

# **Life-Satisfaction Is a Momentary Judgment and a Stable Personality Characteristic: The Use of Chronically Accessible and Stable Sources**

**Ulrich Schimmack**

University of Toronto, Mississauga

**Ed Diener**

University of Illinois, Urbana-Champaign

**Shigehiro Oishi**

University of Minnesota

**ABSTRACT** Social cognition research indicates that life-satisfaction judgments are based on a selected set of relevant information that is accessible at the time of the life-satisfaction judgment. Personality research indicates that life-satisfaction judgments are quite stable over extended periods of time and predicted by personality traits. The present article integrates these two research traditions. We propose that people rely on the same sources to form repeated life-satisfaction judgments over time. Some of these sources (e.g., memories of emotional experiences, academic performance) provide stable information that explains the stability in life-

This research was supported by a post-doctoral scholarship awarded to Ulrich Schimmack by the DFG.

Correspondence concerning this article should be addressed to Ulrich Schimmack, Department of Psychology, University of Toronto at Mississauga, Erindale College, 3359 Mississauga Road North, Mississauga, Ontario, L5L 1C6, Canada, e-mail: uli.schimmack@utoronto.ca.

*Journal of Personality* 70:3, June 2002.

Copyright © 2002 by Blackwell Publishing, 350 Main Street, Malden, MA 02148, USA, and 208 Cowley Road, Oxford, OX4 1JF, UK.

satisfaction judgments. Second, we propose that the influence of personality traits on life satisfaction is mediated by the use of chronically accessible sources because traits produce stability of these sources. Most important, the influence of extraversion and neuroticism is mediated by use of memories of past emotional experiences. To test this model, participants repeatedly judged life-satisfaction over the course of a semester. After each assessment, participants reported sources that they used for these judgments. Changes in reported sources were related to changes in life-satisfaction judgments. A path model demonstrated that chronically accessible and stable sources are related to stable individual differences in life-satisfaction. Furthermore, the model supported the hypothesis that personality effects were mediated by chronically accessible and stable sources. In sum, the results are consistent with our theory that life-satisfaction judgments are based on chronically accessible sources.

**LIFE-SATISFACTION IS A MOMENTARY  
JUDGMENT AND A STABLE PERSONALITY  
CHARACTERISTIC: THE USE OF CHRONICALLY  
ACCESSIBLE AND STABLE SOURCES**

Over the past two decades research on the determinants of subjective well-being has increased dramatically (Argyle, 1987; Diener, Suh, Lucas, & Smith, 1999; Myers, 1992). Researchers typically distinguish an affective component and a cognitive component of subjective well-being. The present article focuses on the cognitive component of subjective well-being, that is, people's evaluations of their lives. This component of subjective well-being is typically assessed by life-satisfaction judgments, (e.g., "I am satisfied with my life"; cf., Diener, Emmons, Larsen, & Griffin, 1985). The use of judgments to assess life-satisfaction stimulated two research traditions. On the one hand, a social cognition tradition has studied the cognitive processes underlying judgments of life-satisfaction (see Schwarz & Strack, 1999, for a review). On the other hand, a personality tradition has studied predictors of individual differences in life-satisfaction (see Diener & Lucas, 1999, for a review). These traditions evolved relatively independent of each other. The present article presents an integrated model of life-satisfaction that incorporates the major findings of both traditions.

### Integrating the Social Cognition and the Personality Tradition

The social-cognition tradition used experimental or quasi-experimental studies to study the processes underlying life-satisfaction judgments. For example, participants reported their life-satisfaction after a pleasant or unpleasant mood induction, before or after answering a question about dating, or in the presence or absence of a handicapped confederate (Schwarz & Strack, 1999). These studies demonstrate that life-satisfaction judgments are sometimes influenced by temporarily accessible information. Additional studies showed that people disregard accessible information that is considered irrelevant (Schwarz & Clore, 1983). To account for these findings, Schwarz and Strack (1999) developed a model of life-satisfaction judgments. The model assumes that life-satisfaction judgments are based on a few, easily accessible, and relevant sources. This model has been used to explain why life-satisfaction judgments often are unrelated to objective indicators of people's lives and why life-satisfaction judgments sometimes show low retest reliabilities. Based on this model, Schwarz and Strack (1999) suggested, "there is little to be learned from self-reports of global well-being. Although these reports do reflect subjectively meaningful assessments, what is being assessed, and how, seems to be too context-dependent to provide reliable information about a population's well-being, let alone information that can guide public policy" (p. 80).

The personality tradition usually relies on correlational studies in which individual differences in life-satisfaction are related to individual differences in predictor variables such as self-esteem (Diener & Diener, 1995) or the Big Five personality dimensions (Costa & McCrae, 1980; McCrae & Costa, 1991). These studies indicate that personality influences life-satisfaction, with extraversion and neuroticism being the most reliable predictors (cf. Diener & Lucas, 1999). Furthermore, research in this tradition demonstrated that life-satisfaction is quite stable over extended periods of time. For example, Pavot and Diener (1993) reported a retest-correlation of .82 over a 2-month period and a retest-correlation of .54 over a period of 4 years. These findings have been interpreted as evidence that "situational factors usually pale in comparison with long-term influences on well-being measures" (Diener, 2000, p. 35).

At first sight, the two traditions have produced conflicting results. However, we suggest that both traditions have provided valuable

insights that can be integrated into a common model. Following Schwarz and Strack (1999), we propose that life-satisfaction judgments are based on accessible and relevant information. Sometimes people rely on *temporarily accessible* information. However, in addition, people are likely to use *chronically accessible* information (cf. Schwarz & Strack, 1999). For example, thoughts about the satisfaction with important life domains (e.g., work, social relationships) may automatically come to mind when asked about life-satisfaction. Furthermore, these chronically accessible sources may provide relatively stable information over time. For example, individual differences in income are relatively stable over time. If financial satisfaction were chronically accessible and people were drawing on this information in repeated life-satisfaction, then life-satisfaction judgments could be quite stable over time.

In short, we propose that participants draw on three types of sources to form life-satisfaction judgments, which have different implications for the stability and variability of life-satisfaction judgments. First, participants seem to use temporarily accessible sources that are salient in one assessment situation, but not in other situations (e.g., a handicapped confederate is present). The use of these sources produces variability in life-satisfaction judgments. Second, participants can use chronically accessible sources that provide variable information. For example, people may chronically use mood as information because it is a salient and relevant source (Schwarz & Clore, 1983). Use of mood should also produce variability in life-satisfaction judgments because mood fluctuates considerably over time (e.g., Schimmack, 1997; Schimmack & Grob, 2000). Finally, participants may use chronically accessible sources that provide stable information (e.g., satisfaction with income). The use of chronically accessible and stable sources could explain the stability of life-satisfaction judgments that has been demonstrated in the personality tradition (Pavot & Diener, 1993). Of course, stability and variability are extremes of a continuous dimension. Even chronically accessible and stable sources change over longer time intervals, which explains why life-satisfaction judgments are more stable over shorter time periods than over extended periods of time (Pavot & Diener, 1993).

### Why Do People Use Certain Types of Information?

One key assumption in subjective well-being research is that people select sources because they are relevant and reflect important aspects

of their lives (Diener & Lucas, 1999). Past research indicated that people use temporarily accessible information only when this information is relevant (Schwarz & Strack, 1999). For example, when the relevance of mood is drawn into question, people stop using mood as information (Schwarz & Clore, 1983). It seems plausible that chronically accessible sources are also relevant because relevant information is more accessible (Pelham, 1995; Pelham & Swann, 1989; Schwarz & Strack, 1999). For example, if somebody is married, marital satisfaction is salient and relevant for this individual. As a consequence, it is likely that the individual thinks about marital satisfaction to evaluate life-satisfaction. In contrast, this domain is less salient for singles or priests, and it is less likely that this domain comes to mind during a life-satisfaction judgment. Cross-cultural studies provide support for the hypothesis that people rely on chronically accessible sources because they are emphasized in a culture (Kwan, Bond, & Singelis, 1997; Oishi, Diener, Lucas, & Suh, 1999; Suh, Diener, Oishi, & Triandis, 1998). For example, people in collectivistic and poorer countries were more likely to rely on financial (dis)satisfaction (Oishi et al., 1999), social norms (Suh et al., 1998), and relationship harmony (Kwan et al., 1997), presumably because these sources are chronically accessible in these cultures. However, even within cultures, individuals are likely to use different sources to judge life-satisfaction because the relevance of sources is likely to differ across individuals. In short, we propose that chronically accessible sources reflect important aspects of people's lives. To the extent that a specific source is important to members of a particular group, it is likely to be used by most members of a group. For example, most students care about their academic performance. Hence, most students should consider this domain in their global life-satisfaction judgments. To the extent that sources vary in importance across individuals, we expect individual differences in the use of sources. For example, students may differ in the importance that they attach to the relationships with their family. In this case, we expect that students are more likely to use family satisfaction if this domain is important to them.

### Integrating Top-Down and Bottom-Up Models of Life-Satisfaction

The hypothesis that people use chronically accessible and stable sources also integrates top-down and bottom-up theories of life-satisfaction

(cf. Diener, 1984). Bottom-up theories assume that life-satisfaction is a summary evaluation of aspects of one's life. For example, one is satisfied with one's life because one has good social relations, enough money, and an interesting job. Top-down theories assume that life-satisfaction is due to personality influences. For example, a neurotic individual is more dissatisfied in general and with his or her job, social relations, and income in particular. Brief, Butcher, George, and Link (1993) presented an intriguing integration of these two seemingly contradictory models. Consistent with judgment theories of life-satisfaction (Schwarz & Strack, 1999), the authors proposed that life-satisfaction judgments are constructed bottom-up by considering chronically accessible sources. At the same time, personality traits produce stability in these sources. The authors presented strong support for this model for health satisfaction. The authors obtained measures of objective health (e.g., hospital visits), subjective health (participants' ratings of their health), neuroticism, and life-satisfaction. A path model indicated that health satisfaction was a joint function of objective health and neuroticism. This finding indicates a top-down influence of neuroticism on health satisfaction. The path model also indicated that life-satisfaction was based on health satisfaction. Hence, life-satisfaction was constructed in a bottom-up manner, using health as one source. The model also demonstrated that the influence of neuroticism on life-satisfaction was mediated by health satisfaction. Taken together, the model suggests that a chronically accessible and stable source (i.e., satisfaction with health) mediated the influence of neuroticism on global life-satisfaction.

Drawing on Brief et al.'s (1993) integrated model, we propose that other chronically accessible sources also mediate the influence of personality traits on life-satisfaction. As noted earlier, extraversion and neuroticism are the strongest predictors of life-satisfaction (Diener & Lucas, 1999). Furthermore, it is well known that extraversion is a disposition to experience more pleasure, whereas neuroticism is a disposition to experience more displeasure (Costa & McCrae, 1980; Diener & Lucas, 1999). Hence, these two personality traits are likely to produce stable individual differences in the actual amount of pleasure and displeasure in people's lives. Furthermore, previous research demonstrated that memories of past emotional experiences are an important chronically accessible source of life-satisfaction judgments, in particular in individualistic cultures (Ross, Eyman, & Kishchuck, 1986; Suh et al., 1998). Hence, it seems likely that memories of past

emotional experiences are an important mediator of the relationship between extraversion and neuroticism and life-satisfaction. In short, we predict that personality traits are determinants of stability in chronically accessible sources of life-satisfaction judgments and that the influence of personality traits on life-satisfaction is mediated by chronically accessible sources. More specifically, we predict that the influence of extraversion and neuroticism on life-satisfaction judgments is mediated by memories of emotional experiences.

### Studying Chronically Accessible Sources: The Validity of Source Reports

Previous research on life-satisfaction judgments has neglected chronically accessible sources. The reason might be the preference of social cognition researchers for experimental designs. Experimental studies have the advantage of high internal validity. However, they are not suitable to the investigation of chronically accessible information because these sources are by definition not subject to experimental manipulation. Correlational studies are also problematic because a significant correlation between life-satisfaction judgments and a source does not prove causality. For example, a significant correlation between life-satisfaction and marital status could be due to the fact that satisfied people are more likely to marry (cf. Myers, 2000). Hence, we needed a new empirical approach to study the influence of chronically accessible sources on life-satisfaction judgments. We decided to ask participants after they completed life-satisfaction judgments to report their thoughts during the judgment process. We refer to these reports as *source reports*.

After the decline of behaviorism, the assessment of people's thoughts has gained in acceptance in contemporary research, although this method is still controversial (cf. Crutcher, 1994). However, several findings over the past decades encouraged us to use this method to examine sources of life-satisfaction judgments. First, thought protocols are routinely and successfully used in persuasion research (cf. Eagly & Chaiken, 1993). For example, Osterhouse and Brock (1970) examined the influence of distraction on the effectiveness of a counter-attitudinal message with weak arguments. The authors demonstrated that higher levels of distraction produced larger attitude changes. Participants thought protocols revealed why this was

the case. In the low distraction condition, participants were able to generate counterarguments to the weak messages, whereas high levels of distraction interfered with the generation of counterarguments. Further evidence for the usefulness of thought protocols stems from the cognitive literature (Ericsson & Simon, 1993). For example, Brown (1995) demonstrated that participants judge frequencies by enumerating exemplars when exemplars are easy to retrieve, but they use an intuitive estimation strategy when the retrieval of exemplars is difficult. This finding was first suggested by participants' reports of their judgment strategies and then confirmed by response latencies in a second study.

A few studies already examined sources of well-being judgments. Ross et al. (1986) asked participants to report the sources that they considered during life-satisfaction judgments. The authors found that participants often mentioned affective experiences as one source of their life-satisfaction judgments. Although the authors did not validate the reports, the reports are consistent with findings in other studies of life-satisfaction judgments (Schwarz & Clore, 1983; Suh et al., 1998). More direct evidence stems from a recent study of relationship satisfaction. Wilson and Kraft (1993) obtained thought-protocols of the reasons for romantic happiness and ratings of romantic happiness on four separate occasions from the same panel of participants. Independent raters determined the number of positive and negative statements in the thought-protocols. The scores were then related to participants' romantic happiness ratings. The correlations ranged from .25 to .81, with an average of .52. Schimmack (1998) obtained first evidence regarding the validity of source reports in the context of global happiness judgments. Participants rated whether they were happy or unhappy persons. Then they completed a check list with potential sources that they might have used to answer the well-being question. One question asked about mood because some participants were expected to use mood as information (Schwarz & Clore, 1983). After the source reports, participants reported their current mood. Roughly half of the participants reported using mood. Hence, it was possible to split the sample into participants who reported using mood (users,  $N = 53$ ) and those who did not report mood (non-users,  $N = 48$ ) and to compute the correlation between well-being judgments and current mood separately for users and for non-users. If users did indeed rely on their current mood when they answered the well-being question, then users' mood should be more highly correlated with the

well-being judgment than non-users' mood. Consistent with this prediction, the correlation between mood and the well-being judgment was significantly higher for users ( $r = .67$ ) than for non-users ( $r = .25$ ),  $z = 2.37$ ,  $p < .05$  (one-tailed). We used one-tailed significance tests because we had a directed hypothesis that correlations are higher for users than for non-users. The present studies were designed to provide more definitive evidence regarding the validity of source reports. Based on the preliminary results in Schimmack's (1998) study and the usefulness of thought protocols in other research areas (cf. Ericsson & Simon, 1993), we predicted that source reports provide useful information about the determinants of life-satisfaction judgments.

## OVERVIEW

The present article examines two related, yet distinct research questions. On the one hand, we examined the usefulness of source reports to study the cognitions that are underlying life-satisfaction judgments. On the other hand, we examined whether stability in chronically accessible sources that are used by a majority of participants is influenced by personality factors, and whether these sources mediate the relation between personality traits and life-satisfaction. In this part of the article we relied on findings from the first part of the article to identify chronically accessible sources that are repeatedly used by the majority of participants. We present the results in two parts. The first part examines the validity of source reports. The second part examines an integrated bottom-up, top-down model that specifies chronically accessible sources as mediators of the relation between personality traits and life-satisfaction.

## PART 1: THE VALIDITY OF SOURCE REPORTS

### PILOT STUDY 1

Researchers have a variety of methods at their disposal to assess people's thoughts, namely (a) concurrent verbalization, (b) retrospective open-ended reports, and (c) retrospective questionnaires (e.g., Ericsson & Simon, 1993). One problem of concurrent verbalizations is that they can alter the judgment process. Retrospective questionnaires

may invite participants to generate thoughts post hoc based on the questions. To avoid these potential problems, we used open-ended retrospective thought protocols in a preliminary study.

## METHOD

### Participants

Participants were 150 students at the University of Illinois, Urbana-Champaign. Students took part in the data collection as part of a semester-long course on subjective well-being (SWB).

### Materials and Procedure

First participants completed the Satisfaction With Life Scale (SWLS; Diener et al. 1985) to measure life-satisfaction. The scale comprises five-items, namely (a) "In most ways my life is close to ideal," (b) "The conditions of my life are excellent," (c) "I am satisfied with my life," (d) "So far I have gotten the important things I want in my life," and (e) "If I could live my life over, I would change almost nothing." Responses were made on a 7-point *agree-disagree* scale (Diener et al., 1985). Immediately afterwards, participants reported their thoughts during the life-satisfaction judgments on a blank page.

## RESULTS

The free responses were coded into several categories derived from the subjective well-being literature. Responses were coded as providing either clear or vague evidence that respondents had thought about a source. Respondents quite often thought about *family* (clear statements 33%, vague statements 16%), *romantic life* (22.5%, 21%), *relationships with friends* (26%, 12%), and *academic life* (20%, 16%), whereas *financial situation* (9%, 10%), *housing* (9%, 4%), and *health* (12%, 4%) were mentioned less frequently. Participants also frequently mentioned past emotional events (36%, 12%), whereas *social comparisons* (6%, 1%) and *using the past as a comparison standard* (1%, 0%) were mentioned infrequently. A classification into positive and negative statements revealed that participants thought

more often about positive aspects (39%) than about negative aspects (30%).

## DISCUSSION

Study 1 provided encouraging evidence that people have access to some of their thoughts during life-satisfaction judgments. Furthermore, the results replicate Ross et al.'s (1986) finding that people often think about past emotional events when they form life-satisfaction judgments. In addition, Study 1 revealed that participants frequently mention important life domains such as relations with family, romantic partner, and friends as well as academic performance. In contrast, financial satisfaction was mentioned less frequently. This finding is consistent with evidence that financial satisfaction is a weak predictor of life-satisfaction in the United States. If people do not think about their financial situation when they form life-satisfaction judgments, then individual differences in income do not influence these judgments.

Although open-ended response formats decrease the likelihood of demand effects, they have other problems. It is most likely that participants omitted sources that they considered because they lacked the motivation to note all thoughts in writing and because they forgot some thoughts. A questionnaire overcomes these limitations because it requires the same effort to indicate that a source was used as it takes to indicate that a source was not used. Furthermore, a checklist can serve as a retrieval cue for thoughts that would have been forgotten in an open-ended report.

## PILOT STUDY 2

Study 2 examined whether previous results from the open-ended study could be replicated with a closed-format assessment of sources. For this purpose, we focused on two life-domains that were mentioned with different frequencies in Study 1, namely satisfaction with family relationships (frequently mentioned) and satisfaction with housing (infrequently mentioned). Study 2 also tested the hypothesis that chronically accessible sources are more relevant. Hence, we also obtained ratings of the importance of the two domains. We predicted that (a) participants report using family satisfaction more frequently than housing satisfaction, (b) participants rate family satisfaction as more

important than housing satisfaction, and (c) participants who report using family satisfaction or housing satisfaction rate these domains as more important than participants who report not using these domains.

## METHOD

### Participants

One-hundred and ninety students at the University of Illinois, Urbana-Champaign participated in the study. The data were collected at the beginning of a lecture in an introductory psychology class in return for extra course credit.

### Materials and Procedure

Participants received a two-page questionnaire. On the first page was a five-item life-satisfaction questionnaire (cf. Schwarz & Clore, 1983). The internal consistency of the five-item scale was .86. At the beginning of the second page followed two dichotomous questions (yes/no) about the use of satisfaction with one's family relationships and satisfaction with one's housing situation. Next followed two items regarding the importance of the two life-domains (0 = *not at all important* to 7 = *of utmost importance*). The next two questions addressed how satisfied participants were with the two life-domains (0 = *totally dissatisfied* to 10 = *totally satisfied*).

## RESULTS

Consistent with the open-ended reports in Study 1, satisfaction with family relationships (83%) was reported significantly more often than satisfaction with housing (67%), sign-test  $z = 3.78$ ,  $p < .01$ . As predicted, participants also rated family relationships as more important ( $M = 6.29$ ,  $SD = 1.09$ ) than housing ( $M = 4.76$ ,  $SD = 1.43$ ),  $F(1,189) = 151.69$ ,  $p < .01$ . Importance ratings were also related to individual differences in the report of the two domains in the source reports. Users of family relationships rated this domain as more important ( $M = 6.56$ ,  $SD = 0.67$ ) than non-users ( $M = 5.03$ ,  $SD = 1.67$ ),  $F(1,188) = 75.19$ ,  $p < .01$ , and users of housing satisfaction rated this domain as more important ( $M = 5.23$ ,  $SD = 1.08$ ) than non-users of housing satisfaction ( $M = 3.79$ ,  $SD = 1.59$ ),  $F(1,188) = 54.36$ ,  $p < .01$ .

Next, we explored the validity of participants' source reports. The analyses follow the procedure outlined in the introduction (cf. Schimmack, 1998). We divided the sample into those participants who reported using family satisfaction (i.e., users) and those participants who reported not using family satisfaction (non-users). Then we computed the correlation between life-satisfaction and family satisfaction separately for users and for non-users. If source reports are valid, then the correlation between a source (i.e., family satisfaction) and life-satisfaction judgments should be stronger in the user-group than in the non-user group. Consistent with this prediction, the correlation between life-satisfaction and family satisfaction was higher among users ( $N = 157$ ,  $r = .44$ ,  $p < .01$ ) than among non-users ( $N = 33$ ,  $r = .12$ ,  $p = .51$ ),  $z = 1.75$ ,  $p < .05$  (one-tailed). The same analysis was performed for users and non-users of housing satisfaction. Again, the correlation among users ( $N = 128$ ,  $r = .35$ ,  $p < .01$ ) was higher than the correlation among non-users ( $N = 62$ ,  $r = .03$ ,  $p = .83$ ),  $z = 2.15$ ,  $p < .05$  (one-tailed).

## DISCUSSION

Study 2 revealed several findings. First, a closed-format questionnaire replicated the finding of Study 1 that participants report using family more often than housing. The convergent evidence with open-ended and closed-format assessments suggests that source reports reflect actual thoughts during life-satisfaction judgments. Study 2 also supported the hypothesis that relevance is related to the accessibility and use of sources. Overall, participants reported family satisfaction as more important than housing satisfaction, and they mentioned family satisfaction more often than housing information in the source report. In addition, individual differences in source reports were correlated with individual differences in importance ratings.

However, Study 2 suffers from several shortcomings. First, importance ratings were assessed after the source reports. Hence, participants may have relied on their responses on the source questionnaire to judge importance. Second, domain satisfaction was assessed shortly after the source reports. Participants may have biased their domain satisfaction judgments in order to be consistent with the life-satisfaction judgments and the source reports. To address these concerns, we conducted the main study.

## STUDY 1: A LONGITUDINAL INVESTIGATION

The study involved assessments of life-satisfaction in monthly intervals over the course of one semester. At each time, participants made life-satisfaction judgments, reported the use of various sources (e.g., use of current mood) and rated themselves on these dimensions (e.g., actual current mood). The study also used two types of life-satisfaction judgments. At the beginning and the end of the semester, participants made general life-satisfaction judgments without an explicit time frame. In the two assessments during the semester, participants made life-satisfaction judgments that were limited to the past month. We had two reasons for the use of monthly satisfaction judgments during the semester. First, general life-satisfaction judgments are highly stable over periods of a few months (Pavot & Diener, 1993). Hence, it would have been very difficult to observe changes in these judgments from month to month because reliable changes are small. Assessments of satisfaction with the past month allow a better test of our hypothesis that changes in reported sources are related to changes in life-satisfaction judgments, because monthly satisfaction judgments are more variable. Second, we wanted to test whether people use different sources to evaluate longer or shorter time periods of their lives.

## METHOD

### Participants

One-hundred-and-thirty-six students at the University of Illinois, Urbana-Champaign, enrolled in a semester-long course on personality and life-satisfaction. Due to the longitudinal nature, some students missed one or more data collections. As a consequence, the final sample for the present data analyses consisted of 122 students (36 male, 86 female) who completed all data collections. On average, participants were 21 years old.

### Materials

The materials are presented in the order as they appeared on the questionnaire.

*Current mood.* Current mood was assessed before the life-satisfaction judgments for several reasons. First, life-satisfaction judgments may influence people's moods. A participant who comes to the laboratory in a good mood, but then is made to think about his terrible family relationships,

lack of a romantic partner, and bad grades might feel worse after the life-satisfaction judgments. In this case, mood ratings would be consistent with life-satisfaction judgments because the life-satisfaction judgments influenced mood. Second, mood assessments after source reports may introduce a demand to be consistent. If an individual just reported a high level of life-satisfaction and then reported using mood, he or she may feel compelled to report a positive mood to be consistent with the prior judgments. Mood assessments before the life-satisfaction judgments avoid these problems. Mood was assessed with the pleasure-displeasure subscale of the PAT questionnaire (Schimmack & Grob, 2000; see also Steyer, Schwenkmezger, Notz, & Eid, 1994). The questionnaire relies on three items to assess pleasure (pleasant, good, positive) and three items to assess displeasure (unpleasant, bad, negative). Ratings were made on 4-point intensity scale (*not at all, slightly, moderately, strongly*). We subtracted unpleasant items from pleasant items to create bipolar indicators. At all measurement occasions, the three indicators had good reliabilities (Cronbach's alpha > .80).

*Satisfaction With Life Scale.* After the mood ratings, we assessed life-satisfaction with the Satisfaction With Life Scale (Diener et al., 1985), a common five-item measure of life-satisfaction with good psychometric properties (cf. Pavot & Diener, 1993). At the beginning and the end of the semester, the SWLS was given with standard instructions. For the two assessments during the semester, the items were changed to assess satisfaction in the past month (e.g., "In the past month, I was satisfied with my life.") The internal consistency of the five-item scale was good at all four assessments (Cronbach's alpha > .80).

Most well-being researchers consider the use of mood as information as a source of error variance in the assessment of life-satisfaction because mood is variable and influenced by situational factors. To test whether the influence of this source can be reduced, we included explicit instructions not to use mood before the life-satisfaction judgments at Time 3 and Time 4. Incidentally, these instructions provide a conceptual replication of Schwarz and Clore's (1983) attribution manipulation. The authors found that participants do not use mood when moods are attributed to irrelevant factors like the weather. We reasoned that direct instructions might have the same effect as the indirect attribution manipulation.

*Source reports.* Immediately after the SWLS, participants completed source reports. The source report included 10 sources that could be used to judge life-satisfaction. Following the procedure of Pilot Study 2, participants reported the use of sources by means of dichotomous yes/no responses. The first question addressed whether participants used current mood because previous studies demonstrated that mood influences life-satisfaction judgments (Schwarz &

Clore, 1983; Schimmack, 1998). The next question addressed the use of memories of past emotional experiences because previous studies found that this is another important source of life-satisfaction (Ross et al., 1986; Schimmack, 1998; Suh et al., 1998). The third question addressed use of progress towards goals because goal progress was an important determinant of life-satisfaction in a previous semester-long studies (Brunstein, 1993). Next we asked about several life-domains. We included family relations and housing to replicate the results of the pilot studies. We added academic performance, romantic relationships, and health, which were also mentioned in Pilot Study 1. Finally, we included two domains that were not mentioned in the open-ended pilot study. We included satisfaction with weather because previous studies demonstrated that people usually do not consider this source in life-satisfaction judgments (Schkade & Kahneman, 1998). The second irrelevant domain was the performance of the Illini men's basketball team. The inclusion of irrelevant sources has several advantages. They allow examining the influence of acquiescence response styles on dichotomous source reports, and they allow testing the hypothesis that people do not include irrelevant factors in life-satisfaction judgments. The second assessment of monthly satisfaction followed spring break. We speculated that students' satisfaction judgments would be influenced by their experiences during spring break. To examine whether participants report this source, we included spring break in the source questionnaire during this assessment only.

*Hedonic balance.* To assess the reliance on past emotions, we used a measure of hedonic balance. Participants estimated how much of the time on a typical day they experience pleasure versus displeasure. Consistent with the life-satisfaction judgment, we asked either about a typical day in general, or a typical day in the past month. The same six adjectives that were used for the mood assessment were used for the assessment of hedonic balance. However, the response format was an 8-point scale with the following response categories: 1 = *never* (0% of waking time), 2 = *slight amount* (1–5%), 3 = *some of the time* (5–25%), 4 = *less than half* (25–50%), 5 = *more than half* (50–75%), 6 = *large amount* (75–95%), *almost always* (95–99%), *always* (100%). As for current mood, we computed a single pleasure-displeasure score (Cronbach's alphas > .78).

*Goal progress.* For global assessments, we asked about three major goals in life. For monthly assessments, we asked about three important goals in the past month. Participants first wrote a short description of the goals. Then they rated the progress that they had made toward the goal on a 4-point scale, ranging from 1 = *close to reaching this goal* to 4 = *not sure I will ever reach this goal*. We recoded the data so that high numbers reflect higher levels of goal progress. We averaged the three ratings to obtain a general index of goal progress. The

internal consistency of progress toward the three different goals ranged from .22 to .38. The finding demonstrates that progress towards one goal is not strongly related to progress toward another goal. Nevertheless, the average of three goals might be a reasonable estimate of people's general sense of goal progress.

*Domain satisfaction.* Domain-satisfaction questions were either framed "in general" or "in the past month." Participants were asked about their satisfaction with the domains that were included in the source reports, namely academic performance, family relationships, romantic relationship (or the lack thereof), health, housing, weather, and the Illini men's basketball team. Each domain was rated on a 5-point scale, from 1 = *rock bottom cannot get worse* to 5 = *top cannot get better*. The second assessment of monthly satisfaction occurred after spring break. We used this opportunity to include satisfaction with spring break as a temporarily accessible source that might influence students' life-satisfaction.

*Importance ratings.* At the first assessment of life-satisfaction, participants also rated the importance of the seven life-domains. Importance ratings were made on a 6-point scale, ranging from 1 = *does not matter to me at all* to 6 = *is of vital importance to me*. Participants were also instructed to consider each domain separately to minimize the use of internal standards of comparison (cf. Schimmack, Oishi, Diener, & Suh, 2000).

*Personality dimensions.* The Big Five personality dimensions were assessed at the beginning of the semester in a session following the first assessment of life-satisfaction. We used Goldberg's 300-item questionnaire that assesses the Big Five with 60 items for each dimension (Goldberg, 1997). All scales had satisfactory reliabilities (alphas > .70).

## Procedure

Participants completed the questionnaire with global instructions (i.e., all questions referred to life in general) at the beginning of the semester on the first measurement occasion. One month later, participants completed the questions with past-month instructions. After another month, participants repeated the questions with past-month instructions. At the end of the semester, another month later, participants repeated the life-satisfaction and source reports with global instructions. For the last two measurements, we also included special instructions before the life-satisfaction judgments. These instructions explained that mood is influenced by transient and irrelevant factors. For this reason participants were asked not to use mood in their life-satisfaction judgments.

## RESULTS

Effects described as significant met the conventional 5% level for type I errors. We present our empirical data in four sections. The first section explores the stability of life-satisfaction judgments and sources. These analyses test the claim that some sources provide rather stable information about one's life, whereas other sources provide more variable information. The analyses also address the question whether general judgments draw on more stable information than monthly judgments. The second section explores the use of sources. The results provide information about the consistency in the use of sources and about the influence of the time frame of the life-satisfaction judgments on source selection. In this section, we also explore the relation between source selection and importance of these sources. The third section explores the validity of source reports by comparing correlations between life-satisfaction judgments or changes in life-satisfaction judgments with sources.

### Stability of Life-Satisfaction Judgments and Sources

First, we explored the stability of life-satisfaction judgments and sources (see Table 1). Consistent with previous studies, life-satisfaction judgments were highly stable (Pavot & Diener, 1993). The retest correlation of the two global life-satisfaction judgments at the beginning and the end of a three-month semester was high (.73). The retest correlation of the monthly satisfaction judgments was lower (.51), even though these were assessed only 1-month apart. This pattern of results indicates that people use more stable information to judge global life-satisfaction. Aggregating across all four assessments produced a highly reliable measure of life-satisfaction (see Table 1).

Consistent with previous findings, current mood shows low stability, whereas the moderate alpha indicates greater stability in average mood levels (e.g., Diener & Larsen, 1984; Schimmack, 1997; Steyer et al., 1994). Judgments of hedonic balance also confirm high stability in average levels of pleasure and displeasure (Costa & McCrae, 1980). The low stability of goal progress ratings might be due to the low reliability of our measures (see Method section). Most domain satisfaction judgments also revealed fairly high stability across measurements. The exceptions were satisfaction with weather and satisfaction with the Illini basketball team. The reason might be that

**Table 1**  
Stability of Life-Satisfaction Measures and Sources

	Assessments			
	G1-G2	M1-M2	Mean <i>r</i>	Alpha
Life-Satisfaction	.74	.50	.55	.82
<i>Sources</i>				
Current Mood	.30	.29	.29	.62
Emotional Memories	.65	.59	.58	.85
Goal Progress	.16	.44	.28	.52
Family Relationships	.56	.65	.60	.85
Housing	.44	.59	.54	.83
Health	.47	.57	.45	.76
Academic Performance	.51	.57	.52	.81
Romantic Relationship	.65	.78	.72	.91
Weather	.13	.08	.19	.48
Illini	.26	.44	.34	.67

*Note.* G1-G2 = correlation between global assessments three months apart. M1-M2 = correlation between monthly assessments 1 month apart. Mean *r* = average correlation of all six pairwise combinations, alpha = reliability of the combined scale based on all four assessments.

weather and performance of the basketball team were objectively the same for all participants. Hence, variability can only be due to subjective evaluations. Interestingly, there seem to be very few stable differences in the subjective evaluation of these sources. This finding is inconsistent with the idea that generally satisfied people have a strong bias to evaluate all aspects—relevant and irrelevant—of their lives consistently more favorably than chronically dissatisfied individuals.

### Source Reports

#### *Which Sources Do People Report?*

*Stability in source selection.* Table 2 shows the percentages of source reports over the four assessments. Sources like emotional memories, goal progress, academic performance, and romantic relationships were reported by many participants, whereas very few participants reported weather and Illini basketball. To determine the stability of the source reports over time, we computed the rank order correlations of the

**Table 2**  
 Percentages of Reported Sources in Life-Satisfaction Judgments

Source of Information	Importance	Assessments			
		General 1	General 2	Monthly 1	Monthly 2
Current Mood	—	.63	.43	.57	.40
Hedonic Balance	—	.70	.76	.90	.85
Goal Progress	—	.93	.94	.91	.90
<i>Satisfaction with. . .</i>					
Family Relationships	5.26 (1)	.78 (3)	.81 (2)	.53 (4)	.69 (4)
Health	5.10 (2)	.76 (4)	.78 (3)	.67 (3)	.70 (3)
Academic Performance	4.99 (3)	.90 (1)	.88 (1)	.86 (1)	.87 (1)
Romantic Relationship	4.91 (4)	.85 (2)	.78 (3)	.84 (2)	.78 (2)
Housing (inc. Roommate)	4.02 (5)	.57 (5)	.50 (5)	.48 (5)	.55 (5)
Weather	2.38 (6)	.09 (6)	.07 (6)	.12 (6)	.07 (6)
Illini basketball team	1.22 (7)	.01 (7)	.03 (7)	.01 (7)	.03 (7)

*Note.* Numbers in parentheses are ranks for the domain satisfaction means in descending order.

percentages in Table 2. The correlation between the percentages of reported sources were .94 between the two global assessments at the beginning and the end of the semester, and 1.00 between the two monthly assessments during the semester. The average correlation among all four assessments was .94.

Importance ratings of life domains are consistent with previous findings that work (academic performance for students) and social life are more important than weather (Schkade & Kahneman, 1998). Next, we computed the rank order correlations between percentages of source reports and importance ratings of domains. These correlations were .67 or higher. This finding replicates the results of Study 2 that source reports are related to the relevance of a life domain. Romantic relationships are reported by most participants and rated as important; weather is reported by very few participants and rated as unimportant. This relationship persisted over time, in that importance ratings at the beginning of the semester predicted source reports three months later at the end of the semester. In sum, these findings indicate that source reports are not made in an ad-hoc random manner. Rather, they contain systematic information that is related to the importance of domains. This finding is consistent with our theory that relevant aspects of

people's lives are chronically accessible and are easily accessible when people are asked to evaluate life-satisfaction.

*Variability in source selection.* The following analyses explored whether source reports varied significantly across the four assessments. We analyzed each source report in a *type of question* (general vs. monthly)  $\times$  *time* (first vs. second assessment) repeated measurement ANOVA. Source reports of mood revealed a significant time effect,  $F(1,121) = 22.72, p < .01$ . The main effect for type and the interaction were not significant. The time effect reveals that our instructions not to use mood significantly decreased reports of this information. The analyses of emotional memories revealed a main effect for type of question,  $F(1,121) = 19.30, p < .01$ . Participants reported using emotional experiences more often in monthly satisfaction judgments than in global judgments. Furthermore, participants more often reported using family relationships in general satisfaction judgments than in monthly satisfaction judgments,  $F(1,121) = 29.36, p < .01$ . A similar effect was observed for health satisfaction,  $F(1,121) = 6.76, p < .05$ . We also analyzed the data with the non-parametric McNemar test because source reports are dichotomous variables. These analyses confirmed the results of the ANOVAs for mood, emotion memories, and family relationships, but the weaker effect for health did not reach significance. In sum, these analyses reveal that participants use slightly different sources to evaluate extended life-satisfaction and monthly life-satisfaction. This finding is inconsistent with the idea that source reports are based on implicit theories about the sources that people should use to evaluate life-satisfaction, unless one assumes that people hold different implicit theories for life-satisfaction judgments with varying time frames. Our results also provide additional evidence for the mood-as-information model. Although mood was as accessible during the last two assessments as it was during the first two assessments, fewer people reported this source because we told participants not to use this information.

*Individual differences in source selection.* Finally, we explored the stability of individual differences in the use of sources. These analyses were only meaningful for sources that revealed a sufficient amount of variability between individuals such as current mood, housing, and health. Regarding use of mood, we only could investigate source reports of the first two occasions because our intervention at times 3 and 4

influenced participants' natural selection of this source. Source reports of mood at time 1 and time 2 were significantly correlated ( $\phi = .30$ ). Regarding family relationships, source reports of the two monthly satisfaction judgments were significantly correlated (.40), as were the source reports of the two general satisfaction judgments (.45). The average correlation across all four assessments was .38. Regarding housing, source reports of the two monthly satisfaction judgments were significantly correlated (.48), as were the source reports of the two general satisfaction judgments (.30). The average correlation across all four assessments was .32. Finally, health-related source reports of the two monthly satisfaction judgments were significantly correlated (.39), but the correlation for the two general satisfaction judgments did not approach significance ( $\phi = .17$ ). The average correlation across all four assessments was .32. Individual differences in source reports of life domains were also significantly related to importance ratings at the beginning of the semester. Importance ratings of family relationships predicted source reports of family satisfaction overall and at each of the four assessments over the semester (source reports at T1:  $r = .36$ , T2:  $r = .34$ , T3:  $r = .23$ , T4:  $r = .25$ , Average:  $r = .41$ , all  $ps < .05$ ). Importance ratings of housing predicted source reports of housing satisfaction overall and at each of the four assessments over the semester (source reports at T1:  $r = .43$ , T2:  $r = .27$ , T3:  $r = .26$ , T4:  $r = .25$ , Average:  $r = .43$ , all  $ps < .05$ ). The relation was weaker for health satisfaction, but the overall relationship was again significant (source reports at T1:  $r = .18$ ,  $p < .05$ , T2:  $r = .18$ ,  $p < .05$ , T3:  $r = .12$ , n.s., T4:  $r = .08$ , ns, Average:  $r = .21$ , all  $ps < .05$ ). In sum, the results replicate the findings of Study 2 that individual differences in source reports are related to individual differences in the importance of life domains. Furthermore, for two out of three domains, the correlation remained significant for source reports three months after the importance ratings (although this relation was not significant for health satisfaction). This finding eliminates the concern that the relation is merely due to a pressure to provide consistent responses during a single assessment of both variables.

### *Concurrent Validation of Source Reports*

*Comparisons of users and non-users.* The first validation relied on concurrent reports of sources, source reports, and life-satisfaction at one point in time. The analyses follow the procedure of Study 2. We

first divided the sample into users and non-users on the basis of source reports. For example, participants were considered users of family satisfaction if they answered “yes” to family satisfaction in the source report questionnaire. Participants were considered non-users if they answered “no” to family relationships in the source report questionnaire. Then, we computed the correlations between a source (e.g., actual level of family satisfaction) and life-satisfaction among users and among non-users (Table 3). If users actually used family satisfaction in life-satisfaction judgments, then their family satisfaction and life-satisfaction should be more strongly correlated than the family satisfaction and life-satisfaction of non-users. Furthermore, the correlation between a source and life-satisfaction should be significant for users, but may not be significant for non-users. Table 3 confirms these predictions. First, nearly all correlations for users are significant with the notable exceptions of weather. For weather, the  $N$  is too small to obtain a reliable effect. Second, many of the correlations for non-users are nonsignificant. The findings for weather and Illini are particularly important because they are based on a large sample. Hence, the lack of a statistical association cannot be attributed to a lack of statistical power. Rather, these nonsignificant correlations indicate that participants’ life-satisfaction judgments were indeed unrelated to satisfaction with the weather, just as one would expect on the basis of the source reports.

There are also a few significant correlations for non-users, most clearly for mood and monthly satisfaction judgments. This finding can indicate that source reports are not entirely accurate. However, it is also possible that these correlations are due to a third variable. For example, current mood may be correlated with hedonic balance in the past month. Hence, current mood can correlate with life-satisfaction when people use hedonic balance rather than mood as information.

Table 3 also allows a direct comparison of users and non-users. This comparison was not possible for the basketball team because too few participants reported using it. For the remaining nine sources, correlations for users nearly always exceeded the ones for non-users (33 of 36),  $z = 4.83$ ,  $p < .01$ . Averaged across all 36 correlations in Table 2, the average correlation between a source and life-satisfaction was .41 when participants reported that they had used this source, whereas the same correlation was only .17 when participants reported that they had not used this information. The difference between these two correlations is significant,  $t(35) = 6.03$ ,  $p < .01$  (the  $t$ -test is based

**Table 3**  
Correlations Between Life-Satisfaction and Sources for Users and Non-Users

Source	Assessments			
	General 1	General 2	Monthly 1	Monthly 2
<i>Current Mood</i>				
User	<b>.47*</b> (77)	<b>.64*</b> (53)	<b>.56*</b> (70)	<b>.42*</b> (49)
Non-User	.15 (45)	.23 (69)	.32* (52)	.27* (73)
<i>Hedonic Balance</i>				
User	<b>.59*</b> (86)	<b>.48*</b> (93)	<b>.77*</b> (110)	<b>.47*</b> (104)
Non-User	.48* (36)	.43 (29)	.57 (12)	.43 (18)
<i>Goal Progress</i>				
User	<b>.33*</b> (113)	.41* (115)	<b>.52*</b> (111)	<b>.50*</b> (110)
Non-User	-.11 (9)	<b>.64</b> (7)	-.22 (11)	.09 (12)
<i>Satisfaction with...</i>				
<i>Family Relationships</i>				
User	<b>.34*</b> (95)	<b>.46*</b> (99)	<b>.25</b> (64)	<b>.23*</b> (84)
Non-User	.12 (27)	.24 (23)	-.02 (57)	.08 (38)
<i>Housing</i>				
User	<b>.49*</b> (70)	<b>.33*</b> (61)	<b>.52*</b> (59)	<b>.31*</b> (67)
Non-User	.31* (52)	.29* (61)	.17 (63)	.29* (55)
<i>Health</i>				
User	<b>.35*</b> (93)	.28* (95)	<b>.43*</b> (82)	<b>.48*</b> (86)
Non-User	.06 (29)	<b>.33</b> (27)	.26 (40)	.26 (36)
<i>Academic Perform.</i>				
User	<b>.35*</b> (110)	<b>.40*</b> (107)	<b>.40*</b> (105)	<b>.42*</b> (106)
Non-User	-.51 (12)	.25 (15)	-.23 (17)	-.23 (16)
<i>Romantic Rel.</i>				
User	<b>.45*</b> (103)	<b>.31*</b> (95)	<b>.41*</b> (104)	<b>.38*</b> (95)
Non-User	.19 (19)	.30 (27)	-.01 (18)	.25 (27)
<i>Weather</i>				
User	-.20 (11)	<b>.58</b> (9)	<b>.20</b> (15)	<b>.20</b> (9)
Non-User	<b>.03</b> (111)	-.07 (113)	.16 (107)	-.02 (113)
<i>Illini</i>				
User	.- (1)	.- (3)	.- (1)	.- (3)
Non-User	-.11 (121)	-.07 (119)	.00 (121)	-.01 (119)

*Note.* Higher correlations are printed in bold type. Number of participants in each group is printed in parentheses.

on  $z$  scores after Fisher  $r$  to  $z$  transformation). In sum, the results replicate the findings of Pilot Study 2 that sources are more strongly correlated with life-satisfaction judgments when participants reported using this source than when they reported not using this source. In addition, the present results generalize the results to a larger number of sources.

*Weighted and unweighted domain satisfaction and life-satisfaction.* The previous analyses examined one source at a time. In the following analyses, we examined the relation between life-satisfaction and multiple sources. If source reports reflect actual sources of life-satisfaction judgments, then weighing domain satisfaction by source reports should increase the relation between domain satisfaction and global life-satisfaction. To test this prediction, we created weighted and unweighted predictor variables based on the seven domains listed in Table 1. Unweighted domain satisfaction (UDS) was the average satisfaction in all seven domains. Weighted domain satisfaction (WDS) included only domains that were reported in the source reports. For example, if a participant reported using romantic satisfaction, academic satisfaction, and health satisfaction, then WDS was based on the average satisfaction in these three domains, whereas the other domains were not considered.

At each point in time, we computed hierarchical regression analyses with life-satisfaction as the criterion variable. In the first step, we entered UDS and in the second step we entered WDS into the regression equation. The incremental amount of explained variance reveals the ability of source reports to increase the fit between global life-satisfaction and domain satisfaction by taking individuals' use of domains into account. For the first assessment of life-satisfaction, UDS explained 24% of the variance. Entering WDS into the equation significantly increased the amount of explained variance in life-satisfaction by another 11% to a total of 35%. In the final equation, only WDS was significant ( $\beta = .50$ ), whereas UDS did not contribute unique variance to life-satisfaction ( $\beta = .13$ ,  $p = .24$ ). Similar results were obtained at time 2 (incremental  $R^2 = 10\%$ , WDS  $\beta = .49$ , UDS  $\beta = .19$ , *ns*), and at time 3 (incremental  $R^2 = 9\%$ , WDS  $\beta = .45$ , UDS  $\beta = .19$ , *ns*). At time 4, WDS still produced a significant increase in explained variance (incremental  $R^2 = 4\%$ ), but the increase was smaller and the relation to UDS remained significant (WDS  $\beta = .27$ , UDS  $\beta = .30$ ). In sum, the results confirm that weighting domain

satisfaction judgments by source reports improves the relationship between domain satisfaction judgments and global life-satisfaction judgments. This finding is consistent with the hypothesis that source reports reflect sources that people use to form global life-satisfaction judgments. The findings are also consistent with previous findings in the self-esteem literature that weighed esteem of self-aspects is more strongly related to global self-esteem than unweighted esteem of self-aspects (Pelham, 1995; Pelham & Swann, 1989).

### *Cross-Lagged Validation of Source Reports*

The following analyses tested the hypothesis that source reports are related to actual changes in life-satisfaction judgments. To illustrate, consider mood as a source. Mood fluctuates considerable over time with very low stability from one life-satisfaction assessment to the next (see Table 1). The mood-as-information model assumes that people rely on their mood to judge life-satisfaction. In this case, mood should be related to changes in life-satisfaction judgments from one assessment to the next because they are influenced by a chronically accessible, yet variable, source. However, life-satisfaction judgments are also influenced by other factors that produce stability in life-satisfaction judgments over time (Pavot & Diener, 1993). In a longitudinal regression analysis, life-satisfaction at Time 2 should be influenced by life-satisfaction at Time 1 (stability) and by mood at time 2 (variability, mood-as-information effect). However, if some participants do not use mood as information, then mood should not be related to changes in life-satisfaction from Time 2 to Time 1. Hence, we predict that a source is only related to changes in life-satisfaction if participants reported using this source. That is, mood at Time 2 is a significant predictor of life-satisfaction at Time 2 above and beyond life-satisfaction at Time 1 for users, but not for non-users. Typically, researchers conduct a single regression analyses to test this prediction and interpret the beta coefficients. However, betas cannot be compared directly across samples. Hence, we conducted similar analyses that produced simple correlations instead. We first regressed life-satisfaction judgments onto previous life-satisfaction judgments. For example, life-satisfaction at Time 3 was regressed onto life-satisfaction at Time 1 and Time 2. We retained the standardized residuals of these analyses for further analyses. The standardized residuals represent changes in life-satisfaction judgments. Then, we computed separate correlations

between sources at Time 3 and the standardized residuals for users and non-users. If source reports reflect actual sources, one would expect significant correlations for users, but not for non-users.

There is, however, one caveat. If a source is highly stable, using this source does not produce changes in life-satisfaction judgments. Hence, one can expect significant correlations for users only when there are valid changes in the source information. For example, we can expect stronger results for a variable source like mood than for a stable source like romantic satisfaction (see Table 1). The same reasoning also applies to the stability of life-satisfaction. As demonstrated earlier, monthly satisfaction judgments were more variable than general life-satisfaction judgments (see Table 1). Therefore, sources are more likely to predict changes in monthly satisfaction judgments than in global satisfaction judgments.

Table 4 shows the results. Overall, the results support the validity of source reports. Most comparisons (24 of 27) revealed higher correlations for users than for non-users,  $z = 4.12$ ,  $p < .01$ . The average correlation between changes in life-satisfaction judgments and a source was .27 for users and .01 for non-users,  $t(26) = 5.76$ ,  $p < .01$ . A closer inspection of Table 4 suggests an influence of the variability of sources and life-satisfaction judgments. Strong results were obtained for mood, a highly variable source. Table 4 also suggests that the more variable monthly satisfaction judgments produced stronger correlations than the more stable global judgments. In sum, the results indicate that source reports are related to the amount of change in life-satisfaction judgments when actual satisfaction with a source changed. For example, if family satisfaction changed over time, then life-satisfaction changed in the same direction when participants reported using this source, but not when participants did not report using this source. This finding is consistent with the hypothesis that source reports reflect actual sources of life-satisfaction judgments.

#### *Spring Break. A Temporarily Accessible Source*

The second monthly satisfaction assessment was given one week after spring break. We included questions about use and satisfaction with spring break to examine whether participants relied on this temporarily accessible source. Seventy-five percent of the participants reported using satisfaction with their spring break to judge monthly satisfaction. For users the correlation between life-satisfaction and spring-break

**Table 4**  
Correlations Between Changes in Life-Satisfaction and  
Sources for Users and Non-Users

Source	Assessments			
	General 1	General 2	Monthly 1	Monthly 2
<i>Current Mood</i>				
User	.–	<b>.40*</b>	<b>.52*</b>	<b>.38*</b>
Non-User	.–	.06	.29*	.11
<i>Emotional Memories</i>				
User	.–	<b>.19</b>	<b>.66*</b>	<b>.28*</b>
Non-User	.–	.00	.38	.26
<i>Goal Progress</i>				
User	.–	<b>.19*</b>	<b>.43*</b>	<b>.41*</b>
Non-User	.–	.03	–.30	–.04
<i>Satisfaction with... Family Relationships</i>				
User	.–	<b>.18</b>	<b>.10</b>	<b>.07</b>
Non-User	.–	.14	–.26	.01
<i>Housing</i>				
User	.–	<b>.08</b>	<b>.40*</b>	<b>.09</b>
Non-User	.–	–.07	.07	.13
<i>Health</i>				
User	.–	.02	<b>.35*</b>	<b>.32*</b>
Non-User	.–	.02	.24	.24
<i>Academic Perform.</i>				
User	.–	<b>.16</b>	<b>.24*</b>	<b>.32*</b>
Non-User	.–	–.46	–.34	–.20
<i>Romantic Rel.</i>				
User	.–	<b>.10</b>	<b>.29*</b>	<b>.25*</b>
Non-User	.–	–.04	–.16	.18
<i>Weather</i>				
User	.–	<b>.34</b>	–.03	<b>.29</b>
Non-User	.–	.03	<b>.19</b>	–.02
<i>Illini</i>				
User	.–	.–	.–	.–
Non-User	.–	.16	.08	–.02

*Note.* Higher correlations are printed in bold type. The number of participants in each group is identical to the numbers in Table 2.

satisfaction was significant (.53). For non-users the correlation was significantly weaker ( $r = -.20$ , difference  $z = 3.60$ ,  $p < .01$ ). Furthermore, users' satisfaction with spring break was not significantly correlated with previous life-satisfaction judgments at time 1 (.12) and at time 2 (.01). As a consequence, satisfaction with spring break was related to changes in life-satisfaction from before to after spring break for users ( $r = .54$ ), but not for non-users ( $r = -.10$ ). This finding demonstrates that source reports of a temporarily accessible source reflect actual influences of temporarily accessible information on life-satisfaction.

## DISCUSSION

In the first part of this article, we presented evidence regarding source reports after completing a life-satisfaction questionnaire. The first question was whether participants have anything to report. If life-satisfaction judgments are made in an intuitive, unconscious manner, then participants would not be able to report the determinants of life-satisfaction judgments. However, our first pilot study with open-ended source reports demonstrated that participants have more to say than "I felt this way," "Six seemed to be the appropriate answer," or "I am just a happy guy." Rather, participants reported thinking about important life-domains such as their academic performance, romantic relationships, and family relationships.

Of course, these reports do not show that participants formed life-satisfaction judgments in a deliberate manner that is accessible to introspection. Alternatively, participants may have based their source reports on cultural theories of the factors that should influence life-satisfaction. For example, participants may recall the saying "Money doesn't buy happiness," and therefore report that they did not use financial satisfaction to evaluate life-satisfaction. Several findings challenge this account of source reports. First, participants reported some sources that are not salient in cultural theories of happiness, such as the use of mood as information (Schwarz & Clore, 1983). Nevertheless, participants reported this source, and mood was related to life-satisfaction judgments. On the other hand, cultural theories imply that weather is a determinant of life-satisfaction (Schkade & Kahneman, 1998). However, participants did not report this source, and it did not influence life-satisfaction judgments. Furthermore, cultural theories have problems to explain individual differences among

individuals in the same culture. Although cultural theories may acknowledge variability within cultures, they do not explain these differences. However, our data show reliably individual differences in the use of sources, and these individual differences were related to the importance of life-domains. For example, participants who reported thinking about family relations also rated family relations as more important. In Study 4, this relationship was significant even when source reports and importance ratings were assessed three months apart. At the very least, our data show that source reports differed from individual to individual, and any theory of source reports has to account for this finding.

One possible explanation could be that participants spend a lot of time thinking about their lives (Diener et al., 1999). As a consequence, they have a pre-stored evaluation of their life and pre-stored theories about the determinants of their life that differ between individuals. At the time of the life-satisfaction judgment, participants may report a pre-stored evaluation. For the source reports, they may draw on pre-stored reflections about the determinants of life-satisfaction. One problem for this theory is to account for changes in life-satisfaction judgments, and for the countless examples of context effects on life-satisfaction judgments (cf. Schwarz & Strack, 1999). If life-satisfaction judgments were pre-stored in memory, why would they be influenced by a prior question about dating? In the present study, some participants reported using their mood at the time of the judgment, and life-satisfaction judgments actually changed in the direction of their current mood. Furthermore, ample evidence indicates that mood effects disappear, when participants believe that their mood is influenced by irrelevant factors (Schwarz & Clore, 1983). In the present study, fewer participants reported using mood as information when we told them that mood is an unreliable source. These findings are inconsistent with the idea that life-satisfaction judgments and source reports are based on pre-stored evaluations and personal theories of life-satisfaction.

The last alternative explanation assumes that our findings are an artifact. This theory assumes that participants have no insight into the determinants of life-satisfaction judgments based on introspection or based on prior personal theories. However, when they are confronted with source reports, they use a few simple heuristics to infer whether they used a source or not. For example, when they are asked to report whether they used family satisfaction to judge life-satisfaction, they compare the life-satisfaction judgment to their actual level of family

satisfaction. If life-satisfaction and family satisfaction are consistent, they infer that they must have used family satisfaction to evaluate global life-satisfaction. If family satisfaction is inconsistent with life-satisfaction, they infer that they must not have used life-satisfaction. This explanation is inconsistent with several findings. First, participants report sources even when they are asked about sources in an open-ended format (Ross et al., 1986; Pilot Study 1). Second, this account cannot explain the infrequent endorsement of weather and Illini basketball in the source reports. The near zero correlations between satisfaction with these domains and life-satisfaction imply that satisfaction with these domains was consistent with life-satisfaction for several participants. Hence, more participants should have reported using this source, if source reports were inferred from the consistency between life-satisfaction judgments and domain satisfaction. In fact, if people rely on consistency and nobody reports using a domain in the source reports, then satisfaction with this domain should be strongly negatively correlated with life-satisfaction. Our data do not support this prediction. Rather, domains that participants reported not using were uncorrelated with life-satisfaction, which is consistent with the validity of source reports. If somebody is not thinking about a domain, then this domain should have no influence on life-satisfaction.

The final argument against this alternative explanation stems from our longitudinal data, which revealed that changes in variable life-domains are related to changes in global life-satisfaction. For example, satisfaction with spring break was related to life-satisfaction after spring break after controlling for life-satisfaction before spring break. This finding suggests that spring break influenced life-satisfaction judgments after spring break. Consistent with this conclusion, the majority of participants reported this source in their source reports. In this sense, source reports reflect actual sources of life-satisfaction that produced changes in life-satisfaction judgments over time. Any theory of source reports has to account for the relation between source reports and the relation between sources and life-satisfaction. An inference process that merely compares the consistencies between global life-satisfaction judgments and satisfaction with a particular domain is unable to do so because domains that were not used during a life-satisfaction judgment may be consistent with a global life-satisfaction judgment.

We realize that it is impossible to prove that source reports reflect actual thoughts during a life-satisfaction judgment. However, research

in many other areas of psychology has benefited from examining participants' thoughts (Ericsson & Simon, 1993). Furthermore, we do not see any reason why participants should not form life-satisfaction judgments in a deliberate manner that is accessibly to introspection. One challenge to this view would be the behaviorists' notion that people do not have access to thoughts or feelings—a position that we find no longer defensible 40 years after the cognitive revolution (cf. Pashler, 1999). The second challenge seems to arise from Nisbett and Wilson's (1977) influential article, which revealed the limitation of introspection to explain behavior. However, even Nisbett and Wilson (1977) share our view that people have introspective access to thoughts and feelings: "It should be noted that *the individual's private access to content* [italics added] will sometimes allow him to be more accurate in his report about the causes of his behavior than an observer would be" (p. 256). It also has to be noted that source reports about thoughts during the formation of a judgment differ from inquires about causal explanations of behavior. "Did you think about the weather when you answered the previous question about life-satisfaction?" is different from asking "Did your parents' upbringing influence your level of life-satisfaction today?" The latter question goes beyond the evidence that could be accessible to introspection and forces people to rely on inferences. To avoid this problem, we deliberately limited our questions to the content of thoughts during the formation of a life-satisfaction judgment.

In sum, we believe that the present findings encourage the use of source reports in life-satisfaction research. We do not suggest that source reports are a magic bullet that can replace correlational and experimental research on actual determinants of life-satisfaction. However, we believe that they constitute an economical and useful tool for life-satisfaction researchers that can enrich future studies of life-satisfaction. Part II illustrates how source reports can be used to inform research on life-satisfaction with more traditional methods.

## **PART II: CHRONICALLY ACCESSIBLE AND STABLE SOURCES MEDIATE THE INFLUENCE OF PERSONALITY TRAITS ON LIFE-SATISFACTION**

One challenge for any theory of life-satisfaction judgments is to explain the high temporal stability of life-satisfaction judgments and the systematic relations between life-satisfaction and personality traits

(Diener & Lucas, 1999; Pavot & Diener, 1993). We propose that the use of chronically accessible sources explains these findings. If people rely on chronically accessible sources, then their life-satisfaction judgments are based on the same sources in repeated life-satisfaction judgments. Furthermore, if satisfaction in these domains remains stable over time, then the global life-satisfaction judgment will remain stable as well. Personality traits may be related to global life-satisfaction because they predict stability of chronically accessible sources. We tested these hypotheses by means of a path model. The theoretical assumptions underlying this model were derived from (a) the source reports in the longitudinal study of source reports in Part 1 and (b) well-established findings in the subjective well-being literature.

We relied on the source reports to determine chronically accessible sources of life-satisfaction judgments. We focused on sources that were chronically accessible for the majority of participants. The major reason for this decision was the lack of appropriate statistical tools to test mediator models, in which a source is only a mediator for a subset of the full sample. For example, housing satisfaction should only mediate the relation between a personality predictor of housing satisfaction and global life-satisfaction for the one half of the sample that actually used housing satisfaction. In other words, the mediation of housing satisfaction should be moderated by the use of housing satisfaction. To avoid these difficulties, we focused on sources that were reported by a large majority of participants. These sources should mediate personality effects for (nearly) all participants, thus avoiding the problem of modeling moderator effects.

We derived a theoretical path model based on the source reports in the main study and previous findings in the well-being literature. The source reports suggested that hedonic balance, romantic satisfaction, academic satisfaction, family satisfaction, and health satisfaction were considered by a majority of the participants. Hence, we specified in the path model direct paths from these sources to global life-satisfaction. Furthermore, we predicted that these sources fully mediate the relation between life-satisfaction and personality traits in the following manner.

The influence of personality traits on subjective well-being is best documented for the affective component of subjective well-being (Costa & McCrae, 1980). Extraversion is a predictor of pleasure, and neuroticism a predictor of displeasure. When the two affects are combined in a hedonic balance score, extraversion is a positive predictor

and neuroticism a negative predictor. Furthermore, people rely on their hedonic balance as one source of information to judge life-satisfaction (Suh et al., 1998). We integrated these two findings by assuming that the influences of extraversion and neuroticism on life-satisfaction are mediated by hedonic balance. To test this mediation hypothesis, we specified that (a) neuroticism predicts hedonic balance ( $N \rightarrow HB$ ), extraversion predicts hedonic balance ( $E \rightarrow HB$ ), and hedonic balance predicts life-satisfaction ( $HB \rightarrow LS$ ), but neuroticism and extraversion do not predict life-satisfaction directly ( $N \rightarrow LS = 0$ ,  $E \rightarrow LS = 0$ ).

McCrae and Costa (1991) proposed that love and work are predictors of subjective well-being beyond the influences of extraversion and neuroticism. Agreeableness is a predictor of love, whereas conscientiousness is a predictor of work. This idea is consistent with our findings that a majority of participants used satisfaction with academic performance (work) and with romantic relationships (love) in life-satisfaction judgments. To integrate these findings in a path model, we predicted that conscientiousness predicts academic satisfaction ( $C \rightarrow AS$ ), and academic satisfaction predicts life-satisfaction ( $AS \rightarrow LS$ ). Similarly we predicted that agreeableness predicts romantic satisfaction ( $A \rightarrow RS$ ), and that romantic satisfaction predicts life-satisfaction ( $RS \rightarrow LS$ ). Furthermore, the direct paths from conscientiousness and agreeableness to life-satisfaction should not be significant ( $A \rightarrow LS = 0$ ;  $C \rightarrow LS = 0$ ).

We also found that a majority of participants reported considering health satisfaction. Health satisfaction is influenced by neuroticism (Brief et al., 1993). Hence, we also predicted that  $N$  influences health satisfaction ( $N \rightarrow HS$ ), and that health satisfaction predicts life-satisfaction ( $HS \rightarrow LS$ ). Hence, influences of neuroticism on life-satisfaction can be mediated by two sources, namely hedonic balance and health satisfaction.

We were not aware of clear theoretical predictions about the relationship between personality dimensions and satisfaction with family relationships. Hence, we only predicted that family satisfaction predicts life-satisfaction ( $FS \rightarrow LS$ ), but we did not assume that this domain is a mediator of personality traits.

## METHOD

We used the data from the longitudinal study in Part I for our analyses (see Part I for methodological details). To simplify the analyses and to examine long-

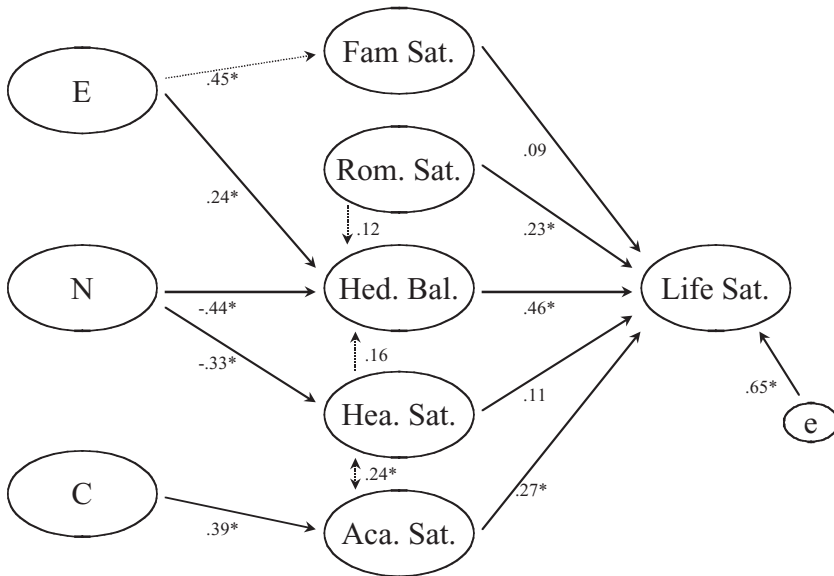
term life-satisfaction, we aggregated life-satisfaction judgments and sources across the four assessments (see Table 1 for reliabilities).

## RESULTS

After fitting the theoretically predicted model, we freed additional paths that were not theoretically predicted, but improved model fit. In addition, we removed agreeableness from the model because, contrary to our predictions, it was neither significantly related to romantic satisfaction nor to life-satisfaction. Figure 1 shows the final model. Not shown in the Figure are the correlations between the personality traits, namely  $-.55$  between E and N,  $.28$  between E and C, and  $-.41$  between N and C. Due to our modifications, the fit of the final model was acceptable, indicating that further modifications would not improve the fit of the model,  $\chi^2(df = 14) = 21.76$ ,  $p = .08$ ; AIC =  $-.6.24$ , and RMSEA =  $.069$  (see Bollen & Long, 1993, for tests of structural equation models). Figure 1 shows theoretically predicted paths as solid lines and added paths as dashed lines. Seven of the nine predicted paths showed statistically significant path coefficients. In addition, all paths predicted to be nonsignificant were nonsignificant. The most important result was that personality influences on life-satisfaction were mediated by sources that were used to judge life-satisfaction. The influence of extraversion and neuroticism was mediated primarily by hedonic balance. The influence of conscientiousness was mediated by academic satisfaction. Figure 1 also shows that hedonic balance, romantic satisfaction, and academic satisfaction were the strongest independent predictors of life-satisfaction. Together the five sources in Figure 1 explained 68% of the variance in life-satisfaction. In sum, the path model confirms our prediction that chronically accessible sources mediate the influence of personality traits on life-satisfaction.

## GENERAL DISCUSSION

Our findings extend previous research on life-satisfaction in three ways. First, it was commonly assumed that individuals consider different types of information to judge life-satisfaction (e.g., Diener & Lucas, 1999; Oishi, Schimmack, & Diener, 2001). However, it was difficult to test this assumption in previous paradigms. We presented evidence that participants differ in the use of some sources, such as



**Figure 1**

Path model of the integrated top-down bottom-up model.

*Note.* E = Extraversion, N = Neuroticism, C = Conscientiousness, Fam Sat. = Satisfaction with Family Relationships, Rom. Sat. = Satisfaction with Romantic Relationships, Hed. Bal. = Hedonic Balance, Hea. Sat. = Satisfaction with Health, Aca. Sat. = Satisfaction with Academic Performance, Life-Sat. = Life-Satisfaction, e = Error Variance, that is Variance not explained by predictor variables.

satisfaction with family relations, housing, and health. However, for other sources, we found that a majority of participants tended to use some sources (academic performance) and not to use others (weather). This consistency might be due to the homogeneity of the sample. We expect more variability in source reports in more diverse samples. Future research needs to test this prediction.

Our second contribution is the integration of personality theories and judgment theories of life-satisfaction. Consistent with judgment theories of life-satisfaction, we presented evidence that life-satisfaction judgments are constructed bottom-up from accessible and relevant sources of information. Consistent with the personality literature, we found that life-satisfaction judgments were quite stable over time. We demonstrated that this stability was due to the consistent use of chronically accessible sources that provided stable information.

Our third contribution was our support of Brief et al.'s (1993) integrated top-down and bottom-up model. Personality traits produced stability in sources such as hedonic balance, health satisfaction, and academic performance. At the same time, these sources were chronically accessible and consistently used in life-satisfaction judgments. As a consequence, personality traits predict stable individual differences in life-satisfaction.

The present findings pose several constraints on potential theories of life-satisfaction. Judgment theories that focus exclusively on temporarily accessible sources and highly variable sources like current mood fail to explain the temporal stability of life-satisfaction judgments and the relationship between life-satisfaction and personality traits. Life-satisfaction theories that regard life-satisfaction as a global trait cannot explain the changes in life-satisfaction judgments over time, nor can they account for the mood effects on life-satisfaction judgments. Exclusive top-down theories of life-satisfaction have difficulties explaining why global life-satisfaction should influence some domains (e.g., family satisfaction), but not other domains (e.g., weather). They also are inconsistent with the finding that participants reported the construction of life-satisfaction judgments in a bottom-up manner on the basis of important life domains. Although it may be possible to change these theories to accommodate inconsistent findings, we consider our integrated model as the most parsimonious account of all findings. People rely on multiple sources to form life-satisfaction judgments. Some sources, like mood and spring break, produce temporal changes in life-satisfaction, whereas other sources, like academic success, provide rather stable information. This explains the stability and variability of life-satisfaction judgments. Personality traits are responsible for some of the stability in chronically accessible sources. As a consequence, personality traits predict life-satisfaction, and this relation is mediated by chronically accessible sources. Finally, participants form life-satisfaction judgments partially in a consciously accessible, deliberate manner. As a consequence, source reports predict the strength of the relation between global life-satisfaction and life-domains. A conscious, deliberate process is also consistent with the evidence that life-satisfaction judgments are not influenced by accessible sources when these sources are considered uninformative (Schwarz & Strack, 1999). For example, when students are asked to judge dating prior to a life-satisfaction judgment, dating satisfaction heavily influences life-satisfaction judgments. However, when the

instructions implied that dating should be excluded from the global judgment, a previous question about dating no longer influences global life-satisfaction. This finding is more in line with a deliberate judgment process that takes the context of the question into account. In sum, our integrative theory is a plausible and parsimonious account of the existing evidence. However, it is possible that other theories can explain the data as well or better. Furthermore, it is possible that the present results are limited to samples with predominantly female psychology students. Future research should test the integrated theory of life-satisfaction judgments with other methods and in other populations.

## REFERENCES

- Argyle, M. (1987). *The psychology of happiness*. London: Methuen.
- Bollen, K. A., & Long, J. S. (Eds.). (1993). *Testing structural equation models*. Newbury Park, CA: Sage.
- Brief, A. P., Butcher, A. H., George, J. M., & Link, K. E. (1993). Integrating bottom-up and top-down theories of subjective well-being: The case of health. *Journal of Personality and Social Psychology*, **64**, 646–653.
- Brown, N. R. (1995). Estimation strategies and the judgment of event frequencies. *Journal of Experimental Psychology: Learning, memory and cognition*, **21**, 1539–1553.
- Brunstein, J. C. (1993). Personal goals and subjective well-being: A longitudinal study. *Journal of Personality and Social Psychology*, **65**, 1061–1070.
- Costa, P. T., & McCrae, R. R. (1980). Influence of extraversion and neuroticism on subjective well-being: Happy and unhappy people. *Journal of Personality and Social Psychology*, **38**, 668–678.
- Crutcher, R. J. (1994). Telling what we know: The use of verbal report methodologies in psychological research. *Psychological Science*, **5**, 241–244.
- Diener, E. (1984). Subjective well-being. *Psychological Bulletin*, **95**, 542–575.
- Diener, E. (2000). Subjective well-being: The science of happiness and a proposal for a national index. *American Psychologist*, **55**, 34–43.
- Diener, E., & Diener, M. (1995). Cross-cultural correlates of life satisfaction and self-esteem. *Journal of Personality and Social Psychology*, **68**, 653–663.
- Diener, E., Emmons, R. A., Larsen, R. J., & Griffin, S. (1985). The Satisfaction With Life Scale. *Journal of Personality Assessment*, **49**, 71–75.
- Diener, E., & Larsen, R. J. (1984). Temporal stability and cross-situational consistency of affective, behavioral, and cognitive responses. *Journal of Personality and Social Psychology*, **47**, 871–883.
- Diener, E., & Lucas, R. E. (1999). Personality and subjective well-being. In D. Kahneman, E. Diener, & N. Schwarz (Eds.), *Well-being: The foundations of hedonic psychology* (pp. 213–229). New York: Russell Sage.

- Diener, E., Suh, E. M., Lucas, R. E., & Smith, H. L. (1999). Subjective well-being: Three decades of progress. *Psychological Bulletin*, **125**, 276–302.
- Eagly, A. H., & Chaiken, S. (1993). *The psychology of attitudes*. Fort Worth, TX: HBJ.
- Ericsson, K. A., & Simon, H. A. (1993). *Protocol analysis: Verbal reports as data (rev. ed.)*. Cambridge, MA: MIT Press.
- Goldberg, L. (1997). *A broad-bandwidth, public domain, personality inventory measuring the lower-level facets of several five-factor models*. [On line] Available: <http://www.ipio.ori.org/ipio/>.
- Kwan, V. S. Y., Bond, M. H., & Singelis, T. M. (1997). Pancultural explanations for life-satisfaction: Adding relationship harmony to self-esteem. *Journal of Personality and Social Psychology*, **73**, 1038–1051.
- McCrae, R. R., & Costa, P. T. (1991). Adding Liebe and Arbeit: The full five-factor model of well-being. *Bulletin of Personality & Social Psychology*, **17**, 227–232.
- Myers, D. G. (1992). *The pursuit of happiness*. New York: Morrow.
- Myers, D. G. (2000). The funds, friends, and faith of happy people. *American Psychologist*, **55**, 56–67.
- Nisbett, R. E., & Wilson, T. D. (1977). Telling more than we can know: Verbal reports on mental processes. *Psychological Review*, **84**, 231–259.
- Oishi, S., Diener, E. F., Lucas, R. E., & Suh, E. M. (1999). Cross-cultural variations in predictors of life satisfaction: Perspectives from needs and values. *Personality and Social Psychology Bulletin*, **25**, 980–990.
- Oishi, S., Diener, E., Suh, E., & Lucas, R. E. (1999). *Value as a moderator in subjective well-being*. *Journal of Personality*, **67**, 157–184.
- Oishi, S., Schimmack, U., & Diener, E. (2001). Pleasure and subjective well being. *European Journal of Personality*, **15**, 153–167.
- Osterhouse, R. A., & Brock, T. C. (1970). Distraction increases yielding to propaganda by inhibiting counterarguing. *Journal of Personality and Social Psychology*, **15**, 344–358.
- Pashler (1999). *The psychology of attention*. Cambridge, MA: MIT Press.
- Pavot, W., & Diener, E. (1993). Review of the Satisfaction With Life Scale. *Psychological Assessment*, **5**, 164–172.
- Pelham, B. W. (1995). Self-investment and self-esteem: Evidence for a Jamesian model of self-worth. *Journal of Personality and Social Psychology*, **69**, 1141–1150.
- Pelham, B. W., & Swann, W. B. (1989). From self-conceptions to self-worth: On the sources and structure of global self-esteem. *Journal of Personality and Social Psychology*, **57**, 672–680.
- Ross, M., Eyman, A., & Kishchuck, N. (1986). Determinants of subjective well-being. In J. M. Olson, C. P. Herman, & M. Zanna (Eds.), *Relative deprivation and social comparison*. Hillsdale, NJ: Erlbaum.
- Schimmack, U. (1997). Das Berliner-Alltagssprachliche-Stimmungsinventar (BASTI): Ein Vorschlag zur kontentvaliden Erfassung von Stimmungen [The Every-Day Language Mood Inventory (ELMI): Toward a content valid assessment of moods]. *Diagnostica*, **43**, 150–173.

- Schimmack, U. (1998, May). *Mood effects on life-satisfaction judgments: Conscious or unconscious?* Paper presented at the 70th annual convention of the Midwestern Psychological Association.
- Schimmack, U., & Grob, A. (2000). Dimensional models of core affect: A quantitative comparison by means of structural equation modeling. *European Journal of Personality, 14*, 325–345.
- Schimmack, U., Oishi, S., Diener, E., & Suh, E. (2000). Facets of affective experiences: A new look at the relation between pleasant and unpleasant affect. *Personality and Social Psychology Bulletin, 26*, 655–668.
- Schkade, D. A., & Kahneman, D. (1998). Does living in California make people happy? A focusing illusion in judgments of life satisfaction. *Psychological Science, 9*, 340–346.
- Schwarz, N., & Clore, G. L. (1983). Mood, misattribution, and judgments of well-being: Informative and directive functions of affective states. *Journal of Personality and Social Psychology, 45*, 513–523.
- Schwarz, N., & Strack, F. (1999). Reports of subjective well-being: Judgmental processes and their methodological implications. In D. Kahneman, E. Diener, & N. Schwarz (Eds.), *Well-being: The foundations of hedonic psychology* (pp. 61–84). New York: Russell Sage.
- Steyer, R., Schwenkmezger, P., Notz, P., & Eid, M. (1994). Testtheoretische Analysen des Mehrdimensionalen Befindlichkeitsfragebogens [Test theoretical analyses of the Multidimensional State Questionnaire]. *Diagnostica, 40*, 320–328.
- Suh, M., Diener, E., Oishi, S., & Triandis, H. C. (1998). The shifting basis of life-satisfaction judgments across cultures: Emotions versus norms. *Journal of Personality and Social Psychology, 74*, 482–493.
- Wilson, T. D., & Kraft, D. (1993). Why do I love thee? Effects of repeated introspection on attitudes. *Personality and Social Psychology Bulletin, 25*, 379–400.