ASSIMILATION AND CONTRAST EFFECTS IN PART-WHOLE QUESTION SEQUENCES: A CONVERSATIONAL LOGIC ANALYSIS

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Abstract A theoretical model of the emergence of assimilation and contrast effects in part-whole question sequences is presented. When one specific question precedes a general question and the two are not assigned to the same conversational context, respondents use the information primed by the specific question to form the general judgment. This results in part-whole assimilation effects. If both questions are perceived as belonging together, however, conversational norms of nonredundancy prohibit the repeated use of information that has already been provided in response to the specific question when making the general judgment. Accordingly, respondents interpret the general question to refer to aspects *other* than the ones covered by the specific question. Contrast effects may emerge in that case under specified conditions. If several specific questions precede the general question, however, the general one is always interpreted as a request for a summary judgment. This results in assimilation effects, even under conditions that would foster contrast effects if only one specific question is asked. The model is supported by experimental data and provides a coherent account of apparently contradictory findings previously reported in the survey literature.

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Survey researchers repeatedly observed that answering a specific question may influence the responses given to a subsequent general question (e.g., McClendon and O'Brien 1988a and 1988b; Schuman and Presser 1981; Smith 1982). However, the findings are inconsistent. In some studies, the responses to the general question are assimilated to the responses given to the specific question, whereas in others they are contrasted to the previous responses. For example, Schuman and Presser (1981) found that respondents were *less* likely to report high general life-satisfaction when they had previously answered a similar question on marital satisfaction. Given that most respondents reported high marital satisfaction, this pattern reflects a part-whole contrast effect. In contrast, Smith (1982; also see Smith 1991) obtained just the opposite result, although apparently using the same questions in the same order. Again, most respondents reported high marital satisfaction, but after having answered this specific question, they were subsequently *more* likely to report high general life-satisfaction as well. Thus, Smith's (1982) data reflect a part-whole assimilation effect. In the present paper, we describe a theoretical model that accounts for the emergence of these apparently inconsistent findings and report an experiment that was designed to test our predictions.

Cognitive Accessibility

In a theoretical analysis of the findings noted above, Strack and Martin (1987) suggested that the emergence of assimilation effects on measures of general life-satisfaction reflects the increased accessibility of information about one's marriage that was used to answer the preceding marital satisfaction question. Specifically, individuals may use a variety of different aspects of their life to evaluate its overall quality, including their marriage, job, income, housing, and so on (see Schwarz and Strack 1989 and 1991 for a more detailed discussion). Which of these potentially relevant aspects they select in making a judgment depends on which is most likely to come to mind at the time of judgment (e.g., Schwarz and Clore 1983; Schwarz et al. 1987; Strack, Schwarz, and Gschneidinger 1985). As a large body of literature in cognitive psychology indicates (see Bodenhausen and Wyer 1987; Wyer and Srull 1989 for reviews), individuals are unlikely to retrieve all information that may potentially bear on a judgment, but truncate the search process as soon as enough information has come to mind to form a judgment with sufficient subjective certainty. Accordingly, their judgments strongly reflect the impact of the information that is most accessible in memory at the time of judgment. This is usually the

information that has been used most recently, for example, for the purpose of answering a preceding question.

In line with this assumption, Strack, Martin, and Schwarz (1988) observed in an experiment with U.S. college students that the correlation between ratings of "happiness with dating" and "happiness with life-as-a-whole" depended on the order in which both questions were asked. If the general happiness question preceded the dating question, both questions were essentially uncorrelated, $r = .16$. If the question order was reversed, however, this correlation increased to $r = .55$, $z = 2.44$, $p < .007$, for the difference between correlations. These findings indicate that respondents were more likely to use information about their dating life in evaluating the quality of their life-as-a-whole when this information was more accessible in memory, due to its use in answering the preceding question.

The Impact of Conversational Norms

However, individuals do not always *use* the information that is easily accessible in memory. Under some conditions, they may intentionally disregard information that comes to mind, for example, because it does not bear on the judgment at hand (Schwarz and Bless 1990) or because other factors require that it should not be used. As Strack and Martin (1987) pointed out, following related suggestions by Bradburn (1982) and Tourangeau (1984), a particularly relevant factor that may inhibit the use of easily accessible information in a survey context is provided by conversational norms. Specifically, one of the principles that govern the conduct of conversation in everyday life (Grice 1975) requests speakers to make their contribution as informative as is required for the purpose of the conversation, but not more informative than is required. In particular, speakers are not supposed to be redundant, providing information that the recipient already has. In psycholinguistics, this principle is known as the "given-new contract," emphasizing that speakers should provide new information rather than information that has already been given (Clark 1985; Haviland and Clark 1974).

If respondents apply this conversational norm to the survey interview, they may expect that each question is a part of the same conversational context and is a request for *new* information. Thus, respondents who have just reported their marital happiness may consider the subsequent question about their happiness with life-as-a-whole to be a request for *new* information about their life. Accordingly, they may interpret the general question to refer to *other* aspects of their life, much as if it were worded, "Aside from your marriage, how happy do

you feel about the other aspects of your life?" If so, these respondents may deliberately ignore information about their marriage in answering the general life-satisfaction question, despite its high accessibility in memory. We assume that this provides the psychological rationale that underlies what Schuman and Presser (1981) have called a "subtraction effect."

To provide a direct test of this assumption, Strack, Martin, and Schwarz (1988) explicitly manipulated the conversational context in which the specific and the general question were presented. This was accomplished by a joint lead-in to both questions that read, "Now, we would like to learn about two areas of life that may be important for people's overall well-being: (*a*) happiness with dating, and (*b*) happiness with life in general." Subsequently, both happiness questions were asked in the specific-general order. Under this condition, answering the dating question prior to the general happiness question did *not* result in an increased correlation, $r = .26$; moreover, this correlation was significantly lower, $z = 1.88$, $p < .03$, than the correlation of $r = .55$, obtained under the same order condition without a joint lead-in. Thus, respondents based their general happiness judgment on information *other* than their dating life when both questions were explicitly assigned to the same conversational context—despite the high cognitive accessibility of the previously used dating information. This suggests that they deliberately ignored dating-related information because they interpreted the general question as a request for new information, in line with conversational norms.

Although testing differences in correlations provides the strongest test of the theoretical assumptions, survey researchers are often more interested in differences in means and marginals. Accordingly, we will extend our analysis to these differences. Note, in this regard, that the direction of differences in the means or marginals depends on the valence of the information that is brought to mind by the specific question. For example, high dating-happiness should result in reports of high general happiness if the specific information is included when making the general judgment, whereas low dating-happiness should result in reports of decreased general happiness. While this prediction of part-whole assimilation effects is straightforward, the reverse does not necessarily follow. For example, disregarding one's happy dating life may not necessarily reduce judgments of general life-satisfaction. If respondents exclude information about one life-domain from consideration, they may turn to other life-domains as a basis of judgment. If so, their judgments may be determined by the evaluative implications of the new information they turn to. If they happen to have wonderful jobs in addition to a great dating life, they may still report high happiness when they use their job situation as a basis of judgment. Thus,

while we can conclude that the impact of dating happiness on general happiness will be reduced, and part-whole assimilation effects will not be obtained, it does not necessarily follow that a part-whole contrast effect will emerge. For this very reason, analyses of correlational differences, rather than mean differences, provide the theoretically more adequate test. The study reported here explores these possibilities, extending the analysis provided by Strack, Martin, and Schwarz (1988) from differences in correlations to differences in means.

In addition, more direct evidence on the assumed underlying process would be highly welcome. If respondents interpret the general question as referring to aspects of their life that have not been covered by the preceding specific question when both are put into the same conversational context, similar effects should be obtained when respondents are explicitly instructed to exclude the life-domain that was addressed in the specific question. Conversely, when they base their general judgment on the information that was brought to mind by the specific question if both questions are *not* assigned to the same conversational context, similar effects should be obtained when respondents are explicitly instructed to consider the life-domain that was addressed by the specific question. Thus, rewording the general question to include or exclude the specific life-domain addressed by the preceding question should provide additional evidence for the assumed process. The present study includes conditions that test these predictions.

Finally, additional insights into the variables that determine the operation of conversational norms and their impact on respondents' interpretation of the general question are needed to increase the applied usefulness of our analysis. In Strack, Martin, and Schwarz 1988, using a self-administered questionnaire, respondents' perception of the conversational context was manipulated by introducing both questions with a joint lead-in, as described above. In conditions where respondents were not intended to perceive both questions as belonging together, the specific question was presented as the last question on one page, and the general question as the first question on the next page. Thus, explicitly connecting the two questions, or visually separating them, may affect respondents' interpretation of the conversational context. In a study of related interest, Ottati et al. (1989) observed that answering a specific question resulted in assimilation effects on a subsequent general question when both questions were separated by several filler items, but it resulted in contrast effects when both questions were presented adjacent to one another.

Another variable that seems highly likely to affect respondents' interpretation of the intended meaning of the general question is the sheer number of related questions that precede it. In fact, the conflicting findings reported by Schuman and Presser (1981) and Smith (1982)

may be due to the number of specific questions asked. Whereas Schuman and Presser, who obtained a part-whole contrast effect, used only one specific question, Smith asked several specific questions before respondents had to answer the general one and obtained a part-whole assimilation effect. Why might that be the case? How does the number of specific questions asked influence the processes discussed here?

Suppose that respondents are asked to report on their marital satisfaction, job satisfaction, and leisure time satisfaction before a general life-satisfaction question is presented. In that case, they may either interpret the general question as a request to consider still other aspects of their life or as a request to integrate the previously reported aspects into an overall judgment, much as if it were worded, "Taking these aspects together, how satisfied are you with your life-as-a-whole?" Note that this latter wording would make little sense if only one aspect were addressed in a preceding specific question. In that case, the reworded general judgment would be completely redundant with the specific one that has already been provided. Accordingly, the norm of nonredundancy requires that the former, rather than the latter, interpretation of the general question is adopted if only one specific question is asked. If several specific questions are presented, however, the alternative interpretation of the general question as a request for a final, integrative summary judgment is legitimate from a conversational point of view. In that case, the integrative judgment is informative because it does provide new information about the relative importance of the respective domains, which are the focus of the conversation. Moreover, "summing up" at the end of a series of related thoughts is an acceptable conversational practice—whereas there is little to sum up if only one thought was offered. Accordingly, respondents may interpret a general question as a request for a summary judgment if it is preceded by several specific ones. They may even do so when all questions are explicitly placed into the same conversational context, because an integrative judgment does not violate the redundancy norm if several specific questions are asked.

If respondents interpret the general question as a request for a summary judgment, as this analysis would suggest, they obviously need to consider the information used to answer the specific questions in making the general judgment. Accordingly, increased correlations and part-whole assimilation effects in the means should be obtained, even under conditions where part-whole contrast effects might emerge if only one question were asked.

Note, however, that if several specific questions about different domains of one's life are presented, answering these questions increases the accessibility of a broader information set that bears on the general judgment than thinking about only one life-domain. If so, the impact

of any specific domain on a subsequent general judgment should be reduced, due to the impact of easily accessible competing information. Accordingly, the correlation between the general and the specific measure, as well as part-whole assimilation effects in the means, should be less pronounced when several specific questions precede a general one than when only one specific question is asked in the appropriate condition. Again, this study includes conditions that test these predictions.

To sum up, we assume that answering a specific question influences what comes to mind when respondents are later asked to make a general judgment. This results in assimilation effects if easily accessible information is used. However, what comes to mind is not always used. If the specific and general question are perceived as belonging to the same conversational context, the general question is interpreted as a request for new information, in line with conversational norms. If only *one* specific question is asked, the most plausible request for new information bears on other aspects of one's life. Accordingly, respondents interpret the general question as if it were worded, "Aside from what you already told us. . . ." Part-whole contrast effects may emerge under this condition, depending on the valence of the new information that respondents consider in making the general judgment. If *several* specific questions are asked, however, a final summary judgment that informs the recipient about the relative weight of the previously provided specific information would also be informative, and would conform to the conversational practice of "summing up" at the end of related thoughts. Accordingly, respondents may interpret the general question as if it were worded: "Taking these aspects together . . ." If so, part-whole assimilation effects should be obtained when several specific questions are asked. For a given specific question, however, these part-whole assimilation effects should be less pronounced than the ones obtained in the appropriate condition with one specific question, due to the impact of competing information primed by the other specific questions.

Method

To explore these issues, we conducted an experimental self-administered survey, following a 2 (one vs. three specific questions preceding the general one) × 4 (no conversational context, explicit conversational context, explicit inclusion, explicit exclusion instructions) factorial design with a nonfactorial control group that answered the general question first.

A convenience sample of 456 German adults (age 18 and over) par-

ticipated in the study. The respondents were approached in the downtown pedestrian mall of a German city and were asked to answer a short, two-page questionnaire. Park benches were available in that area of the pedestrian mall for their convenience. About 20% of the approached respondents complied with this request. Unfortunately, the demographic questions were omitted from the questionnaire, due to a technical oversight, and a detailed description of the sample is not possible. Given that the sole purpose of conducting the study in a pedestrian mall, rather than in the psychological laboratory, was to sample a reasonably heterogenous population, this oversight does not severely restrict the value of the collected data.

To assure random assignment of respondents to one of nine conditions, the respective questionnaires were brought into a random order, and handed out by an experimenter who was blind to conditions. Respondents assigned to the *General-Specific Condition* were first asked to report their general life-satisfaction, and subsequently reported their satisfaction with three specific life-domains, namely their marriage or dating relationship, work, and leisure time. Each judgment was made along 11-point rating scales, with 1 = "very dissatisfied" and 11 = "very satisfied"; the exact wording of the questions is given in the appendix.

Respondents assigned to the *One Specific-General Condition* first reported their relationship satisfaction, and subsequently their general life-satisfaction, whereas respondents assigned to the *Three Specific-General Condition* first reported their work and leisure satisfaction, followed by their relationship satisfaction, before they responded to the general question. Thus, the question about respondents' relationship satisfaction immediately preceded the general question under all conditions, but was or was not itself preceded by the work and leisure satisfaction questions. In both conditions, the relationship question was presented as the last question on page one of the questionnaire and the general question as the first question on page two, to reduce the visual relatedness of both questions.

In the respective *Conversational Context Conditions*, the specific-general question sequences were introduced with a joint lead-in, to ensure that respondents perceived the questions as belonging together, and all questions were presented on the same page. The lead-in read: "We would first like to ask you to report on two [four] aspects of your life, which may be relevant to people's overall well-being."

Finally, in the explicit instructions conditions, the wording of the general question was changed to explicitly request the inclusion or exclusion of specific information that we assume to be elicited by the above manipulations. Specifically, in the *Explicit Exclusion Conditions*, the respective wording read: "Leaving aside the life-domain(s)

Table 1. Correlation of Relationship Satisfaction and Life-Satisfaction as a Function of Question Order and Conversational Context

Condition	Number of Specific Questions	
	One	Three
General-specific	—	.32*
Specific-general	.67*	.46*
Specific-general, with joint lead-in	.18	.48*
Specific-general, explicit inclusion	.61*	.53*
Specific-general, explicit exclusion	.20	.11

NOTE: $N = 50$ per cell, except in "Specific-general, with joint lead-in," $N = 56$.
* $p < .05$.

that you already told us about, how satisfied are you currently with other aspects of your life?" Conversely, in the *Explicit Inclusion Conditions*, this question read: "Including the life-domain(s) that you already told us about, how satisfied are you currently with your life-as-a-whole?"

Results and Discussion

CORRELATIONAL ANALYSES

Table 1 shows the correlation between respondents' reported relationship satisfaction and their reported general life-satisfaction as a function of the experimental conditions.

As expected, the correlation between both measures increased from $r = .32$, in the general-specific condition, to $r = .67$, $z = 2.32$, $p < .01$ for the difference in correlations, when the specific question preceded the life-satisfaction question.[1] This finding replicates the results of the Strack, Martin, and Schwarz (1988) studies, indicating that respondents used the previously activated specific information in answering the general question. This interpretation is further supported by the respective explicit inclusion condition, which yielded a nearly identical correlation of $r = .61$ when respondents were instructed to consider their relationship in making their general judgment.

1. All reported tests are one-tailed unless otherwise indicated.

However, the observed increase in the correlation of relationship satisfaction and general life-satisfaction was less pronounced, $r = .46$, and not significant, $z = .803$, when several specific questions preceded the general one. This finding reflects that the larger number of preceding questions increased the accessibility of a more varied set of potentially relevant information, thus reducing the impact of the relationship satisfaction question relative to the single specific-general condition. Again, this interpretation is supported by a similar correlation, $r = .53$, in the respective explicit inclusion condition, where the wording of the question invited respondents to consider all three life-domains in making their general judgment.

Thus, we conclude that respondents used the information brought to mind by the preceding questions in answering the general question, providing the prerequisite for the emergence of part-whole assimilation effects in the means. The impact of information bearing on respondents' relationship satisfaction was less pronounced, however, when other life-domains were addressed as well, reflecting the fact that the additional specific questions increased the accessibility of competing information.

Let us now turn to a consideration of the hypothesized impact of conversational norms. When a joint lead-in introduced one specific question and the general question as part of the same conversational context, no increase in the observed correlation was obtained, $r = .18$. This finding presumably reflects respondents deliberately ignoring information about their relationship under this condition because they had already provided it in response to the preceding question. In line with this interpretation, the respective explicit exclusion condition, in which respondents were asked to disregard their relationship in evaluating their life-as-a-whole, yielded a nearly identical correlation of $r = .20$. Moreover, the correlations obtained under the conversational context and explicit exclusion conditions were not only significantly lower than the correlation of $r = .67$ obtained under the same question order without a conversational context manipulation, $z = 3.14$ and 2.95, $p < .002$, but also nonsignificantly lower than the correlation of $r = .32$ obtained in the general-specific condition, $z = .75$ and .63, nonsignificant. This latter finding presumably reflects that some respondents in the general-specific condition did spontaneously consider their relationship in making the general judgment, although the accessibility of the respective information had not been experimentally increased.

In summary, we conclude that respondents deliberately ignored information that they had already provided in response to a specific question when making a subsequent general judgment, *if* the specific and the general questions were assigned to the same conversational

context, thus evoking the application of conversational norms that prohibit redundancy. In that case, they interpreted the general question to refer to aspects of their life that they had not yet reported on, in line with conversational norms.

Let us now consider how the operation of this conversational norm is affected when several specific questions are asked prior to the general one. For that case, we hypothesized that respondents may always interpret the general question as a request for a summary judgment, irrespective of our manipulation of conversational context. Our findings are in line with this assumption. Specifically, introducing three specific questions along with the general question as part of the same conversational context did *not* result in a decreased correlation of respondents' relationship satisfaction and general life-satisfaction, $r = .48$, as compared to the same question order without a lead-in, $r = .46$. Our hypothesis is further supported by the explicit instruction conditions. Specifically, the instruction to include all three life-domains addressed in the specific questions resulted in a similar correlation of $r = .53$, whereas the instruction to exclude these domains resulted in a correlation of $r = .11$, significantly lower than the correlation observed under the same order condition without explicit exclusion instructions, $z = 1.88$, $p < .03$.

The complex pattern of correlations nicely conforms to the theoretical predictions, reflecting that the order in which the questions were presented determined the accessibility of relevant information in memory, whereas the perceived conversational context determined whether this easily accessible information was or was not used in making the general judgment. Specifically, the conditions in which respondents were expected to consider previously activated information about their relationship in evaluating their life-as-a-whole resulted in an average correlation of both measures of $r = .56$, significantly higher than the correlation of $r = .32$ observed under the general-specific question order, $z = 1.85$, $p < .04$. In contrast, a nonsignificant decrease in correlations, $r = .17$, $z = 1.0$, $p = .15$, was obtained under conditions where respondents were expected to deliberately disregard the previously provided information in making the general judgment, because either conversational norms or explicit rewordings elicited an interpretation of the general question as a request for information about other aspects of one's life. We now turn to the impact of these processes on respondents' reported mean life-satisfaction.

DIFFERENCES IN MEANS

As mentioned previously, the impact of including or excluding information about the quality of one's relationship may affect judgments of

Table 2. Mean Differences in Life-Satisfaction as a Function of Relationship Satisfaction, Question Order, and Conversational Context

Condition	Number of Specific Questions: One	Number of Specific Questions: Three
	Respondents with a Happy Relationship[a]	
General-specific	—	8.5 *a,b,c,d*
Specific-general	9.5 *f*	9.1 *b,c,d,e,f*
Specific-general, with joint lead-in	8.5 *a,b,c,d*	8.9 *a,b,c,d,f*
Specific-general, explicit inclusion	9.4 *f*	9.1 *b,c,d,e,f*
Specific-general, explicit exclusion	8.3 *a,b*	8.0 *a*
	Respondents with an Unhappy Relationship[b]	
General-specific	—	6.8 *a,b*
Specific-general	5.8 *b*	7.1 *a,b*
Specific-general, with joint lead-in	8.0 *a*	6.7 *a,b*
Specific-general, explicit inclusion	5.0 *b*	6.8 *a,b*
Specific-general, explicit exclusion	7.0 *a,b*	7.1 *a,b*

NOTES: Ratings were on an 11-point scale, with 11 = "very satisfied." Means that share the same letter designation (*a–f*) do not differ at $p < .10$, two-tailed, Duncan test.
[a] $N = 15–21$.
[b] $N = 9–14$.

general life-satisfaction in different directions, depending on whether relationship satisfaction is high or low. Accordingly, we used respondents' reported *relationship satisfaction* as a grouping variable, selecting respondents whose reported relationship satisfaction was approximately one standard deviation above or below the mean of the sample as the "happy" (values of 10 and 11) or "unhappy" (values of 5 or less) group, respectively. Table 2 shows these respondents' reported general life-satisfaction as a function of the experimental conditions. A 2 (number of specific questions) × 4 (order and conversational context conditions) × 2 (happy vs. unhappy relationship) analysis of variance

Table 3. Contrast Weights Used in Means Analysis

Condition	Exclusion Contrast	Inclusion Contrast
General-specific	−2	−2
Specific-general	1	1
Specific-general, with joint lead-in	0	1
Specific-general, explicit inclusion	1	0
Specific-general, explicit exclusion	0	1

that treated the general-specific condition as a nonfactorial control group revealed a significant triple interaction, $F(3,233) = 3.41$, $p < .02$, which was diagnosed by planned contrasts (Rosenthal and Rosnow 1985) and Duncan's range test (see italic letters in table 2).

As shown in the first part of table 2, respondents who reported a high degree of relationship satisfaction reported higher general life-satisfaction when the single specific question preceded the general one ($M = 9.5$) than when it did not ($M = 8.5$), $t(177) = 1.06$, $p < .03$. This part-whole assimilation effect reflects that they were more likely to consider information bearing on their happy relationship when making the general judgment, as the previous correlational results demonstrated. Further paralleling the correlational findings, this impact of thinking about one's relationship was eliminated when both questions were placed into the same conversational context ($M = 8.5$). Finally, explicitly instructing respondents to exclude ($M = 8.3$) or to include ($M = 9.4$) relationship information yielded effects equivalent to the specific-general condition with or without a joint lead-in, further supporting the current analysis. A theoretically specified contrast that tests the hypothesis that the "inclusion" of previously activated information results in part-whole assimilation effects confirms these conclusions, $t(177) = 2.01$, $p < .02$, for the "inclusion contrast" shown in table 3. Respondents' reported life-satisfaction was unaffected by question order, however, if conversational norms or explicit instructions required them to "exclude" the previously activated information, $t(177) = 1.43$, n.s., for the "exclusion contrast" shown in table 3.

When several specific questions were asked, the impact of thinking about one's relationship was somewhat less pronounced ($M = 9.1$), and was not affected by the introduction of a joint conversational context ($M = 8.9$), again replicating the correlational findings. Accordingly, a nearly identical value of $M = 9.1$ was obtained when respondents were instructed to include the previously reported information

when making a general judgment, whereas explicit exclusion conditions resulted in a report of comparatively lower life-satisfaction, M = 8.0. However, planned contrasts analogous to the ones reported above failed to reach significance, $p > .20$.

The life-satisfaction reports of respondents who reported low relationship satisfaction provide a mirror image of these findings. As shown in the second part of table 2, thinking about their unhappy relationship before answering the life-satisfaction question (M = 5.8) decreased reported general well-being relative to the general-specific condition (M = 6.8), although this effect did not reach significance, $t(89) = .97$, n.s. A similar decrease emerged when respondents were explicitly instructed to include information about their relationship when making the general judgment (M = 5.0). Accordingly, the theoretically specified contrast indicates that unhappy respondents reported lower life-satisfaction under inclusion conditions, $t(89) = 2.75$, $p = .06$, for the "inclusion contrast" shown in table 3.

Such a decrease was not obtained when both questions were presented as part of the same conversational context. In fact, under this condition, respondents reported higher general life-satisfaction (M = 8.0) than under the general-specific order condition, reflecting a part-whole contrast effect, $t(89) = 2.18$, $p < .03$. The explicit instructions condition again paralleled this finding (M = 7.0), although the effect was less pronounced. Accordingly, the planned contrast involving both of these conditions failed to reach significance, $t(89) = .23$, for the "exclusion contrast" shown in table 3.

When several specific questions were asked, thus drawing respondents' attention to different areas of their life, thinking about their unhappy relationship did not notably influence their overall life-satisfaction, all $p > .20$.

DISCUSSION

The obtained pattern of correlations and mean differences nicely conforms to the theoretical predictions, although not all differences were reliable. Compared to the general-specific question order, we obtained increased correlations between relationship satisfaction and general life-satisfaction when respondents had previously reported their relationship satisfaction, and neither explicit instructions nor conversational norms discouraged the use of this easily accessible information in making the general judgment. Moreover, these increased correlations did translate rather consistently into part-whole assimilation effects in the means. Conversely, we obtained low correlations when either conversational norms or explicit instructions required respon-

dents to disregard information that they had already provided in response to the specific question. However, this decrease in correlations did not consistently translate into mean differences. Rather, a part-whole contrast effect was only obtained for unhappy respondents, in one of the two conditions in which it might have occurred on theoretical grounds, and was not obtained for happy respondents.

On theoretical grounds, this relative unreliability of part-whole contrast effects is not particularly surprising. The conversational norms that underlie the disuse of previously communicated information only urge respondents not to be redundant. They do not, themselves, provide any cues about what information might be considered in making the general judgment, but only specify which information should *not* be used. Accordingly, respondents may turn to a variety of different information, making it difficult to predict the nature of their general judgments. While one might expect that exclusion of a life-domain with which one is especially happy should decrease life-satisfaction, it is important to note that such a straightforward subtraction model implicitly assumes that respondents consider *all* information that is potentially relevant for that judgment. If so, the exclusion of some information from this fixed set should change the judgment. This implicit assumption, however, is unlikely to hold. In fact, if this assumption were valid, we should not observe part-whole assimilation effects that reflect that respondents' selection of information is a function of preceding questions.

Rather, it is more realistic to assume that respondents rarely use all information that may be relevant, but tend to truncate the search process early (Bodenhausen and Wyer 1987). If so, they may well evaluate their life-as-a-whole on the basis of any life-domain that happens to come to mind, much as they did on the basis of their relationship in other conditions. Accordingly, their general judgment will depend on the information they happen to retrieve at that time. In the present study, for example, happy respondents should only have reported decreased general satisfaction if they were less happy with other domains of life that happened to come to mind than they were with their relationship; conversely, unhappy respondents should have reported higher general satisfaction if they were happier with other domains than they were with their relationship. Unfortunately, the available data do not allow us to evaluate this possibility in any detail.

In combination, these considerations suggest that part-whole assimilation effects should always be obtained when the use of previously activated information is not discouraged. Part-whole contrast effects, on the other hand, only follow from the exclusion of previously provided information under the conditions specified above.

Conclusions

We conclude from the reported findings and our previous results (Ottati et al. 1989; Strack, Martin, and Schwarz 1988) that the proposed theoretical model accounts for the emergence of assimilation and contrast effects in part-whole question sequences. Answering a specific question increases the accessibility of relevant information, and this easily accessible information is more likely to be used when making a subsequent general judgment to which it may be relevant. This is reflected in increased correlations of the specific and the general measure, as well as in part-whole assimilation effects in the means. Both of these effects are more pronounced when only one specific question, or several questions that bear on the *same* issue, are asked, than when several specific questions bearing on *different* issues are presented. In the latter case, the different questions are likely to draw attention to a more varied set of information, thus reducing the impact of any specific piece of information.

However, respondents do not always use the information that easily comes to mind. The norms that govern the conduct of conversation in everyday life (Grice 1975) discourage redundancy, and require speakers not to reiterate information that the listener already has. Applying these norms to the survey interview, respondents interpret questions that are perceived as part of the same conversational context as requests for new information. Some of the variables that may influence the perception that two questions belong to the same conversational context are lead-ins (e.g., Strack, Martin, and Schwarz 1988), the physical separation of items in the questionnaire, and the number of filler items (e.g., Ottati et al. 1989). In addition, what may most plausibly be considered "new" and "informative" depends on the number of specific questions asked.

If only one specific question is asked, the most plausible request for new information bears on other aspects of one's life. Accordingly, respondents interpret the general question as if it were worded, "Aside from what you already told us. . . ." If *several* specific questions are asked, however, a final integrative judgment would conform to the conversational practice of "summing up" at the end of related thoughts, and would provide new information about the relative importance of the related thoughts that are in the focus of the ongoing conversation. In that case, respondents interpret the general question as if it were worded, "Taking these aspects together. . . ." In the present study, this was even the case under conditions where the questions were deliberately introduced as part of the same conversational unit. The latter interpretation results in increased correlations and part-whole assimilation effects in the means, which are tempered, however,

by the high accessibility of competing information, due to the reasons discussed above.

If respondents interpret the general question as a request to provide information about aspects that they have not yet reported on, they will deliberately disregard information that is highly accessible in memory. This is reflected in decreased correlations between the specific and the general measures. How this affects the means, however, depends on the evaluative implications of the new information that respondents turn to. Theoretically, this process will result in part-whole contrast effects if the implications of the new information that respondents consider are *opposite* to the implications of the information that they used to answer the specific question. If the implications of the new information are similar to the implications of the specific question, however, neither a contrast effect nor an assimilation effect may emerge. Finally, if the implications of the new information have the same valence, but are more extreme than the implications of the information used to answer the specific question, the general judgment will also become more extreme, a possibility that does not quite match with the assimilation/contrast terminology. For example, our respondents with a happy relationship could have been even more happy with their work. In that case, the general judgment might have been even more positive under conditions where they had to look for new information, once the easily accessible information bearing on their relationship was eliminated from consideration.

Accordingly, it is difficult to predict the specific outcome unless one has some insight into the information that respondents may use under these conditions. In this regard, we agree with McClendon and O'Brien (1988a, 771) "that there can be no substitute for substantive knowledge of the phenomena under investigation for predicting order effects"—although we would like to add that substantive knowledge is of little use, unless one understands the general dynamics of judgmental processes.

Turning to the applied implications of our analysis, we note that the model offered here is consistent with the available findings. Most important, part-whole assimilation effects were found in surveys that presented several specific questions prior to the general one (McClendon and O'Brien 1988a and 1988b; Smith 1982), whereas part-whole contrast effects were obtained in a study that presented only one specific question immediately before the general one (Schuman and Presser 1981). Whereas the former studies should be easily replicable, quite different results may emerge in replications of the latter study, depending on the implications of the information that respondents consider after disregarding information about their marriage. Accordingly, the prediction of part-whole assimilation and contrast effects requires

the combined consideration of the number of specific questions asked, of variables that may determine the perception of conversational context, and of the implications of the information that respondents may turn to, once they realize that the easily accessible information primed by the specific question should not be used.

Although the highly consistent pattern of the present findings fosters our belief that the underlying cognitive processes are systematic and reliable, the relative indeterminacy of the sources of information that respondents may use in making a general judgment renders it difficult to predict specific outcomes for question sequences that prompt the disuse of primed information. We assume that this will be reflected in future studies in consistent replications of assimilation effects under the conditions specified above, but in a heterogeneous set of apparent nonreplications under conversational context conditions with one specific question. Suffice it to say that the present model allows for all possible outcomes in the latter case and clearly specifies the conditions under which each particular one is likely to emerge.

Appendix

GERMAN QUESTION WORDING

General Life-Satisfaction. "Was meinen Sie? Wie zufrieden sind Sie gegenwärtig mit Ihrem Leben insgesamt?" (1 = sehr unzufrieden; 11 = sehr zufrieden)

Relationship Satisfaction. "Denken sie bitte einmal an Ihre partnerschaftliche Beziehung (Ehe oder Freund/in). Wie zufrieden sind Sie zur Zeit mit Ihrer Partnerschaft?" (1 = sehr unzufrieden; 11 = sehr zufrieden)

Work Satisfaction. "Wie zufrieden sind Sie—alles in allem—mit Ihrer Arbeit (Beruf, Studium oder Haushalt)?" (1 = sehr unzufrieden; 11 = sehr zufrieden)

Leisure Satisfaction. "Wie zufrieden sind Sie im allgemeinen mit der Art und Weise, in der Sie Ihre Freizeit verbringen?" (1 = sehr unzufrieden; 11 = sehr zufrieden)

Rewordings of General Question. (*a*) Inclusion, one specific question: "Wenn Sie den genannten Lebensbereich (Partnerschaft) berücksichtigen, was meinen Sie, wie zufrieden sind Sie gegenwärtig mit Ihrem Leben insgesamt?" (1 = sehr unzufrieden; 11 = sehr zufrieden)

(*b*) Inclusion, three specific questions: "Wenn Sie die genannten Lebensbereiche (Arbeit, Freizeit und Partnerschaft) berücksichtigen, was meinen Sie, wie zufrieden sind Sie gegenwärtig mit Ihrem Leben insgesamt?" (1 = sehr unzufrieden; 11 = sehr zufrieden)

(*c*) Exclusion, one specific question: "Wenn Sie den genannten Lebensbereich (Partnerschaft), über den Sie uns bereits berichtet haben, einmal außer

acht lassen, wie zufrieden sind Sie dann gegenwärtig mit den anderen Aspekten Ihres Lebens?" (1 = sehr unzufrieden; 11 = sehr zufrieden)

(*d*) Exclusion, three specific questions: "Wenn Sie die gennanten Lebensbereiche (Arbeit, Freizeit und Partnerschaft), über die Sie uns bereits berichtet haben, einmal außer acht lassen, wie zufrieden sind Sie dann gegenwärtig mit den anderen Aspekten Ihres Lebens?" (1 = sehr unzufrieden; 11 = sehr zufrieden)

Lead-In. (*a*) One specific question: "Zunächst möchten wir Sie bitten, uns etwas über zwei Lebensbereiche mitzuteilen, die für das durchschnittliche Wohlbefinden von Menschen wichtig sein können:

(*a*) Zufriedenheit mit der Partnerschaft;

(*b*) Zufriedenheit mit dem Leben insgesamt."

(*b*) Three specific questions: "Zunächst möchten wir Sie bitten, uns etwas über vier Lebensbereiche mitzuteilen, die für das durchschnittliche Wohlbefinden von Menschen wichtig sein können:

(*a*) Zufriedenheit mit der Arbeit;

(*b*) Zufriedenheit mit der Freizeit;

(*c*) Zufriedenheit mit der Partnerschaft;

(*d*) Zufriedenheit mit dem Leben insgesamt."

TRANSLATION OF QUESTIONS

General Life-Satisfaction. "How satisfied are you currently with your life-as-a-whole?" (1 = very dissatisfied; 11 = very satisfied)

Relationship Satisfaction. "Please think about your relationship to your partner (spouse or date). How satisfied are you currently with your relationship?" (1 = very dissatisfied; 11 = very satisfied)

Work Satisfaction. "How satisfied are you with your work (job, school, or housework)?" (1 = very dissatisfied; 11 = very satisfied)

Leisure Satisfaction. "How satisfied are you generally with the way you spend your leisure time?" (1 = very dissatisfied; 11 = very satisfied)

Rewordings of General Question. (*a*) Inclusion, one specific question: "Including the life-domain that you already told us about (relationship), how satisfied are you currently with your life-as-a-whole?" (1 = very dissatisfied; 11 = very satisfied)

(*b*) Inclusion, several specific questions: "Including the life-domains that you already told us about (work, leisure, and relationship), how satisfied are you currently with your life-as-a-whole?" (1 = very dissatisfied; 11 = very satisfied)

(*c*) Exclusion, one specific question: "Leaving aside the life-domain that you already told us about (relationship), how satisfied are you currently with other aspects of your life?" (1 = very dissatisfied; 11 = very satisfied)

(*d*) Exclusion, several specific questions: "Leaving aside the life-domains that you already told us about (work, leisure, and relationship), how satisfied are you currently with other aspects of your life?" (1 = very dissatisfied; 11 = very satisfied)

Lead-In. (*a*) One specific question: "We would first like to ask you to report on two aspects of your life, which may be relevant to people's overall well-being:

(*a*) relationship satisfaction;

(*b*) satisfaction with life-as-a-whole."

(*b*) Several specific questions: "We would first like to ask you to report on four aspects of your life, which may be relevant to people's overall well-being:

(*a*) job satisfaction;

(*b*) leisure time satisfaction;

(*c*) relationship satisfaction;

(*d*) satisfaction with life-as-a-whole."

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