaluation of change.

As a first implication, it suggests that gains and losses of an equal magnitude may not result in "zero net change". Rather, the steeper value function for losses implies, for example, that a DM 100 increase in rent, which constitutes a loss relative to the reference point of one's previous rent, has a higher impact on one's subjective sense of economic well-being than an apparently equivalent pay raise of DM 100, constituting a gain relative to one's previous income. As a result, the net effect may not be neutral but negative, as, for example, the recent discussion about increasing rents in east Germany amply illustrated. In general, "the significant carriers of utility are not states of wealth (...), but changes relative to a neutral reference point," as Thaler (1992, p. 70) noted. Given the differential value function, however, "changes that make things worse (losses) loom larger than improvements or gains" (Thaler, 1992, p. 70). Accordingly, the gains must far exceed the losses to result in an overall sense of improvement, and relatively large improvements may be offset by comparatively smaller losses.

Once again, however, the impact of simultaneously increasing rents and salaries, for example, is likely to vary as a function of the specific mental representation formed. In the above example, we assumed that the increases in rent and salary are evaluated separately, against their respective reference points. Based on what we know about "mental accounting" (Thaler, 1985; Tversky & Kahneman, 1981) this is, in fact, the most likely procedure chosen, resulting in separate "mental accounts" for different sources of income and expenditures, each of which may reflect gains and losses. On the other hand, if the wording of the judgment task induced respondents to balance these accounts prior to evaluation of the net result, they may indeed perceive zero change. Thus, the parsing of reality into different chunks is again likely to affect the judgmental outcome, as we have seen in the preceding section.

The differential weighting of losses and gains assumed by prospect theory is also reflected in what is known as the "endowment effect" in behavioral economics (Thaler, 1980). In general, "people (...) demand much more to give up an object than they would be willing to pay to acquire it" (Thaler, 1992, p. 63). In several studies, the median price at which people were willing to sell something they owned has been found to be twice the median price at which they were willing to buy it (Thaler, 1992; Kahneman, Knetsch, & Thaler, 1990; Knetsch & Sinden, 1984). Hence, it comes as no surprise that closing an existing day care facility, for example, meets more outrage than establishing a previously non-existing one would elicit active support. Again, the loss inflicted by closing a facility looms larger than the gains offered by opening one.

Similarly negative reactions are likely when a gain is expected, but not received on time. Although many theories predict dissatisfaction when positive expectations are not met (e.g., Runciman, 1966; Gurr, 1970), prospect theory holds that this dissatisfaction is considerably larger than the satisfaction that would result from meeting the expectations on time. Investigations of intertemporal choice and delayed consumption provide experimental analogues of this situation. In such studies (e.g., Benzion, Rapaport, & Yagill, 1989; Loewenstein, 1988; Loewenstein & Prelec, 1989), it is typically observed, for example, that individuals request more compensation for delaying consumption beyond its expected date, than they would be willing to pay to speed-up consumption. As in the preceding examples, the loss inflicted by having to delay consumption of an expected gain looms larger than the additional gain offered by earlier consumption. This suggests that the negative impact of delays in expected improvements is likely to be more pronounced than the positive impact of obtaining the expected improvements. Moreover, delays in improvement in one domain may easily offset the positive impact of obtained improvements in others, again reflecting that losses loom larger than gains.

The loss aversion that underlies all of the above findings is also likely to complicate negotiation and bargaining processes, as Quattrone and Tversky (1988) pointed out. Specifically, "each party may view its own concessions as losses that loom larger than the gains achieved by the concessions of the adversary" (Quattrone & Tversky, 1988, p. 726). Thus, in negotiating a fair distribution of the cost of German unification, for example, each party is likely to weight the encountered losses higher than the losses of other parties, resulting in the feeling that one has to shoulder more than one's fair share of the burden.

Finally, prospect theory's S-shaped value function predicts that we are willing to take higher risks to obtain gains, than to avoid losses (Kahneman & Tversky, 1979). This reflects that a given chance to encounter a considerable loss is more aversive than an equal chance to encounter a comparable gain is rewarding. For example, when asked to choose between a 1 in 1000 chance of winning $5000 and a sure gain of $5, most respondents preferred the risky alternative -- a decision that reminiscent of the purchase of lottery tickets in daily life. Conversely, when asked to choose between a 1 in 1000 chance of loosing $5000 and a sure loss of $5, most respondents preferred the sure loss -- a decision reminiscent of the purchase of an insurance policy (Kahneman & Tversky, 1979).

In combination, the phenomena reviewed in this section contribute to a "tendency to remain at the status quo, because the disadvantages of leaving it loom larger than the advantages" (Thaler, 1992, p. 68; see also Quattrone & Tversky, 1988; Samuelson & Zeckhauser, 1988). In light of our preceding discussion of direction of comparison effects, we conjecture that this tendency may be enhanced when we compare the status quo to some future alternative, given that distinct positive features of the status quo may be missing in the representation of the alternative, thus drawing our attention to potential losses. To compensate for these losses, the gains promised by the alternative must be considerable, because foregoing these gains is less aversive than the losses associated with leaving the status quo. Conversely, however, the foregone gains may turn into psychological losses when we compare the expected alternative to the status quo, thus potentially reducing the status quo preference.

**Framing Effects**

Given the nature of the value function discussed above, it is not surprising that the evaluation of an outcome depends on whether it is perceived as a reduction in gain or as an actual loss. As we have seen, foregone gains are experienced as less aversive than actual losses (Kahneman, Knetsch, & Thaler, 1991). Accordingly, the evaluation of a given change may often depend on how that change is framed (see Kahneman & Tversky, 1984, for a review). For example, Kahneman, Knetsch, and Thaler (1986) observed that respondents found it more acceptable to receive a pay raise of 5 percent in an economy with a 12 percent inflation rate, than to receive a pay cut of 7 percent in an economy with a zero percent inflation rate -- although both scenarios reflect a loss in real income of 7 percent. By the same token, reduced increases in public benefits are likely to meet less resistance than increased taxes, even though the net result may be the same. Unfortunately, framing effects have been studied primarily by manipulating the description of decision tasks, and we know little about the variables that induce people to spontaneously frame a change as a reduction in gain or as a loss, an issue that awaits further research.

In addition to loss and gain related framing effects, the evaluation of a given absolute change is likely to be influenced by the perceived rate of change. Compare the following statements:

(1) From July to October 1992, the rate of unemployment increased from 4 to 8 percent.

(2) From July to October 1992, the rate of employment decreased from 96 to 92 percent.

Whereas both statements reflect the same actual change, the ratio-difference principle known from psychophysical judgment predicts that the change is evaluated as more dramatic in the first than in the second case (Quattrone & Tversky, 1988; Thaler, 1985). Empirically, this is the case. In an unpublished study (Schwarz & Hippler, unpublished data), respondents rated situation (1) as significantly more problematic than situation (2), reflecting that the first statement indicates a relative increase in unemployment of a full 100 percent over its initial value, whereas the second statement indicates a relative decrease in employment by a mere 4.2 percent below its initial value. Surprisingly, though, politicians have not yet realized that the employment rate would be a more benevolent indicator of economic performance than the unemployment rate.

Whereas the nature of the problem presentation drew attention to the ratio of change in the above example, people may often focus on absolute rather than relative changes, as Silka (1988) emphasized. Learning, for example, that in the United States one assault occurred about every 18 minutes in the year of 1900, but every 6 minutes in the year of 1980, most respondents conclude that the assault rate tripled in that time period. They are likely to ignore, however, that the population tripled in that time period as well, resulting in a zero increase in the rate of assaults relative to the population (Silka, 1988, p. 159; Silka & Albright, 1983). In general, changes in population trends are not very salient and are unlikely to be considered, paralleling findings on the general underutilization of base-rate information (see Nisbett & Ross, 1980). This is particularly likely when the absolute frequency of the target event shows no change at all. Suppose, for example, that the number of assaults had remained the same from 1900 to 1980. In light of an increasing population, this apparent stability would reflect a decreasing assault rate, yet most people would be unlikely to infer change from stable absolute frequencies. As these example illustrates, how we frame the to-be-evaluated changes in a research interview is bound to have a large impact on respondents' judgments and the conclusions drawn by the researcher.

**Do Social Comparisons Override the Impact of Comparisons Over Time?**

In our preceding discussion of comparison processes, we focused on comparisons of the present to some previous state of affairs, assuming that satisfaction is derived from perceived improvements. As plausible, and frequently supported, as this assumption is, other findings suggest that a note of caution is appropriate. In many cases, the assessment of improvement may not only be based on how one's present situation compares to the past, but also on how one's present situation compares to the situation of others. Most notably, research into the impact of individuals' income on reported life-satisfaction indicates that increasing levels of income within a given country are not related to increasing reports of life-satisfaction (see Campbell, 1981; Easterlin, 1974). Rather, the effect of income is largely relative, increasing one's sense of well-being if one earns more than others.

As a result, wealthier people report somewhat higher life-satisfaction in most surveys, but substantial increases in everybody's income and standard of living do not raise the general level of reported life-satisfaction (e.g., Easterlin, 1974; see Campbell, 1981; Diener, 1984, for reviews). Reflecting this relative nature of income effects, Morawetz (1977) observed that citizens of a community with a relatively equal income distribution reported higher well-being than citizens of a community with an unequal income distribution, although the former's absolute level of income was lower. Similarly, Seidman and Rapkin (1983) found that he usually observed increase in the prevalence of mental illness during an economic downturn was most pronounced in heterogeneous communities, in which the recession did not affect everyone equally.

In combination, these findings suggest that unfavorable outcomes of social comparison processes may potentially override favorable outcomes of the comparison of one's own situation over time. If so, the increasing inequality in the income distribution of the formerly communist countries may elicit unfavorable social comparisons for a large segment of the population, thus resulting in pronounced dissatisfaction despite general increases in the standard of living over time. Based on our previous discussion of the construction of relevant comparison points, we conjecture that this effect may be particularly pronounced for east Germans, for whom unification resulted in a society with extreme income disparities, thus offering standards of social comparison which may mute any perceived improvement over time. If so, we may expect that comparable rates of improvement will result in less subjective satisfaction for east Germans than for citizens of other ex-communist countries.

## Using Heuristic Strategies

So far, we focused on the construction of mental representations of different time periods, the processes involved in comparing them, and the differential weighting of the losses and gains uncovered by comparisons. In many cases, however, respondents may not rely on effortful feature comparison strategies to begin with, but may resort to heuristic processing strategies that render the judgmental task less effortful. Over the last decades, research in different domains of judgment indicated that the use of heuristic strategies increases with increasing task complexity, increasing time pressure, decreasing motivation, and decreasing task importance (cf. Brewer, 1988; Fiske & Neuberg, 1990; Kruglanski, 1980, 1990; Sherman & Corty, 1984; Schwarz, 1990; Schwarz & Strack, 1991a). With regard to the survey interview in which citizens' evaluations of change are typically assessed, it is important to keep in mind that respondents hardly use more than half a minute to answer a question (Groves & Kahn, 1979) and that the responses they provide to the interviewer have few, if any, real life implications for them. Hence, heuristic processing may be the dominant mode in most social science studies (Krosnick, 1991; Schwarz, Strack, Hippler, & Bishop, 1991).

What, however, are the heuristics that we are likely to use in assessing and evaluating change? As two prime candidates, we address the use of implicit theories in detecting change (Ross, 1989), and of a "How-do-I-feel-about-it?" heuristic in evaluating change (Schwarz & Clore, 1988).

**Implicit Theories of Change and the Reconstruction of the Past**

Whereas our preceding discussion assumed that respondents infer the degree of change by comparing mental representations of the present and the past, a fascinating research program by Michael Ross and collaborators (see Ross, 1989; Ross & Conway, 1986, for reviews) suggests that this process may often be reversed. Rather than inferring change from a comparison of the present and the past, we may use a theory of change to determine what the past must have been like in the first place. To the extent that we have such theories for a given domain of life, we do not need to engage in any feature comparison process to determine if change has occurred. The answer to this question is directly provided by the subjective theory -- and using this theory to reconstruct the past, we are likely to detect the appropriate evidence, as the examples reviewed below aptly illustrate.

Specifically, Ross assumes that our reconstructions of the past involve a two stage process. As a first step, we use our more accessible present status with regard to the attribute under study as a bench-mark. Next, we invoke an implicit theory of change to determine if our past standing on that attribute was similar to, or different from, our current standing. In fact, his research indicates that people hold implicit theories of stability and change with regard to many variables. In the personal domain, these theories are often related to naive conceptions of life-span development, on which considerable interpersonal agreement has been documented (Ross, 1989). These subjective theories allow us to infer our previous attitudes and behaviors by using our current attitude or behavior as an initial estimate, which we then adjust according to our implicit theory for the respective content domain. This strategy results in correct reconstructions of our previous attitudes and behaviors to the extent that our implicit theory is accurate, and leads to systematic bias if our theory is inaccurate (see also Nisbett & Wilson, 1977).

In the absence of salient reasons to expect change, individuals typically assume a rather high degree of stability, resulting in underestimates of the degree of change that has occurred over time. Accordingly, retrospective estimates of income (Withey, 1954), or of tobacco, marijuana, and alcohol consumption (Collins, Graham, Hansen, & Johnson, 1985) were found to be heavily influenced by respondents' income or consumption habits at the time of interview. On the other hand, when respondents have reason to believe in change, they will detect change, even though none has actually occurred. For example, respondents who participated in a study skills training that did not improve their skills on any objective measure, subsequently reported that their skills were considerably poorer before they participated in the program, in fact, much poorer than they had themselves reported before participating in the training. Presumably, they used their belief in the effectiveness of the training program to infer what their skills must have been before they "improved" (Conway & Ross, 1984). Similarly, participants in a pain treatment program "remembered" more pain than they had recorded during a baseline period, again reflecting their belief in program induced change (Linton & Gotestam, 1983; Linton & Melin, 1982). As a final example, women's retrospective reports of menstrual distress (McFarland, Ross, & DeCourville, 1988) were found to be a function of their theory of the menstrual cycle: The more respondents believed that their menstrual cycle affected their well-being, the more their retrospective reports deviated from diary data obtained during the cycle.

The examples considered so far pertained to changes in people's personal lives, including consumption habits, skills, or the course of well-being. Unfortunately, we know little about subjective theories of change at the societal level, which people may use in inferring social, rather than individual, change. Some well-documented exceptions pertain to the general belief that our societies are characterized by a decline in family values, decaying morals, and increasing anonymity and callousness. As Scott and Wishy (1983) pointed out for the United States, these beliefs have been held by every generation since the late 18th century. In fact, when Williamson, Swingle, and Sargent (1982) provided subjects with a description of the case of Kitty Genovese, a woman stabbed to death while 38 neighbors watched without providing or calling help, their subjects assumed that this might well happen now, but would not have happened twenty years earlier -- although 1964 was the actual date of the event. Similar themes are reflected in current complaints about the growing selfishness that supposedly accompanies social change in eastern Europe, often contrasted to memories of extensive social support and close social relationships in the past. To what extent such reports are theory driven remains an open issue. In contrast to individually experienced changes, collectively experienced changes are likely to be the topic of public debate. Accordingly, we may expect that societies develop shared theories about the changes they are undergoing, resulting in a high level of agreement in the reconstructions of the past offered by their citizens. This agreement, in turn, provides apparent validation for the reconstruction offered, rendering collective theories potentially more powerful than individual ones. To our knowledge, the role of subjective theories in the generation of collective memories has not yet been addressed, yet it provides a fascinating agenda for future research at the interface of "cognitive" and "social" social psychology.

In summary, Ross' (1989) research suggests that an answer to the question, "Has any change occurred?", may often be derived from our subjective theories about the respective domain of life.

In using this theory to reconstruct our past, we are likely to produce corroborating evidence, thus bolstering the apparent validity of the theory. Our subjective theories, however, may not only drive our reconstruction of the past, but may also guide our expectations. Under some circumstances, this may influence our assessment of change in the present in some rather counterintuitive ways. This possibility is suggested by studies that explored the impact of severely negative life-events. Many of these studies observed that victims of adverse circumstances frequently report numerous positive changes in their lives as a function of having had a severely negative experience. Such self-reports of positive changes were observed in cancer patients (e.g., Taylor, Lichtman, & Wood, 1984; Collins, Taylor, & Skokan, 1990), AIDS patients (e.g., Taylor, Kemeny, Reed, & Aspinwall, 1991), bone marrow transplant patients (e.g., Curbow et al., 1992), stroke victims (e.g., Thompson, 1991), and widows (e.g., Lopata, 1973, 1975). What casts doubt on the validity of these self-reported positive changes is that they are not supported by other data bearing on the well-being of the respondents. For example, bereaved spouses and parents reported more positive than negative changes as a function of the bereavement in a study by Lehman et al. (in press). However, the number of reported positive changes was unrelated to psychological symptoms and self-reported well-being. Although denial, self-presentation and related factors undoubtedly play a role in such counterintuitive reports, comparisons of one's actual situation to the scenario implied by subjective theories are likely to contribute to the erroneous detection of positive changes. To the extent that our subjective theories imply that negative events will cause numerous negative changes, any positive experience is likely to stand out. The high salience of unexpected positive experiences may then result in reports of positive changes, although the relative banality of the positive experiences is insufficient to significantly increase victims' actual well-being, much as our discussion of the impact of gains and losses would predict.

Independent of whether change is implied by subjective theories which drive the construction of supporting evidence, or is suggested by the salience of unexpected features of the present in the light of theory driven expectations, the findings reviewed in this section once again cast serious doubt on the validity of self-reported change. For the time being, we note that this line of reasoning also suggests a very cost-efficient social improvement program: To the extent that politicians can convince their electorate that things are really changing for the better, voters may detect evidence for this change by reconstructing their past, much as Conway and Ross (1984) have observed in the personal domain. After all, you can always get what you want by revising your beliefs about what you had.

**The "How-Do-I-Feel-About-It?" Heuristic**

A heuristic that is particularly likely to be used in evaluating the quality of one's life is based on one's momentary feelings as a source of information. In this section, we first review the operation of this heuristic and then address how its use may override the comparison processes that we focused on above.

A study by Schwarz and Clore (1983, Experiment 2) illustrates how our mood at the time of judgment may determine reports of well-being. In this study, respondents were called on sunny or rainy days and were asked to report their general life-satisfaction. Not surprisingly, they reported being more satisfied with their "life as a whole" on sunny than on rainy days. This effect was eliminated, however, when their attention was drawn to the possible impact of the weather on their current mood. Specifically, in one condition, the interviewer pretended to call from out of town and asked at the beginning of the interview, as a private aside, "By the way, how's the weather down there?". Under this condition, no difference in life-satisfaction emerged between sunny and rainy days. Although several different mechanisms may result in mood effects on evaluative judgments (see Forgas, 1992; Schwarz & Clore, 1988; Schwarz, 1990, for reviews), the discounting effect observed when respondents' attention was drawn to the weather, indicates that respondents used their current mood as a direct basis of judgment. Rather than engaging in some complex comparison process, they used their current feelings as an indicator of their well-being in general, unless the informational value of their current feelings was called into question. Accordingly, a measure of current mood, assessed at the end of the interview, was correlated with reported life-satisfaction when the weather was <u>not</u> mentioned, but was uncorrelated when the weather was mentioned.

In more general terms, this and related studies (for a review see Schwarz & Clore, 1988) indicate that individuals may simplify evaluative judgments by asking themselves, "How do I feel about it?". In doing so, they use their apparent affective response to the target as a basis of judgment. However, in using this strategy, it is difficult to distinguish between one's affective response to the target and one's pre-existing mood state. As a result, people frequently misread their pre-existing feelings as a response to the target, resulting in more favorable evaluations under elated than under depressed moods. Mood effects of this type are not obtained when the informational value of one's current feelings is called into question, in which case respondents have to resort to a different judgmental strategy, typically based on comparison processes of the type addressed above (see Schwarz & Strack, 1991a).

Under some conditions, the use of this strategy may undermine the detection of change and may reverse otherwise obtained evaluations. In the section on comparison strategies, we reviewed a study by Strack et al. (1985, Experiment 1) in which thinking about past negative life-events increased current life-satisfaction, whereas thinking about past positive events decreased current life-satisfaction, reflecting a contrast effect. These results were obtained under conditions in which subjects had to provide short descriptions of the past events, without going into much detail, thus limiting the emotional impact of their memories. In fact, a mood measure did not reveal any impact of the recall task on subjects' current feelings under these conditions. However, in two follow-up studies (Strack et al., 1985, Experiments 2 and 3), we asked some subjects to provide vivid and detailed reports of positive or negative past events, a task that resulted in corresponding positive or negative current mood states. As a result, these subjects evaluated their current living conditions more positively after having described a positive rather than a negative past event. On the other hand, subjects who had to provide short descriptions of the past events, which did not elicit an affective reaction, showed the previously observed contrast effect (see Table 2).

**Table 2: The Impact of Past Events as a Function of Emotional Involvement**

| | Valence of Event | |
|---|---|---|
| | Positive | Negative |
| Emotional Involvement | | |
| Detailed description | 9.1 | 7.9 |
| Short description | 6.8 | 8.4 |

Note. Mean score of happiness and satisfaction questions; range is 1 to 11, with higher values indicating reports of higher well-being. Adapted from Experiment 2 of Strack, F., Schwarz, N., & Gschneidinger, E. (1985). Happiness and reminiscing: The role of time perspective, mood, and mode of thinking. Journal of Personality and Social Psychology, 49, 1460-1469. Reprinted by permission.

In summary, assimilation effects were obtained when the recall task induced a pronounced affective state, whereas contrast effects where obtained when it did not. Apparently, the affective state induced by vivid memories provided a salient source of information, allowing subjects to use the "How-do-I-feel-about-it?" heuristic, thus avoiding the more effortful comparison process that resulted in contrast effects in the judgments of subjects whose pallid reports did not elicit an affective reaction. Although judgments of change were not assessed in these studies, we may assume that subjects who based their evaluation of the present on their affective state elicited by their memories of the past would see less change in their living conditions than subjects who used the recalled past events as a standard of comparison.

As these findings illustrate, the use of heuristic rather than systematic feature-based processing strategies may result in dramatically different judgments, including reversals of the obtained data patterns, even under conditions where comparable objective events were considered. We also note that findings bear on the management of subjective well-being: If negative memories of the past come to mind, our appreciation of the present may benefit from the resulting contrast, provided that we keep those memories sufficiently pallid. Yet we are better off fleshing out the memories of the good old days in great detail, so we can benefit from the warm glow of the good feelings (see also Clark, Collins, & Henry, in press).

As is the case for other heuristics (see Sherman & Corty, 1984, for a review), the use of the "How-do-I-feel-about-it?" heuristic is the more likely, the more burdensome the judgment would be to make otherwise. Hence, the use of this heuristic increases with increasing complexity of the judgment, increasing time pressure, and decreasing motivation (see Schwarz, 1990; Schwarz & Clore, 1988). Accordingly, mood effects are more likely to emerge in judgments of general life-satisfaction than in evaluations of any specific life-domain (Schwarz, Strack, Kommer, & Wagner, 1987), reflecting that judgments of general life-satisfaction pose a more complex task. This suggests that mood effects should be particularly likely and pronounced in evaluations of the future -- after all, the future is the time period about which we have the least substantive information. In most studies, people are unrealistically optimistic about their own future and about the outcomes it has in store for them. In general, we assume that positive things are more, and negative things less, likely to happen to ourselves than to happen to others (e.g., Weinstein, 1982, 1987). Not surprisingly, this optimism is increased when we are in an elated, and decreased when we are in a depressed mood (e.g., Johnson & Tversky, 1983).

**Assessing the Impact of Specific Events**

Sometimes, however, we may not only be interested in global comparisons of the past, present, or future, but in more specific assessments of the impact of some specific act or event. How much, for example, did the exodus of east Germans through Hungary in the summer of 1989 contribute to the collapse of the GDR? Retrospective assessments of this type are likely to be systematically biased. In general, we are bound to overestimate the impact and importance of whatever factor we focus on. In fact, after an event has occurred, it often seems inevitable in retrospect, resulting in the (erroneous) feeling that we knew all along that it couldn't have happened otherwise, as a large body of research into the dynamics of the hindsight bias (Fischhoff & Beyth, 1975) indicates (see Christensen-Szalanski & Willham, 1991; Hawkins & Hastie, 1990, for reviews). In this section, we review some of the processes that underlie causal accounts of change.

To determine to what extent an event, such as the 1989 exodus from the GDR, contributed to an outcome, we need to handle three tasks, as Dunning et al. (1991) pointed out. First, we have to construct a scenario in which the crucial factor is eliminated. In the present case, this scenario would be a counterfactual world in which the exodus did not occur. Second, we need to run a mental simulation of this counterfactual world to see what kind of outcome it would produce. And finally, we need to compare the outcome of that simulation to the actual outcome to estimate the impact of the crucial factor. The more differences this comparison yields, the more impact we attribute to the crucial factor that is part of the representation of reality, but not of the counterfactual. Several processes are likely to contribute to an overestimation of the impact and importance of whatever factor we focus on.

First, as studies on counterfactual reasoning indicate (see Miller, Turnbull, & McFarland, 1990, for a review), we are likely to construct counterfactuals by replacing unusual events by the usual routine. In a typical study, subjects may be told that Mr. Smith left his office 20 minutes earlier than usual, and on his usual route home, he had an accident. They may then be asked to complete the sentence, "If only ...". Many different counterfactuals could result in an "undoing" of the accident. For example, Mr. Smith could have taken a different route home, he could have left his office even earlier, the other driver might have done something else, and so on. The overwhelming majority of subjects, however, is likely to construct a counterfactual in which things are returned to normal: "If only he had left his office at the usual time, rather than 20 minutes early." For our example of the collapse of the GDR, this suggests that the counterfactual against which we evaluate the impact of the exodus is likely to be the usual, routine state of affairs. In using this counterfactual, we are likely to miss other factors that could also have contributed to a collapse, lets say the larger number of dissatisfied citizens who might have participated in the people's movement, had they not left the country.

The fewer alternative factors we consider, however, the more important a given factor seems to be, as suggested by research on causal schemata in attribution theory (Kelley, 1972). Specifically, the perceived impact of a given facilitating factor declines, as other potentially facilitating factors come to mind, reflecting a discounting effect. In a research situation, the factors likely to be considered are not only determined by respondents' representations of reality and its alternatives, but are also a function of the research instrument (Schwarz & Hippler, 1991). For example, Bless, Wänke, and Schwarz (unpublished data) asked German and American students to rate the impact of different factors that may have contributed to two political events, namely the fall of the Berlin wall, and the intervention of the U. S. in Panama. As expected, a given factor was rated as less influential when presented in the context of six rather than four other potentially relevant influences. Moreover, this discounting effect was more pronounced for the event that students were less familiar with, that is, for the fall of Berlin wall among U. S. students and the Panama intervention among German students, indicating that alternative accounts were less accessible for the less familiar event. Much as drawing attention to other facilitating factors reduces the inferred impact of a given one, drawing attention to inhibiting factors increases the impact of a given facilitating one, reflecting an augmentation effect (Kelley, 1972). Similarly, drawing attention to factors that may have produced a different outcome reduces the feeling that we "knew it all along," which frequently characterizes our retrospective assessments, and diminishes hindsight biases, as Slovic and Fischhoff (1977) observed. In the absence of reminders, however, we are unlikely to pay sufficient attention to alternative influences, resulting in an overestimation of the influence we focus on, unless the alternatives are particularly salient.

Moreover, many of the issues addressed in the section on comparison processes are likely to be relevant to the assessment of causality. We may expect, for example, that people have a richer representation of what actually happened than of what might have happened. Hence, we should again see direction of comparison effects: If our representation of reality has more unique features than our representation of some hypothetical alternative, we should perceive more impact when we compare reality to one of its alternatives, rather than the alternative to reality. Again, studies by Dunning et al. (1991, Experiments 1 and 2) support this prediction. For example, students were asked to assess the impact of their major on their study habits. The question either asked them to compare the major that they had actually chosen to an alternative that they had considered but not chosen, or to compare this alternative to their actual major. As predicted, they inferred more impact of the choice of major on their study habits when comparing reality to its alternative than when comparing the alternative to reality. Note, however, that this experiment required the comparison of an actually experienced reality to a completely hypothetical counterfactual. For other impact assessments, e.g., "How much did losing my job contribute to my decreased well-being?", the relevant counterfactual is likely to be better represented. In this case, the counterfactual to reality, namely having a job, has only become hypothetical recently. If so, the asymmetric comparison effects observed in the Dunning et al. (1991) studies may be less pronounced.

As these examples indicate, assessments of causality vary as a function of the substantive nature of the alternatives considered, the number of possible influences taken into account, and the direction of comparison. In addition, assessments of causality are influenced by whether the judgmental task requires mental addition or subtraction, as our next example illustrates.

To return to the collapse of the GDR, we could ask for estimates of the impact of the 1989 exodus in one of the following ways:

(1) How much more likely did a collapse of the GDR become because of the exodus?

(2) How much less likely would a collapse of the GDR have been without the exodus?

(3) How much less likely did a survival of the GDR become because of the exodus?

(4) How much more likely would a survival of the GDR have been without the exodus?

These questions differ on two characteristics: First, questions (1) and (3) inquire about the impact of the presence of a causal factor, whereas questions (2) and (4) inquire about the impact of its counterfactual absence. As we have seen with regard to the choice of a major in the Dunning et al. (1991) studies, comparing the actual event to its counterfactual is likely to result in higher impact estimates than comparing the counterfactual to the actual event. In addition, these questions differ in how the potential impact is framed. Questions (1) and (4) pertain to how much a causal factor facilitated an outcome, whereas questions (2) and (3) pertain to how much a causal factor inhibited an outcome. Whenever a question pertains to how much a causal factor facilitates an outcome, it poses a task of mental addition (Dunning & Parpal, 1989). Mental addition tasks require the judge to decide if a causal agent produces an outcome to a greater degree or with greater probability. In contrast, whenever a question pertains to the inhibiting effects of a causal factor, it poses a task of mental subtraction. Mental subtraction tasks require the judge to decide whether an outcome occurs to a lesser extent or with reduced probability. In these tasks, the crucial factor is not whether the causal agent is present or absent, but how its alleged influence is framed. Whenever the question refers to an increased impact it poses an "additive frame", whenever it refers to a decreased impact it poses a "subtractive frame". Several studies indicate that people infer a larger impact in an additive than in a subtractive frame. For example, when asked, "How many more questions will you get right on an exam if you study one hour more?", students attributed more impact to an additional hour of work than when asked, "How many fewer mistakes will you make on an exam if you study one hour more?" (Dunning & Parpal, 1989). This asymmetry reflects that people weight facilitating factors more than inhibiting factors.

In studies of actual changes, this asymmetry is further compounded by a natural confound of framing and the presence or absence of the causal factor. In most cases, it seems more natural to ask about the impact of the presence of a factor in an additive frame, and to ask about the impact of its absence in a subtractive frame, as the above examples indicate. In fact, experiments that crossed both factors produced the highest impact ratings when the presence of a factor had to be evaluated in an additive frame, and the lowest impact ratings when its absence had to be evaluated in a subtractive frame (Dunning & Parpal, 1989; Dunning et al., 1991).

## Conclusions

The research reviewed in the present chapter has methodological, substantive, and theoretical implications. From a methodological point of view, the reviewed findings indicate that subjective assessments and evaluations of change are a function of the cognitive processes employed at the time of judgment. Whether we infer that something has changed or not, and whether the change was for the better or the worse, depends on the mental representations formed and the inference rules applied.

In many cases, both are likely to be shaped by the research instrument used. Hence, subjective reports of change provide an inadequate substitute for objective assessments of change in longitudinal studies. As Singer (1977, p. 84) noted, questions about change are often "a poor man's attempt to measure at one point in time what really should have been measured at two" (if not more). Unfortunately, the findings reviewed illustrate that the poor man's strategy is likely to result in poor data. Granted that subjective reports of change may not reflect actual change, we may still hope that reported <u>evaluations</u> of change are more meaningful than apparently factual reports. Once again, however, the present findings -- as well as research reviewed by Schwarz and Strack (1991a) -- illustrate that subjective social indicators, such as reports of life-satisfaction, are not a direct reflection of any stable inner state of the respondent, in contrast to what the pioneers of the social indicator movement had hoped for (see Campbell, 1981). Rather, these reports reflect judgmental processes that are to a large degree shaped by the research instrument, and are influenced by question context, question framing, mood at the time of judgment, and other fortuitous variables. At the extreme, consideration of the same objective event may result in opposite evaluations, depending on the salience of boundary markers or the degree of emotional involvement at the time of judgment, as we have seen above. Whereas the cognitive processes underlying these context effects reflect the nature of human judgment, and are likely to hold both in natural contexts and in research situations, their dependency on the research instrument requires considerable caution in the interpretation of the obtained results.

On the substantive side, our review suggests the gloomy hypothesis that numerous aspects of the judgmental processes involved in the evaluation of change foster dissatisfaction rather than satisfaction. If our comparisons of the present to the past are indeed likely to be triggered by the problems we experience in the present, for example, our past has a good chance to remain in memory as the time of the "good old days." And if losses do loom larger than gains, any subjective sense of improvement will require that the benefits of social change far outweigh the accompanying losses. Unfortunately, the wide-spread dissatisfaction that accompanies current social change in Europe does little to call this pessimistic prediction into question.

Finally, we can't help but note how far psychological theorizing is from offering a coherent conceptualization of the judgmental processes involved in the assessment and evaluation of changes in our daily life. As the eclectic nature of the present review indicates, current theorizing offers little more than isolated islands of knowledge, with occasionally contradictory implications. Although most of the reviewed findings are reliably replicable under specified conditions, we know little about the circumstances under which one or the other judgmental process is employed, rendering predictions under natural conditions uncertain at best. We hope, however, that the present surge of interest in social change and its consequences will extend beyond the pressing applied issues, contributing to basic research into the processes that underlie answers to one of the key questions of social life: Are things getting better or worse?

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