

REVIEW ARTICLE

Advances and Open Questions in the Science of Subjective Well-Being

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Subjective well-being (SWB) is an extremely active area of research with about 170,000 articles and books published on the topic in the past 15 years. Methodological and theoretical advances have been notable in this period of time, with the increasing use of longitudinal and experimental designs allowing for a greater understanding of the predictors and outcomes that relate to SWB, along with the process that underlie these associations. In addition, theories about these processes have become more intricate, as findings reveal that many associations with SWB depend on people's culture and values and the context in which they live. This review provides an overview of many major areas of research, including the measurement of SWB, the demographic and personality-based predictors of SWB, and process-oriented accounts of individual differences in SWB. In addition, because a major new focus in recent years has been the development of national accounts of subjective well-being, we also review attempts to use SWB measures to guide policy decisions.

Keywords: Subjective Well-Being; Happiness; Emotion; Measurement

Subjective well-being (SWB) reflects an overall evaluation of the quality of a person's life from her or his own perspective. Interest in the phenomenon is broad, spanning both popular writing and scientific work. Scientific investigations into the topic are interdisciplinary, with research coming from diverse fields including psychology, economics, sociology, philosophy, gerontology, kinesiology, and the health sciences. Thus, as the field has expanded, it has become increasingly difficult to keep abreast of the various empirical and theoretical developments that have emerged. Indeed, **Figure 1**, which plots three-year averages for the number of articles that include the term "subjective well-being," shows the huge growth in the field, with over 170,000 articles that mention the topic published since a major comprehensive review in 1999 (Diener, Suh, Lucas, & Smith, 1999).

At this point, given the amount of research that exists, a thorough and detailed overview of what we know about SWB, including the strength of support for specific research findings or theoretical models would be impossible. Yet, at the same time, it is useful to reflect on the broad advances that have occurred, to point towards research findings that appear to have reasonable support,

and to identify the most fruitful avenues for future research on the topic. The goal of the current review is not to provide a comprehensive overview of all existing research in the field, but to describe several of the most important advances that have occurred in recent years and help clarify what additional research is needed.

Defining Subjective Well-Being

As the term implies, SWB refers to the extent to which a person believes or feels that his or her life is going well. The descriptor "subjective" serves to define and limit the scope of the construct: SWB researchers are interested in evaluations of the quality of a person's life *from that person's own perspective*. This issue can sometimes cause confusion in the literature because it is tempting to equate *subjective* well-being with broader forms of well-being, and there are many theories of well-being that are not subjective in nature. For instance, philosophers have frequently proposed various *objective-list-based* models of well-being, which attempt to specify all the critical ingredients that are required for a person to have a good life (Hurka, 2014). SWB researchers acknowledge that SWB cannot and should not be equated with well-being. Instead, SWB should be thought of as the facet or specific form of well-being that captures how people evaluate their own lives.

Yet despite this acknowledgement that SWB is not synonymous with well-being, SWB researchers also point out that there are some clear reasons to study and understand this narrower construct. Indeed, there is even a plausible argument to be made that SWB may

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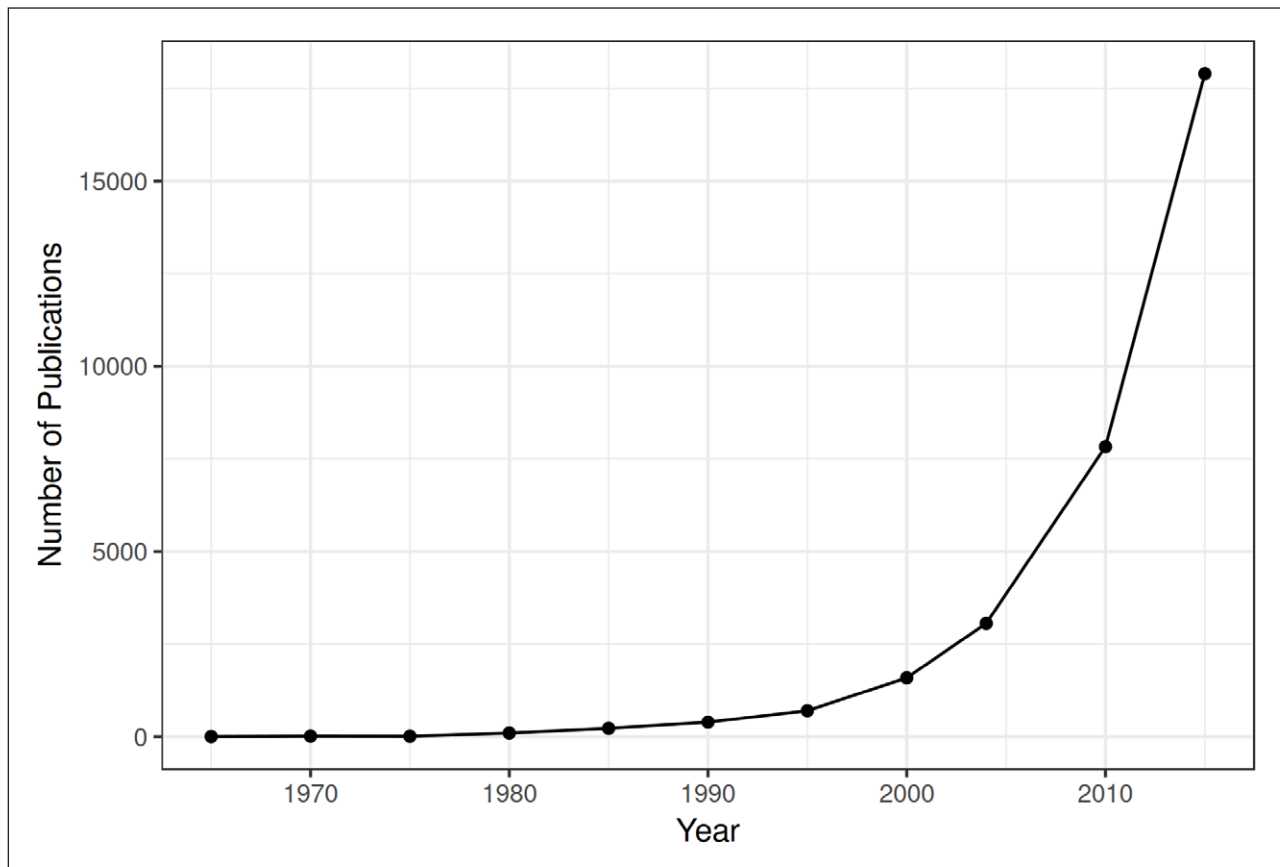


Figure 1: Annual Number of Scholarly Publications Mentioning Subjective Well-Being^a.

^a Based on a search of Google Scholar.

be one of the best available proxies for a broader, more canonical form of well-being; and it is the subjective nature of the construct that gives it its power. This is due to the fact that different people likely weight different objective circumstances differently depending on their goals, their values, and even their culture. Presumably, subjective evaluations of quality of life reflect these idiosyncratic reactions to objective life circumstances in ways that alternative approaches (such as the objective-list approach) cannot. Thus, when evaluating the impact of events, interventions, or public-policy decisions on quality of life, subjective evaluations may provide a better mechanism for assessment than alternative, objective approaches. The fact that SWB measures may serve as easily measured proxy for well-being more broadly helps explain the popularity of the construct.

Limiting the construct of SWB in this way also allows for clear differentiation between related, but distinct concepts. For instance, researchers have at times debated the extent to which SWB is distinguishable from the set of constructs subsumed under the term *Eudaimonic Well-Being* (Keyes, Schmotkin, & Ryff, 2002). Eudaimonic well-being includes such characteristics as a sense of purpose in life and the existence of positive relationships with others. By defining SWB as a person's subjective evaluation of the quality of his or her own life, it is possible to distinguish between the two sets of constructs. Eudaimonic well-being clearly includes characteristics that are typically assessed using *subjective* measures (i.e., self-reports). In addition, the specific characteristics subsumed under the

umbrella of eudaimonic well-being likely contribute to a good life. However, the specific constructs fall outside of the domain of SWB as we have defined it because they do not refer specifically to a person's own evaluation of the quality of his or her life. It may turn out that people require strong and healthy relationships to evaluate their life positively, but this does not mean that measures of these relationship variables can be equated with that person's evaluation of life as a whole. Thus, SWB researchers would not deny the importance of social relationships (or any other variable that eudaimonic-well-being researchers typically assess); instead, they would conceptualize quality of social relationships as a potential predictor of one's subjective evaluation of life as a whole, rather than as part of the evaluation itself. We believe that this distinction between ingredients of a life lived well and the subjective evaluations of that life are essential, and the terms listed in **Table 1** reflect this distinction (see Diener, Lucas, Schimmack, & Helliwell, 2009; Oishi, 2012 for a more complete discussion).¹

Once the domain of SWB is constrained to subjective evaluations of one's life, it is then possible to consider the diverse ways that the quality of one's life can be appraised. At first glance, it may seem that the only way such an evaluation could be obtained is simply by asking respondents to consider the various features of their lives and to provide an explicit judgment about the quality of that life (an approach that is most clearly reflected in self-report measures of global life satisfaction). For instance, the widely used Satisfaction With Life Scale

Table 1: Definitions of Key Terms.

Concept	Definition	Example of Measures/Research
<i>Well-Being</i>	The most general term covering how well individuals are doing in life, including social, health, material, and subjective dimensions of well-being.	See Kitayama & Markus (2000); Searle (2008) for theoretical discussions
<i>Psychological Well-Being</i>	A term that has come to be equated with <i>Eudaimonic Well-Being</i> (see below). Thus, it is often used in a way that does not refer to all possible types of psychological well-being, but only to one form of well-being.	Ryff & Keyes (1995); Brown & Ryan (2003)
<i>Quality of Life</i>	A term usually referring to a person's overall life circumstances, including environmental, social, societal, material, and other aspects of their life that would affect how desirable and positive his or her life is.	See Hagerty, Cummins, Ferriss, Land, Michalos et al. (2001)
<i>Subjective Well-Being</i>	General term referring to the various types of subjective evaluations of one's life, including both cognitive evaluations and affective feelings.	See Diener (1984) for conceptual discussions
<i>Life Satisfaction</i>	People's explicit and conscious evaluations of their lives, often based on factors that the individual deems relevant.	Diener, Emmons, Larsen, & Griffin (1985); Cantril 1965 <u>Children & Adolescents:</u> Huebner, 2004; Gadermann, Guhn, & Zumbo (2011)
<i>Domain Satisfactions</i>	Narrower than life satisfaction, domain satisfactions refer to evaluations of various domains in life such as health, work, and relationships.	Frisch, Clark, Rouse, Rudd, Paweleck, & Greenstone (2005) <u>Children:</u> Huebner (1994)
<i>Positive Affect</i>	Positive, pleasant, and desirable emotional feelings and moods.	Diener, Wirtz, et al. (2010)
<i>Negative Affect</i>	Negative, unpleasant, and undesirable emotional feelings and moods.	Diener, Wirtz, et al. (2010)
<i>Affect Balance</i>	The preponderance of positive affect over negative affect.	Computed by subtracting negative from positive affect
<i>Hedonic Well-Being</i>	A person's well-being derived from pleasure, and lowered by pain. Often scholars will include physical pleasures, pleasures of the mind, and emotions.	See Kahneman (1999) for theoretical discussions
<i>Emotional Well-Being</i>	People's positive moods and emotions and low levels of negative moods and emotions, and reflects not only momentary enjoyment, but also movement toward goals that are congruent with a person's motives. In addition, Emotional Well-Being is thought to include resilience after bad events, and the ability to express various emotions that are functional and appropriate to the situation.	Brunstein et al. (1998) Fredrickson & Joiner (2002)
<i>Experienced Well-Being</i>	A person's experiences of well-being "on-line," from moment to moment, often contrasted with <i>Recalled Well-Being</i> and <i>Evaluative Well-Being</i> (see below).	Kahneman et al. (2004); Oishi et al., 2004; Schimmack (2003)
<i>Recalled Well-Being</i>	How people recall their feelings of well-being, often during a specific past period of time or episode.	Oishi & Sullivan (2006); Robinson & Clore (2002); Scollon et al. (2004); Thomas & Diener (1990)
<i>Evaluative Well-Being</i>	People's explicit evaluations and judgments of their lives, including both <i>Life Satisfaction</i> , <i>Domain Satisfactions</i> , and other evaluative judgments about their life.	Kahneman & Deaton (2010)
<i>Eudaimonic Well-Being</i>	In contrast to <i>Subjective Well-Being</i> , this refers to well-being defined as desirable psychological characteristics such as meaning and purpose, positive social relationships, mastery, autonomy, virtues, and so forth, which can enhance effective functioning and <i>Subjective Well-Being</i> . Eudaimonic refers to Aristotle's notions of well-being based on the good functioning person.	Butler & Kern (2016); Hills & Argyle (2002); Ryff & Keyes (1995); Deci & Ryan (2008); Diener, Wirtz, Tov, Kim-Prieto, Choi et al. (2009); Su, Diener, Tay (2014)
<i>Happy or Happiness</i>	This popular word can be confusing because it means different things in different contexts and to different people. It may mean positive feelings at the moment, long-term life satisfaction, all forms of well-being, or even the causes of subjective well-being. This word is helpful at times communicating with the public, but can be confusing in a scientific context.	Lyubomirsky & Lepper (1999)

(SWLS; Diener, Emmons, Larson, & Griffin, 1985) asks simple, face-valid questions like “I am satisfied with my life.” However, alternative possibilities exist. For instance, because emotions include an evaluative component, some have argued that people’s emotional experiences may provide evidence as to their overall evaluation of life as a whole (e.g., Kahneman, 1999). Specifically, people whose lives include many desirable features might tend to experience positive emotions as they encounter those desirable features on a moment-to-moment basis. Thus, it is possible to assess SWB by assessing how frequently or intensely people experience a variety of positive and negative emotions such as “happy,” “sad,” “angry,” or “joyful” (Diener, Wirtz, Tov, et al., 2010). Accordingly, one important distinction in the conceptualization of SWB focuses on the contrast between more cognitive, judgment-focused evaluations like life satisfaction and more affective evaluations that are obtained when asking about a person’s typical emotional experience.

A related distinction concerns the timeframe over which these evaluations are made. Kahneman and Riis (2005), in summarizing this distinction, noted that evaluations that occur as a person experiences the conditions of her or his life are different than the more reflective evaluations that that person makes when thinking back on the various features of one’s life as a whole (Some have termed these two ways of evaluating life “experiential” versus “evaluative” measures of SWB). The latter task—evaluating one’s life as a whole or aggregating over emotional experiences from a long time period—may be difficult for respondents to do, which may make these evaluations prone to biases that affect their validity (Kahneman, 1999; Schwarz and Strack, 1999; see below for a more complete discussion). Advocates of the experiential approach argue that *in situ* reports of emotional experiences avoid many problems that occur with global retrospective evaluations and thus may provide more valid measures of SWB.

Before describing the specific measurement issues that emerge when assessing these components of SWB, it is important to acknowledge one additional conceptual issue. Although SWB researchers typically emphasize the need for assessing both affective and cognitive components (Busseri & Sadava, 2011), a case could be made that emotional experiences may not provide an optimal measure of overall quality of life (see Diener et al., 2009, for a discussion). Because emotions are multiply determined, it is possible that the emotional experiences that people have do not directly reflect their evaluation of the conditions of their lives. Furthermore, people may differ in the extent to which they value pleasant emotional experiences. For instance, people who achieve high levels of positive emotional experiences through superficial means (e.g., drugs or other meaningless pleasures) may still evaluate their lives negatively because that life lacks meaning or some other fundamental feature. Because both cognitive and affective measures are typically included in broad models of SWB, and because of the theoretical basis for conceptualizing affective responses as moment-to-moment evaluations of life as it is lived (Kahneman, 1999), we focus both on cognitive and affective components in

this review. We do, however, acknowledge that future empirical and theoretical work could provide evidence that one component is more central than the other.

Measuring Subjective Well-Being

A central focus of SWB research over the past few decades is the reliability and validity of measures of SWB (for a review of specific measures, see Pavot, 2018). Because most measures are simple self-reports, considerable research addresses the psychometric properties of these types of assessments. This research consistently shows that existing self-report measures exhibit strong psychometric properties including high internal consistency when multiple-item measures are used; moderately strong test-retest reliability, especially over short periods of time; reasonable convergence with alternative measures (especially those that have also been shown to have high levels of reliability and validity); and theoretically meaningful patterns of associations with other constructs and criteria (see Diener et al., 2009, and Diener, Inglehart, & Tay, 2013, for reviews). There is little debate about the quality of SWB measures when evaluated using these traditional criteria.

Research also shows that even single-item measures—those measures that are most likely to be used in large-scale panel studies or large-scale efforts by governments to track the well-being of their populations—are strong when it comes to traditional psychometric properties. For instance, Lucas and Donnellan (2012) used longitudinal data from four large panel studies to show that the reliability of single-item life satisfaction measures is moderately high (typically around .70), and Cheung and Lucas (2014) used two large datasets to compare the validity of single-item to multiple-item life satisfaction measures. They found that correlations with relevant criteria were virtually identical across the two types of measures, suggesting that there is little loss of validity when single-item measures are used.

Despite the strength of evidence for the strong psychometric properties of these measures, researchers within and outside of psychology are often (and rightfully) skeptical of self-report methods (Lucas & Baird, 2006), especially as they pertain to the construct of SWB. People may deceive themselves about their own well-being, or they may be unwilling to provide an honest answer to researchers who ask about their well-being. The meaning of the question asked may vary depending on the context in which it is presented, resulting in differing answers in different contexts (Schwarz, 1999). For all of these reasons, much research attention has been aimed at clarifying the extent to which SWB measures behave as the underlying measurement theories predict they should. One approach has been to develop a better understanding about the process underlying self-reported well-being judgments.

Process Accounts of Global Self-Report SWB Measures

Campbell (1981) was one of the first to critically evaluate the processes involved in constructing well-being judgments. He argued that three assumptions must be met in order for well-being judgments to be meaningful:

(a) the experiences that people encounter should add up to global feelings of well-being, (b) these feelings ought to be relatively stable over time (because life circumstances typically change relatively slowly), and (c) people should be able to report these feelings with candor and accuracy. Laboratory studies challenge these assumptions in several ways.

One of the fundamental issues concerns whether or not people, when asked to evaluate their lives as a whole, are willing and able to conduct a comprehensive search of relevant information in memory, and whether they are then able to aggregate this information and provide a meaningful response. Research shows, for instance, that when asked to evaluate affective experiences over a long period of time, people make judgments too quickly to conduct a thorough search of memory (Robinson & Clore, 2002). The fact that people can make these judgments almost instantaneously suggests that they are not considering all the relevant information that could be used to evaluate the quality of their lives. Perhaps they are recalling a global judgment of their lives stored in memory, but it is also possible that people use heuristics that enable quick judgments but that also may lead to biased reports. Researchers from the judgment-model tradition (e.g., Schwarz & Strack, 1999) investigate these possibilities.

One explanation for the rapid responses is that respondents do not retrieve relevant episodic memories when making SWB judgments, but instead rely on their immediate affective reaction to these thoughts as a basis for their judgment. The problem, judgment researchers point out, is that if an irrelevant factor influences mood at the time of judgment, this may lead to biased reports of long-term SWB. If a person happens to be in a good mood at the time the response is provided, the respondent may report unusually high levels of life satisfaction as compared to the report he or she would give when in a bad mood. In support of this idea, Schwarz, Strack, and their colleagues published numerous studies showing that life satisfaction judgments can be influenced by factors such as the weather at the time of judgment (Schwarz & Clore, 1983), whether one's favorite soccer team recently won a game (Schwarz, Strack, Kommer, & Wagner, 1987), and whether one recently experienced a subtle mood induction (Schwarz & Clore, 1983). As Schwarz and Strack (1999) point out, the large size of effects found in these studies (with standardized effect sizes in the range of one to two standard deviations) leads to concerns about the reliability and validity of well-being measures.

There are two issues that emerge, however, when considering the implications of judgment-model research for the understanding of the reliability and validity of SWB measures. First, as measurement theorists have noted, experimental studies like those cited above, on their own, provide little evidence regarding the validity of the measures themselves (Alwin, 2007). It is possible that the processes identified do influence well-being judgments, but that their effect on validity of surveys is minimal. Thus, one needs directly to assess the effects of mood and other theoretically irrelevant factors on the validity

of the measures. Second, although there are now a small number of studies that exhibit mood effects on well-being judgments, almost all have relied on extremely small samples, and few direct replications have been conducted (Yap, Wortman, Anusic, Baker, Scherer, Donnellan & Lucas, 2017). Thus, in light of the imprecision of results from studies that rely on small samples, it is unclear whether the effects that have been found are large enough to have practical implications. Indeed, more recent large-sample replication attempts have suggested that mood effects on judgment are generally very small.

For instance, Lucas and Lawless (2013) examined the effects of weather on life satisfaction judgments in a sample of approximately one million U.S. residents who were assessed in a cross-sectional design over a four-year period. Although Lucas and Lawless did not directly assess mood, the logic of the initial investigation by Schwarz and Clore (1983) was that naturally occurring weather fluctuations would affect mood, which would in turn affect life satisfaction judgments. Although the size of these effects found across a broad range of weather conditions may not be as large as those in the original study (because Schwarz and Clore specifically targeted days that were supposed to be especially nice or especially unpleasant), they should still be detectable given the power of the Lucas and Lawless study. However, Lucas and Lawless found, at best, tiny effects of weather on life satisfaction judgments. Furthermore, in nine separate replication attempts, Yap et al. (2017) found only weak evidence that experimentally manipulated mood (including manipulations based on weather at the time of judgment) influenced life satisfaction judgments. Relatedly, Eid and Diener (2004) directly assessed momentary mood (rather than inferring it from conditions), as well as SWB, and found mood effects on SWB measures to be generally small and inconsistent. This research, when combined with the fact that the original studies used extremely small sample sizes and have not been directly replicated, suggest that the effects of mood are not a strong concern for the reliability and validity of SWB judgments, though more large-sample research on this topic would aid the interpretation of the existing literature.

Other studies from the judgment-model tradition examine additional contextual factors beyond mood that could potentially bias SWB judgments. For instance, in one frequently cited study, Strack, Martin, and Schwarz (1988) tested whether making certain information (in this case one's dating life) salient before asking respondents for global life satisfaction judgments would make it more likely that that information would be used in the subsequent judgment. They found that the correlation between satisfaction with dating frequency and overall life satisfaction was .66 when dating frequency question was asked first, whereas the correlation was just $-.12$ when the dating frequency question was asked after the general life satisfaction question. The effect size for this item-order effect was an extremely large d of 1.83, suggesting that the validity of SWB judgments might be compromised by biased judgment processes. As was true with the mood studies, however, these initial investigations relied on

extremely small sample sizes, and larger studies have failed to replicate these effects. For instance, in a large meta-analysis on the item-order effect on life satisfaction judgments, Schimmack and Oishi (2005) showed that the item-order effect like those investigated by Strack et al. was quite small (Cohen's $d = .18$).

Additional work is required before item-order effects, and effects identified by judgment-model researchers more broadly, are fully understood. For instance, although Schimmack and Oishi (2005) found that item order effects are typically small in the laboratory, it is clear that occasionally they can be large. Deaton and Stone (2016), for example, used data from the Gallup Daily Poll to show that asking respondents questions about politics right before a global life evaluation question substantially reduced scores on the global evaluation of life. However, it is not clear what the mechanism underlying this effect is because asking a single transition question (i.e., adding "Now thinking about your personal life,") after the political questions and before the global evaluation virtually eliminated the item-order effect. Thus, it is not clear whether asking questions about politics primed negative information that was later used in the global evaluation, or whether the preceding political questions implied something to respondents about what the survey organizers included when asking the respondents to evaluate their lives as a whole. These distinctions are important because they have implications for how these potentially biasing factors can be prevented. In sum, the studies on how people respond to SWB surveys can reveal important mental processes. At the same time, recent studies reveal that potential biases usually do not seriously threaten the validity of the measures.

Alternatives to Global Self-Reports: Experiential Measures

The studies reviewed above focus on the ways that irrelevant information (such as mood or aspects of one's life that a person would not typically weigh heavily had it not been made salient) can affect global judgments of well-being. In addition to this concern, a separate line of research suggests that participants may not aggregate across various experiences in ways that are ideal. For instance, Kahneman, Fredrickson, and their colleagues showed that the summary rating of an overall experience tends to be biased toward the most intense feelings that one experienced during the episode and the feelings that the person experienced at end of the episode. In contrast, the duration of the positive and negative experiences themselves tend to be neglected (Fredrickson & Kahneman, 1993; Kahneman, Fredrickson, Schreiber, & Redelmeier, 1993; Redelmeier & Kahneman, 1996). So even if respondents are relying on accurate information, they may not aggregate that information in a way that is logical or that matches the expectations of those who are conducting the research.

One intuitively appealing alternative is to take the difficult task of aggregation out of the hands of respondents and to have researchers compute the calculations themselves, based on repeated assessments

of momentary mood or satisfaction over the course of an extended period of time. For instance, Kahneman (1999) suggested that even if researchers are skeptical about responses that people give to questions about their affective states, respondents should be able to indicate accurately at any given moment whether they are feeling pleasant or unpleasant. Ratings of precisely how pleasant or unpleasant they feel may be suspect, as people may use these scales in different ways; but even the most skeptical among us may agree that individuals can usually identify whether any particular moment is predominantly good or bad. Thus, according to Kahneman's proposal, a measure of *objective happiness* could be obtained by asking people many times over an extended period whether they feel pleasant or unpleasant, and then these recorded responses could be aggregated by the researcher to obtain the percentage of time that someone experiences positive or negative states.

Experience-sampling-based approaches have been used by psychologists for many decades (e.g., Csikszentmihalyi & Larson, 1984). These methods not only allow researchers to capture people's overall affective experience, they also allow for a closer examination of fluctuations on a moment-to-moment basis, which allows for better insight into the dynamics of SWB over time. Furthermore, although sampling affective experiences on a moment-to-moment basis can be burdensome for participants, methodologists have developed hybrid designs that solve some of these practical problems while retaining many of the benefits of the more intensive sampling approach. For instance, Kahneman, Krueger, Schkade, Schwarz, and Stone (2004) suggested that rather than sampling moments as they happen, respondents could be asked to recreate a recent day of their lives, focusing first on what they did throughout the day and then evaluating the feelings that they experienced while they were engaged in those activities. This *Day Reconstruction Method* is thought to have many of the same benefits of the more intensive moment sampling methods (which are typically referred to as *experience sampling methods* or *ecological momentary assessment*), while reducing the burden on participants.

It is important to note that although it is possible to articulate reasons why measures that rely on momentary assessment may solve problems that may lead to lower reliability and validity in the global evaluations, it is not necessarily the case that these benefits actually accrue. It is possible that the processes identified by the judgment model do not actually weaken the validity of evaluative measures, or the moment-based experiential methods may have their own weaknesses that counteract their strengths. For instance, it is often only feasible to assess a single day's experience using the Day Reconstruction Method, and it is not clear how representative one day is for capturing daily experiences over time. It could be that when averaged across a large number of respondents that single randomly chosen days are representative of long-term trends. It is essential that basic psychometric work on *both* global and experiential measures continue so that researchers can empirically assess the reliability and validity of both types.

The research that has examined this question suggests that experiential assessments do not have a strong advantage over the more widely criticized global evaluations, at least when the former are aggregated to obtain a single indicator of people's overall well-being. For instance, studies that use both methods have shown that aggregated experiences of positive emotions are strongly associated with retrospective rating of positive emotions (e.g., $r = .76$ in the 90-day daily diary study by Barrett, 1997; $r = .62$ in Study 1, $r = .77$ in Study 2 of Thomas & Diener, 1990). Furthermore, discrepancies across these approaches may actually support the favorability of global evaluations. Several studies found that retrospective ratings of emotional experiences predict important outcomes such as whether respondents would choose to return to the same vacation spot (Wirtz, Kruger, Scollon, & Diener, 2003) and whether dating couples were still in the same relationship six months later (Oishi & Sullivan, 2006). Other studies show that global evaluations correspond more closely to alternative measures than do experiential methods (Anusic, Lucas, & Donnellan, 2017). Of course, it is also important to note that if the research focus is on how affect and emotions changes over short periods of time, then experiential measures have few viable alternatives. An important goal for future research will be to further clarify how global and experiential measures relate to one another, as well as to important criteria and outcomes.

Additional Methods of Assessing SWB

Although the subjective nature of the construct of SWB pulls for self-report methods, several non-self-report measures of SWB also exist. Such measures complement self-report scales, and converge to some degree with self-report instruments (Sandvik, Diener, and Seidlitz, 1993). For example, Schneider and Schimmack (2009) conducted a meta-analysis of the correlation between self and informant reports, and they found that there is reasonable agreement ($r = .42$) between these two methods of assessing SWB. Physiological measures, including brain activity (Davidson, 2004) and hormones (Buchanan, al'Absi, & Lovallo, 1999), along with behavioral measures such as the amount of smiling (e.g., Oettingen & Seligman, 1990; Seder & Oishi, 2012) and patterns of online behaviors (Schwartz, Eichstaedt, Kern, Dziurzynski, Agrawal et al., 2013) have also been used to assess SWB. Finally, because happy people think differently than do unhappy people (Robinson & Compton, 2008), it is possible to use behavioral evidence that reflects different cognitive processes as an indicator of SWB. People high in SWB may be able to recall a greater number of positive events from their lives, to make more frequent positive associations to words, be quicker to identify positive stimuli, and more readily endorse positive adjectives as accurate descriptions of themselves.

Although cognitive and physiological indicators provide promising alternatives that could potentially address problems associated with self-report methods, it is unlikely that they will be able to replace self-report methods in the near future. First, in regard to cognitive measures, although there are strong reasons to think that happy

and unhappy people differ in their cognitive patterns, the theories linking these constructs are currently far from complete. Furthermore, the links between the underlying feelings and judgments of well-being and their cognitive consequences are indirect. Therefore, the cognitive outcomes may be weak indicators of the underlying construct. Similarly, in regard to biological indicators, attempts to map physiological factors to subjective feelings have had mixed success (Ito & Cacioppo, 1999; LeDoux & Armony, 1999). This is likely because there is not a one-to-one correspondence between physiological systems as currently assessed and the subjective evaluations that SWB researchers study. Thus, even though physiological processes are certainly involved in subjective evaluations, at this time these evaluations cannot be reduced to simple physiological signals. Thus, although cognitive and physiological measures will be helpful in developing theories about the processes that underlie SWB judgments, and although these indicators can help validate self-report measures, they are not likely to supplant such measures in the near future.

Recommendations and Conclusions for Measurement

Several recommendations regarding the measurement of SWB are now possible. The first (and perhaps least controversial) is that many open questions remain regarding the associations among different SWB measures and the extent to which these measures map on to theoretical expectations; therefore, understanding how the measures relate and how they diverge will continue to be one of the most important goals of research in the area of SWB. Although different camps have emerged that advocate for one set of measures over others, we believe that such advocacy is premature. More research is needed about the strengths, weaknesses, and relative merits of the various approaches to measurement that we have documented in this review.

Second, because of this uncertainty about the associations among different types of measures, we recommend that, when possible, researchers should include a broad array of measures, including both judgment-focused measures like life satisfaction and more affective measures. If time and resources permit, both global, evaluative measures and more experiential measures can provide unique insights into the SWB of respondents, and thus, both should be considered. Relatedly, alternatives to self-report, including informant reports, cognitive or behavioral measures, and even psychophysiological measures may help address specific methodological concerns about more widely used self-report measures.

Finally, although recent research suggests that context effects such as current mood or specific content that has been made salient rarely have strong effects on SWB judgments, it is wise to consider these potential effects and work to counteract them when possible. For instance, it is often easy enough to keep item order constant across administrations to prevent item-order effects, and many in cases it is possible to include SWB questions at or near the beginning of the survey to avoid any potential contamination effects. As is true with all research, it will

likely be safer to ensure that all other conditions are as constant as possible as well, avoiding measuring some groups at times or in conditions that are unusual. And finally, research on the judgment processes that underlie well-being measures should focus less on documenting that problems exist and more on understanding the processes that underlie these effects. The understanding that such investigations would afford could allow researchers to design studies in such a way as to avoid the most pressing problems that exist.

In many ways, research into the psychometric properties of SWB measures is a model for other fields. Measurement issues are currently, and have long been, one of the most central topics of investigation in the field. Research on the reliability and validity of these measures takes a multi-pronged approach, ranging from traditional classical-test-theory-based strategies (e.g., Diener, Emmons, Larsen, & Griffin, 1985), to item-response theory (e.g., Oishi, 2006), to research into the processes underlying well-being judgments (e.g., Schimmack et al., 2002), and beyond. Various biases or artifacts in SWB measurement have been assessed (e.g., Diener, Sandvik, Pavot, & Gallagher, 1991; Diener, Suh, Smith, & Shao, 1995). A variety of procedures for correcting biases have been proposed, and numerous alternative measurement strategies (including momentary sampling, response-time measures, and physiological measures) have been investigated. To be sure, not all measurement issues have been solved, and additional issues remain to be investigated; but much is known about the measures and the evidence that exists provides an optimistic picture about the quality of measurement in the domain of SWB.

Predictors, Correlates, and Causes of SWB

Initial attempts to understand SWB often focused on the objective characteristics that were associated with well-being judgments (see Diener, 1984; Diener et al., 1999; Wilson, 1967; for reviews). If SWB measures capture people's evaluations of their lives, then presumably the objective features of those lives should predict the evaluations that people make. To be sure, even early well-being researchers acknowledged that people have diverse goals, values, and desires and that different people may perceive the same objective circumstances in different ways; this means that objective circumstances may not explain all the variance in well-being judgments. However, intuition suggests that certain objective circumstances, such as the income that people earn, the health that they have, or even their age, may play a role in how people feel about their lives. In this section, we briefly review the correlates of SWB, focusing first on objective characteristics such as demographic factors and external circumstances and then moving to internal characteristics such as personality traits. Our coverage is brief because earlier reviews have covered this work in considerable detail (e.g., Diener et al., 1999; Eid & Larsen, 2008), and we refer readers to more detailed reviews when possible.

Social Relationships

One consistent theme that has emerged in research on subjective well-being is that social relationships play an important role in people's evaluations of their lives (Argyle, 1999; Myers, 1999). Thus, a central focus of research has been on the extent to which indicators of strong social relationships are associated with SWB. Specifically, considerable research has focused on the links between marital status and SWB, with two early meta-analyses showing consistent associations between the two (Haring-Hidore, Stock, Okun, & Witter, 1985; Wood, Rhodes, & Whelan, 1989).

However, subsequent research has examined these associations more closely and at least some of the strong conclusions present in early work must be tempered. For instance, Lucas and Dyrenforth (2006) pointed out that although the association between marital status and SWB is robust, it is relatively small (e.g., a correlation of .14 in the Haring-Hidore et al., 1985 meta-analysis). In addition, research that uses prospective longitudinal data to examine trends in life satisfaction before and after marriage often shows that people quickly adapt to marriage, meaning that their long-term levels of life satisfaction following this event may be little different than they were before the event (Lucas, Clark, Georgellis, & Diener, 2004; Luhmann, Hofmann, Eid, & Lucas, 2012). It appears that at least some of the differences between married and unmarried people may be due to pre-existing differences between those who will get married and those who will not marry or who will get divorced (Lucas, 2005; Stutzer & Frey, 2006). It is important to note, however, that although life satisfaction levels are typically no different long after marriage than they were before marriage, some studies suggest that marriage may be protective against declines that would typically occur among similarly aged single individuals (Anusic, Yap, & Lucas, 2014a, 2014b; Helliwell & Grover, 2014; Yap, Anusic, & Lucas, 2012). Conclusions about the role that marriage plays are further complicated by the fact that the effects of marriage may vary across cultures or over time (e.g., Diener, Gohm, Suh, & Oishi, 2000; Glenn & Weaver, 1988; Lucas & Dyrenforth, 2006).

Furthermore, the effects of marriage may not simply be the opposite of the effects of relationship dissolution, which complicates the interpretation of studies that compare people with many different marital statuses. For instance, research on the longitudinal changes that occur following widowhood is much clearer than research on the changes that occur around marriage: those who become widowed experience substantial declines in SWB, with some degree of slow rebound in the years following the event (Anusic et al., 2014a, 2014b; Lucas et al., 2003; Yap et al., 2012). Research on divorce suggests that happiness improves following divorce, though perhaps not to levels seen during the peak periods of marriage or before (Lucas, 2005; Luhmann et al., 2012). Finally, for most of these events, there are considerable individual differences in the types of changes that occur, and very little research

has been conducted to clarify the factors that predict variability in these reactions.

Social relationship variables have typically been described as the strongest correlates of SWB (Argyle, 1999; Myers, 1999, 2000). These correlations, however, are often based on self-reports of relationship quality (Lucas & Dyrenforth, 2006), which can inflate correlations with self-reported measures of SWB. For instance, people who report that they have a strong network of close social relationships also report having higher levels of subjective well-being, but when more objective measures of the quality and quantity of social relationships are examined, these associations tend to be smaller (often with correlations around .10; see Lucas & Dyrenforth, 2006). It is possible that associations with objective measures are weaker simply because these objective measures do not adequately capture important variance in social relationships. However, it is also possible that correlations between subjective measures of relationship quality and reports of well-being are inflated by shared method variance or the influence of personality characteristics that lead to a broad positive outlook on life.

Income and Wealth

Perhaps the most intuitive predictor of individual differences in SWB is income and other indicators of financial status. Income might be expected to have a wide-ranging effect on people's ability to maximize their quality of life, precisely because income itself has the potential to affect so many other life circumstances. In addition to the obvious benefits for material possessions, income can allow people to purchase better health care, more interesting leisure experiences, and many other objective benefits in their lives. Given these intuitive links, it is not surprising that many studies have examined the association between material well-being and SWB. Reviews are available from Argyle and Furnham (1998), Diener and Biswas-Diener (2002), Diener and Oishi (2000), Ng (2013), Stevenson and Wolfers (2013), Weiman, Knabe, and Schob (2015), and Xiao (2014). Notably, more than for perhaps any other predictor, research on the association between income and SWB has relied on large and representative samples, and thus, correlations, which tend to fall in the range of .15 to .25 (Lucas & Schimmack, 2009), have been estimated with a great deal of precision.

The fact that income and SWB are associated is well-established and not controversial. Yet a number of important questions about the nature of this association remain. For instance, it is not yet clear whether people become satiated with material wealth once they reach a certain level of income. While some evidence supports this idea of declining marginal utility of income (e.g., Clark, Frijters, & Shields, 2008; Diener, Sandvik, Seidlitz, & Diener, 1993; Frey & Stutzer, 2002; Kahneman & Deaton, 2008; Mayraz, Layard, & Nickell, 2008), and perhaps even a decline in well-being among the wealthiest participants in a sample (Jebb, Tay, Diener, & Oishi,

2017), other research suggests that SWB levels continue to be associated with income even among the wealthiest nations or the wealthiest participants in a sample (e.g., Deaton, 2008; Sacks, Stevenson, & Wolfers, 2013; Stevenson & Wolfers, 2013). Part of the discrepancy comes from different treatments of income variables in analyses that are conducted: when raw income is analyzed, there is (as might be expected) relatively strong evidence for curvilinear effects, as the same absolute income is more weakly associated with SWB among higher income respondents than lower income respondents. In contrast, less evidence for satiation and curvilinear effects is found when the log of income is used, which, conceptually, tests whether the same proportional increase in income is associated with the same well-being benefits at all levels of income. Although this analytic issue can explain some of the discrepancies, even after analytic approaches are standardized results sometimes differ, and thus, debate continues about the existence of a satiation point for income and well-being.

A second major debate concerns the extent to which economic growth is associated with increases in well-being within nations over time. In an influential article, Easterlin (1974) argued that although cross-sectional associations between income and SWB are clear (both within and between-countries), dramatic increases in income within nations over time have not led to a corresponding increase in SWB over time. Since the publication of this paper, many studies have investigated this "Easterlin Paradox," and as with the issue of satiation-points, no resolution has been achieved. For instance, a number of researchers have used over-time cross-national analyses to suggest that economic growth is associated with increases in well-being (e.g., Diener, Kahneman, Tov, & Arora, 2010; Inglehart, Foa, Peterson, & Welzel, 2008; Hagerty & Veenhoven, 2003; Stevenson & Wolfers, 2008; Veenhoven & Hagerty, 2006). In a large and representative sample of nations and individuals, Diener, Tay, and Oishi (2013) found that rising income was associated with both positive affect and life satisfaction. However, there were many nations in which this did not occur because factors such as declining optimism or conflict seemed to swamp the effects of rising income. Thus, although rising national income on average is associated with rising levels of SWB, there are many exceptions. Oishi and Kesebir (2015) analyzed this issue using cross-temporal data from 34 nations. They found that an increase in GDP per capita was indeed associated with an increase in mean life satisfaction when it was *not* accompanied by growing income inequality during the study period (e.g., in France, Italy, Ireland, Finland, and Japan). In contrast, an increase in GDP per capita was not associated with an increase in mean life satisfaction when it was accompanied by growing income inequality during the study period (e.g., in Austria, Portugal, Belgium, and El Salvador). These findings suggest that it is not economic growth per se that increases residents' life satisfaction; rather it is the

fair distribution of the added national wealth that is critical in order for a nation's life satisfaction to increase. Oishi and Kesebir concluded that: "Even growth is happy growth, and uneven growth is unhappy growth" (p. 1637). An important topic for future research is to determine how urbanization, changing levels of social capital, rising desires, and stress are associated with how economic growth influences SWB. As more and more high-quality data are obtained from many different nations over time, this question can be addressed more definitively.

A third (and related) question concerns the extent to which the effects of income on SWB are relative or absolute. Brickman and Campbell (1971) hypothesized that people are stuck on a "hedonic treadmill" where they adapt to their current circumstances, which prevents any permanent increases in SWB. According to this perspective, changing conditions have only short-term effects on SWB because people inevitably adapt. A mathematical formulation of this theory was offered by Pardo (1995). Easterlin (1974) explained the previously mentioned "Easterlin Paradox" through these relative-income effects. He proposed that any effects of income result from people's social comparisons. Research by Luttmer (2005) supports this idea. He showed that, controlling for a person's own income, those living in poorer neighborhoods were actually happier than people living in richer neighborhoods, perhaps because of social comparison effects. Relatedly, Ferreri-i-Carbonell (2005) found that people's reference groups' income was associated with their own their life satisfaction and the negative association with the reference group was equivalent in size to the positive association with one's own income. However, the reference effects were asymmetric. Those lower than their reference group in income had lower life satisfaction, but there was no boost for those above the reference group. Thus, social comparison might explain why rising income does not lead to increased happiness: As people's income rise the average rises too, of course, and people on average are no more satisfied than before because they compare with a higher standard.

In contrast to this perspective, Veenhoven (1991) argued that the effects of income on SWB are absolute, not relative, because income is used to fulfill universal needs. Diener, Tay, and Oishi's (2013) finding that both the poor and rich report higher SWB in rich countries compared to their counterparts in poor nations suggests that any broad social comparison effects are overridden by factors such as better health care, security, infrastructure, and so forth. Furthermore, in explicit tests of social comparison effects, Diener, Sandvik, Seidlitz, and Diener (1993) did not find significant effects for social comparisons on SWB, and this was replicated by Diener, Tay, and Oishi (2013). It is possible that both relative and absolute effects exist; suggestive evidence comes from a study by Diener, Ng, Harter, and Arora (2010), who reported that both fulfillment of basic needs and the ownership of conveniences such as televisions mediated the relationship between household income and life satisfaction.

A related issue concerns the impact of income inequality on SWB. Given the increasing inequality in many societies in recent years, increased attention has been brought to

the possible consequences of these changes. Diener and Oishi (2000) reported that across nations, income equality was not associated with higher SWB, but Oishi, Kesebir, and Diener (2011) did find such a relationship over time in the US. They found that the association between inequality and SWB was particularly strong for poorer respondents, and it was mediated by feelings of unfairness and distrust. Burkhauser, De Neve, and Powdthavee (2015) found that when the top one percent of individuals in terms of income earns a proportionately higher share, that the population life satisfaction declines and negative affect increases. Income inequality also might have very negative effects on happiness in societies where it is high and persistent (Graham, 2008). Alesina, Di Tella, and MacCulloch (2004) found that the SWB of the poor and political liberals more strongly associated with inequality than that of wealthier and conservative individuals, but this pattern was not found in the USA (see however, Napier & Jost, 2008). Relatedly, Cheung and Lucas (2016) found that social comparison effects of income are stronger when income inequality is high. It appears that the effects of objective income inequality may depend on factors such as whether people believe in income mobility in their nation, and whether they believe that inequality is unfair. Importantly, Zyphur, Sarafides, Tay, Connor, Diener, and Pierides (2016) found that greater income equality due to redistribution from government policies largely dampened the negative effects of market inequality on SWB.

Research on the association between income and SWB is typically motivated by an intuitive lay theory that high levels of income can be used to "buy" higher levels of happiness. In other words, the assumed causal direction goes from income to SWB. Of course, most of the research reviewed above is correlational in nature, and very little of it has features that allow for a sophisticated analysis of causal direction. Yet some research has been conducted that speaks to causality. In a classic (though over-interpreted) study, Brickman, Coates, and Janoff-Bulman (1978) used the occurrence of a relatively random event—a large lottery win—to examine the effects of income change on happiness. They reported that lottery winners were not significantly happier than a comparison group, and concluded that the increase in income did not cause a corresponding change in happiness. However, the study itself included fewer than two-dozen lottery winners, and other larger studies have found that lottery winners are higher in SWB than comparable lottery-ticket purchasers who did not win (Gardner, & Oswald, 2007; Smith & Razzell, 1975). Furthermore, in a longitudinal analysis, Gardner and Oswald (2002) found that SWB rose among those receiving substantial inheritances. These findings suggest that rising income can in fact raise SWB, even over relatively long periods.

In studies where people have received supplemental income in controlled experiments, the outcomes have been mixed. In the Negative Income Tax studies in the USA (Thoits & Hannan, 1979), participants reported lower SWB after receiving extra income. Haushofer and Shapiro (2015) studied unconditional cash transfers and found that people in a Kenyan village receiving an income

supplement had higher SWB, including higher reports of happiness and life satisfaction and lower reports of stress and depression. These patterns were confirmed by reduced cortisol in the recipients, but only in households where females received the transfer. A year after the payments ended the effects on SWB were virtually gone. An unfortunate side-effect of the study is that the life satisfaction of the villagers not receiving payments declined (Haushofer, Reisinger, & Shapiro, 2015).

Additional cash transfer studies are being coordinated around the world. However, a note of caution is in order regarding the generalizability of the lottery studies and the cash transfer experiments. For one thing, it might be different in terms of feelings of self-esteem and mastery to passively receive money rather than to earn it. For another, people may encounter different issues such as envious neighbors and friends than is encountered when people earn income. Thus, although these studies are strong in terms of inferring causality, they raise questions regarding generalizability.

A final issue that impacts research and theorizing on the links between income and SWB is that this association varies in different contexts. This suggests that there may be no single explanation for the association between the two variables. For example, income losses have a larger effect on SWB than income gains (Boyce, Wood, Banks, Clark, & Brown, 2013). Other research suggests that how people use the money that they have can impact happiness: spending money on others (Dunn, Aknin, & Norton, 2014) and spending money on experiences versus material goods (Dunn & Norton, 2013; Gilovich, Kumar, & Jampol, 2015) are both thought to enhance SWB. There is as of yet, however, only a small literature on how different forms of consumption are related to SWB (see, for example, Stanca & Veenhoven, 2015) and research has not invariably favored experiential over material spending. The line between the two is sometimes blurred, and in some cases material purchases may produce more frequent happiness over time (Nguyen, 2016; Weidman, 2016).

Additional research suggests that there are individual differences in the associations between income and SWB. Soto and Luhmann (2013) found that personality moderates the effects of income on SWB. For example, neurotic individuals react more strongly to their level of incomes and changes in their incomes. Cheung and Lucas (2015) found that age moderates the association, with middle aged participants showing stronger associations than older or younger participants (possibly because income may not be the best indicator of financial health among the young or the old). Social factors might also alter the influence of money on happiness. For example, Thoits and Hannan (1979) found that those whose incomes were increased in a negative income-tax experiment reported greater distress after the intervention, compared to those who did not receive the payments. Perhaps the money caused stress because neighbors reacted negatively. A parallel finding is that in the lottery winner studies researchers describe some people as losing their friends because of the lottery win, and this could be a negative side effect of winning (Smith & Razzell, 1975). Kahneman

and Deaton (2010) uncovered another moderator in that negative life events such as illness and divorce have a much more negative impact on the poor than the rich. Thus, one's income may interact with life events in terms of influencing SWB.

Despite the complexities involved in the study of income and its association with SWB, several clear conclusions can be drawn, both in terms of what researchers already know and what debates will require more empirical evidence to resolve. First, the association between income and SWB is consistently positive in cross-sectional studies, with small to medium effect sizes within nations and large effect sizes when ecological correlations are examined (e.g., aggregated national income correlated with aggregated SWB). Second, it appears that income is more strongly associated with judgment-focused measures like life satisfaction than it is with more affective measures, though differences in the quality of the measures that are available cannot always be ruled out as an explanation of these differences. Third, although early reviews concluded that people quickly reach a satiation point beyond which increased income is no longer associated with increased SWB, more recent research with large samples and sophisticated designs has challenged that conclusion; thus, more research is needed to determine whether such a satiation point really exists. Similarly, although considerable research has been conducted to determine whether the effects of income are relative or absolute, and although it seems likely that both types of effects play a role, more research is needed on the relative impact of absolute income and comparison standards. Future research is also needed to clarify whether people adapt to changes in income. Finally, research clearly shows that various factors, including the way that people use their income, along with various individual difference variables, moderate the association between income and SWB. A greater focus on these moderating factors will help clarify the processes that account for this complex and widely studied association.

Religion and SWB

Another demographic characteristic that is frequently found to be associated with SWB is religiosity. Specifically, studies and reviews generally conclude that religious individuals have higher SWB than the nonreligious (Hackney & Sanders, 2003; Koenig & Larson, 2001). For example, Diener and Clifton (2002) found a small but significant association between religiosity and SWB in broad representative samples. Similarly, Tay, Li, Myers, and Diener (2014) examined the association in multiple large samples from the USA and other nations, and they found that religiosity was consistently associated with higher SWB. Like the association with income, research on religion and SWB has turned to understanding why the association exists and whether there are contextual factors that influence its strength or even direction. In addition, because the construct of religiosity itself is not as concrete or clear as income, some research focuses on whether distinct types of religiosity (e.g., religious beliefs versus religious behavior or specific religious affiliations) are differentially related to SWB.

In terms of process models, Pargament (2002) noted that there are many potential mediators of religiosity and SWB, including the social support that comes from belonging to a religious community, the sense of meaning that may come with some religious beliefs, and potential benefits from specific behaviors such as prayer or attendance at religious services. Ellison (1991) found that strong religious belief systems appeared to be directly associated with SWB, whereas religious attendance and private devotion appeared to be only indirectly related to SWB through strengthened religious beliefs. Similarly, Colon-Baco (2010) concluded that religious beliefs were a major factor in explaining religion's association with SWB. However, recent work also raises the possibility that religion helps people in different circumstances for different reasons, and that the effects of religiosity vary by populations and conditions.

Recent findings suggest that religion may only benefit some individuals, and only individuals living in certain circumstances. For example, Diener, Tay, and Myers (2011) found that religion was related to higher SWB across four major religions, but this effect was strong in nations with difficult circumstances such as widespread hunger and low life expectancy. They found that in wealthy nations, religious people did not have higher SWB than less religious people. Hoverd and Sibley (2013) replicated this finding in New Zealand, where they found that people living in deprived neighborhoods had higher SWB if they were religious, but in wealthier neighborhoods both groups were comparable and relatively high in SWB. Along the same lines, Zuckerman, Li, and Diener (2018) suggested that effective government might decrease the popularity of religion when it takes over certain functions such as security that religions have traditionally helped fulfill.

Diener et al. (2011) found that in nations with difficult conditions, religious people had higher SWB, and this difference may be due to greater social support, greater respect from others, and higher levels of purpose and meaning. A path model with these three mediators explained the association between religiosity and SWB for all three major types of SWB—life satisfaction, positive feelings, and low negative feelings. The direct paths from religiosity to SWB were small in this model, suggesting that the mediating variables of social support, respect, and meaning together explained most of the effects. In terms of the influence of being respected, Diener et al. found nonreligious people had much higher negative affect than religious individuals if they lived in a highly religious nation, but had lower negative affect if they lived in a nonreligious nation. Religious people in religious nations are respected and fit in, whereas nonreligious people may not be so readily accepted. Diener et al. suggested that this finding might explain why there are differences in religiosity among nations. For example, in Bangladesh and Sri Lanka, 99% of respondents reported that religion is an important part of their lives; in Denmark and Sweden fewer than 20% did so.

Consistent with these ideas, Graham and Crown (2014) found that religion appears to serve different functions for different socioeconomic groups. They write that “the happiest are the most likely to seek social purpose in

religion, the poorest are likely to seek social insurance in religion, and the least social are the most likely to seek social time in religion” (p. 1). Chang (2009) found in Taiwan that although religious attendance was associated with higher SWB, the pattern of associations was moderated by Christian versus Eastern religious traditions. Thus, it appears that religiosity is a frequent but not a universal predictor of higher SWB, and its effects and mediators depend to some degree on culture and the life circumstances of respondents.

Other Demographic Factors

Although considerable research has focused on social relationships, social scientists have also amassed a large amount of evidence about the extent to which other characteristics are linked with self-reported subjective well-being. For instance, much research has focused on trends in SWB over the lifespan. Although early reviews emphasized that there was not a strong association between the two (e.g., Diener et al., 1999), more recent research often finds a U-shaped pattern from early adulthood through the 60s and 70s (Blanchflower & Oswald, 2008), with happiness levels reaching a low sometime in the 40s. In very old age, life satisfaction again declines (Baird, Lucas, & Donnellan, 2010), and this decline is especially strong as one approaches death (Gerstorf, Ram, Rocke, Lindenberger, & Smith 2008). However, even the basic finding that life satisfaction shows a U-shaped trajectory over the lifespan is not without controversy. Although this pattern is often found when large-sample studies are used, this is not always the case. For instance, Steptoe, Deaton, and Stone (2015) found that in many countries around the world SWB declines linearly with age, and it is only in wealthy Western nations that the U-shaped curve is found. Furthermore, even in these countries, some studies fail to find the U-shaped curve (e.g., Baird et al., 2010). Thus, future research can clarify when and why this age-related pattern occurs.

Other demographic characteristics also show relatively small associations with well-being. For instance, levels of education are typically not strongly associated with self-reported well-being (Michalos, 2008; Witter, Okun, Stock, & Haring, 1984). It is important to note, however, that most investigations into demographic predictors of subjective well-being focus exclusively on the individual-level associations (i.e., between a person's own education and his or her own well-being). It is also possible to examine the links between population-level characteristics and well-being outcomes. Often, these associations differ depending on the level of analysis. For instance, Lawless and Lucas (2011) examined the predictors of county-level well-being in the United States. In contrast to results at the individual level, county-levels of educational attainment were one of the strongest predictors of aggregate life satisfaction across regions (with aggregate correlations in the range of .40 to .50). More and more studies are examining regional differences, and it is likely that new insights about the characteristics of happy communities will emerge from this work.

Consistent with the small associations between education and SWB, sex differences in SWB are generally small (Diener et al., 1999; Geerling & Diener, 2017). The biggest sex differences tend to be found for affective measures rather than cognitive judgments of life satisfaction. For instance, Geerling and Diener found that 18% of men reported feeling sad the prior day, compared with 23% of women. As is true of many demographic predictors (especially those with small overall effects), the direction of this association may vary across contexts. For instance, Stevenson and Wolfers (2009) presented evidence that once small sex differences in life satisfaction in the United States have grown in recent years. Tesch-Romer, Motel-Klingebiel, and Tomasik (2008) found that the direction of sex differences depended on the nation. In countries with high support for gender equality, greater gender equality in the labor market was associated with smaller gender differences in SWB. In contrast, in nations where citizens did not support gender equality, greater labor market equality was associated with larger differences in SWB between men and women. Similarly, Zuckerman, Li, and Diener (2017) found that for life satisfaction and positive affect, sex differences were largest in nations where conditions had become moderately favorable for women. Sex differences were smaller in traditional societies and in nations where women have made the most progress. However, for negative affect, sex differences were largest in nations that had conditions that were most favorable to women. Thus, it appears that sex differences in SWB are not universal, are often small, and depend on the cultural values and conditions in societies.

Health

One life circumstance that might play a prominent role in subjective well-being is a person's health. Various health conditions—both positive conditions such as physical strength and mobility and negative conditions such as physical disease or injury—have the potential to significantly impact the day-to-day lives of people who experience them. Initial research on the topic of health conditions often concluded that health played only a minor role in well-being judgments (Diener et al., 1999; Okun, Stock, Haring, & Witter, 1984). According to this early research, only self-reports of health were consistently associated with SWB, but this association diminished in size when more objective reports of health were used; suspicion about the value of self-reports often led to the conclusion that the moderate association when self-reports of both constructs were used might be artifactual. However, an alternative possibility is that the objective measures that are often used are simply not good indicators of a person's overall health. For instance, if researchers ask respondents' physicians to evaluate the respondents' health, this measure would not be confounded with the respondents' own biases and response styles. However, the physicians may not have complete information about all relevant health conditions or understand the impact of these conditions on the respondents' overall perspective. Thus, it is possible that the discrepancy between relatively "objective" and more

subjective measures of health is at least in part due to the possibility that the former may be less valid.

In addition, it has become clear that the link between health conditions and well-being outcomes is stronger than once thought. For instance, literature reviews often mention the Brickman, Coates, and Janoff-Bulman (1978) study in which patients with spinal cord injuries were compared to lottery winners and a group of controls. The surprising finding from this study—one that seemed to suggest a limited impact of health conditions—was that, according to the authors, the three groups barely differed in their levels of SWB. However, this conclusion was somewhat impressionistic, and by actually calculating effect sizes, Lucas (2007) showed that the differences between the spinal-cord-injured group and the other two were substantial (with standardized mean differences around .80). Furthermore, other studies have shown that disabling conditions—especially those that are more severe or those that have a strong effect on mobility—are associated with relatively large decrements in SWB (again, see Lucas, 2007, for a discussion and evidence from longitudinal studies). Studies that examine a broader range of health conditions in large, representative samples also show that specific health conditions are associated with the subjective well-being of those who experience them (Steptoe, Deaton, & Stone, 2015). For example, Wikman, Wardle, and Steptoe (2011) found that stroke lowered SWB more than did cancer. Thus, although early reviews often downplayed the role of health in SWB judgments, it has become clear that health conditions can have a major impact on the well-being that people report.

Summary

The overview presented above shows that considerable research has been conducted that examines the correlation between various components of SWB and a wide range of demographic factors and life circumstances. This research benefits from the fact that many large-scale and wide-ranging surveys include measures of SWB, which means that high quality data are available, and these data can provide an initial picture of who does and does not report high levels of SWB. The evidence reviewed above suggests that high SWB is consistently associated with high levels of income, strong social relationships, and—at least in some contexts—with high levels of religiosity. At the same time, other intuitive predictors of SWB, including gender and education, appear to be less predictive. One limitation of the existing research, and one limitation of our review, however, is that few up-to-date meta-analyses that use modern techniques for addressing publication bias have been conducted to clarify precisely how strong these associations are and how robust the mediators we discussed above really are. Thus, we hope that researchers will take our narrative summary as impetus to conduct comprehensive but targeted meta-analyses of these results.

Culture

The first three Psychological Bulletin reviews of the SWB literature (Diener, 1984; Diener et al., 1999; Wilson, 1967) paid scant attention to culture. In many ways, this was a

critical omission for the field: If a cardinal feature of SWB is that the factors that predict it should vary depending on people's goals, values, and preferences, the culture should play a major role in SWB, as culture is strongly linked to these goals, values, and preferences. Unfortunately, at the time of these early reviews, few studies had systematically examined the impact that cultural differences have on the predictors of SWB. In contrast, over the last 20 years, cultural differences have become a major focus of research, and considerable research has tackled this important topic. Below, we review the key issues and findings on culture and its links with SWB.

Differing Conceptions of SWB

Although SWB can be defined in relatively simple and straightforward terms, legitimate concerns can be raised about the extent to which the construct itself and its predictors differ across cultures. As noted above, **Table 1** summarizes various definitions of SWB. Even when a relevant term such as happiness is clearly defined, it is worth exploring whether the term used in similar ways across cultures and time (see Oishi & Gilbert, 2016; Uchida & Oishi, 2016, for recent reviews on culture and SWB). Most philosophers and historians agree that the concept of happiness has changed over the years. In antiquity, this concept centered around good luck and fortune, whereas contemporary Americans view happiness as a pleasant experience over which they have control and something that they can actively pursue (Kesebir & Diener, 2008; McMahon, 2006; Oishi, 2012). In short, in ancient Greece happiness was deemed as something beyond human control, determined mostly by luck and the gods. An analysis of historical changes in the dictionary definition of happiness in American English (Webster's unabridged dictionary) also showed that the early definitions of happiness included the concepts of luck, fortune, or fate (Oishi, Graham, Kesebir, & Galinha, 2013), whereas over time, this usage was deemed archaic. Oishi et al. also collected dictionary definitions of happiness from 30 countries, and found that good luck or fortune was at least partially evident in 24 nations' definition of happiness (80%). Luck or fortune was completely absent in the U.S., Spain, Argentina, Ecuador, India, and Kenya.

The prominence of the good fortune definition indicates that the original concept of happiness in American English was very similar to the Greek (eudaimon), German (Glück), French (Bonheur), Chinese (福), and Japanese (幸福) ones. Over time, however, the concept of happiness as something one can pursue gained ascendancy in the U.S. Interestingly, people living in the nation where happiness is *not* defined as good luck and fortune reported higher levels of happiness than those living in the nation where happiness is defined as good luck and fortune. This suggests that happiness can be pursued and attained to some extent in cultures where happiness is defined as a pleasurable experience.

Similar to the dictionary analysis above, studies have often found that the content of free associations about happiness differs across cultures. For instance, Lu (2001) found that Americans often mentioned personal

achievement and an intense positive emotion (e.g., excitement), whereas Chinese often mentioned spiritual enrichment, harmony, and dialectic relation between happiness and unhappiness (see Schimmack, Oishi, & Diener, 2002 for a large cross-cultural study on this topic). Uchida and Kitayama's (2009) free association study related to the terms happiness and unhappiness also showed similar differences between Japanese and Americans. Likewise, a content analysis of children's books showed that American picture books had more characters with a wide smile than Taiwanese picture books (Tsai, Louie, Chen, & Uchida, 2007), suggesting that American concept of positive emotion is more intense than Taiwanese.

A text analysis of Christian and Buddhist classics also revealed the qualitative difference in positive affect (Tsai, Miao, & Seppala, 2007). In Christian texts, high activation positive affect terms such as "rejoice," "glory," and "proud" were often mentioned. In contrast, in Buddhist texts, low activation positive affect terms such as "serene," "calm," and "peace" were more frequently used. These findings suggest that ideal positive emotional states differ across religions. Consistent with the difference in ideal positive emotions, Christians reported feeling pride more frequently than Buddhists (Kim-Prieto & Diener, 2009). Interestingly, Christian ideals also appear to be different across cultures. For instance, when asked to free associate about Jesus, the majority of Americans mention only positive words such as "benevolence" "awesome" and "excellence," whereas many Koreans (the majority of Korean participants were Christians) mentioned "suffering," "sacrifice," and "pain," as well as positive words (Oishi, Seol, Koo, & Miao, 2011). Not surprisingly, then, when asked to rate how happy Jesus was, Americans rated Jesus to be happier than Koreans. Consistent with previous research, Americans also reported being more satisfied with their own lives than Koreans, and this difference was partially explained by the differential image of Jesus. Thus, concepts of happiness and ideal positive emotional states seem to be intertwined with actual emotional experiences as well.

Measurement Equivalence Across Cultures

Considering the fact that the concept of happiness differs across time and societies, it is not surprising that some items function differently across cultures. For instance, Item Response Theory (IRT) analysis of the Satisfaction with Life Scale (SWLS, Diener, Emmons, Larsen, & Griffin, 1985) showed that the item that assesses external conditions ("The conditions of my life are excellent") functioned very similarly between Chinese and Americans, whereas the items that assess the attainment of goals ("So far I have gotten the important things I want in my life") and affirmation of one's life ("If I could live my life over, I would change almost nothing") showed a large difference (Oishi, 2006). Similarly, IRT analysis of the PANAS (Watson et al., 1988) showed that most items functioned differently between Chinese and Americans. "Pride" in particular functioned completely differently between Chinese and Americans (Oishi, 2007; see also Scollon, Diener, Oishi, & Biswas-Diener, 2004). It should be noted, however, that

when there is at least one equivalent item, it is possible to “link” and compare two samples by weighing the equivalent item(s) heavier than the nonequivalent items in scoring. In the case of the SWLS, the IRT scoring changed the mean difference between Chinese and Americans from the traditional scoring of taking the sum, going from Cohen's d from 1.18 to .71.

A similar finding is reported when comparing Americans and Danish' positive affect; the IRT scoring reduced the mean difference slightly (Biswas-Diener, Vitterso, & Diener, 2010). Interestingly, however, Greenlanders and Norwegians were not different in the mean score of the SWLS when the traditional scoring method was used, whereas Norwegians scored higher than Greenlanders when the IRT scoring method was used (Vitterso, Biswas-Diener, & Diener, 2005). An inspection of Vitterso et al.'s data indicates that this was perhaps due to the fact that the majority of Greenlanders (80.9%) belonged to the latent class in which respondents either randomly responded or used only extreme response categories. At this point, there are few studies that utilized IRT in testing measurement equivalence of SWB scales. IRT and related methods should be used in testing measurement equivalence of SWB in various nations, as they also bring to light important cultural similarities and differences in the concept of SWB.

An encouraging cross-cultural measurement finding comes from Scollon, Diener, Oishi, and Biswas-Diener (2004), who found that three different measurement methods led to similar relative ordering of five cultures on the mean levels of emotional well-being. However, Scollon, Diener, Oishi, and Biswas-Diener (2005) did find some cultural differences in factor structures of pleasant affect such that pride loaded on the unpleasant affect factor among Japanese and Asian American samples. In addition, Diener, Scollon, Oishi, Dzokoto, and Suh (2000) found a tendency for general positivity in some cultures more than in others, a tendency to rate broad and abstract items higher than narrow and concrete items. The positivity effect was large in Latin cultures and small in Confucian cultures. Using self and informant reports and structural equation model, Kim, Schimmack, and Oishi (2012) showed that European Canadians are more positive than Asian Canadians about the self and others, and this difference in positivity explained the mean difference in self-reported life satisfaction between European and Asian Canadians. More research like Kim et al. is needed to untangle when general positivity or negativity influence SWB scores.

Culture Mean-Level Differences in SWB

A number of studies have examined differences between cultures in SWB. Researchers have found strong differences in life satisfaction between nations, for example, that differ in economic development (e.g., Diener, Kahneman, Tov, & Arora, 2010). A number of studies have found that European and Latin cultures tend to have higher SWB than Pacific-Rim Confucian cultures, especially after income is taken into account (e.g., Diener & Oishi, 2004; Tov & Diener, 2007). One possible reason for lower reported SWB in the

Confucian cultures is that there might be less positivity bias there. However, Suh (2007) hypothesized that the low SWB scores in Confucian collectivistic cultures might be due to the context-sensitive nature of self-esteem in them. He suggested that people who are very sensitive to the evaluations of others can be at risk because they do not pursue intrinsically rewarding activities and because they can be quite reactive to the negative evaluations of others.

Culture-Dependent Predictors of SWB

Several large international studies found cultural variations in predictors of SWB. A 31-nation college student data set revealed, for instance, that satisfaction with the self was a stronger predictor of life satisfaction in individualist nations such as the U.S. and New Zealand than in collectivist nations such as Bangladesh, Egypt, and Japan (Diener & Diener, 1995). This finding replicated in another large cross-cultural survey from 39 nations (Oishi, Diener, Lucas, & Suh, 1999). Whereas self-esteem was a stronger predictor of life satisfaction in individualist nations than in collectivist nations, several studies showed that emotional support and relationship harmony were predictors of life satisfaction above and beyond self-esteem in Hong Kong (Kwan, Bond, & Singelis, 1997) and Japan (Uchida, Kitayama, Mesquita, Reyes, & Morling, 2008), but not in the U.S. (see Pehlert & Chen, 2010, for similar findings in China). Recent studies clarified one reason for these cross-cultural variations. The relative importance of self-esteem as a predictor of life satisfaction was explained by relational mobility, or the degree to which there are opportunities to acquire new, desirable relationships and sever old, undesirable relationships (Yuki, Sato, Takemura, & Oishi, 2013). Consistent with the previous studies, self-esteem was a stronger predictor of life satisfaction among Americans than among Japanese. This cultural difference was explained by the difference in relational mobility. Americans perceived their environment to be more relationally mobile than Japanese. In a relationally fluid society self-esteem is a more important indicator of life satisfaction than in a relationally fixed society.

Emotional experience is a core aspect of the private self (Baumeister, 1987). Thus, emotional experiences might be more strongly associated with the evaluation of one's life in societies where the private perspective as opposed to the public perspective is prized. In a large international survey study, scientists indeed showed that the frequency of positive emotion was a better predictor of life satisfaction among individualist nations than among collectivist nations (Suh, Diener, Oishi, & Triandis, 1998; see also Kuppens, Realo, & Diener, 2008; Schimmack, Radhakrishnan, Oishi, Dzokoto, & Ahadi, 2002). Among positive emotions, various studies also showed that pride is a stronger predictor of happiness among Americans, whereas interpersonal positive emotions such as friendly feelings are stronger predictors of happiness among Japanese (e.g., Kitayama, Markus, & Kurokawa, 2000; Kitayama, Mesquita, & Karasawa, 2006). In a daily diary study, self-esteem predicted overall pleasantness of emotional experiences among Americans, whereas social distance and reputation (face loss) concerns were more

predictive among Japanese (Mesquita & Karasawa, 2002). Interestingly, Kitayama, Ishii, Imada, Takemura, and Ramaswamy (2006) replicated the earlier finding that pride was not a strong predictor of happiness among Japanese in Kyoto, but found that pride was a strong predictor of happiness among Japanese who grew up in Hokkaido. Hokkaido was a frontier in the late 1800s, where many Japanese soldiers moved. Kitayama et al. argued that Hokkaido Japanese are culturally similar to Americans because they were descendants of pioneers. Combined with Yuki et al. (2013) these findings suggest that the previously observed Japan-US difference in positive emotions (e.g., pride vs. friendly feelings) could be due to historical differences in migration patterns. The U.S. is a nation of immigrants with a frontier spirit (Kitayama, Ishii et al., 2006) and willingness to move (Oishi, 2010), whereas Japan is a nation of relatively few immigrants and migrants (with the exception of Hokkaido), and a largely residentially stable population.

Person-Culture Fit

There are two lines of thought about the extent to which person-culture fit influences SWB. One possibility is that certain characteristics are universally associated with higher levels of SWB, whereas a second is that the specific factors that predict well-being vary depending on culture. For instance, self-determination theorists have long argued that individuals who pursue goals for intrinsic reasons are happier than those who do not (Ryan & Deci, 2001; Sheldon, Ryan, Deci, & Kasser, 2004). However, Oishi and Diener (2001) found that Japanese who became more satisfied with their lives over time were those who attained the goals they pursued to please their parents, whereas Americans who became more satisfied with their lives over time were those who attained the goals they pursued for fun and enjoyment. According to the self-determination theorists, these findings do not pose a threat to the universalist claims because these Japanese participants might have pursued goals to please parents for intrinsic or internalized reasons (Sheldon et al., 2004). Thus, the self-determination theory of SWB is at the abstract level of generality: it is not about the self (e.g., self-esteem, pride) versus others (e.g., emotional support, parental approval). Instead, the theory is concerned with the reasons for an action being intrinsic (fun and enjoyment) and internalized reasons (personally important) versus introjected (feel ashamed and guilty otherwise) and external (someone else wants you to do it).

Similar to the self-determination theorists (Ryan & Deci, 2001; Sheldon et al., 2004), Suh (2007) also proposed a universalist theory of SWB. He suggested that East Asians are on average not as satisfied with their lives as North Americans because East Asians are especially concerned about how others view them. This is a sharp contrast to the person-culture fit theory (e.g., Markus & Kitayama, 2000; Oishi, 2000), which predicts that East Asians who are relationship-oriented are more satisfied with their lives than East Asians who are not. According to Suh, East Asians who are relationally-oriented are no more satisfied with their lives than East Asians who are not.

There is no clear support for one theory over the other. Instead, there seems to be partial support for both. For instance, consistent with Suh's (2007) theory, a 39-nation study found that horizontal individualism (e.g., "I enjoy being unique and different from others in many ways") was generally positively associated with life satisfaction, while vertical collectivism ("I would do what would please my family, even if I detested that activity") was generally negatively associated with life satisfaction (Oishi, 2000). At the same time, however, consistent with the person-culture fit theory, the degree to which horizontal individualism was associated with life satisfaction was stronger in individualist nations than in collectivist nations (Oishi, 2000). Likewise, a 26-nation study found, consistent with the universalist theory, that extraversion was positively associated with life satisfaction in most nations (Fulmer et al., 2010). However, consistent with the person-culture fit theory, the degree to which extraversion was associated with life satisfaction was stronger in nations where nation-level extraversion (assessed as observer rating) was higher.

In a nine-nation study, Fulmer et al. found that promotion focus was in general positively associated with self-esteem, but it was more strongly associated with self-esteem in nations where nation-level promotion focus was higher. Likewise, in a large international dataset, Diener, Tay, and Myers (2011) found that religiosity was in general positively associated with SWB. However, the degree to which religiosity was associated with SWB was significantly higher in poor, generally more religious nations than in wealthy, secular nations (see also Li & Bond, 2010). Research by Stavrova and her colleagues suggests that cultural norms exert an influence, affecting the life satisfaction of individuals who conform or do not conform to the norms. For example, in nations where civic virtue is valued, those with this characteristic have higher life satisfaction than those low on it (Stavrova, Schlosser, & Fetchenhauer, 2013), whereas there is no association in nations where the virtue is not highly valued.

In addition to the person-culture fit studies, there are studies reporting a person-community fit effect on SWB as well. For example, a large internet study in the greater London area (Jokela et al., 2015) found that residents who are high in openness to experiences were more satisfied with their lives if they live in urban areas (where there is more demographic diversity, as well as arts) than those living in the outskirts of the city. Likewise, Republicans are more satisfied with their lives if they live in a Republican district than a Democratic district, whereas liberals are more satisfied with their lives if they live in a Democratic district (Motyl & Oishi, 2016). Furthermore, the person-environment fit effect was explained by sense of belonging. That is, those who live in the area where their personal political ideology matches with the dominant ideology of the community felt more sense of belonging than those who live in the mismatched area. Furthermore, those who live in a mismatched area were more likely to move to an area where their personal ideology matches with the dominant ideology (Motyl, Iyer, Oishi, Trawalter, & Nosek, 2014). In short, the person-culture fit effect on SWB is in part due to sense of belonging. The misfit is likely to

induce a sense of alienation, which is detrimental to one's SWB. At the level of nations, however, there are many sub-cultures and communities where diverse types of values and personalities are allowed (e.g., pious Muslims in China), and many people are often able to find their own niche. That might partly explain why the person-culture fit effect tends to be small, even when statistically significant.

Together the studies reviewed above show that culture does matter for interpreting research on SWB. Definitions of SWB may vary across cultures, predictors of well-being likely do vary, and together, these sets of findings provide a more nuanced picture of the processes that underlie individual and group differences in the components of SWB. Our review also shows that considerable work is left to be done on the cultural factors that influence SWB. Research using sophisticated methods is needed to clarify the extent to which different definitions or psychometric properties are responsible for observed differences in means and predictors across correlations; and further development regarding theories of cross-cultural differences will be needed to characterize all of the differences that have been found.

Psychological Processes and Theories of SWB

Each of the prior sections presents descriptive findings regarding the predictors of and group-level differences in SWB that have been found. Of course, these descriptive findings provide suggestive evidence regarding the processes that underlie well-being. However, much research has also tackled these process models more specifically. In the next section, we provide a brief overview of the broad range of process models that have been proposed to explain individual and group-level differences in SWB.

Personality and Genes

In contrast to the descriptive research on the correlates of SWB, theories that have been developed to explain individual differences in this construct emphasize the psychological processes that result in high or low SWB. One major class of process-level models focuses on the links between personality and SWB judgments (for reviews, see DeNeve & Cooper, 1998; Diener & Lucas, 1999; Lucas & Diener, 2008; Steel, Schmidt, & Shultz, 2008). The role of personality is supported by at least four pieces of evidence. First, as noted in the section on the external correlates, many objective life circumstances correlate only modestly with subjective judgments of subjective well-being. Even after accounting for these external circumstances, there are considerable individual differences in SWB, individual differences that might be accounted for by personality. Second, many studies show that SWB is moderately heritable (Roysamb, Nes, & Vitterso, 2014). Separated twins who grow up in different households have similar levels of SWB (e.g., Lykken & Tellegen, 1996), suggesting that something about their inborn personality has played a role in the well-being they report. Third, SWB is moderately stable, even over very long periods. Again, views about how stable it is have evolved over time. Short-term stability studies suggest that SWB is very stable; but evidence from long-running

panel studies suggests that long-term change sometimes does occur (Fujita & Diener, 2005; Lucas & Donnellan, 2007, 2012). Despite this evolving view, however, some degree of trait-like stability emerges even in the longest-running studies. This again suggests that there may be characteristics internal to the person that influences SWB despite changing life circumstances.

Finally, researchers have directly studied the links between personality traits and SWB. This research consistently shows that personality traits can be substantial predictors of SWB. For instance, in a meta-analytic review, Steel et al. (2008) showed that the Big Five personality traits of Neuroticism and Extraversion had the strongest correlations with life satisfaction (average r 's of $-.38$ and $.28$, respectively). In addition, the personality traits of Agreeableness and Conscientiousness showed moderate correlations with certain well-being components, though these tended to be weaker than those for Neuroticism and Extraversion. Diener and Lucas (1999) reviewed additional evidence that other traits such as self-esteem and optimism also are moderately associated with SWB judgments. It is important to note, however, that in most studies of personality and SWB the predictor and outcome are measured with self-report. This likely inflates the correlation between the two, and makes comparisons with other predictors (such as measures of objective circumstances reviewed above) somewhat difficult. Indeed, Lucas and Fujita (2000) showed that the correlation between extraversion and positive affect was smaller but still significant when different methods are employed to assess each construct.

Identifying links between personality and SWB is important because this provides insight into potential mechanisms that may influence SWB. For instance, considerable research has been conducted to understand the association between extraversion and positive affect. One possible explanation for this association is that extraverts behave differently than introverts, and these differences in behavior lead to positive well-being outcomes. Given that a defining characteristic of extraverts is their greater sociability, it is possible that social activity is the causal factor, and extraverts experience more of it. However, a number of studies have tested this hypothesis directly, with little support (e.g., Lucas, Le, & Dyrenforth, 2008; Srivastava, Angelo, & Vallereux, 2008). Social activity is associated with greater positive affect, but extraverts do not experience enough social activity to account for their greater happiness, and they do not appear to respond more positively to social activity than do introverts. Thus, researchers have turned to alternative explanations, including ones that focus on direct links between personality and affect. For instance, some researchers have attempted to investigate the role of basic, physiological systems.

The personality traits of extraversion and neuroticism have been linked to underlying physiological systems that govern response to punishment and reward (Gray & McNaughton, 2000). Researchers working from this perspective have suggested that extraverts may simply respond with greater amounts of positive affect to rewarding stimuli (Larsen & Ketelaar, 1991). Laboratory

studies have provided some support for this hypothesis (Smillie, Cooper, Wilt, & Revelle, 2012), though it is still not clear whether individual differences in this form of reward sensitivity can fully account for extraverts' SWB.

Research into the personality correlates of SWB also raises broader issues about the relative importance of internal versus external factors as determinants of differences in SWB. These issues have important implications for the interpretation of correlational findings, especially when self-report measures are used to assess both theoretically relevant predictors and well-being outcomes. This issue is reflected in discussions about the importance of top-down versus bottom-up processes in SWB judgments (Brief, Butcher, George, & Link, 1993; Diener et al., 1999; Feist, Bodner, Jacobs, Miles, & Tan, 1995; Headey, Veenhoven, & Wearing, 1991; Heller, Watson, & Ilies, 2006). Briefly, bottom-up theories posit that various objective characteristics of a person's life (e.g., his or her health, social relationships, and standard of living) are evaluated according to that person's values, goals, and preferences and then aggregated to derive an overall evaluation of life as a whole. In contrast, top-down theories posit that people have a broad tendency to view their lives either more positively or more negatively and these broad tendencies influence individuals' perspective on the features of their lives. Some may consistently view the world through "rose-colored glasses," leading to positive evaluations of the domains of life. Top-down and bottom-up theories have implications for how we view the association between people's overall evaluations of their lives and their evaluations of specific life domains. Although it is tempting to interpret strong correlations between, for instance, one's satisfaction with finances and satisfaction with life as a whole as evidence for the impact of finances on overall life satisfaction, it is possible that the correlation reflects a top-down effect. Studies examining top-down and bottom-up influences typically compare broad sets of domain satisfaction to global life satisfaction using longitudinal data or statistical modeling techniques (e.g., Nakazato, Schimmack, & Oishi, 2011). Existing studies suggest that both bottom-up and top-down processes play a role. Top-down processes may also play a role in positive illusions, where people have overly optimistic and overly positive views about themselves and their lives (Taylor & Brown, 1988).

The issue of positive illusions also raises questions about people's default views of their lives and the world around them, and how this is associated with typical levels of happiness. Part of the claim made by Taylor and Brown (1988) in their overview of positive illusions was not only that some people had such illusions (illusions which they argued are psychologically healthy), but that most people tend towards such positive illusions. Indeed, they made the controversial suggestion that depressed people were more likely than non-depressed people to view the world accurately, which has negative consequences for psychological health and well-being. More recently, researchers have noted that indeed, most people are happy most of the time (Diener & Diener, 1996), although not in truly dire circumstances (Diener, Diener, Choi, &

Oishi, in press). Indeed, although people seem to have a negativity bias, in that they react more quickly and intensely to negative information in the environment, they also seem to have a "positivity offset," in which their default state is more likely to be positive than negative (Cacioppo & Berntson, 1999; Ito & Cacioppo, 2005). One possible reason for this relatively positive default state is that it may motivate exploration when things seem safe (see Fredrickson, 2001). Diener, Kanazawa, Suh, and Oishi (2015) provide a more complete discussion of the potential reasons why it may be adaptive for people to be generally in a good mood.

Desires, Needs, and Goals and SWB

According to Maslow's (1943) hierarchy of needs theory, the most salient needs for people in poor nations are basic needs (e.g., foods, shelter) and safety, whereas the most salient needs for people in wealthy nations are likely to be self-actualization needs. Consistent with Maslow's theory, Gallup World Poll data showed that the life evaluation and positive feelings of people in poor nations were more strongly associated with the satisfaction of basic needs than was the case for people living in the Northern Europe/Anglo region (Tay & Diener, 2011). Similarly, the life evaluation and positive feelings of people living in the Middle East were more strongly associated with the satisfaction of safety needs than was true for people living in other regions. In contrast, Tay and Diener found that the satisfaction of social needs (love, social support) and mastery needs (measured by "learned something yesterday," "did something they do best at work yesterday") was associated with SWB fairly similarly across various world regions. Surprisingly, Tay and Diener found that the satisfaction of autonomy needs (measured by "chose how time was spent yesterday," "experienced freedom in life yesterday") was more strongly associated with life evaluation among people in East and South Asia than those in Northern Europe.

Using the World Values Surveys, however, Inglehart, Foa, Peterson, and Welzel (2008) found that having free choice and control over life was more strongly associated with life satisfaction among residents of wealthy nations than poor nations. Similarly, using the survey data from 39 nations, Oishi, Diener, Lucas, and Suh (1999) found that satisfaction with freedom was more strongly associated with life satisfaction among residents of wealthy nations, as well as of individualistic nations than those of poor nations or collectivist nations. Furthermore, like Diener and Diener (1995), Oishi et al. found that satisfaction with the self was more strongly associated with general life satisfaction among residents of wealthy nations as well as individualistic nations than those of poor and/or collectivist nations. Interestingly, however, Oishi et al. did not find much cross-national variation in the association between the satisfaction of basic needs (e.g., foods, housing) and life satisfaction. Thus, they modified Maslow's model and proposed that the satisfaction of basic needs is more or less universally important, but the degree to which the satisfaction of higher-order needs (e.g., freedom, the self) is associated with general

life satisfaction varies, depending on the economic and cultural backgrounds of respondents.

Another related theory of SWB suggests that the satisfaction of desires is a key to SWB, and that individual differences in SWB can be explained by the degree of discrepancy between what one has and what one desires (e.g., Emmons, 1986; Michalos, 1985). Desires include low-level physical cravings (e.g., water, food, sex), acquired cravings (e.g., alcohol, cigarettes, the New York Times), and, in a broader sense, even ideals that do not necessarily involve craving or withdrawal (e.g., a big house, promotion, see Oishi, Westgate, Tucker, & Komiyama, 2015). Having a strong desire for material goods is found to be associated with lower levels of SWB (Kasser, 2002 for review). A series of experiments show that the discrepancy between resources and desires is associated with lower SWB (Solberg, Diener, Wirtz, Lucas, & Oishi, 2002). Similarly, people are more satisfied with their lives if they have resources to help achieve their goals (Diener & Fujita, 1995). If two individuals desire to achieve academically, but one person has the necessary resources (e.g., intelligence, time to devote to studying), the first person is likely to be happier than the second person who has a greater gap between what he has and what he desires.

It is important to recognize that not all desires are equally attainable. For instance, wanting to have a partner typically ends when the person finds such a partner. In contrast, wanting to have a lot of money does not necessarily end when one reaches the initial goal as one's aspirations often rise. Thus, the satisfaction of relatedness and autonomy appears to be more strongly associated with an increase in SWB than the satisfaction of material needs (Kasser, 2002) partially because the satisfaction of relatedness and autonomy needs does not lead to more relatedness or autonomy desires, whereas the satisfaction of material desires could lead to yet more material desires.

In addition to insatiable material desires, another impediment standing in the way of happiness is that people often experience conflicting goals and desires (e.g., Emmons & King, 1988). Hofmann, Kotabe, and Luhmann (2013) found that people felt no happier upon satisfying their desires if the desire they achieved conflicted with other goals (e.g., eating chocolate and going on a diet). In such cases, satisfying those desires resulted in positive feelings, however the feelings of guilt and loss of pride undermined the positive effects of satisfying the desire, resulting in no net gain in happiness.

Relatedly, research shows that people with maximizing tendencies (i.e., those who seek to make sure each decision or experience is the best it can possibly be) are not as happy as satisficers (those who seek things that are simply "good enough;" see Schwartz, Ward, Monterosso, Lyubomirsky, White, & Lehman, 2002). Maximizers, in their efforts to pick the best option, engage in a thorough search, for instance applying for more jobs than satisficers. As a result, maximizers tend to obtain a higher paid job than satisficers, yet paradoxically they are less satisfied with their jobs than satisficers (Iyengar, Wells, & Schwartz, 2006), perhaps because more options lead to more regret. In other words, trying to make the very best choice

does not necessarily lead to greater happiness because such an effort may make people more susceptible to counterfactual thinking and social comparison. Schwartz and Sharpe (2006) proposed a practical wisdom theory of SWB, which suggests that the goal is not to find the single best choice or find one signature strength, but rather try to have a balanced life with "the right goals, the right motives, and the relevant experiences" (p.390). As appealing as the practical wisdom theory of SWB is, however, research shows that people do not always know what the "right" goals are (Wilson & Dunn, 2004), and they may miscalculate the impact of achieving certain goals (Wilson & Gilbert, 2003, for review).

Research on desires, needs, and goals indicates that the discrepancy between what one has and what one wants is a predictor of overall SWB (Michalos, 1985; Solberg et al., 2002). However, reducing the discrepancy between what one has and what one wants can be difficult, depending on the type of desires and goals that one is pursuing. In order to find a balance between what one has and what one wants, practical wisdom is required. To the extent that practical wisdom comes with life experiences (Baltes & Staudinger, 2000), older and mature people might have a greater chance of knowing what they truly want. One reason, then, why older people tend to be happier than younger people (e.g., Siedlecki, Tucker-Drob, Oishi, & Salthouse, 2008) might not be because they have more of things but rather because they have more educated desires. In other words, wisdom may be learning to desire what will truly make us happy—possessing what can be called "educated desires."

Adaptation to Life Events

Early reviews that examined the predictors of SWB judgments frequently noted that major life circumstances often had surprisingly small associations with the happiness that people report. This fact, combined with evidence for the moderate to strong stability of SWB judgments over time (even in the face of changing life circumstances), the moderate heritability of these judgments, and the fact that personality traits appeared to be a strong predictor of SWB, provided support for the idea that people may adapt to major life events (Frederick & Loewenstein, 1999) and return to a baseline determined by their personalities. Events might influence people's immediate happiness; but they perhaps always soon adapt to these events, and levels of SWB would quickly return to a person's baseline level. The publication of high profile studies that seemed to suggest that people quickly adapt to even the most extreme life events (like becoming a quadriplegic or winning the lottery; Brickman et al., 1978), led some to suggest that adaptation effects are so powerful that it may be impossible to avoid their influence (Brickman & Campbell, 1971).

The idea that people eventually adapt to changes in life circumstances is one that is based in theories about broader adaptation phenomena in other domains, most notably in sensation. Just as it is most important to notice, attend, and react to changing sensory information in one's environment (as that information is most likely to

need immediate attention), it is possible that evaluative responses to life circumstances are weighted towards *changes* in those circumstances. Furthermore, it is possible that adaptation in evaluative responses—like sensory adaptation more generally—occurs automatically without conscious control. Thus, as people become used to the conditions in their lives, they may automatically adjust and adapt, resulting in a lessened impact of those circumstances, even when the circumstances themselves are judged to be objectively pleasant or unpleasant.

Although early support for adaptation effects appeared to be strong, a close look at the evidence for the phenomenon suggests that initial studies were actually ambiguous (for overviews, see Diener, Lucas, & Scollon, 2006; Lucas, 2007; Luhmann et al., 2012). For instance, few studies that informed the early understanding of adaptation processes actually used longitudinal designs, and fewer still were *prospective*, allowing for before-and-after comparisons. Instead, conclusions were often drawn from cross-sectional studies, like the Brickman et al. (1978) study, which compared multiple groups at a single point in time. Furthermore, effect sizes were sometimes not computed, which allowed authors of critical papers to make impressionistic judgments about the importance of life circumstances, rather than relying on objective comparisons of different predictors (see Lucas, 2007, for a discussion).

In recent years, advances have been made in the types of studies that can be used to examine claims about the ubiquity and strength of adaptation effects. For one thing, there are now many more, extremely large-sample studies that can be used to examine the associations between specific health conditions and well-being outcomes (e.g., Steptoe et al., 2015). As noted in the section on the correlates of well-being, these studies often show that specific life circumstances are more strongly associated with SWB than once believed. More importantly, however, there is an increasing number of large-scale panel studies that track large samples of people over time. One of the difficulties in conducting research on adaptation is that to know whether people adapt it is necessary to compare their level of SWB before and after an event has occurred. However, because events are rare, it is difficult to recruit samples that are large enough that sufficient numbers of participants will have experienced an event at some point during the study. Panel studies solve this problem by surveying extremely large numbers of participants (sometimes as many as 50,000 to 100,000), for many years, and by inquiring about many different aspects about respondents' lives. With large enough samples tracked for many years it is much more likely that a number of participants will experience major life events at some point in the study. These participants can be identified, and trajectories of satisfaction can be compared.

We and others have used this approach to study a number of different life events in several different panel studies (e.g., Anusic et al., 2014a, 2014b; Lucas, 2007b; Lucas et al., 2003; Nakazato et al., 2011, Yap et al., 2012). These studies show that a number of important revisions to early ideas about the nature of adaptation are needed (also see Diener, Lucas, & Scollon, 2006). First, there is no

simple answer to the question of whether people adapt to life circumstances; the answer depends on the event in question (Luhmann et al., 2012). For instance, using the same panel study design, we have repeatedly shown that levels of life satisfaction are, on average, very similar long after a person gets married as they were before that marriage (Anusic et al., 2014a, 2014b; Lucas et al., 2003; Yap et al., 2012). However, these same studies show that the effect of widowhood is much longer lasting and perhaps even permanent. Still other events, such as the onset of a disability, are associated with even stronger changes in well-being that appear to be very long lasting (Lucas, 2007; though see Oswald & Powdthavee, 2008). In addition, even if the average response to an event or a change in life circumstances is no change from baseline, individuals vary considerably in their reactions. For instance, in one of the first studies we conducted on adaptation to marriage, Lucas et al. (2003) showed that there is as much variance in the change that occurs from before marriage to the years around the time of the marriage as there was variance in life satisfaction before the event. Furthermore, people who had a strong positive reaction to the event were still far above their initial baselines many years after the event. This means that even in analyses that show evidence that adaptation has occurred, the results may be due to average responses, with many individuals showing upward or downward change in their SWB. The individuals who show the stable upward trends in SWB are important because they reveal that the absence of full adaptation occurs for positive circumstances, and is not just limited to bad events such as widowhood or unemployment. Findings in the literature may hide the fact that some people may have experienced a large increase in SWB following the event and that these people were balanced by people who experienced a large decrease following the event. Thus, it is important to examine moderators that may explain why some people adapt more readily than others.

Additional evidence against the set-point or baseline stability hypothesis comes from comparisons of SWB across nations. For example, Geerling and Diener (2017) found that the largest effect size for SWB in all the variables they studied came from differences between the happiest versus unhappiest nations. Because personality-based explanations of effects of this size are not plausible, it seems more likely that they result from the effects of objective life circumstances (though, of course, differences in questionnaire use are also a possibility). Similarly, although Diener, Diener, Choi, and Oishi (2018) found that personal circumstances could distinguish the unhappy from the moderately happy, societal characteristics such as social capital were best able to distinguish the moderately happy from the happiest. Additional evidence against an unchanging baseline come from a study showing that immigrants to Canada had similarly high levels SWB regardless of the typical happiness of people in the nation from which they emigrated. These immigrants to Canada all showed similarly high levels of SWB, with only a small residual effect from their nations of origin. The results cannot be explained by immigrations of happier individuals because people wanting to emigrate tend to be less happy

than other citizens (Helliwell, Bonikowska, & Shiplett, 2016). These findings, while correlational in nature, suggest that the quality of life in a society can play a role in SWB, and that people do not inevitably adapt to good conditions. This is important because many past longitudinal findings on failure to adapt had previously come from negative conditions such as unemployment and disability.

These and other findings show that adaptation to life events and circumstances is not as inevitable as once thought. Although SWB is moderately stable over time, and although stable personality characteristics certainly play a role in people's happiness, life events and life circumstances also matter. Thus, the goal for future research is to clarify which events matter most and what the critical ingredients are that distinguish events to which people do and do not adapt. In addition, studies examining individual differences in adaptation can help clarify the factors that make people resilient as well as those that enable people to sustain lasting improvements following changes in life circumstances. These investigations into adaptation processes will also help researchers understand more basic processes that drive well-being judgments. An edited volume by Sheldon and Lucas (2014) provides a thorough overview of the evidence for change, the types of studies that are used to study change, and the process models that might account for the changes that do occur.

Cognitive Theories

The efficacy of Cognitive Behavioral Theory in treating mood disorders indicates the importance of cognitive processes in affecting emotional well-being. Partially based on these ideas, Diener and Biswas-Diener (2008) developed their AIM theory of SWB, based on peoples' Attention, Interpretation, and Memory. They suggest that in each of these mental processes people can focus on positive versus negative information, and this is likely to exert a continuing influence on their SWB (see also Quoidbach, Mikolajczak, & Gross, 2015, for review).

First, those who are dispositionally happy might naturally attend to positive stimuli more quickly, intensely, and for a longer period of time than dispositionally unhappy people. Using an eye-tracker, Raila, Scholl, and Gruber (2015) found that individuals who scored high in the Subjective Happiness Scale and the Satisfaction with Life Scale spent more time looking at positive stimuli than those who scored low in these two scales (see Isaacowitz, 2005 for optimism; Tamir & Robinson, 2007, for similar results with the manipulation of positive moods). Similarly, happy people engage in social comparisons when the comparisons are favorable, whereas they do not when the comparisons are unfavorable (Lyubomirsky & Ross, 1997). In contrast, unhappy people tend to engage in social comparisons even when the comparisons are unfavorable. These findings are likely to be caused in part by attentional factors. Recent findings about savoring also suggest that sustained appreciative attention to a positive event/condition is a helpful component of inducing the subjective feeling of happiness (Kurtz, 2008; Jose, Lim, & Bryant, 2012; O'Brien & Ellsworth, 2012).

Second, dispositionally happy people might interpret the same event/situation more positively than dispositionally unhappy people. Seidlitz and Diener (1993) found that happy people report experiencing concrete positive events (e.g., getting engaged, getting a promotion) more than unhappy people ($r = .28$). Interestingly, happy people reported experiencing abstract positive events (e.g., improved my character) a lot more than unhappy people ($r = .51$). These findings are parallel to Diener, Scollon, Oishi, Dzokoto, and Suh's (2000) positivity bias findings on concrete versus abstract domain satisfaction judgments. Likewise, happy people are more likely to reframe a negative event/situation more positively than unhappy people. For instance, happy high school students de-value the colleges they did not get in, whereas unhappy students do not engage in flexible re-interpretation of the colleges that rejected them (Lyubomirsky & Ross, 1999). Similarly, mothers of children with intellectual disabilities who saw their children to be a source of happiness used positive reframing to a greater extent than those who did not (Greer, Grey, & McClean, 2006). Thus, positive interpretation and reframing might differentiate happy from unhappy people.

Finally, dispositionally happy people might remember positive events more than unhappy people. Seidlitz and Diener (1993) found that people high in life satisfaction recall more positive events than those low in life satisfaction in a three-minute recall task. Using the false memory paradigm, Koo and Oishi (2009) also found that people high in life satisfaction falsely recognized the word "happy" as included in the original study list than people low in life satisfaction. In a similar vein, chronically happy people recall past positive events more often to make themselves happy and help recover from a depressing event (Liberman, Boehm, Lyubomirsky, & Ross, 2009). Matlin and Stang (1978) reviewed the positive cognitive biases that characterize the majority of people, and that may help explain why most people are happy (Diener & Diener, 1996).

The Social Ecological Approach

A promising conceptual approach in recent years is the social ecological approach that views the results of various predictors of SWB such as income, personality, gender, and so forth as dependent on the context in which they occur and on the values of those involved (Oishi, 2014; Yuki et al., 2013). For instance, although extraverts are happier than introverts in various situations (Lucas, Le, & Dyrenforth, 2008), a recent study found the person-ecology fit effect such that extraverts were happier in an open space than in a secluded space, whereas introverts were happier in a secluded space than in an open space (Oishi, Talhelm, & Lee, 2015). As summarized in the person-culture fit section, Londoners who are high in openness to experiences were more satisfied with their lives if they lived in a city center (more ethnically diverse and dense) than if they lived in a suburb (Jokela, Rentfrow, Bleidorn, Lamb, & Gosling, 2015). Politically liberal Americans were more satisfied with their lives if they lived in politically liberal areas than in conservative areas (Motyl & Oishi, 2016; see also Fulmer et al., 2010; Oishi, 2000 for a

culture-person fit effect). Furthermore, this fit effect was explained by a greater sense of belonging. Not surprisingly, liberal Americans who grew up in conservative areas were more likely to move to liberal areas, whereas conservative Americans who grew up in liberal areas were more likely to move to conservative areas (Motyl et al., 2014).

In this approach, also called the interactional approach (Ahuvia, Thin, Haybron, Biswas-Diener, Ricard, & Timsit, 2015) one must consider goals, social norms and arrangements, and societal resources in order to understand the factors that will increase or decrease SWB. For example, single unpartnered parents report lower life satisfaction in countries where there is a strong norm for two-parent families (Stavrova & Fetchenhauer, 2015). Another instance of the social-ecological effect is that county-level unemployment is associated with lower SWB, but not for retired adults (Luhmann, Murdock, and Hawkey, 2015). Growing income inequality in the U.S. is associated with decreasing happiness among the middle and lower-class citizens, but not among upper-class citizens (Oishi, Kesebir, & Diener, 2011).

Conclusions About Theories of SWB

It should be clear at this point that there is no single, overarching theory of subjective well-being. That is because SWB is a broad construct that is likely multiply determined. For instance, it is quite likely that people's income and standards of living have an effect on the SWB that they experience. Individuals living in poverty often experience difficulties that could directly affect the well-being they experience. Yet at the same time, social comparison processes and personality processes may also contribute independently to the person's overall evaluation of his or her life, so that two people with the same objective circumstances may experience very different levels of SWB. This means that as theoretical work on the processes underlying SWB proceeds it will be necessary to isolate different processes, while realizing that by doing so, only a portion of the variance in SWB will be explained. Simply showing that personality matters does not rule out the fact that objective circumstances play a role as well; showing that subtle manipulations of transient factors affect well-being judgments does not preclude a strong influence of stable factors on these same judgments. Thus, researchers who investigate the processes underlying SWB judgments must keep the breadth of the construct and its causes in mind when designing studies and interpreting their results.

The theoretical approaches described above focus primarily on top-down processes such as personality. Three of the approaches (Social Comparison, Needs and Desires, and Adaptation) focus on discrepancies between what an individual is experiencing in the external world and internal standards that serve to evaluate the experiences. In the case of social comparison other peoples' levels on the resource set the standard, for Needs and Desires theories a person's goals set the standard, and for Adaptation the past sets the standard.

The AIM Theory of Diener and Biswas-Diener (2008) focuses on cognitive processes related to SWB.

Characterizing the types of environments that are conducive to high levels of SWB has received less attention. Despite the impact of internal factors, the huge differences between nations in mean levels of SWB indicate the impact that the external environment can exert. More theoretical and empirical work in confirming internal and external factors are needed. The Social Ecological approach is promising in that it combines both internal, top-down processes, with external or bottom-up processes. Initial findings suggest that combining the internal factors with the living circumstances of individuals is likely to produce insights that go beyond either approach taken alone.

Interventions to Raise SWB

Researchers, practitioners, and lay people alike want to know whether interventions exist that reliably lead to lasting changes in levels of subjectively evaluated well-being. These questions are important both because people often desire higher levels of SWB (or at least want to know how to return to their high level if they experience a decline) and because interventions provide insight into the processes that underlie individual differences in SWB. A number of interventions have been developed and evidence about their effectiveness is continuing to be updated (for reviews, see Huppert & Cooper, 2014; Lyubomirsky & Della Porta, 2010; Quoidbach et al., 2015; Sheldon & Lucas, 2014; Sin & Lyubomirsky, 2009).

Intervention research takes many forms. Interventions can be targeted at individuals or they can be targeted at organizations. Interventions can be designed to accomplish specific goals that have value in their own right (e.g., interventions that provide practical guidance to new parents) and that may only have secondary effects on well-being, or the interventions can target SWB as their primary outcome. Indeed, many of the interventions that exist have goals other than to directly raise SWB (see, e.g., the various chapters included in Huppert & Cooper, 2014), and thus, the extent to which successful interventions can be developed is not as clear as it might have been if these interventions had explicitly targeted SWB.

However, some studies have examined more narrowly focused interventions, and these provide some evidence of success. For instance, Sin and Lyubomirsky (2009) conducted a meta-analysis of over 50 intervention studies (many of which were focused on depression or well-being among depressed patients), and they found a statistically significant effect with a mean r of .29. A number of reviews and meta-analyses have been conducted on positive psychology interventions, which often includes a SWB component, and several conclusions can be drawn. First, significant improvements in SWB are often found (e.g., Bolier, Haverman, Westerhof, Riper, Smit, & Bohlmeijer, 2013). Second, some of these effects persist over moderate time periods (e.g., six months; Seligman, Steen, Park, & Peterson, 2005). Third, different interventions may vary in their effectiveness (Seligman et al., 2005). Finally, effects of interventions appear to be larger for those who diligently practice the exercises that the interventions target (Lyubomirsky & Della Porta, 2008; Seligman et al., 2005).

Although the early results are promising, it is also important to acknowledge the limitations of existing intervention studies. For instance, many intervention studies are small and concerns about the rigor of the design can be raised. Importantly, Bolier et al., 2013 found that weaker studies showed stronger effects. Most of the studies that Sin and Lyubomirsky (2009) cited in their review included relatively small samples of participants, which leads to concerns about the robustness of the results. Furthermore, one difficulty in designing intervention studies is that it is difficult to design plausible no-treatment controls, and thus, placebo effects or demand characteristics are often a possible alternative explanation for significant effects. In addition, several reviews have found evidence for publication bias, which leads to concerns about inflated effect sizes. Finally, many intervention studies follow participants for short periods of time, which means that long-term effects of interventions are uncertain.

The interventions that have been tested often build upon known correlates of subjective well-being. For instance, because happiness is correlated with gratitude, optimism, and prosocial behavior, many interventions target these feelings and behaviors (Lyubomirsky & Layous, 2013). Specifically, researchers may ask people to write about things they are grateful for or actually express their gratitude towards others, or these interventions may ask people to participate in a specific prosocial activity. Other attempts to develop interventions may start with obstacles to lasting changes in well-being. For instance, Lyubomirsky, Sheldon, and Schkade (2005) examined theories of adaptation to identify factors that may prevent adaptation to positive circumstances, and then identified potential interventions that could slow these adaptation processes. In short, several strategies have been identified for developing interventions, and thus far these have been implemented with some success. As more information about the correlates of high SWB are discovered and a deeper understanding of the processes underlying SWB is developed, stronger interventions can be created, which will lead to improved tests of whether happiness and well-being can intentionally be changed. In addition, large-scale tracking of well-being by governments will allow researchers to determine whether large-scale policy changes are effective in changing population levels of SWB.

SWB as a Cause of Outcomes

One intriguing development in the field in recent years is that SWB is not just studied as an outcome. Rather, SWB is also viewed as a potentially important influence on health and behavior. Longitudinal studies show that high SWB often precedes and predicts beneficial outcomes and does not merely follow from them. There is also increasing evidence that SWB can be beneficial to health and other outcomes. Before providing this review, it is important to note that establishing the causal role of SWB is difficult. Even longitudinal data that supports the temporal priority of SWB over other factors cannot rule out all possible third-variable explanations; and experimental studies often

focus on narrower constructs than SWB. Yet at the same time, the longitudinal and experimental work that has been conducted provides suggestive evidence that SWB may play an important role in life outcomes, suggestive evidence that will need to be followed up with increasingly sophisticated designs. For overviews of research in this general area, the reader is referred to Lyubomirsky, King, and Diener (2005), Diener, Kanazawa, Suh, and Oishi (2015), and DeNeve, Diener, Tay, and Xuereb (2013).

Health and Longevity

The evidence linking SWB to health and longevity is now extensive. Furthermore, the case that SWB influences health rather than only the reverse rests on experimental, longitudinal, mediational, quasi-experimental, and other types of evidence, as well as studies that establish evidence for potential mediating pathways going from SWB to health and longevity (Pressman, Diener, Hunter, & Chase 2017). For instance, correlational research shows that people high in SWB not only have better health but are also more likely to engage in better health behaviors, which provides a potential causal pathway linking SWB to these outcomes. There have been a number of broad reviews of the literature and most conclude that there is a path leading from SWB to health and longevity (e.g., Chida & Steptoe, 2008; Diener & Chan, 2011; Dockray & Steptoe, 2010; Pressman & Hooker, 2013; Rozanski & Kubzansky, 2005). Smith and MacKenzie (2006) reviewed evidence linking stress and other negative emotions to cardiovascular disease and negative health behaviors. In a review of 11 studies, Rugulies (2002) concluded that depression is a significant predictor of coronary heart disease in initially healthy people. Lambiase, Kubzansky, and Thurston (2015) found that emotional vitality prospectively predicts strokes over a mean follow-up period of 16 years, controlling for traditional cardiovascular risk factors and psychological distress. Even one's partner's happiness predicts one's own health beyond the effects on one's own happiness (Chopik & O'Brien, 2016). The association between SWB and longevity has even been found in orangutans (Weiss, Adams, & King, 2011). Veenhoven (2008) concluded based on a review of the literature that SWB is related to health and longevity in healthy populations. In a meta-analysis of 17 studies, Lamers, Bolier, Westerhof, Smit, and Bohlmeijer (2012) found significant effects of SWB on recovery and survival among ill patients. Similarly, Kopp et al. (2003) found quicker recovery among surgical patients if their life satisfaction was high. Ostir, Markides, Black, and Goodwin (2000) found that higher positive affect predicted mobility, functional status, and survival in a sample of the elderly who were followed for two years.

In addition to these studies at the individual level, there are also data indicating that geographical regions with higher SWB have better health and longevity, although these data are correlational and do not indicate causal direction. Lawless and Lucas (2011) found that counties in the USA with higher SWB also had better health. Eichstaedt et al. (2015) analyzed Twitter posts on the internet and found that hostility and anger in such posts

predicted heart disease in USA counties, whereas positive affect and engagement were associated with better cardiovascular health. Blanchflower and Oswald (2008) found that happier nations experience less hypertension.

Although a thorough review of individual studies is too extensive to be included here, a description of a few specific findings will provide readers with some of the types of evidence in this area. A widely-known study found that happy Catholic nuns lived longer than less happy ones (Danner, Snowdon, & Friesen, 2001), and this finding was replicated among psychologists (Pressman & Cohen, 2012). There also are longitudinal data based on very large and broad samples (see Diener & Chan, 2011; Lyubomirsky, King, & Diener, 2005, for reviews of the longitudinal literature in this area). Steptoe and Wardle (2011) found that among people over age 50, survival rates varied depending on positive affect, with mortality differences between the groups growing larger over time. Going beyond longevity and absence of illness, Steptoe, Oliveira, Demakakos, and Zaninotto (2014) found that enjoyment of life predicted reduced functional impairment in the elderly over an 8-year period. In this sample of people 60 and older gait speed and impairment of activities of daily living were both predicted from starting SWB scores, controlling for speed and activity scores at Time 1.

In the Million Women study conducted in England and Scotland, Liu et al. (2016) reported that happiness did not predict longevity. However, as we discuss below, the authors did find an association, but then statistically controlled for a large number of variables that could be affected by SWB, including smoking, having a romantic partner, subjective health, and sleep, and thus may have controlled for pathways through which SWB influences health and longevity. Furthermore, the authors controlled Time 1 health, and thus may have statistically eliminated existing effects of well-being on health up to that point. As a result, the focus of their investigation would shift to an examination of whether after Time 1 changes in SWB are related to changes in health after the first 50 years of life. However, if SWB were relatively stable, the effects on health would be apparent only if levels of SWB were changing or the size of influence were changing in rate. For the challenges of correctly employing statistical control see Diener, Pressman, Hunter, and Delgado-Chase (2017).

Experimental studies also indicate that moods influence physiology in a way that is likely to influence people's long-term health (Diener & Chan, 2011; Lyubomirsky, King, & Diener, 2005). Similarly, there is evidence that naturally occurring moods over time are associated with physiological indicators that would likely affect health. For instance, Bhattacharyya, Whitehead, Rakhit, and Steptoe (2008) found that higher levels of positive feelings are associated with healthier levels of heart rate variability. Kubzansky, Gilthorpe, and Goodman (2012) found that stress in childhood predicted future elevated levels of inflammation, which can be harmful to the cardiovascular system. Uchino, deGrey, Cronan, Smith, and Diener (2016) found that high life satisfaction was associated with lower levels of inflammatory markers in the bloodstream. Rodents exposed to stress due to social defeat showed

greater expression of proinflammatory genes, helping to explain why inflammation-related diseases are associated with difficult life circumstances (Powell, Sloan, Baily, Arevalo, Miller et al., 2013).

Steptoe, Dockray, and Wardle (2009) discuss the various biological and psychological processes through which SWB influences health and longevity. In a series of studies Steptoe, Wardle, and Marmot (2005) found connections between SWB and neuroendocrine, cardiovascular, and inflammatory processes. A number of literature reviews have concluded that SWB is related to stronger immune function (Barak, 2006; Marsland, Pressman, & Cohen, 2007; Pressman & Black, 2012; Steptoe, Dockray, & Wardle, 2009). Based on a meta-analysis of the literature, Howell, Kern, and Lyubomirsky (2007) concluded that SWB is strongly related to immune strength and pain tolerance, and less related to cardiovascular health. However, also based on a meta-analysis Steptoe and Kivimaki (2013) concluded that stress is strongly related to cardiovascular disease. Steptoe, Dockray, and Wardle (2009) concluded that independently of negative feelings positive feelings are associated with favorable levels of heart rate, blood pressure, and immune parameters. It appears that positive emotions and optimism may dampen physiological hyper-responsiveness to adverse events (Rozanski & Kubzansky, 2005). Spiegel and Giese-Davis (2003) reviewed evidence suggesting that negative states are related with more certainty to cancer progression than to its incidence.

Another reason that SWB might be related to mortality is that stress may cause a shortening of the telomere endcaps protecting the integrity of DNA, and thereby to quicker aging (Epel et al., 2004). Youngsters living in violent and disrupted families have shorter telomeres (Drury et al., 2014) and stress appears to shorten the telomeres not only of adults, but also of children (Mitchell et al., 2014; Drury et al., 2014). The early effect on telomere shortening suggests that the effects of SWB on health and longevity can be set in motion early in life.

There is also evidence indicating that people high in SWB are more likely to behave in ways that are conducive to health, for example, by exercising and avoiding smoking (Boehm, Vie, & Kubzansky, 2012). For instance, Goudie, Mukherjee, DeNeve, Oswald, and Wu (2012) found that happier individuals were more likely to wear seatbelts and are less likely to be involved in automobile accidents. Cuffee et al. (2012) found better medication adherence among African Americans with hypertension who also scored high on a happiness scale. Pettay (2008) found that students who were high in life satisfaction were more likely to eat nutritiously and get exercise. Kim, Park, Sun, Smith, and Peterson (2014) found that high life satisfaction predicted fewer doctor visits for illness, controlling for baseline health; while at the same time, Kim, Kubzansky, and Smith (2015) reported that more satisfied individuals were more likely to use preventive healthcare services. Kirkcaldy and Furnham (2000) found that nations higher in positive affect had lower rates of automobile accidents and death. Grant, Wardle, and Steptoe (2009) found that exercising and avoiding smoking were associated with SWB across several regions

of the world, although sunscreen use showed variable associations with SWB across different regions.

Research has established not only an association with high SWB and health, but also with physiological markers that help explain the relationship. For instance, Kiecolt-Glaser, Marucha, Marlarkey, Mercado, and Glaser (1995) found that stressed caregivers showed slower wound-healing and differences in inflammatory markers compared to a matched control group. Importantly, Kiecolt-Glaser, Loving and their colleagues (2005) also showed that marriage partners, after they were experimentally assigned to a conflictual interchange, healed more slowly than when they were assigned to a supportive interaction.

Further evidence comes from studies showing that long-term interventions to raise well-being can influence health outcomes. Rutledge, Redwine, Linke, and Mills (2013) meta-analyzed the literature on psychological interventions and cardiac outcomes among those with cardiovascular disease. They found that psychological treatments were predictive of fewer future cardiac events, although they did not affect rates of mortality. Orth-Gomér, Schneiderman, Wang, Walldin, Blom, and Jernberg (2009) found in a large clinical trial that a stress reduction intervention substantially reduced the risk of mortality of elderly women who had suffered a cardiovascular event. Whalley et al. (2011) found that interventions to reduce Type A behavior were more effective in reducing mortality than other types of psychological interventions. Ogedegbe et al. (2012) found that a positive affect intervention increased patient medication adherence compared to an education intervention. Nikrahan, Laferton, Asgari, Kalantari, Abedi, et al. (2016) studied cardiac patients who had undergone bypass surgery or a percutaneous procedure, and administered one of three types of well-being interventions. Two of the interventions reduced biomarkers of inflammation, and one reduced waking cortisol levels. The changes in physiological markers following well-being interventions help strengthen the causal case for a path from SWB to health and longevity.

In sum, there is evidence that happy people are healthier and live longer in part because they exhibit better health behaviors (e.g., Carver, Scheier, & Segerstrom, 2010; Grant, Wardle, & Steptoe, 2009), have stronger immune systems, and experience better cardiovascular health. The data show that the effects are not simply due to the deleterious influences of negative emotions, but that positive emotions have beneficial effects that to some degree are independent of the effects of negative feelings (e.g., Steptoe, Dockray, & Wardle, 2009). Both enjoyment of life and optimism are associated with better health outcomes (Carver, Scheier, & Segerstrom, 2010; Steptoe, de Oliveira, Demakakos, and Zaninotto, 2014). Steptoe, Dockray, and Wardle conclude that positive states are also associated with other health-protective factors such as perceived social support and a preference for adaptive coping. However, there are a number of reasons that SWB might predict longevity beyond social support and coping. For one thing, positive feelings might directly trigger beneficial physiological processes such as immune

protective factors. For another, SWB might be a signal of underlying health and energy. In addition, SWB gives the energy to people to perform healthy behaviors such as exercise and to avoid unhealthy behaviors such as smoking. All of these processes might be at work, but more research is required to disentangle the various pathways from SWB to health and longevity. A comprehensive review of what is known about the effects of SWB on health and longevity is available (Diener, Pressman, Hunter, & Delgado-Chase, 2017). These authors conclude that the case that SWB can and does influence health is now extremely strong, and how it does so is partially understood. What remains is the question of when it is more and less likely to do so.

Productivity, Mastery, Citizenship, and Organizational Success

As with research on health outcomes, establishing a causal link between SWB and organization outcomes is challenging. However, there are several lines of research that suggest that SWB may be causally linked to higher productivity on the job, more creativity and self-regulation, and better citizenship behavior. The factors leading to job satisfaction are beyond the scope of this paper, but relevant to the present review is that happiness on the job, as well as life satisfaction, is often associated with better work outcomes. On average workers with higher job satisfaction have better job performance (Boehm & Lyubomirsky, 2008; Judge, Thoreson, Bono, & Patton, 2001). Wright and Staw (1999) found that pleasantness of affect, but not the activation dimension of positive affect, was predictive of supervisor ratings and performance. Furthermore, measures of dispositional affect, but not state affect, were predictive of performance over time. Krause (2013) found that happier individuals are more likely to be re-employed when they become unemployed. Similarly, Clark (2014) found that people's drop in SWB when they became unemployed predicted the vigor and success of their search for another job.

George (1995) found that positive moods in both sales managers and their subordinates in customer service units were associated with better performance. Staw and Barsade (1993) found that those high in positive affect scored higher on a number of measures based on an in-basket test. In an experimental study Oswald, Proto, and Sgroi (2009) found that those put into a positive mood had about 11 percent greater quantity of work output, without any loss in quality. Low and medium productive individuals benefitted most from the mood induction. In a second study, they found that those who were experiencing a negative mood due to family illness or bereavement were less productive. In a meta-analysis of panel studies, Riketta (2008) found a small but significant association between job satisfaction on job performance. It should be noted that the statistical controls included baseline performance, and therefore the study was examining job satisfaction and increases over time in performance because initial levels of performance (that could be influenced by SWB) were controlled.

Happy work units are more profitable over time (Harter, Schmidt, & Hayes, 2002) and companies with more

desirable working conditions tend to rise more in share price (Edmans, 2011). Bockerman and Ilmakunnas (2012) found that manufacturing plants with higher employee job satisfaction were more productive. One reason that happier workers and workplaces are more productive may be that they have lower turnover (e.g., Rusbult & Farrell, 1983 or more customer loyalty (Harter, Schmidt, Asplund, Killham, & Agrawal, 2010). Another factor boosting the success of happy organizations is the creativity within them. Experimental studies in the lab (though mostly small in size) suggest that when positive moods are induced in the laboratory, people become more creative (e.g., Isen, Daubman, & Nowicki, 1987). In actual work situations workers tend to be more creative when they are in naturally occurring positive moods (Amabile, Barsade, Mueller, & Staw, 2005; George & Zhou, 2007). Reviews of the mood and creativity literature suggest that positive moods are more likely to enhance creativity when they are activated and combined with a promotion focus (Baas, De Dreu, & Nijstad, 2008), and there is evidence that the association might be curvilinear (Davis, 2009). The curvilinear effect might explain why at times high positive mood combined with some negative mood is associated with the most creativity in organizations (George & Zhou, 2007). De Dreu, Baas, and Nijstad (2008) found that whereas positive affect was related to creativity because of increased cognitive flexibility, negative affect was related to creativity due to increased persistence. Bledow, Rosing, and Frese (2013) present evidence that shifting from negative to positive moods, a rise in positive moods, may be important in creativity.

The possibility that SWB promotes high productivity is also supported by studies showing that happy workers tend to earn higher incomes, even when factors such as parental income and college major are controlled (DeNeve & Oswald, 2012; Diener, Nickerson, Lucas, & Sandvik, 2002; Graham, Eggers, & Sukhtankar, 2004; Marks & Fleming, 1999; Mohanty, 2009; Shin, Choi, Suh, & Koo, 2013). DeNeve and Oswald (2012) found that current happiness predicted later income, and Kansky, Allen, and Diener (2015) found that adolescents high in positive affect had higher levels of job competence and job satisfaction ten years later.

Experimental evidence on the benefits of high positive affect and reduced negative affect helps clarify the processes by which individual differences in SWB may affect outcomes. Delay of gratification is lowered by experimentally induced sadness (Lerner, Li, & Weber, 2013). Conversely, resistance to temptation is increased by positive mood inductions (Fry, 1975). Leitzel (2000) found that happy people feel more energetic and interested in doing things, and are more curious. Kavanaugh and Bower (1985) found that people who were put in a positive mood felt greater self-efficacy in a variety of domains. Samuel, Bergman, and Hupka-Brunner (2013) found that well-being predicts successful intergenerational transfer of educational attainment. Guven (2012) found in nationally representative surveys that happier individuals save more money. Oishi, Diener, and Lucas (2007) found that although extremely happy individuals were slightly less

successful in the workplace compared to the very happy, they did excel in social relationships.

Prosocial or citizenship behaviors also seem to be boosted by positive affect. In experimental studies people put into a good mood are more likely to be altruistic (e.g., Isen & Levin, 1972) and cooperative (e.g., Carnevale, 2007; Carnevale & Isen, 1986), though the experimental studies examining these issues tend to be very small in size. In natural settings Priller and Schupp (2011) found that happier individuals donated both more money and more blood than less happy individuals (see also Shin, Choi, Su, & Koo, 2013). Brethel-Haurwitz and Marsh (2014) found that in areas high in SWB people are likely to have a higher rate of kidney donation. Happier workers also show better “organizational citizenship,” (Organ & Ryan, 1995), meaning that they help other workers even when it is not required by their job. Thus, not only do happier individuals tend to be more productive and create more profitable organizations, but they are superior at behaviors that help others.

In general, happier people perform better than less happy people in the workplace. When you add in the fact that happy workers are likely to take fewer sick days off from work, and are likely to require lower healthcare costs, the advantages of high SWB workers are manifold. Thus, a host of converging factors may result in happy workers being better workers. Although the effects of SWB on the job often show only modest associations with performance, this might in part be because most workers are in fact in a positive mood at work, and the few unhappy workers do not exert a large influence on the statistical associations. What is not understood is whether there is a threshold effect, above which further increments in SWB do not affect performance. Furthermore, we know little about whether SWB influences the performance in some jobs more than in others. For instance, it might be that SWB is very helpful in jobs requiring flexibility, sociability, initiative, and creativity, but less beneficial in assembly line jobs that are highly routinized. Finally, there are many other moderating factors such as the local unemployment rate that affect the association of SWB with job performance. For a review of what is known and not known about the pathways leading from SWB to work performance readers are referred to Tenney, Poole, and Diener (2016).

Social Relationships

Lucas, Diener, Grob, Suh, and Shao (2000) found in countries around the world that positive affect was associated with extraverted characteristics such as sociability and affiliation. There are now data indicating that not only are happier individuals more outgoing and sociable, but they also tend to have higher quality social relationships. Diener and Seligman (2002) found that all of the happiest individuals they studied had supportive social relationships. Experimental and longitudinal evidence both point toward the fact that SWB does not merely follow from supportive social relationships, but can influence people to be more sociable and experience higher-quality social relationships. People in an experimental setting who are placed in a positive mood

are more talkative (Cunningham, 1988a). Cunningham (1988b) also found that inducing a positive mood led people to be more self-disclosing. Children put into a positive mood in an experiment showed better social skills and more self-confidence (Kazdin, Esveldt-Dawson, & Matson, 1982). Longitudinal research with children shows that low subjective well-being can be predictive of future social problems. For instance, Martin, Huebner, and Valois (2008) found that children low in life satisfaction were less likely later to be prosocial and more likely to be victimized. Kansky, Allen, and Diener (2015) found that young adolescents who were high in positive emotions had less conflictual relationships ten years later. Moore and Diener (2017) found that positive affect was associated with more accurate knowledge of one's partner's personality traits and life satisfaction was associated with more knowledge of the partner's attitudes.

Boehm and Lyubomirsky (2008) reviewed studies that show that happy people are more popular and likable. In longitudinal research high SWB was predictive in later years of people getting married, becoming parents, a lower likelihood of divorcing, and a lower probability of losing one's job or changing jobs (Luhmann, Lucas, Eid, & Diener, 2013), and these findings replicated across three nations (Germany, the U.K., and Australia). Smile intensity in photographs has been found to predict later marital quality and divorce (Harker & Keltner, 2001; Hertenstein, Hansel, Butts, & Nile, 2009), though one famous study on smile intensity predicting longevity among baseball players (Abel & Kruger, 2010) recently failed to replicate (Dufner et al., 2017). Furthermore, in natural settings happy people talk more when with others, and have more substantive conversations (Mehl, Vazire, Holleran, & Clark, 2010). For a review of the literature on SWB's influence on social relationships see Moore, Diener, and Tan (2017).

Resilience

Evidence is growing that positive affect helps people bounce back from negative events and makes them less susceptible to problems such as PTSD (McCanlies, Mnatsakanova, Andrew, Burchfiel, & Violanti, 2014; Zanon, Hutz, Reppold, & Zenger, 2016) and adaptation to stress in later life (Ong, Bergeman, Biscanti, & Wallace, 2006). Tugade, Fredrickson, and Barrett (2004) found that positive emotions played a crucial role in coping with negative events (see also Tugade & Fredrickson, 2004). Fredrickson and her colleagues (Fredrickson, Tugade, Waugh, & Larkin, 2003) found that resilience before the terrorist attacks of 9/11 predicted less depression and more psychological growth in those who experienced positive emotions such as gratitude and love after the attacks. In three studies Tugade and Fredrickson (2004) found that resilient individuals use positive affect to recover from negative events, in terms of cardiovascular recovery and finding meaning in negative events. Positive mood inductions lead people to recover in the cardiovascular system more quickly after a negative mood induction (Fredrickson & Levenson, 1998; Fredrickson, Mancuso, Branigan, & Tugade, 2000). Jia, Kia, Hsee, and Shiv (2016) found that after an earthquake those who

recovered most quickly were those who had used phone apps that produce pleasant feelings.

Caveats About the Benefits of High SWB

Although there is now ample evidence that people higher in SWB show a host of desirable characteristics, from health to productivity, from creativity to altruism, and from quality social relationships to delay of gratification, several important cautions must be kept in mind. First, these findings do not mean that people should never feel negative affect. Indeed, the evidence clearly indicates that negative emotions can produce behaviors that are adaptive and functional (e.g., see Parrott, 2014). Gruber, Mauss, and Tamir (2011) reviewed studies showing that depending on the situation, people put in a negative mood may perform better than those in a positive mood (also see Forgas, 2013). In a book edited by Gruber and Moskowitz (2014), scholars present the case for when and why positive emotions are beneficial, and when they can make things go wrong (see also Kashdan & Biswas-Diener, 2014). Tamir (2009) reviews evidence showing that people may prefer to feel negative emotions over positive emotions if they believe that these unpleasant feelings will be useful. In addition, some evidence suggests that seeking happiness for its own sake can be counterproductive (e.g., Schooler, Ariely, & Loewenstein, 2003).

One caution to keep in mind is that although SWB is often beneficial, this does not mean that chronic intense positive emotions are optimal, and it does not mean that everyone would benefit if they were even happier than they are now. Oishi, Diener, and Lucas (2007) suggested that there might be an optimum level of happiness that depends on the specific behaviors in question. For sociability, they found that the very happiest people were the most sociable. However, in the workplace, they reported that people high in life satisfaction earned more income than the extremely satisfied. In Guven's (2012) study on re-employment of the unemployed there was a drop-off of re-employment in the very happiest group, again suggesting an optimum level of SWB. In the Diener, Nickerson, Lucas, and Sandvik (2002) study on happiness and income people who were more cheerful on average earned more income. However, this effect was moderated by parental income in that the effect was strongest if the respondent came from a wealthier family. If the participant had poor parents, an intermediate level of cheerfulness was associated with the highest level of later income. Another caveat is that in some instances extreme happiness can actually be detrimental. For instance, although SWB seems to produce health and longevity, there are indications that highly aroused positive affect might be harmful to health (e.g., Pressman & Cohen, 2005).

Nickerson, Diener, and Schwarz (2011) found that cheerful college students received somewhat lower grades than less cheerful students, perhaps because they spent more time socializing and less time studying. Although their sociability might help them perform better in many jobs and therefore on average they earned higher incomes, their happiness might have somewhat lessened behaviors such as scholarship. Thus, optimal levels of SWB seem to depend

both on the behaviors and outcomes in question, as well as on the circumstances of the individual. Furthermore, anxious individuals might sometimes serve to warn their group of danger (Ein-Dor, Mikulincer, & Shaver, 2011).

Despite the studies showing that positive emotions are not beneficial in all situations, a bias toward optimism and positive affects seems to be beneficial (Armor & Taylor, 1998; Taylor & Brown, 1988) and does not lead to behaviors that depend on ignoring reality and ignoring problems. As Armor and Taylor wrote: “The optimist may see what is ugly as less ugly, what is bad as less bad, and what is wrong as less wrong, but at the same time will have a relatively good idea of what is ugly, bad, and wrong” (p. 363). Armor, Massey, and Sackett (2008) found that people believe that optimistically biased predictions are in fact desirable, perhaps based on the belief that such biases can lead to greater goal attainment than pessimistic expectations. Ouweneel and Veenhoven (2016) found that protest voters did not come from the unhappiest places in the city of Rotterdam, but from the region. Although happy individuals might give somewhat lower probabilities to risks and problems than unhappier individuals, they might be more willing nevertheless to take action to correct or avoid those problems.

National Accounts of SWB

If SWB is designed to capture subjective assessments of quality of life, then measures of SWB could be used to determine whether some groups, regions, or nations are flourishing or floundering. In addition, by assessing the characteristics of the groups that vary, or by tracking changes in SWB as those characteristics change, it may be possible to design policies to rectify bad conditions. In 2000, Diener proposed that nations use national surveys of SWB in both representative and targeted samples to help inform policy debates. The idea was that the SWB of various groups, as well as people living in specific circumstances, could be used to inform societal and organizational policy discussions by revealing how differences in quality of life may be caused by various societal and community factors. When surveys assess SWB along with measures relevant to policy issues, the results can shed light on the effects of various policy alternatives. Some nations now have ongoing longitudinal panel studies that shed light on policy issues. For example, long-running panel studies that track well-being now exist in Germany (the Socioeconomic Panel Study), in Australia (the Household Income and Labour Dynamics in Australia study), the United States (the Panel Study of Income Dynamics), Switzerland (the Swiss Household Panel study), and in the United Kingdom (the Understanding Society panel study). Mackie and Smith (2017) outline how SWB data can be collected by statistical offices to help guide policy.

Progress on the Implementation of National Accounts of SWB

Substantial progress has occurred in terms of national accounts of SWB (Diener, Oishi, & Lucas, 2015). For example, the prime minister of the United Kingdom announced well-being surveys for policy purposes in

2010, and over 40 nations have assessed SWB in surveys by the government or international agencies. The United Nations published SWB averages in nations in its 2010 Development Program decennial report, and the National Academy of Sciences of the USA (National Research Council, 2013) issued a substantially positive review of time-use measures of SWB. The Organization of Economic Cooperation and Development (OECD) helps coordinate statistical collection across nations. In 2013 the OECD published an evaluation of the SWB measures and their uses. For a detailed description of progress on accounts of SWB, readers are referred to Diener, Lucas, Schimmack, and Helliwell (2009), Diener, Oishi, & Lucas (2015), and Oishi and Diener (2014).

Reasons for National Accounts of SWB

Diener, Oishi, and Lucas (2015) offer several reasons for monitoring the SWB of nations. First, SWB may reveal how various societal differences influence quality of life in those societies. Using SWB measures may be more efficient than trying to track objective characteristics directly. There are so many different features that may play a role in quality of life that it may be impossible to monitor them all. In addition, if these indicators are to be used to guide policy decisions, then those who make these decisions must often consider the fact that any single policy may have both positive and negative effects on factors relevant to quality of life. For instance, reserving green space through zoning restrictions can provide more exposure to nature and perhaps a cleaner environment, but it can also drive up housing prices due to the reduction in space available for development. Policy makers must weigh these effects against one another when implementing policy decisions, and there is little guidance from the indicators themselves which factors are most important. SWB measures potentially reveal which conditions in society are most important to its citizens and may provide specific information about how these factors are weighted.

A second reason for the accounts is that citizens highly value SWB (e.g., Diener, Sapyta, & Suh, 1998). Simply because most citizens value happiness is reason enough in a democratic society to monitor it and find ways to increase it. People prefer high SWB – they would prefer to be mostly satisfied with their lives, not disgruntled, and to feel positive and pleasant rather than angry and depressed. The utilitarian philosopher Jeremy Bentham argued that the best society is the one that provides the greatest happiness for the greatest number of people. We would not argue that SWB is the only metric of a successful society, but having citizens who believe and feel that their lives are desirable is certainly superior to the situation where people are miserable and dissatisfied. SWB does not trump all other measures of quality of life, but is an important one that must be considered.

A third reason to monitor societal SWB is that high SWB has beneficial effects on health and behavior, and low SWB often is detrimental to them. As reviewed earlier, happy individuals and groups on average have better health, social relationships, citizenship, and work productivity, as

well as better delay of gratification and creativity. These characteristics that are facilitated by SWB are desirable, and therefore monitoring a factor that facilitates them should be a high priority. Fourth, leaders and citizens alike tend to pay attention to what is measured, and therefore programs to increase SWB are likely to spring from the dissemination of the accounts. Because of the widespread interest in surveys of SWB, happiness scholars have now set their sights on taxation, corporate governance, criminal justice, and tort systems as areas that could be informed by the national accounts of SWB.

A final reason for monitoring SWB is to help provide monetary amounts when they are needed for calculating the weight of variables for which the marketplace does not provide dollar values. For instance, findings on the SWB of those encountering various unpleasant circumstances, for example disability due to an accident, can help set tort damages in lawsuit cases (Swedloff & Huang, 2010). The authors state that “the happiness revolution is coming to legal scholarship” (p. 553). While we agree that it will be useful to consider the role that SWB measures can play in this regard, we also acknowledge that some of the measurement issues discussed in the earlier sections will need to be addressed before the measures can be used in this more individualistic way.

Policies Supported by SWB Findings

Policy relevant information has been produced based on existing measures of SWB. Although the data in many areas are not yet strong enough to provide a strong basis for policy, the initial findings provide an idea of the types of policy-relevant findings that are possible. For example, Oishi, Schimmack, and Diener (2012) found that countries with more progressive taxation had higher SWB, controlling for income and overall levels of taxation. Helliwell, Huang, Wang, & Grover (2014) reviewed evidence suggesting that efficient governments, which do not waste money, produce higher levels of SWB. Nations high in SWB have more political freedoms, and also have laws protecting property rights and sound money (Helliwell et al., 2014; Radcliff, 2013). They have a strong rule of law, and fair and efficient legal systems (Helliwell et al., 2014). Thus, existing SWB data point to a number of public policies, even if the extant evidence is not yet strong.

A finding that is relevant to policy issues is that unemployment is often seriously harmful to SWB (e.g., Lucas, Clark, Georgellis, & Diener, 2004), which contradicts the belief held by some economists that people in certain situations maximize their well-being by choosing unemployment over available, but less desirable jobs. The idea is that unemployed people willingly chose unemployment over available jobs, and thus maximize their own well-being with this choice. The evidence suggests that people’s life satisfaction drops substantially when they become unemployed, and that they are scarred even when they are re-employed, in that their life satisfaction often does not fully return to former levels (Clark, Georgellis, & Sanfrey, 2001).

The evidence suggests that various types of support programs for the unemployed boost their SWB (e.g.,

Davidson, Pacek, & Radcliff, 2013). Employment policies such as job training and employment incentives are related to higher SWB (Easterlin & Switek, 2014). Indeed, the evidence suggests that such programs aid the SWB of the unemployed and employed alike (e.g., Di Tella, MacCulloch, & Oswald, 2003; Sjoberg, 2010), perhaps in the latter case because of the feelings of security such programs provide. Indeed, a variety of income security programs appear to boost the SWB of citizens (Radcliff, 2013). Pacek and Radcliff (2008) wrote: “... we find that welfare state generosity exerts a positive and significant impact on life satisfaction and happiness.” (p. 179). For instance, social welfare programs such as the earned income tax credit (Boyd-Swan, Herbst, Ifcher, & Zarghamee, 2013) boost the SWB of at least some groups.

Another area of research relevant to policy is on the natural environment and SWB. Not only does green space seem to enhance SWB (MacKerron & Mourato, 2013; White, Alcock, Wheeler, & Depledge, 2013), but clean air does so as well. Participants walking in green space compared to urban surroundings showed greater increases in positive feelings and more decreases in angry feelings (Hartig, Evans, Jamner, Davis, & Garling, 2003). In a quasi-experiment conducted by Luechinger (2009) it was found that the installation of scrubbers on smokestacks (which removed much of the pollution from the effluent) improved the life satisfaction of those downwind, but not upwind, of the smokestack. Because this occurred at various locations over time, strong evidence was provided that it was the installation of the scrubbers that was responsible for raising life satisfaction. Although health and environmental considerations might be sufficient in themselves to lead to policies to protect the environment, the costs and tradeoffs of these policy alternatives are usually weighed against the benefits. Thus, the SWB benefits of clean air and green space add to the strength of other arguments in favor of policies to protect the environment. Shorter and less difficult commuting to work is related to higher SWB, while long, difficult commutes to work appear to lower life satisfaction (Stutzer & Frey, 2008). In contrast to difficult commuting by vehicle, active commuting, for example walking to work, is related to better emotional well-being (Martin, Goryakin, & Suhrcke (2014).

Thus, SWB can serve as a way to enhance the efficacy of policy debates by providing valuable information. Huang (2010) suggests that happiness findings can be used to improve policies on employment discrimination, sexual harassment, family law, and criminal sentencing. Information from SWB measures should not trump other values and considerations such as the costs of policy alternatives. However, this information can serve to give weight to certain alternatives over others, as well as pinpoint the suffering of certain groups and regions. National accounts of SWB help reveal where quality of life is good, and where people are not flourishing. These accounts also provide clues about how to improve society, owing to the fact that SWB is in itself frequently a source of desirable behavior and health.

Material prosperity has been a boon to human well-being. However, there are other aspects of quality of

life such as social prosperity that, although they might benefit to some degree by economic development, are independent of it to some degree. Factors such as corruption, being able to count on others, being respected, lack of violent conflict, and so forth can influence SWB, for instance. Diener and Tay (2014) found that statistically controlling for economic development, factors such as a healthy environment, equality, and freedom predicted the level of SWB in nations. A number of types of prosperity exist, and national accounts of well-being are intended to reflect how well societies are doing as a whole across the different dimensions of quality of life.

Future Directions for Research

Although much has been learned about SWB in the last 50 years, there are many important research questions that are still in need of empirical evidence. In the following section, we outline what we believe are some of the most important new research directions.

Methods, Measures, and Statistics

In order to analyze the complex systems that link SWB to other predictors and outcomes, scientists need to use a variety of methodologies that triangulate these associations. In the early days of SWB research the field was dominated by cross-sectional, correlational studies in which a measure of SWB was correlated with some characteristic thought to influence it. Research has mostly moved beyond these types of studies, but additional progress is needed. Diener, Pressman, Hunter, and Delgado-Chase (2017) described how various methodologies from longitudinal studies to experimental studies and experience-sampling studies can each help us more fully understand the network of psychological and physiological processes that connect SWB and health through a variety of mutual causal effects. Such methodologies need to be used more widely to obtain a fuller understanding of causal networks. In addition, greater attention to the contextual factors that moderate these processes is clearly needed, given the ways that variation in goals, values, and outlook can affect SWB.

The assessment of SWB is a particularly promising area for future research. Researchers need to understand more about how processes such as current mood, salience of information, and communication norms affect responses to SWB surveys. If these measurement biases can be understood, then studies can be designed to reduce their impact, resulting in measures that more clearly reflect the intended psychological constructs. This goal can often be achieved by assessing several forms of SWB and examining the ways that they cohere or diverge. Although we know from factor-analytic and other methods that the types of SWB are separable, there is still much to learn about how they differ and what unique causal factors create these differences.

A related measurement issue that has received a great deal of attention in the last decade concerns the difference between more experiential measures of SWB (as measured, for example, through experience-sampling or day-reconstruction procedures) and more

traditional retrospective survey-based measures such as life satisfaction judgments. Although the former were developed to address specific methodological concerns about the latter, it is not yet clear whether the assumed psychometric advantages really do exist. Given the large differences in respondent burden that exist for the different types of measures, a clear psychometric goal for the future is to provide additional evidence regarding the relative strengths and weaknesses of the two types of measures. In addition, if both types of measures are valid, but reflect distinct forms of well-being judgments, then it will be important to understand the distinct predictors and outcomes that are related to each.

One of the more difficult issues in research on SWB, as in most other fields, is establishing causal priority of one variable over another to which it is related. This is especially challenging when attempting to determine whether SWB has benefits for health, relationships, productivity, or any other outcome. One issue that often emerges in literature in this area is knowing when and how statistical controls should be used to separate the effects of SWB from other related variables. Earlier we described a study by Liu et al. (2016) in which they attempted to determine whether happiness can affect longevity after controlling many other variables such as self-rated health at baseline, having a partner, income, exercise, and smoking. The problem is that these statistical controls are likely to eliminate many of the actual effects of SWB on health. For one thing, SWB is known to influence each of these other variables, and therefore controlling them statistically potentially erases actual effects of SWB. For another, some of these variables are causes of SWB, and so again, valid variance can be inappropriately discarded. Furthermore, some of the variables such as smoking and exercise are health behaviors that are influenced by SWB, and therefore controlling them gets rid of a mediational pathway through which SWB is likely to influence health.

What is the solution in such a situation where there is a dynamic system of interrelated variables? Repeated measures of the variables over time may help in mapping their dynamic interplay. Testing structural equation models that simultaneously examine the various pathways of influence between the variables is also usually a superior approach compared to simply treating most variables in the dynamic system as confounds. Furthermore, competing theoretical accounts can be compared by their fit to different structural models. Future research on SWB will benefit from a more focused approach to causal identification that borrows research methods from other fields who have tackled this question.

A newly emerging area of SWB research is to move beyond group averages in describing the influences on SWB. For example, although marriage might have some average effect on SWB across all married individuals, it is clear that some marriages are rewarding and others are not. Thus, it is likely that married individuals may vary enormously in their life satisfaction even if there is a mean average effect. Many other factors such as childrearing, religion, and purchasing (e.g., new house, car) are also instances where people search for average effects. However, it is important

that we start analyzing within these groups to see who is happier or less happy, and if we can find the factors that predict this. A task for the decade ahead is to ask not only does X affect SWB on average, but for whom does it have a positive or negative influence. Statistical approaches such as mixture models, latent-class analysis, and moderator analyses will be helpful in this search.

Substantive Questions

Although methodological issues will feature prominently in the near future of SWB research, any methodological advances will likely be made in service of more substantive questions about the predictors and outcomes of well-being. And it is clear that many open questions remain. For instance, one major issue concerns the extent to which SWB measures reflect absolute levels versus some form of comparison process, in which the subject compares his or her current status to what others have, what the subject has experienced in the past, or what this person expects from the future. These questions encompass a broad range of phenomena, ranging from simple social comparison processes, to adaptation effects, to processes linking goals and aspirations to current judgments of SWB. Although a great deal of research has already tackled these questions, these studies show that the phenomena themselves are quite complex and will require sophisticated designs to achieve a more complete understanding of them. For example, adaptation is often thought of as a single process, but it is likely made up of several psychological processes that all tend to diminish the impact of circumstances when they are experienced over time—coping, habituation, changes in interpretation, and so forth. A complete account of adaptation effects requires a better understanding of the role of each of these processes for events of various types. Similarly, social comparison effects occur, but it is not always possible to predict when and how these comparison processes will work. Future research can clarify when people compare and to whom these comparisons are made.

An additional issue that will require considerable research moving forward concerns that varied ways that SWB influences behavior, health, and other consequential outcomes. For many years, researchers focused on cross-sectional associations between these factors with the assumption that the causal direction typically flowed from life circumstances to well-being related outcomes. However, both theoretical and empirical developments have provided new evidence that the causal direction for many outcomes can go in the reverse direction. Thus, understanding the functional role that SWB can play in people's lives is a critical goal for future research. For example, we need to know more about how the various types of SWB such as life satisfaction and positive feelings influence health, both separately and in concert. We also need to know how much SWB is needed to boost health, and whether the relationship is linear throughout the entire range of SWB. It will be important to learn if improvements in SWB can raise health. Is there a mix of some negative emotions that is helpful if the negative feelings are not chronic, and are they always harmful if

prolonged? Is there an optimal balance of positive and negative emotional feelings, or is the most desirable pattern one where positive feelings are chronic but it is possible to experience negative emotions in certain situations? Can positive emotions be too intense for people to experience the most beneficial outcomes? Too frequent or chronic? A similar set of questions can be raised for how SWB influences productivity and social relationships. In all cases we need to explore the processes that mediate and moderate the relationships between SWB and outcomes.

Of course, it is also very likely that life circumstance variables do have causal effects on SWB variables, and the specific causal factors that are identified might be able to be used to develop successful interventions to increase SWB. Several scholars have concluded from meta-analytic evidence that positive psychology interventions can be effective in raising SWB. Yet, there are many remaining open questions in this area. Listed below are some of the more important remaining issues:

- a. Do the interventions that raise levels of SWB also have benefits for outcomes such as health, social relationships, citizenship, creativity, and supportive social relationships?
- b. In terms of methodology, multiple control groups are required, which would help pinpoint the locus of the effects in terms of activities, expectancies, placebo effects, and so forth. Another methodological question is whether the mode of delivery matters—intervention in groups, for individuals, or on the internet, for example.
- c. There are a set of issues regarding what participants might be helped by the interventions. For example, are people volunteering or have they been referred by a professional? Do they have a choice of which types of interventions will be applied to them? Do different interventions work for different people? Are less happy people helped more by the intervention than people who are already fairly happy?
- d. Are there any detrimental effects of the intervention? For instance, do gratitude interventions increase interpersonal trust but at the same time make people more obedient or gullible? Does mindfulness training make people less judgmental but more susceptible to false memories (Wilson, Mickes, Stolarz-Fantino, Evrard, & Fantino, 2015)? Furthermore, we cannot dismiss the possibility that many people experience a level of SWB that for them is adaptive, and that higher levels of well-being could have some downsides as well as upsides.
- e. Finally, we know virtually nothing about the proper dosage or duration of effective treatments.

A related question concerns the extent to which focusing on SWB has ironic negative effects on the variable itself. An age-old question is whether pursuing happiness is likely to be counterproductive or successful, and the evidence to date on this question has been mixed. Frequency of positive affect is higher in cultures that value it, although people

who experience many negative emotions flourish less in these contexts (Bastian, Kuppens, De Roover, & Diener, 2014). Yet at the same time, there are instances where the pursuit of happiness is counterproductive (e.g., Schooler et al., 2003). Ford, Dmitrieva, Heller, Chentsova-Dutton, et al. (2015) offer a possible explanation of the mixed results. They found that whether the pursuit of happiness was effective or detrimental depended on the culture. In collectivistic nations SWB was sought through social engagement and this tended to be effective, whereas in the USA the pursuit of happiness was counterproductive. Thus, if people seek happiness by engagement with values and goals or through prosocial activities and so forth, the pursuit might be more successful than if they seek it through sensual hedonism, for instance. The question of whether and in what ways the pursuit of “happiness” is effective or counterproductive takes on more urgency now that researchers are developing interventions to raise SWB. National Accounts of SWB, which make the goal of raising well-being more salient, are another reason for the importance of these questions at this time.

Finally, the fact that national accounts of SWB are being initiated in many nations offers opportunities for research that many behavioral scientists have thus far overlooked. These opportunities are promising not only for basic research, but also for applications as well. For instance, psychologists can use measures of SWB to determine how policies they advocate influence SWB. At the basic research level, there are many opportunities to explore how various societal characteristics and policies influence the various types of SWB. This is an especially promising avenue for psychologists who believe they have programs and ideas that will enhance the quality of life. Using accounts of SWB to show the value of these ideas and programs represents a large research opportunity. Another important question is how to convince policy makers to attend to and use the accounts of SWB. For instance, what types of arguments and evidence will convince them that societal measures of SWB should be taken seriously, and provide valuable information?

Conclusions

As this review makes clear, growth in the science of SWB over the past decades has been quite rapid, and there are no signs that this growth is slowing. Yet, there are still large numbers of questions in need of research. At this point the most important research goes beyond cross-sectional correlations of self-reported measures of SWB, and includes experimental and longitudinal designs, as well as varying methods for assessing SWB. Furthermore, what is needed now are studies focused on the underlying psychological processes that influence SWB, as well as research on how SWB affects future outcomes. SWB research has become a truly interdisciplinary enterprise that includes all areas of the social, behavioral, and brain sciences.

Data accessibility statements

This review article does not include the analysis of data, so there is no associated data file to be made available.

Note

¹ The issue of whether subjective and eudaimonic well-being are conceptually distinct is separate from the issue of whether they are *empirically* distinct (i.e., whether measures of the two constructs show evidence of discriminant validity (see, e.g., Kafka & Kozma, 2002; Keyes, Shmotkin & Ryff, 2002).

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Competing Interests

The authors have no competing interests to declare.

Author Contributions

Ed Diener, Richard E. Lucas, and Shigehiro Oishi all contributed to the conception and organization of this review, to the drafting and revising of the review for important intellectual content, and all three approved the final version to be published.

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Peer review comments

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