

SITUATED OPTIMISM: SPECIFIC OUTCOME EXPECTANCIES AND SELF-REGULATION

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One might say that this paradox—to be realistic, and at the same time be guided by high goals—lies at the heart of the problem of morale . . .
(Kurt Lewin, 1948)

I. Introduction

The concept of optimism has an appeal that cuts across many areas of psychology. As a stable manner of perceiving the world (and the personal contingencies interacting between individual and environment), it is an aspect of personality (e.g., Peterson & Seligman, 1984; Scheier & Carver, 1985); as a predictor of behavior, it is focal to the study of motivation and self-regulation (e.g., Bandura, 1977, 1986; Scheier & Carver, 1988); and as a predictor of outcomes relevant to physical and mental well-being, it is of interest to health psychologists (e.g., Peterson & Bossio, 1991; Scheier & Carver, 1992; Schwarzer, 1994; Weinstein, 1984, 1987). As the consequence of social inference processes, optimistic expectancies are most firmly grounded in social cognition (e.g., Klar, Medding, & Sarel, 1996; Taylor & Brown, 1988; Weinstein, 1980).

The present review focuses on the role of specific outcome expectancies in self-regulation. Specific expectancies have commonly been found to be optimistic; however, theorists and researchers to date have presented conflicting messages about what the self-regulatory consequences of these optimistic expectancies are. On one hand, evidence suggests that there are benefits to being optimistic, with favorable expectations facilitating the attainment of favorable outcomes; but there is also evidence that people's

specific predictions tend to be unrealistically optimistic, which if acted upon unchecked would seem to render people vulnerable to a variety of negative outcomes ranging from disappointment to endangerment. Taken together, the results from studies of specific expectations provide considerable substance to Lewin's (1948) paradox—that the key to the effective self-regulation of behavior, affect, and well-being involves the interplay of optimistic expectations and the demands of reality. We contend that a resolution of this paradox can be found in three observations: That unrealistically optimistic expectancies show a high degree of relative accuracy, that they are often tied to concrete action plans for dealing with threats or advancing personal projects (what we call active optimism), and that they are *situated*, that is, optimistic expectancies tend to be expressed to greater or lesser degrees depending on the demands of the situation and the immediate needs of the individual. In general, optimistic expectancies appear to be expressed strategically, being somewhat more extreme in situations in which they are less likely to be disconfirmed, but more modest in situations in which the potential for disconfirmation is great.

Despite these safeguards, optimistic expectations will sometimes be disconfirmed. We offer evidence to suggest that people deal with these disconfirmations by using any of a variety of mechanisms for maintaining optimistic beliefs even in the face of their disconfirmation. Through the combination of relative and strategic optimism on one hand and strategies for minimizing the potentially adverse effects of disconfirmations of optimistic expectations on the other hand, people appear able to simultaneously meet the self-regulatory needs to extract meaningful information from their environment (even when this information is negative or self-threatening) and to maintain a positive sense of self. These conclusions, we will argue, have important implications for interventions that have been designed to reduce unrealistic optimism. They suggest that efforts to undermine unrealistic optimism may make people more pessimistic without necessarily enhancing accuracy and may, at the same time, undermine motivation, persistence, enthusiasm for projects, and mood. Nonetheless, there are likely to be circumstances in which unrealistic optimism has identifiable adverse effects, and we raise suggestions as to when this may be the case. Qualifications with reference to research from personality and cross-cultural comparisons will also be considered.

Our review of optimistic expectancies draws from different domains in which these expectancies have been studied and integrates results from a wide variety of empirical paradigms. We limit this review to domain- and task-specific outcome expectations as they are made by individuals within specific situational contexts; thus, we do not cover several related but distinct constructs such as self-efficacy beliefs (Bandura, 1977, 1986) and

optimism as manifested in explanatory style (Seligman, 1991) except as points of comparison or contrast to the study of specific expectancies. We will, however, begin our overview of the self-regulatory aspects of optimistic expectancies with a brief discussion of dispositional optimism (a measure of generalized outcome expectancies; see Scheier & Carver, 1985, 1992) because it serves as a useful point of comparison for the study of specific expectancies.

A. DISPOSITIONAL OPTIMISM: A POINT OF DEPARTURE

Dispositional optimism has been found to be strongly and consistently associated with positive outcomes (see Scheier & Carver, 1992, and Taylor & Aspinwall, 1996, for reviews). Although there is room to speculate that overly optimistic individuals may occasionally get themselves into trouble (e.g., Baumeister, 1989; Wallston, 1994), published work on the effects of (or associations with) dispositional optimism have been almost uniformly positive. Prospective studies have found dispositional optimism to affect psychological well-being (Aspinwall & Taylor, 1992; Carver & Gaines, 1987; Segerstrom, Taylor, Kemeny, & Fahey, in press; Scheier et al., 1989; Taylor et al., 1992), physical well-being (Scheier et al., 1989; Shepperd, Maroto, & Pbert, 1996; see also Aspinwall & Taylor, 1992; Scheier & Carver, 1985), health-protective behavior (Robbins, Spence, & Clark, 1991; Shepperd et al., 1996), and active and successful coping with stress (Aspinwall & Taylor, 1992; Carver et al., 1993; Jerusalem, 1993; Scheier & Carver, 1985; Scheier et al., 1989; Scheier, Weintraub, & Carver, 1986; Strack, Carver, & Blaney, 1987). Although several researchers have raised concerns that dispositional optimism may be confounded with negative affectivity, and that its apparently beneficial effects may be due primarily to its negative association with this variable (e.g., Smith, Pope, Rhodwalt, & Poulton, 1989), others have demonstrated its independent effects (e.g., Scheier, Carver, & Bridges, 1994).

The positive effects of dispositional optimism have largely been understood in terms of Carver and Scheier's (1981, 1982, in press; Scheier & Carver, 1988) cybernetic model of self-regulation. According to this model, goal-directed behaviors are strongly influenced by people's expectations about what the outcomes of their behaviors might be (see also Bandura, 1977, 1986; Rotter, 1954; Seligman, 1975). If expectancies for success are favorable, behavior will be initiated (and ongoing behaviors maintained); if expectancies are unfavorable, people will disengage from their pursuit (or refrain from initiating that pursuit) and abandon either the task or the currently selected means for completing that task. The results of the studies

reported above have been consistent with these general claims: Favorable expectations have been found to increase motivation, effort, and persistence even in the face of obstacles that might otherwise impair performance, whereas less favorable expectations have been associated with early—perhaps premature—disengagement from tasks, greater anxiety, and more internal attributions for failure.

It is somewhat ironic that we label a section on the self-regulatory aspects of dispositional optimism as a launching-off point for a discussion of specific expectancies. Initial tests of Carver and Scheier's cybernetic model actually focused on the effects of specific expectancies on behavioral self-regulation (see Carver & Scheier, in press; Scheier & Carver, 1988, for reviews), but such work has largely been abandoned in favor of the more generalized construct of dispositional optimism (Scheier & Carver, 1985). This construct is argued to serve as an index for one's typical or average outcome expectancy that (1) remains stable within a person across time, outcome domains, and performance situations, (2) differs between people as a meaningful aspect of personality, and (3) can be used "in much the same fashion as do outcome expectancies that are more specific in focus" (Scheier and Carver, 1988, p. 331). In other words generalized expectancies—particularly as measured by Scheier and Carver's (1985) Life Orientation Test (LOT)—have been formulated to serve as a cross-situational proxy for more specific expectations.

Although the predictive value of Scheier and Carver's generalized expectancy construct is well established, the conceptual status of generalized optimism as a proxy for more specific expectations is less firmly grounded. According to Scheier and Carver (1992), "generalized optimism may be more of an emergent phenomenon, arising out of domain specific expectancies, but being somewhat separate from them" (p. 216). To the extent that the former of these statements is true (i.e., that generalized optimism is an emergent property that develops out of specific predictions), the study of specific outcome expectancies will be useful because they may provide the experiential foundation for generalized optimism. To the extent that the latter statement is true (i.e., that general optimism is somehow different from the specific expectancies upon which it is based), the study of specific outcome expectancies will be important because they may tell us something different about self-regulation than has been revealed in studies of generalized optimism. Although the development of generalized expectancies out of specific ones has yet to be investigated, the distinction between generalized and specific expectancies has been documented both in terms of statistical independence and in terms of their differing consequences.

Studies comparing generalized outcome expectancies as measured by the LOT with measures of specific expectancies have generally revealed weak

or negligible associations between the two measures (Fitzgerald, Tennen, Affleck, & Pransky, 1993; Fontaine, 1994; Scheier et al., 1989; Taylor et al., 1992).¹ Thus, knowledge of an individual's generalized expectancy will provide at best a partial estimate of how optimistic that individual will be for specific outcomes in specific situations. As will be detailed in this review, specific expectancies are influenced by factors that are both internal and external to the person; the portrait that emerges, then, is one of an individual whose specific expectancies are less invariant from situation to situation than they are flexible, malleable, and at least partially ephemeral across time and context.

In addition to being statistically independent, generalized and specific expectancies have also been found to exert different effects on a variety of outcome measures (e.g., Segerstrom et al., in press). Studies that have investigated the effects of both specific and dispositional optimism have generally found that specific optimism is a better predictor of specific outcomes than is dispositional optimism (e.g., Fitzgerald et al., 1993; Scheier et al., 1989; Taylor et al., 1992). Although several studies have suggested that constructs such as outcome-specific efficacy beliefs may serve as proximal predictors that *mediate* the effects of generalized expectancies on eventual outcomes (e.g., Cozzarelli, 1993; Schiaffino & Revenson, 1992), studies assessing specific expectancies have generally not supported such a mediational model and instead have found the two types of expectancies to have independent effects (e.g., Fitzgerald et al., 1993; Scheier et al., 1989). However, at least one study has found specific optimism to mediate the effects of dispositional optimism for some outcomes, though the two constructs were found to have independent effects for other outcomes in the same study (Segerstrom et al., in press). Taken together, the results of these studies suggest a conclusion similar to the one reached in a wide variety of studies linking the impact of cognitions on behavior and affect to the specificity of the antecedent cognition (e.g., Bandura, 1982, 1986; Beck, 1976; Ajzen & Fishbein, 1977; Lazarus, 1991; Leventhal, 1970; Weiner, 1986): The impact of optimistic expectations on eventual outcomes may be greatest when the specificity of the expectancy is consistent with the specificity of the desired outcome.

¹ Of the studies reporting correlations between generalized optimism and specific outcome expectations, only Taylor et al. (1992) obtained a significant association ($r = .18$ between dispositional optimism and a 6-item composite assessing AIDS-specific optimism, $p < .01$). Correlations between generalized optimism and larger composites that average across specific outcome expectations in a variety of domains (such as the Generalized Expectancy for Success Scale; Fibel & Hale, 1978) have been more substantial (Smith, Pope, Rhodewalt, & Poulton, 1989; see also Davidson & Prkachin, 1997), as have correlations between generalized optimism and composites incorporating domain-specific but outcome-general expectancies (Aspinwall & Brunhart, 1996), and expectancies of emotional states (Segerstrom et al., in press).

It is neither our intention nor our desire to suggest that the study of specific expectancies is somehow more important or more informative than the study of generalized expectancies, or that one form of expectancies will be more effective or more useful in predicting outcomes than the other. Indeed, several researchers have suggested that the study of self-regulation may benefit from knowing people's outcome expectancies at a variety of levels of specificity (e.g., Lefcourt, 1976; Rotter, 1954; Scheier & Carver, 1985). However, we will not directly address the potential benefits of such diverse levels of prediction. Rather, we suggest that the study of specific expectancies represents a different perspective on self-regulation that highlight its own set of issues and conclusions that an exclusive focus on generalized optimism may not provide.

B. SPECIFIC EXPECTANCIES

In contrast to dispositional optimism, which has largely been found to have positive effects, optimism in people's specific expectations has been held responsible for both positive and negative consequences. At the heart of this apparent inconsistency is the first main finding of specific expectations: People's specific expectancies tend to be quite optimistic—often to an unrealistic degree (e.g., Weinstein, 1980; see Taylor & Brown, 1988; Weinstein & Klein, 1996, for reviews). Although most empirical work on the consequences of specific expectations suggest that favorable expectancies have favorable consequences (e.g., Armor & Taylor, 1997; Buehler & Griffin, 1996; Sherman, 1980), the potential for negative outcomes following unrealistic optimism remains intuitively compelling: To the extent that expectations lack contact with reality, they would seem to leave people vulnerable to disappointment, and may even lead to inappropriate and potentially dangerous decisions (for discussions of potential negative consequences of optimistic expectancies, see Colvin & Block, 1994; Goleman, 1989; Janoff-Bulman & Brickman, 1982; Tennen & Affleck, 1987; Weinstein, 1984).

That people's expectations about their personal futures are positive and often unrealistic is one of the most robust and reliable findings in the study of the psychology of prediction. In a recent report, Weinstein (1996) documents nearly 200 empirical articles devoted to the demonstration and understanding of unrealistic optimism. Optimistic expectations have been classified as unrealistic according to a variety of criteria (detailed later), and this bias has been found in samples that, on measures of dispositional optimism, have scored well within the normal range (e.g., Fitzgerald et al., 1993; Fontaine, 1994). Moreover, unrealistic optimism appears to be unusually resistant to a variety of manipulations designed to reduce it,

including direct reference to people's past prediction failures (Buehler, Griffin, & Ross, 1994; see also Gerrard, Gibbons, & Warner, 1991; Klein, 1996; Tyler & Cook, 1984; Weinstein, 1980, 1983; Weinstein & Klein, 1995).

However, people do not appear to be as persistently overwhelmed by disappointment as might be expected, given the prevalence of optimistic bias. One possible explanation for these observations may reside in the second main finding about specific expectations: People's specific predictions are not indiscriminately optimistic—they tend to obey the constraints of reality (or at least the person's knowledge of it) and as a consequence become more or less realistic depending on the demands of the situation, the nature of the prediction, and the psychological state of the individual.

The present review addresses two main questions that the repeated demonstrations of unrealistic optimism have raised: First, how can unrealistically optimistic beliefs be maintained (or at least consistently generated)? Given that these beliefs are unrealistic, they should be prone to disconfirmation; how then do people violate the law of effect, and not correct their beliefs or the process of generating their beliefs in response to objective information? Second, what are the consequences of unrealistic optimism? Are they negative, as would be expected if unrealistic optimism reliably sets people up for disappointment, or may even unrealistically optimistic expectations lead to positive outcomes? And if unrealistic optimism does not lead to primarily negative consequences, how are these consequences avoided?

In order to answer these questions, we first review the conceptual and empirical status of optimistic expectations: how they are defined and identified, and what psychological and situational factors influence their expression. We then review the consequences of specific expectations in terms of both what has been expected and what has been found. What emerges from this review is a portrait of a *situated optimist*, a flexible prognosticator who balances visions of the world as one would want it with an understanding of the world that is. Such flexibility may resolve many of the logical dilemmas presented by recent work on unrealistic optimism, as well as the "paradox of morale" that Lewin wrote of long ago.

II. Conceptual and Empirical Foundations: The Expressions and Causes of Optimistic Expectations

A. IDENTIFYING OPTIMISM IN SPECIFIC EXPECTATIONS

Outcome expectations can be identified as optimistic in two different ways. The first is ordinal rather than categorical: One is optimistic to the extent that one's expectations are positive. Thus, the student who expects

a "B" is more optimistic than one who expects a "C" (all else being equal), but is pessimistic compared to another student who expects an "A." Also, the same student may be more optimistic in one class (or in one setting, situation, context, or time) than in another. This is optimism in its simplest sense, and it is distinguished from the more inclusive concept of expectancy only by comparison to other, less favorable, predictions made for the same or similar target event (for a recent review of the expectancy construct in social psychology, see Olson, Roese, & Zanna, 1996).

The other way of thinking about optimism is a subcategory of the first, and is more stringent: It requires that optimism be defined in strict relation to some objective (or nearly objective) criterion, usually denoting reality. Optimism in this sense is typically defined by its divergence from reality; one is optimistic to the extent that one sees the world and its implications (i.e., a generative present and the future that it leads to) as being better than it really is, or as promising more than it ever will be. The problem with defining optimism in this way is that the identification of an appropriate criterion can often be quite difficult. In attempting to address these issues, psychologists have converged on four main categories of criteria against which specific expectancies can be regarded as optimistic, though the relative use of these criteria has largely been determined by convenience rather than by the more noble (but less tractable) goal of operational precision (Kruglanski, 1989; Robins & John, 1997; Weinstein & Klein, 1996). Perhaps the most easily recognizable criterion for reality is reality itself (i.e., what actually occurs following a prediction). If an individual expects more (or less) in a situation than is actually attained, initial expectancies can be regarded as optimistic (or pessimistic) in an absolute sense. Another set of criteria are standards derived from the outcomes of others (e.g., base rates). For example, a collegian who expects to graduate after three years of study can be considered optimistic in comparison to the average duration of college careers. A third, more inferential, standard can be obtained from the predictions of other people. A sports fanatic who expects that her favorite team will reach the Championship game would be considered optimistic if, for example, professional odds makers or ranking organizations regarded that outcome as unlikely. Finally, a "subjective" or "comparative" optimism can be identified to the extent that an individual expects more favorable (and less negative) outcomes will befall the self than other people.

At this point, a few words should be said about the assessment of *unrealistic* optimism or optimistic bias. Of the four criteria outlined above, only the first (attained reality) can be used to definitively assess optimistic bias at the level of the individual. It is possible, for example, for any one person to attain outcomes that others would neither achieve nor be expected to

achieve. Similarly, it is possible that an individual may predict and achieve an outcome that even an expert observer might not. However, the third criterion (predictions of others) may serve as a reasonable proxy for attained reality in certain circumstances (e.g., a detailed health examination might be combined with epidemiological data to predict an individual's proneness to specific health outcomes; see Kreuter & Stretcher, 1995). In addition, the second and fourth criteria (i.e., those derived from the behavior of others, whether real or expected) may be used to identify bias at the level of the *group*. Group-level bias is obtained whenever a significant majority within a group expect more favorable outcomes (or expect favorable outcomes to be more likely) for themselves than would be predicted on the basis of the average outcomes achieved by, or expected for, the members of that group. This analysis requires, of course, that the individuals providing estimates are representative of the group for whom the average outcome has been estimated.

In the subsections that follow, we review the evidence of optimistic expectancies across the domains in which they have been studied and outline the mechanisms by which these expectancies may be derived, and thus understood.

B. EXPRESSIONS OF OPTIMISTIC EXPECTANCIES

Identifying simple optimism is a straightforward matter of recognizing favorable instances among a distribution of expectancies for a single outcome, and thus can be observed in any circumstance in which expectancies for a particular outcome are found to differ. Identifying optimism according to the more stringent criteria of deviation from reality is more difficult, at least in principle. In practice, researchers have found evidence of optimism and optimistic bias in relation to each of the four criteria outlined earlier.

1. *Optimism in Comparison to Reality*

The clearest examples of optimism and optimistic bias occur when people expect more than actually occurs, and several researchers have used actual outcomes as a means of assessing optimistic bias at the level of the individual (e.g., Armor & Taylor, 1997; Buehler & Griffin, 1996; Buehler et al., 1994; Shepperd, Ouellette, & Fernandez, 1996; Taylor & Armor, 1997). Note that the comparison of actual outcomes to expectations offers a conservative test of optimism, as the simple statement of expectation has been found to facilitate performance (Armor & Taylor, 1997; Buehler & Griffin, 1996; Campbell & Fairey, 1985; Sherman, Skov, Hervitz, & Stock, 1981). Yet,

despite the facilitatory effect often seen in these studies, expectations have been found to exceed outcomes in a variety of experimentally created situations (Armor & Taylor, 1997; Buehler et al., 1994; Buehler, Griffin, & MacDonald, 1997) as well as in a variety of meaningful life events such as academic achievement (Buehler et al., 1994; Shepperd, Ouellette, & Fernandez, 1996; Taylor & Armor, 1997) and income tax completion (Buehler et al., 1997). Notably, these effects have been obtained even when the people making predictions acknowledge that the majority of their past predictions were unrealistic (e.g., Buehler et al., 1994). Thus, even against the most stringent criteria of reality, unrealistic optimism appears to be both common and robust.

2. Optimism in Comparison to the Outcomes of Others

There is also evidence that people's expectations are optimistic when compared to the actual outcomes of others (i.e., base rates). Sherman (1980), for example, found that people who made predictions about their actions in a number of situations expected that they would behave in more socially desirable ways than did people who were actually placed in those situations. (Notably, however, the optimistic bias of Sherman's participants was "self-erasing" in that those who made optimistic predictions were more likely to behave in socially desirable ways than those who did not make predictions; this self-fulfilling nature of optimistic predictions will be discussed in more detail later.) Similarly, Rothman, Klein, and Weinstein (1996) found that a significant majority of their participants saw themselves as less at risk for a number of health problems than would be expected from the actual prevalence of those problems in the population from which they were sampled.

Research comparing personal expectations to population base rates has not uniformly revealed evidence of unrealistic optimism, however. For example, several studies have shown that for events such as unwanted pregnancy, people's expectancies can be quite accurate with respect to the base rates of relevant populations (Whitley & Hern, 1991; Gerrard & Luus, 1995). Still others have found overly pessimistic estimates relative to population base rates for such events as AIDS (van der Velde, van der Pligt, & Hooykaas, 1994), lung cancer (Kristiansen, Harding, & Eiser, 1983; Viscusi, 1992), and other low-probability health threats (Rothman et al., 1996). These latter effects, however, seem to be due to the fact that people routinely overestimate the prevalence of low-frequency events and underestimate high-frequency ones (e.g., Lichtenstein, Slovic, Fischhoff, Layman, & Combs, 1978; Pulford & Colman, 1996; Slovic, 1987).

3. Optimism in Comparison to the Expectations of Others

Studies employing the expectations of others as a criterion of reality have also revealed evidence of optimism and optimistic bias. For example, Buehler et al. (1994, Study 5) found that students' estimates of how long it would take them to complete a particular assignment were significantly more optimistic than estimates of yoked observers who were made privy to the information that the students' thought was relevant to the predictions they made. Similarly, Filyer, Griffin, and Ross (1994, as cited in Buehler et al., 1995) found that people involved in romantic relationships were more optimistic about the durability of their relationships than were observers who had detailed information about relevant aspects of those relationships. Interestingly, both of these studies found that observers' ratings were no more accurate than the predictions of the people they observed when predictions of both groups were compared to subsequent outcomes. In fact, observers in both studies exhibited a pessimistic bias equivalent in magnitude to the optimistic bias exhibited by the people they observed. Thus, although these studies demonstrate optimism in reference to the expectations of others, they question the value of using these expectations as a criterion for reality (cf. Colvin, Block, & Funder, 1995).

4. Optimism in Comparison to What People Expect of Others

The most common method of assessing optimism and optimistic bias relies on the comparison of what people expect for themselves and what they expect for other people. There are several variants to this paradigm: some elicit *direct* comparisons of expected outcomes between the self and others (e.g., Weinstein, 1980), others obtain *indirect* comparisons by asking people to independently state expectations for themselves and others (e.g., Perloff & Fetzer, 1986), and still others assess indirect comparisons between subjects by having one group state expectations for themselves and another group state expectations for a comparison target (e.g., Harris & Middleton, 1994). Although such comparisons may reveal optimism at the individual level (e.g., an individual may be considered optimistic if he or she believes that favorable outcomes are more likely to befall the self than others), they do not in themselves provide a basis for identifying the degree of optimistic *bias* exhibited by an individual—any one person may be significantly more likely to attain positive outcomes than the population average. What these comparisons can reveal, however, is optimistic bias at the level of the group (e.g., as occurs when the vast majority within a group believes that they are more likely than the average member of their group to attain positive outcomes and to avoid negative ones), and these group-level biases are quite often found.

Evidence of comparative optimism has accumulated across an impressive array of life events (e.g., Darvil & Johnson, 1991; Klar et al., 1996; Weinstein, 1980). Only a few studies have focused specifically on people's expectations for positive events, such as managerial success (Larwood & Whittaker, 1977) and the rewards of group membership (Brinthaup, Moreland, & Levine, 1991). Most have focused on people's perceptions of their relative invulnerability to negative events. These studies have found that people perceive themselves as less likely than others to experience such disparate events as unwanted pregnancy (e.g., Burger & Burns, 1988; Gerrard & Luus, 1995; Whitley & Hern, 1991), automobile accidents (DeJoy, 1989; Finn & Bragg, 1986; Goszczynska & Roslan, 1989; Job, Fleming, & Morgan, 1992; Matthews & Moran, 1986; McKenna, Stanier, & Lewis, 1991; Svenson, 1981; Svenson, Fischhoff, & MacGregor, 1985), negative consequences of drinking alcohol (Hansen, Raynor, & Wolkenstein, 1991), diet-related risks (Raats & Sparks, 1995; Sparks, Shepperd, & Zimmermanns, 1994), environmental risks (Baird, 1986; Vaughan, 1993), and victimization (Frieze, Hymer, & Greenberg, 1987; Perloff, 1983; Perloff & Fetzer, 1986). Perceptions of relative invulnerability have also been demonstrated for a wide range of health beliefs (e.g., Harris & Middleton, 1994; Hoorens & Buunk, 1993; Kirscht, Haefner, Kegeles, & Rosenstock, 1966; Kulik & Mahler, 1987; Larwood, 1978; Lek & Bishop, 1995; Mahatane & Johnston, 1989; Weinstein, 1983, 1984, 1987; Weinstein & Lachendro, 1982), with particular attention being paid to the threats associated with smoking (Chapman, Wong, & Smith, 1993; Gibbons, McGovern, & Lando, 1991; Hansen & Malotte, 1986; Lee, 1989; Leventhal, Glynn, & Fleming, 1987; McCoy, Gibbons, Reis, Gerrard, Luus, & Sufka, 1992; McKenna, Warburton, & Winwood, 1993; Reppucci, Revenson, Aber, & Reppucci, 1991; Segerstrom et al., 1993; Steptoe et al., 1995; Stretcher, Kreuter, & Kobrin, 1995), cancer (Blalock, DeVillis, Afifi, & Sandler, 1990; Eiser, Eiser, & Pauwels, 1993; Fontaine & Smith, 1995; Saint-Germain & Longman, 1993; Wood, Taylor, & Lichtman, 1985), and AIDS (Bauman & Seigal, 1987; Fontaine, 1994; Gerrard et al., 1991; Gerrard, Gibbons, Warner, & Smith, 1993; Gladis, Michela, Walter, & Vaughan, 1992; Gump & Kulik, 1995; Hansen, Hahn, & Wolkenstein, 1990; Joseph et al., 1987; Kaplan & Shayne, 1993; Linville, Fischer, & Fischhoff, 1993; Moore & Rosenthal, 1991; van der Pligt, Otten, Richard, & van der Velde, 1992; van der Velde, van der Pligt, & Hooykaas, 1992).

Although a portion of the comparative optimism effect can be attributed to the ambiguity of the comparison target (cf. Alicke, Klotz, Breitenbecher, Yurak, & Vredenburg, 1995), comparative bias is still seen—though usually reduced in magnitude—when comparisons are made with well-known and individuated targets (Harris & Middleton, 1994; Klar et al., 1996; Perloff &

Fetzer, 1986; Quadrel, Fischhoff, & Davis, 1993; Regan, Snyder, & Kassin, 1995; Zakay, 1996). Similarly, although many demonstrations of comparative bias involve health risks that are rather remote for the healthy undergraduate participants they employ, optimistic comparative biases have been observed even when the considered risk is immediate, relevant, and highly salient (e.g., Middleton, Harris, & Surman, 1996, found evidence of relative invulnerability among a group of bungee jumpers moments before their jumps). However, there is evidence that the comparative biases seen for future events may disappear when the events considered are common, everyday occurrences such as catching a cold or getting bad service in a restaurant (e.g., Klar et al., 1996).

Unlike the tests of many social-psychological hypotheses, demonstrations of comparative optimistic bias have not been limited to laboratory studies of the ubiquitous college sophomore (cf. Sears, 1986). Many of the health-related biases reviewed above were assessed in specific at-risk populations, such as gay men at risk for AIDS (Bauman & Seigal, 1987; Joseph et al., 1987; McKusic, Horstman & Coates, 1985) and smokers in a smoking cessation program (Gibbons et al., 1991). Comparative optimism has also been found in children (e.g., Whalen et al., 1994; see Stipek, 1984, for a review) as well as the elderly (Staats et al., 1993), suggesting that optimistic bias is not limited to adolescents and young adults, groups whom some developmental researchers suggest may be especially prone to unrealistic optimism (e.g., Arnett, 1995; Elkind, 1967; but see Quadrel et al., 1993; Cohn, Macfarlane, Yanez, & Imai, 1995).

5. Summary

A considerable amount of evidence exists that specific expectations tend toward optimism. Such optimistic beliefs have been observed with reference to a wide array of behaviors, and the studies reporting these beliefs have used a variety of criteria to establish that these expectations are meaningfully optimistic and, often, optimistically biased. It should be noted, however, that the four criteria for identifying optimism may not always lead to the same conclusions: An individual may be identified as optimistic by one criterion but not by another. An intriguing possibility is that the variety in criteria available for assessing predictions can be used to the advantage of the individual prognosticator: One might satisfy a need to be accurate by acknowledging more objective odds at an absolute level, but satisfy self-protective or self-enhancing needs by maintaining pessimistic views of others (Rothman et al., 1996; Whitley & Hern, 1991). We will return to these issues in more detail later.

C. SOURCES OF OPTIMISTIC EXPECTANCIES

From the earliest studies of optimism and optimistic bias (Cantril, 1938; Irwin, 1953; Lund, 1925; Marks, 1951; McGregor, 1938), optimistic expectations have been recognized to be influenced by a variety of factors. Indeed, it has been only in the last ten years that optimism has been considered primarily as an independent variable, as opposed to a dependent variable, in psychological research (Scheier & Carver, 1985). What follows is a brief review of general mechanisms that have been found to have an influence on specific expectations. This is not an exhaustive list, nor are the different sources intended to be mutually exclusive. Rather, these are presented primarily as different perspectives on optimistic expectations and their derivation.

1. Cognitive Origins

One of the more exciting conclusions to come out of the cognitive analysis of prediction is that the very act of making a prediction involves a number of processes and predilections that, in themselves, may lead people to be optimistic (see, e.g., Kahneman & Lovaglio, 1993; Kahneman & Tversky, 1979, 1982). The main culprit in this analysis appears to be people's tendency to rely on case-based plans or scenarios about how the future will unfold when making predictions (see Buehler et al., 1994; Buehler, Griffin, & Ross, 1995; Dawes, 1988; Griffin, Dunning, & Ross, 1990; Johnson & Sherman, 1990; Klar et al., 1996; Klayman & Schoemaker, 1993; Read, 1987; Zukier, 1986). Specifically, this research suggests that people base their predictions on a mental simulation of themselves engaging in all the actions necessary to obtain the outcome under consideration. The most direct evidence for this comes from Buehler et al.'s (1994) studies of the planning fallacy. In these studies, an excess of 70% of all thoughts reported by participants as relevant to their predictions were identified as referring to future plans detailing how their projects would be completed, whereas very few thoughts concerned potential impediments, past successes or failures, personal dispositions, or the experiences of others. Similar effects were reported in Weinstein's (1980) seminal analysis of comparative biases: People in these studies were found to base their judgments of relative invulnerability on a consideration of what they believed they would do (or had done already) to assure themselves of the positive outcomes and to protect themselves from the negative ones. Experimental manipulation of the content of people's scenarios (such as is achieved by asking people to explain how one of several possible outcomes might be brought about; see Koehler,

1991; Ross, Lepper, Strack, & Steinmetz, 1977; Sherman et al., 1981) has confirmed the causal role these scenarios play in people's expectations.

This particular strategy for formulating predictions, though commonly used, has a number of features that tend to leave people prone to optimism. First, because scenario-based thinking focuses on case-specific information, it encourages a relative neglect of relevant base rate or statistical information that may be useful in making the prediction (Kahneman & Tversky, 1973; Tversky & Kahneman, 1983). Second, the scenarios that people create are themselves prone to bias. Because the future is inherently ambiguous, there is room for people's scenarios about how their particular future will unfold to be somewhat idealized (cf. Dunning, Meyerowitz, & Holzberg, 1989); as a consequence, scenarios may focus more on positive than on negative possibilities (e.g., people may generate scenarios about what they are capable of doing rather than on what they are actually most likely to do). For example, Buehler et al. (1994) found that while 71% of participants' prediction-relevant thoughts involved success-oriented plans, only 3% of their thoughts considered potential difficulties or impediments to progress. Similarly, Weinstein (1980) found that people mentioned factors that would facilitate their attainment of desired outcomes (and avoidance of undesired ones) over factors that would impede these attainments (or avoidances) by a factor on the order of 3 to 1. This was especially true for events that people were unrealistically optimistic about, providing corroborating evidence that unrealistic optimism is based on causal scenarios that justify that optimism. Notably, for those events where both facilitatory and inhibitory factors were listed, optimistic biases were significantly reduced (an effect that has been demonstrated experimentally; Armor & Taylor, 1997).

Part of the success orientation in people's future scenarios is likely to be determined by motivational factors (Kunda, 1990), but cognitive constraints on the construction of scenarios will also likely play a substantial role. As Kahneman and Tversky (1982) note, good scenarios—that is, scenarios that are compelling and believed to be the most likely to come true—are ones that bridge the gap between where we are now and where we want to be with a series of easily imaginable steps (see also Kahneman & Miller, 1986). Scenario construction tends to favor simplification—a coherence based on parsimony rather than on complexity—which means that scenarios will tend to focus on a specific route to success rather than on a variety of alternate possible routes or on the many ways in which a plan may fail. This does not mean that people never consider, or are incapable of considering, impediments in their future: People will incorporate anticipated difficulties into their scenarios if these difficulties are salient or easy to imagine. In general, however, people rarely plan to fail. The consequence is that plans will often be optimistically biased.

There is also evidence to suggest that once people imagine a particular outcome, that outcome will be seen as more likely to occur (for reviews, see Koehler, 1991; Tversky & Koehler, 1994). For example, people who have been asked to imagine particular outcomes of presidential elections later estimate those outcomes as more likely (Carroll, 1978); similar effects have been obtained for people asked to imagine social behavior (Anderson, 1983; Anderson & Godfrey, 1987), purchasing decisions (Gregory, Cialdini, & Carpenter, 1982) and automobile accidents (Gregory, Burroughs, & Ainslie, 1985). In general, the act of imagining an event focuses people's attention on that event at the expense of other possible events; as a consequence of this focused attention, people's expectancies for the considered event become more extreme. Thus, by merely imagining a desired outcome people may become unrealistically optimistic about its likely occurrence.

At least two other lines of evidence lend further support to the notion that case-based scenario thinking contributes to the expression of unrealistic optimism. First, considerable evidence suggests that optimistic biases are reduced or even eliminated when the events under consideration are perceived to be uncontrollable (e.g., Harris & Middleton, 1994; Klein & Kunda, 1994; Taylor & Gollwitzer, 1995; Weinstein, 1980, 1984, 1987; Zakay, 1984; see Harris, 1996, for a recent review). Presumably, for uncontrollable events, people are unable to imagine their own potential actions that might help them formulate predictions for their attainment, as they can more easily do for controllable events. The second line of evidence comes from studies by Klar and his colleagues (Klar et al., 1996) on the predictions people make for specific individuated targets. Klar et al. argued that people would use case-based scenario reasoning, similar to that used when making predictions about the self, when making predictions about specific others. Consistent with this reasoning, people were found to be more optimistic about the outcomes of specific others than they were about general others (see also Harris & Middleton, 1994; Perloff & Fetzer, 1986; Quadrel et al., 1993; Regan et al., 1995; Zakay, 1996); in Klar's studies, these differences were found to be associated with the relatively greater use of scenario-based reasoning over statistical (i.e., base rate) information when people made predictions for individuated targets, whether self or other.

It is important to note that scenario-based thinking will not always lead to optimistic predictions (Kahneman & Lovaglio, 1993; Klar, 1996). If people are induced to explain (i.e., generate a causal scenario for) negative outcomes (e.g., Sherman et al., 1981), or if the negative outcomes themselves are easy to imagine (e.g., Sherman, Cialdini, Schwartzman, & Reynolds, 1985), these events will be perceived as more likely to happen, thereby inducing pessimism. Such effects may explain people's overestimation of

relatively rare but highly visible events such as AIDS (e.g., Lichtenstein et al., 1978; van der Velde et al., 1994).

a. Scenario-Based Thinking and Contact with Reality. According to Kahneman and Tversky's (1979, 1982) simulation-based analysis of prediction, the subjective likelihood of an event's occurrence will be determined by the ease with which a plan or scenario detailing the occurrence of that event comes to mind. Scenarios, however, are not capriciously generated but appear to be reasonable extrapolations from reality, and evidence suggests that scenarios that obey the constraints of reality are more easily generated than those that do not (e.g., Kahneman & Miller, 1986). The implication of these results is that even unrealistically optimistic predictions will be *grounded in reality*. People are not typically free to simulate outlandish accomplishments and still feel that they have some chance of them coming true. For example, although a person may be unrealistically optimistic about completing her taxes before the tax deadline, the fantasy that little elves will complete the tax return for her is unlikely to be used as a basis for her prediction. Although reality constraints may be more or less prevalent as a function of the demands of the particular situation in which the prediction is made (e.g., they may be relaxed when predictions are made in private as opposed to in public, or when the test of those predictions is less immediate, possibilities that we will return to later), simulations are rarely free of them altogether—at least when these simulations are used as a tool for making predictions. Thus, the process by which optimistic biases are generated will often work to keep those biases within moderate bounds (see also Taylor & Armor, 1997).

b. Other Cognitive Mechanisms. Although the propensity for scenario-based reasoning explains many instances of optimism and optimistic bias, this style of reasoning alone cannot explain all expressions of optimistic expectancies. The comparative optimistic bias, for example, may result in part from cognitive processes that occur when people are asked to make predictions about the outcomes of others.

Several researchers suggest that people neglect the consideration of others altogether, even when making explicitly comparative judgments (e.g., Weinstein, 1980; Weinstein & Lachendro, 1982). Research has further shown that this neglect—including the failure to consider what goal-relevant actions these others might take—is at least partially responsible for the relatively less favorable expectations people have for others. For example, one might judge another person's risk for HIV infection as higher than one's own on the assumption that one will personally practice safe sex, ignoring the fact that others may do so as well. Simple manipulations that make other people the focal referent in comparative judgments (e.g., asking respondents to compare other people to themselves rather than

compare themselves to other people; cf. Holyoak & Gordon, 1983) have reduced but not eliminated optimistic bias as assessed with direct measures of comparative optimism (Otten & van der Pligt, 1996). Investigators have also shown that when people do consider the average outcomes attained by individuals within a group (or by a typical member of that group, which is the most common target in studies of comparative optimism) they sensibly—and appropriately—rely almost exclusively on statistical or base rate information (e.g., Klar et al., 1996); base rate information, in turn, is almost always less optimistic than the scenario-based predictions made for the self. In a slightly different context, Buehler et al. (1994, Study 5; see also Filyer et al., 1994) demonstrated that people hold pessimistic general theories; because these theories are used when making estimates of the outcomes that are likely to occur for other people, specific expectations for the self may appear especially optimistic in comparison.

2. *Motivational Origins*

Despite the fact that researchers have sought cognitive explanations for unrealistic optimism since the earliest systematic investigations of the bias (Weinstein, 1980), theorists have long maintained that some underlying component of the bias is likely accounted for by a self-enhancing motive or self-defensive denial (e.g., Kirscht et al., 1966). Even theorists who are predominantly cognitive in orientation recognize the importance of emotional and motivational factors as sources of optimistic beliefs (e.g., Johnson, & Tversky, 1983; Kahneman, 1991). Although it is often difficult to tease apart cognitive from motivational explanations for observed biases in judgment (Tetlock & Levi, 1982), several lines of work are generally supportive of the motivational analysis.

One line of work involves studies of self-serving tendencies in social comparisons (Wills, 1981a, 1981b; Wood et al., 1985; see Wood & Taylor, 1991, for a review). A large literature demonstrates that when people are asked to evaluate their personal qualities, resources, outcomes, or likely future situations against those of other people like themselves, the majority will see their prospects as better than those of others (see Taylor, Wayment, & Carrillo, 1996, for a review). The motivation to believe that one is better off than others is often so strong that, in absence of actual others to compare with, people may invent hypothetical others against whom they compare themselves favorably (Taylor, Wood, & Lichtman, 1983). Similar effects have been observed in studies of unrealistic optimism. For example, both Weinstein (1980) and Perloff and Fetzer (1986) found that people justify beliefs in their relative invulnerability to negative events by comparing themselves to their images of a stereotypic or representative victim of

those events, rather than to people who are more representative of the general population.

Another line of work suggests that people may alter beliefs they have about themselves and their own behavioral tendencies in order to maintain a relative advantage in terms of expected future outcomes (Klein, 1996; Klein & Kunda, 1993; Rothman et al., 1996). In these studies, people were first exposed to false norms describing the ostensible frequency in which their peers engaged in a number of health-threatening behaviors, and then were asked to estimate how often they engaged in the same behaviors. When norms were manipulated to suggest that others engaged in fewer health-threatening behaviors than the participants did (thereby undermining just grounds for comparative optimism), participants who received these norms reported that they typically engage in fewer health-threatening behaviors than they would have had they not received the norms. In other words, people changed their self-views in order to maintain a relative advantage (or at least to minimize a relative disadvantage) with respect to their peers. This effect did not appear to be a simple consequence of people anchoring their personal estimates on the norms that they were provided (cf. Tversky & Kahneman, 1974), because the provision of an alternate norm suggesting that others engaged in more health-threatening behaviors than they did had no effect on their behavioral reports. Instead, these results were interpreted as revealing a motivation to maintain one's self in relatively good standing with respect to others, and as showing that this motivation can lead people to change their perceptions of their own behavior when generating less favorable beliefs about the behavior of others is not possible. It is important to note, however, that there appeared to be limits on how far people were willing to bias their self-reports: On average, participants in these studies did not distort their behavioral reports enough to reestablish their relative advantage over the group norm that they had been provided with, although they consistently biased their reports in that direction. It appears, then, that the capacity for distorting self-perceptions in service of self-enhancement and the maintenance of comparative optimism may be constrained by a nontrivial appreciation for reality (cf. Epstein, 1990; Kunda, 1990; Schlenker, 1980, 1985).

A third line of work supporting a motivational basis for optimistic biases consists of studies demonstrating that these biases are often exaggerated in response to threat. Although studies that have operationalized threat in terms of the severity or seriousness of the risky outcomes being considered have revealed mixed results (e.g., Weinstein, 1982, 1987), other studies have shown that optimistic expectations become exaggerated in response to specific threatening events. In a particularly startling example, Taylor et al. (1992) found that, among a group of gay men at risk for AIDS, those

who were HIV-seropositive were *more* likely to believe that they could avoid AIDS in the future than those who were HIV-seronegative. Insofar as HIV is the primary risk factor in the development of AIDS, these results were interpreted to reflect unrealistic optimism. It is important to note that this greater optimism was not a simple response of motivated denial (see also Aspinwall & Brunhart, 1996): Those who had reported more AIDS-specific optimism (i.e., optimism that evolved directly in response to the threat of AIDS) perceived themselves as being more in control of their situation and reported more active coping efforts in response to the threat.

3. *Affective Origins*

Affective states, whether fleeting emotional responses to specific situational cues or chronic mood disturbances, have also been found to influence the expression of optimistic expectations, particularly for the avoidance of negative events. Students feeling anxious because of an upcoming exam, for example, have been found to be less optimistically biased on measures of comparative optimism than less anxious students who had already taken an exam (Dewberry & Richardson, 1990). Similar effects were found in a study that examined students' expectations about their examination scores at three points in time: Once well before the exam, once immediately after the exam, and then again just moments before receiving feedback about their performance on the exam (Shepperd et al., 1996). Students became less optimistic with respect to their exam score across the three time points, and actually became unrealistically pessimistic immediately prior to receiving feedback. Mediation analyses suggested that these results may be understood in terms of the greater anxiety felt by students as the proximity of feedback grew near.

Studies manipulating the positivity and negativity of people's mood have also had effects on their subsequent expectations. For example, the induction of positive affect has been found to lower people's probability estimates for experiencing a variety of negative events, and the induction of negative affect to increase them (Johnson & Tversky, 1983). Similar effects have been obtained in studies of comparative optimism, with positive affect exaggerating perceptions of relative invulnerability and negative affect reducing them (Salovey & Birnbaum, 1989). The induction of a positive mood has also been found to promote risky decisions in hypothetical situations (Isen & Patrick, 1983).

Depression has been formulated as both a cause and a consequence of pessimistic expectancies (e.g., Abramson, Metalsky, & Alloy, 1989; Beck, 1976), and thus has been suggested to be an enduring state in which optimism and optimistic biases may be reduced. Considerable evidence has

demonstrated that depressed individuals make more pessimistic (or less optimistic) predictions than do nondepressed individuals (e.g., Alloy & Ahrens, 1987; Pietromonaco & Markus, 1985; Pyszczynski, Holt, & Greenberg, 1987), and at least one study suggests that pessimistic expectancies among depressed individuals are schematized and thus made automatically (Anderson, Spielman, & Bargh, 1992). Although most depressed individuals believe, as nondepressed individuals do, that positive events are more likely than negative events, the difference in probabilities for positive and negative outcomes is generally not as large for depressed individuals as it is for nondepressed individuals. Depressive pessimism, however, tends to be extended primarily to expectations for the self; it is not the case that depressed individuals are especially pessimistic when making predictions about other people. As a consequence, optimistic bias as assessed by comparing expectations for the self to expectations for others tends to be markedly reduced in depressed samples (e.g., Alloy & Ahrens, 1987). However, when expectations are compared to actual outcomes, depressed individuals have been found to be just as optimistically biased as nondepressed individuals, especially with respect to the avoidance of negative events (Dunning & Story, 1991). In general, the tendency for depressed individuals to expect more negative events to befall them is associated with a greater actual likelihood of experiencing those events.

4. *Concluding Comments*

The clusters of causes described above—cognitive, motivational, and affective—are not intended to represent an exhaustive list of the sources of optimistic expectancies. For example, there may be biological origins or concomitants of optimistic expectancies. Several investigations have found the construct of dispositional optimism to have a moderate genetic component (Plomin et al., 1992; Schulman, Keith, & Seligman, 1993), whereas others have suggested that specific expressions of optimistic bias may be associated with lateral asymmetries in brain activation (Drake, 1984, 1987; Drake & Ulrich, 1992; cf. Levy, Heller, Banich, & Burton, 1983). In addition, we do not intend to imply that the causes of optimistic expectations that we have described are mutually exclusive. These rough categories of causal influence represent alternate perspectives on how specific optimistic expectations may be derived. In many instances, these causes will operate in concert with one another. For example, although the construction of future scenarios has been presented as a cognitive mechanism, it is reasonable to expect that motivational factors may constrain or shape the content of the scenario that is generated (Kahneman, 1991; Kunda, 1990). Similarly, both anxiety (MacLeod, Williams, & Bekerian, 1991) and depression (Anderson

et al., 1992) have been found to lead people to simulate the *attainment* of feared or unwanted events, rather than the avoidance of those events, suggesting that scenario construction can also be influenced by affective states.

III. Understanding the Consequences: The Dilemma of Unrealistic Optimism

In contrast to the considerable amount of research on the expressions and causes of optimistic expectations, relatively little research has been done on the *consequences* of specific optimistic expectations and optimistic bias. We begin our review with a consideration of the positive consequences that optimistic expectations have been shown to have. Next, we turn to a consideration of the potential negative consequences of optimism and optimistic bias, reviewing both the reasons why optimistic expectations may be expected to have negative consequences and the evidence that is relevant to these concerns.

A. POSITIVE CONSEQUENCES

Studies demonstrating positive effects of optimistic expectations have generally come from two sources: Studies on the effects of outcome expectations on behavior in performance situations, and studies on the effects of these expectancies on how people cope with stressful events.

Evidence regarding the favorable effects of specific expectancies on motivation and persistence have typically been obtained in situations in which the attainment of desired outcomes is under the direct control of the person making the prediction (e.g., Armor & Taylor, 1997; Buehler & Griffin, 1996; Campbell & Fairey, 1985; Peake & Cervone, 1989; Sherman, 1980; Sherman et al., 1981; see also Aronson & Carlsmith, 1962). These effects have generally been positive, with people who had been induced to make optimistic expectations performing better than they would have had they not been so optimistic. Experimental studies that have manipulated expectancies for performance on particular tasks have found that the induction of positive expectations has led to significant improvements in performance (Armor & Taylor, 1997; Buehler & Griffin, 1996; Campbell & Fairey, 1985; Peake & Cervone, 1989; Sherman et al., 1981). This appears to be true even for predictions that can, at the time they are made, be considered unrealistic. In Sherman's (1980) studies, for example, people expected that

they would behave in more socially desirable ways than base rate data indicated (thereby demonstrating unrealistic optimism); however, people who had initially made these "unrealistic" predictions were subsequently more likely to behave in a socially desirable manner than were people who had not been first asked to make predictions about their behavior. In a similar vein, Buehler et al. (1994) found that unrealistically optimistic estimates of task completion times (i.e., predictions that were clearly optimistic in comparison to actual task completion times) were significantly correlated with actual completion times for a variety of academic and nonacademic tasks (r s ranged from .4 to .7). Even attempts to reduce unrealistic optimism have demonstrated the causal role that these predictions can play in determining subsequent performance. In general, manipulations intended to reduce unrealistic optimism have made people more pessimistic but have also undermined performance, thereby worsening outcomes without increasing the accuracy of predictions (e.g., Buehler et al., 1994; see also Armor & Taylor, 1997; Buehler & Griffin, 1996).

Evidence for the beneficial effects of unrealistic optimism has also come from studies on individuals encountering intensely threatening events. Several of these have investigated the health beliefs of gay men who were either at risk for or had already been diagnosed with AIDS (Reed, Kemeny, Taylor, Wang, & Visscher, 1994; Taylor et al., 1992). Notably, the men in these studies were faced with situations in which there was little or no just grounds for personal optimism (i.e., given that being HIV-seropositive is the primary risk factor for developing AIDS); thus, effects in these studies can be thought of as effects of optimistic bias, and not simply optimism per se. In one study, Taylor et al. (1992) found that those who were unrealistically optimistic about their ability to avoid AIDS engaged in more health-promoting behaviors and utilized more active forms of coping than those who were less optimistic. Reed et al. (1994) found that, among men diagnosed with AIDS, maintaining an optimistic outlook was associated with an average 9-month increase in survival time. These results are not limited to individuals with HIV-related disease, but have been found in other samples as well, such as studies of breast cancer patients (Greer, Morris, & Pettingale, 1979; Greer, Morris, Pettingale, & Haybittle, 1990; Pettingale, Morris, Greer, & Haybittle, 1985), and studies of patients undergoing coronary artery bypass surgery (Fitzgerald et al., 1993) and heart transplantation (Leedham, Meyerowitz, Muirhead, & Frist, 1995). Similar effects of optimistic expectations have also been found in stressful but nonmedical populations, such as students coping with their first year of law school (Segerstrom et al., in press).

Optimistic expectations may have additional consequences (or correlates, for these effects may be bidirectional) that are more cognitive and affective

than behavioral. In the Taylor et al. (1992) study of men at risk for or diagnosed with AIDS, for example, AIDS-specific optimism among respondents was associated with elevated perceptions of control, the maintenance of positive attitudes, and the perception of personal growth.² Similarly, Segerstrom et al. (in press) found that situational optimism predicted less mood disturbance following stressful events, thereby protecting people against the adverse effects of these events (this protection appeared to occur physiologically as well as psychologically, as the reduction in mood disturbance was in turn associated with decreased immunological activity). Finally, a study by Leedham et al. (1995) found that optimistic expectations among heart transplant patients were associated with several indicators of psychological well being (positive mood, quality of life, and adjustment to their illness). Although these effects have been less frequently studied, the results that have been obtained suggest that the generation and maintenance of positive expectations will be associated with a sense of control or mastery over outcomes as well as with the security—or at least the hope—that desired outcomes can or will be attained.

B. NEGATIVE CONSEQUENCES

Despite evidence suggesting that optimistic expectations have positive consequences, unrealistic optimism is commonly thought to be undesirable. Optimistic beliefs—particularly those that are unrealistically optimistic—have been argued to produce three kinds of negative consequences: disappointment, disillusionment, and endangerment. First, for people who expect good things to happen to them, there is a chance that these outcomes will not be obtained (as will be the case by definition when optimism is unrealistic); such goal-attainment failure may then directly lead to disappointment as people compare their actual outcomes to either what could or what should have been (e.g., Kahneman & Miller, 1986). Second, unrealistic optimism may be responsible for inappropriate persistence at tasks, when disengagement would be the more appropriate strategy. Third, people who do not expect negative events to happen to them or who do not expect negative consequences to befall their actions may put themselves in actual danger (e.g., by not taking the necessary precautions). These potentially negative consequences of unrealistically optimistic expectations are problematic not only for the particularly adverse outcomes they may create, but also because they call into question how unrealistically optimistic expectancies can be maintained in the face of adverse outcomes that would seem highly likely to occur.

² Effects such as these may be especially important in situations in which opportunities for active control over one's outcomes may be limited.

1. *Optimistic Expectancies May Lead to Disappointment*

Pessimism . . . is, in brief, playing the sure game. You cannot lose at it; you may gain. It is the only view of life in which you can never be disappointed.
(Thomas Hardy)

As several researchers have pointed out (e.g., Baumeister, Heatherton, & Tice, 1993; Baumeister, Smart, & Boden, 1996; Janoff-Bulman & Brickman, 1982; Janoff-Bulman & Frieze, 1983; Tennen & Affleck, 1987), unrealistically favorable beliefs should be prone to disconfirmation. This seems especially true for unrealistic optimism: By definition, these are expectancies that deviate from an objective reality. Disappointment thus seems likely if optimistic predictions are (1) too extreme (i.e., too positive and/or too unrealistic), (2) easily disconfirmed, and/or (3) pertinent to important decisions or to behaviors that have important consequences. However, only a few studies have demonstrated that unrealistic optimism may be associated with disappointment. Research has shown, for example, that the inappropriately high achievement goals made by Type A individuals are associated with lower probability of goal attainment and lower evaluations of actual performance (Ward & Eisler, 1987). Similarly, Baumeister et al. (1993) found that high self-esteem individuals who had experienced ego threat set inappropriately high goals and then recklessly tried to pursue them using behavioral strategies that actually undermined performance. Armor and Taylor (1997) found that people's overly optimistic expectancies for success were associated with greater disappointment following performance, but only when these predictions were specific and thus potentially verifiable (notably, less verifiable predictions were found to be *negatively* associated with disappointment following performance). However, there are other studies in which disappointment might be expected, but has not been found. For example, Leedham et al.'s (1995) study of heart transplant patients revealed that the experience of medical complications following treatment was no more discouraging to patients who were initially optimistic than to patients who were initially less optimistic (although not significant, optimistic expectations were reported to be "uniformly in the direction of better achievement," p. 77).³

³ Studies examining disappointment following disconfirmation support the point that people may be more buffered against disappointment than would seem likely. For example, Wagener and Taylor's (1986) study of reactions to renal transplantation found that patients whose transplants had succeeded, as well as those whose transplants had failed, were equally satisfied that they had made a correct decision. A large body of literature on cognitive dissonance resolution processes following decisions makes a similar point (Abelson et al., 1968; Festinger, 1957). Although these studies do not manipulate or measure optimism *per se*, they do provide converging evidence that people have a range of psychological buffers against disappointment when their expectations are not met.

The limited evidence of disappointment following disconfirmed optimistic predictions suggests either that researchers have failed to look at disappointment or that they have failed to find it; to the extent that the latter is true, there may be offsetting mechanisms that people typically undertake to protect themselves against the disappointment that might otherwise be engendered by the disconfirmation of unrealistically optimistic expectancies. In other words, people may avoid making predictions that are too extreme or too easily disconfirmed, and may be especially likely to avoid doing so when the predictions are relevant to important decisions or to specific plans for behavior. These are possibilities that we will return to later.

Even when expectations are clearly disconfirmed, however, these experiences do not seem to deter people from continuing to make optimistic predictions in the future. As Buehler et al. (1994) demonstrated in their studies of the planning fallacy, people will continue to make overly optimistic predictions about when they will complete important projects even when (1) they acknowledge that the majority of their past predictions for similar tasks were too optimistic, and (2) they are induced to recall these past failures immediately prior to making new predictions. These results suggest that even though people continue to fall short of where they wanted to be, they still persist with their unrealistic expectations. This is not to say, however, that people never take their experiences into account when making predictions. A number of studies have shown that people's optimistic biases tend to abate following the experience of negative events including illness (Kulik & Mahler, 1987) and earthquakes (Burger & Palmer, 1992). In general, previous experience with negative outcomes tends to increase the perceived likelihood of that outcome, thereby reducing optimism. However, these effects appear to be specific to the experienced event (e.g., illness does not make one feel more vulnerable to nonillness-related events), and they tend to be short lasting (see Weinstein, 1989, for a review).

2. Optimistic Expectancies May Promote Inappropriate Persistence

The potential for disappointment following unrealistically optimistic predictions may be magnified if the people holding these predictions persist in vain to complete actions for which they are ill prepared, or seek outcomes that are impossible or noncontingent upon continued efforts (e.g., Janoff-Bulman & Brickman, 1982). In these situations the disappointment associated with failure will be compounded with the added stress associated with fruitless persistence, and the continuous redoubling of effort may have the added effects of depleting needed resources (Hobfoll, 1989) and exaggerating current problems (Schonpflug, 1986). Such inappropriate persistence

has been dubbed "the pathology of high expectations" by Janoff-Bulman and Brickman (1982).

According to cybernetic models of self-regulation (e.g., Scheier & Carver, 1988), those who hold optimistic expectations for success should continue to persist, regardless of whether success at the given task is actually contingent upon their performance or not, so long as expectations are favorable. Although research based in the tradition of level of aspiration (e.g., Lewin, Dembo, Festinger, & Sears, 1944) suggests that people's expectations following failure will experience a "typical shift" and be adjusted downward (e.g., Montanelli & Hill, 1969; Zajonc & Brickman, 1969), evidence suggests that even directly disconfirmed predictions may not be appropriately revised (see Buehler et al., 1994). To the extent that people fail to revise their personal expectations, unrealistic optimism should be associated with the ultimately frustrating tendency to persist at tasks that one is incapable of completing. This position has some empirical support. Feather (1961, 1962), for example, found that the induction of optimistic expectations led to inappropriate persistence at tasks that were unsolvable. This relation seems to be especially prominent among people who are high in self-esteem (Perez, 1973; Sandelands, Brockner, & Glynn, 1988; Shrauger & Rosenberg, 1970; Shrauger & Sorman, 1977). Aspinwall and colleagues (Aspinwall & Richter, 1997; Aspinwall & Taylor, 1997; see also Alloy, Albright, Abrahamson, & Dykman, 1990), however, have noted that the majority of demonstrations of inappropriate persistence were conducted in constrained experimental contexts wherein participants' use of a normally productive strategy for task completion—that is, persistence—was rendered nonproductive by circumstances designed precisely to obscure that nonproductivity. Under such circumstances, what the original researchers had called inappropriate persistence may actually be seen as an appropriate application of a normally effective self-regulatory strategy in an unusual situation that had been specifically (and surreptitiously) created to undermine that strategy. Notably, when participants in these studies had been told that some of the to-be-completed tasks were insolvable (and thus that persistence may not be worthwhile), participants who had been induced to have high expectations disengaged from the task more quickly than those who had been induced to have less favorable expectations (Janoff-Bulman & Brickman, 1982).

3. Optimism May Lead to Personal Endangerment

One of the most commonly expressed concerns regarding unrealistic optimism stems from its potential to undermine behaviors that might be undertaken to offset legitimate risks to an individual. Much of this work has been conducted in the context of health, where the potential for unrealistic

optimism to undermine commitment to preventive health behavior or to compromise vigilance to possible health threats has been especially worrisome. Much of this work has made use of the conceptual contexts provided by the health belief model (Becker, 1974; Becker & Rosenstock, 1987). This model posits that the acknowledgment of personal vulnerability is a necessary prerequisite for engaging in self-protective behaviors and that the realistic acceptance of threat is a critical factor in determining the motivation to avoid these threats. These basic propositions form core assumptions of most contemporary models of health behavior (Taylor, 1995), and have provided the impetus for many of the studies of unrealistic optimism in health and safety domains.

An important implication of the health belief model is that perceptions of invulnerability lead people to engage in risky behaviors that others who perceive themselves as vulnerable would not. Research is accumulating, however, to show that people who have engaged in risky behaviors see themselves as more at risk, rather than less, than the general population (although many of these individuals maintain beliefs that they are less at risk than others with similar risk histories). For example, although smokers maintain beliefs of relative invulnerability to smoking-related disease when comparing themselves to other smokers, they tend to admit their vulnerability relative to nonsmokers (e.g., McCoy et al., 1992; McKenna et al., 1993; Segerstrom et al., 1993; Steptoe et al., 1995; Strecher et al., 1995). Similar effects have been obtained in comparisons of women's perceptions of their vulnerability to pregnancy as a function of the effectiveness of their method of birth control (e.g., Gerrard & Luus, 1995; Whitley & Hern, 1991; cf. Burger & Burns, 1988), and of college students' perceptions of their vulnerability to sexually transmitted diseases as a function of their use or nonuse of condoms (Thompson, Anderson, Freedman, & Swan, 1996). These findings are at odds with the health belief model's claim that people engage in risky behaviors *because* they see themselves as relatively invulnerable to the negative consequences of these risky behaviors. If perceived invulnerability were influencing behavior, then we would expect that people who engage in risky behaviors would see their risk as lower than those who do not, and this is not the case.

A more sensitive test would be to assess people's perceptions of relative invulnerability to a number of negative outcomes *before* they had engaged in the risky behaviors that might lead to these outcomes, and then to examine whether these perceptions were associated with actual likelihood of engaging in the target behaviors. Unfortunately, little research on the health belief model is prospective, relying instead on the study of single samples tested at one point in time (e.g., Burger & Burns, 1988; see Weinstein & Nicholich, 1993). Because these studies employ concurrent

measures of perceived risk and intentions to engage in risk-inducing or risk-preventing behaviors, they cannot test the directional prediction regarding the potential health-compromising effects of unrealistic optimism. One longitudinal study of relapse among smokers in a smoking cessation clinic provides suggestive evidence that the direction of causality may be opposite to what the health belief model proposes: In this study, optimistic shifts in risk perceptions appeared to follow rather than precede relapse behavior (Gibbons et al., 1991). This finding is consistent with a large body of research showing that behavior can have a direct or dynamic influence in eliciting or changing attitudes so that they become consistent with the behavior (Festinger, 1957; Bem, 1967). Unrealistic optimism in the face of a health threat may thus be the *consequence* of engaging in risky behavior, rather than a cause of it.

Perhaps the most extensive exploration of the relationship between perceived invulnerability and health-protective behavior has been in the domain of AIDS and AIDS risk. Several prospective studies have been done in this area, and none has found evidence of a positive relationship between specific optimistic expectancies and risky behaviors (Aspinwall, Kemeny, Taylor, Schneider, & Dudley, 1991; Joseph et al., 1987; Montgomery et al., 1989; Taylor et al., 1992). This collection of studies has shown no evidence that unrealistic optimism compromises health behavior generally or risk-related sexual activity in particular, even in samples that were at a high risk for AIDS. In fact, at least some evidence suggests that the opposite is true: The study by Taylor et al. (1992) found that unrealistic optimism about developing AIDS among HIV-seropositive men was associated with several positive health behaviors and was not associated with any health-compromising behaviors.

Similarly, Aspinwall and Brunhart (1996) found optimistic expectations to be associated with a heightened vigilance to threatening information. Contrary to what would be expected if optimistic expectations reliably guided individuals into dangerous situations or into the adoption of reckless or risky behaviors, Aspinwall and Brunhart found that people who had optimistic expectations about their health paid more attention to information suggesting that they might be at risk for specific health problems than people who were less optimistic. In particular, optimists spent more time learning about risk information, and were later better able to recall this information, than were people with less optimistic views about their health. To a limited extent, these effects appeared to be stronger to the degree that the threatening information was personally relevant (e.g., optimists who were also regular vitamin users paid particular attention to information about the potential negative consequences of vitamin use).

Not all research on the behavioral consequences of unrealistic optimism has revealed benign or beneficial effects, however. In a recent pair of studies reported by Davidson and Prkachin (1997), respondents' scores on a measure of unrealistic optimism were found to be associated with a reduction in health-protective behavior and with decreased learning of health-promoting information. However, the measures of unrealistic optimism used in these studies required respondents to make comparative likelihood estimates for a wide variety of events (e.g., tooth decay, suicide) that were not related to one another or to the health outcomes being targeted, rather than specific expectancies associated with the specific outcomes in question. It remains to be seen whether unrealistically optimistic expectations that are relevant to specific compromising behaviors can have similar effects, or whether some other factor—such as a tendency to be indiscriminately optimistic across levels of specificity and outcome domains—may have been responsible for the effects that were observed. (Notably, Davidson and Prkachin's effects were limited to participants who had also scored high in dispositional optimism, although dispositional optimism itself was not independently associated with either outcome.) Nevertheless, the results of Davidson and Prkachin's studies provide evidence that unrealistically optimistic expectations can, under certain circumstances at least, have unwanted negative consequences.

In a recent review of optimistic bias, Weinstein and Klein (1996) note that "Perhaps the biggest gap in the research on this topic is the absence of information about the behavioral implications of optimistic biases" (p. 7). Although prospective or causally unambiguous evidence may yet emerge to suggest health-compromising effects of unrealistically optimistic, outcome-relevant expectations, what modest evidence there is at present provides only mixed results at best, suggesting potentially health-compromising effects in some circumstances while suggesting the opposite relationship—namely that unrealistic optimism may promote appropriate health behaviors—in others.

C. SUMMARY

A variety of positive and negative consequences have been argued to follow from unrealistic optimism. Although outcome studies are few in number, the evidence to date suggests several patterns. On the positive side, unrealistically favorable expectations appear to foster motivation and persistence at tasks and appear to be associated with good psychological adjustment to threatening events. On the negative side, there is some

evidence for disappointment following the disconfirmation of optimistic predictions. In response to such disconfirmation, expectations may become more pessimistic, but this effect appears to be limited to the task at hand and to occur within a fairly limited time frame. That is, unrealistic optimism generally does not appear to abate in response to specific experiences of disconfirmation (e.g., Buehler et al., 1994). The concern that optimistic expectations may facilitate inappropriate persistence does not appear to be well founded, as empirical demonstrations of inappropriate persistence have been limited to situations in which experimental manipulations have obscured the insolubility of tasks on which persistence is usually adaptive. With respect to concerns about personal endangerment, some evidence suggests a possible relation between unrealistic optimism and health-compromising behavior, but evidence for the reverse also exists.

IV. Resolving the Dilemma of Unrealistic Optimism

There have been a number of intuitively plausible concerns about the negative consequences of unrealistic optimism but surprisingly little research to justify them. This simply turns the dilemma of unrealistic optimism on its head, rather than erases it: How can unrealistically optimistic beliefs *not* have these negative consequences? Why are people who make unrealistically optimistic predictions *not* especially vulnerable to disappointment, endangerment, and despair? Not only should unrealistic optimism have implications for how outcomes are interpreted, but so too should these outcomes (and their interpretations) have implications for the general favorability of people's self-views and their subsequent expectancies. In other words, people should experience a "typical shift" following the nonachievement of expectations, and subsequently lower their expectations. Nevertheless, the majority of the evidence suggests that optimistic expectancies are robust against disconfirmation and even direct attempts at debiasing (e.g., Buehler et al., 1994; Weinstein, 1980; Weinstein & Lachendro, 1982; Weinstein & Klein, 1995). How optimistic beliefs can be maintained, and the dangers associated with these beliefs avoided, are issues to which we now turn.

It may be that optimistic expectations can be unrealistic and still not render people vulnerable to disappointment if (1) these expectations lead to self-fulfilling prophecies, (2) people can reinterpret outcomes so that they are consistent with initial expectations, and (3) people are not indiscriminately optimistic.

A. OPTIMISM LEADS TO (ALMOST) SELF-FULFILLING PROPHECIES

As long as there is hope that difficulties may be overcome for that price in effort and pain which the individual is ready to pay, he goes on trying. If the objective is worthy, indeed, the effort is not even felt to be a "sacrifice." Persistence, then, depends on two factors: the value of the goal and the outlook for the future.

(Kurt Lewin, 1948, p. 107)

One way in which people may avoid the disappointment associated with overly optimistic expectations is by living up to their initial expectations. As reviewed above, considerable evidence suggests that optimistic errors in prediction may be "self-erasing" (Sherman, 1980), in that favorable predictions tend to yield favorable performance. In general, those who expect to accomplish more do in fact accomplish more than those who expect to do less. An important caveat, however, is that people's optimistic expectancies are rarely completely fulfilled: Although people who state optimistic expectations attain more than if they had not made those predictions, they do not necessarily achieve the standards they initially set for themselves. A study by Buehler and Griffin (1996) is illustrative of this point. In this study, expectations about how long it would take to complete a particular assignment were manipulated by "anchoring" participants' predictions around relatively optimistic or pessimistic estimates (cf. Tversky & Kahneman, 1974); performance differences between the two resulting groups of participants were then assessed. Although neither group completed their assignments within the time they said they would, the group that had been induced to predict relatively early completion times did complete the assignment significantly earlier than did the group induced to predict relatively later completion times. These results suggest that even unrealistic expectations tend to get people further toward their goals than they would have otherwise. The fact that optimistic expectations, including unrealistic ones, are associated with even partially self-fulfilling prophecies may be one reason why those expectations do not necessarily set people up for disappointment or discourage appropriate preventive action.

Explaining the Facilitatory Effects of Specific Optimism

One possible explanation for how even unrealistically optimistic expectations may influence behavior draws on information about how these expectations are derived. An important distinction in unrealistically optimistic beliefs (and in perceptions of unique invulnerability in particular), and a distinction that may be especially important for understanding the effects of these beliefs on self-regulation, is whether these beliefs are thought

about in essentially *passive* or *active* terms. By passive, we refer to optimistic expectations that are derived and accepted without consideration of thoughts or actions relevant to the outcome in question. For example, one might be overly optimistic about one's likelihood of acquiring AIDS without considering relevant risk behaviors that may influence one's susceptibility to the virus; similarly, one may accept invulnerability as somehow a given and thus free from question or challenge. This conception of optimism is similar to Epstein and Meier's (1989) "naïve" optimism, which they describe as being characterized by simplistic beliefs and a tendency to overgeneralize the implications of positive events. In contrast, active optimism implies that one is not so much *inherently* invulnerable to threats as one is *potentially* invulnerable to them, and the determinants of this potential invulnerability lie within the perceived capability of the individual to actively overcome the threat in question. Thus, one might think of one's likelihood of acquiring AIDS in terms of the self-protective behaviors one is capable of engaging in, as well as the wisdom and discernment to extricate the self from situations that might put one at risk. Although the perception of personal capabilities that is the groundwork for active optimism may also be subject to self-favoring bias, these perceptions may nonetheless provide a basis for future behavior (e.g., Bandura, 1986, 1989).

The two characterizations of optimistic expectancies—active versus passive—are expected to have opposing consequences for self-regulation. Specifically, passive optimism implies that one need not take preventative action because one is not at risk. Active optimism, on the other hand, implies that one is free from risk *because* he or she has taken (or will take) the requisite preventative actions. This distinction has two important implications: First, because active optimism can be maintained only to the extent that the individual perceives him- or herself as actively maintaining reasonable grounds for that optimism, it should be more fragile than passive optimism. In other words, active optimism should be especially sensitive—not defensively insensitive—to risk-relevant information. This sensitivity may protect people from being too optimistic, especially in situations in which information about legitimate risks is more salient. Second, because active optimism involves the consideration of how optimistic expectancies may be fulfilled, active optimists should be better equipped with specific plans for how to attain the desired outcome or avoid the undesired one, and thus more likely to behave appropriately (e.g., Bandura, 1986; Campbell & Fairey, 1985; Corbin, 1972; Gregory et al., 1982; Pham & Taylor, 1996; Taylor & Pham, 1996).

Two lines of evidence suggest that optimistic expectancies may often be more active than passive. The first comes from work distinguishing optimistic expectancies and perceptions of relative invulnerability from denial. As

reviewed above, a number of studies have suggested that people take personal risk information into account when formulating expectations by showing that at-risk individuals tend to report less risk-related optimism than do individuals who are not at risk (e.g., Gerrard & Luus, 1995; McCoy et al., 1992; McKenna et al., 1993; Segerstrom et al., 1993; Steptoe et al., 1995; Stretcher et al., 1995; Thompson et al., 1996; Whitley & Hern, 1991); such effects would not be expected if optimistic beliefs were passively held, and are opposite to what would be expected if they were the consequence of self-protective denial. In addition, Aspinwall and Brunhart's (1996) finding that optimistic individuals pay more attention to potentially threatening risk information than do less optimistic individuals is also inconsistent with the denial hypothesis. Notably, the tendency to reduce optimism in the face of actual risk is not seen in individuals who are especially prone to use denial as a means for coping with threatening events (e.g., Gladis et al., 1992), suggesting that the use of denial when formulating optimistic expectancies may be limited to a particular (and small) subset of individuals.

The second line of evidence suggesting that optimism is more often active than passive comes from work on the cognitive causes of optimistic expectancies. As our review of these causes suggest, unrealistic optimism is often the consequence of a selective consideration of goal-appropriate behavior (Buehler et al., 1994; Kahneman & Tversky, 1979, 1982; Weinstein, 1980, 1982). To the extent that the scenarios generated when making predictions provide a mental script for how to behave, these scenarios may facilitate effective performance. It may be, then, that one of the causes of optimistic bias may be the source of its cure (Taylor & Armor, 1997).

Not all optimistic expectancies are derived from a careful consideration of one's competencies and capacities, however. As noted, recent research by Epstein and colleagues (e.g., Epstein, 1992; Epstein & Katz, 1992; Epstein & Meier, 1989) has documented a distinction between a type of optimism that is adaptive and responsive to information and another that is "naïve" and unrealistic (see also Schwarzer's, 1994, "functional" versus "defensive" optimism). These two types of optimistic beliefs have been found to be statistically independent (conceptually, realistic optimism is associated with the tendency to interpret events and capabilities positively, whereas naïve optimism is associated with grandiose thinking and "gross overgeneralizations" of success). Although the former has been associated with positive outcomes, the latter has not (Epstein & Katz, 1992). Other researchers suggest that the extremity of optimistic expectations may be a basis for distinguishing which expectations will be adaptive and which will be maladaptive, as extremely optimistic expectations imply—though they do not always guarantee—a lack of contact with reality (Baumeister, 1989; Wallston, 1994). Finally, Oettingen (1996; Oettingen & Wadden, 1991) makes a

distinction between positive *expectations* (which are active, derived from careful consideration of available evidence) and positive *fantasies* (which are not). Consistent with the passive-active distinction, Oettingen and colleagues have found that positive expectancies facilitate effective performance, but that positive fantasies hinder it, and that this was true across a variety of behavioral domains (including weight loss, recovery from illness, interpersonal relationships, and work success; see Oettingen, 1996, for a review). Although there may be reason for concern about the potentially negative consequences of passive optimism (fantasies, daydreams, and other unspecified plans may undermine performance because they "imply anticipatory consummation of success," Oettingen, 1996; see also Mobilio, Burgess, & Gonzales, 1995), people seem to be generally capable of distinguishing fantasy from reality (e.g., Johnson, 1988; Johnson, Hashtroudi, & Lindsay, 1993; cf. Slusher & Anderson, 1987) and thus may be unlikely to base self-regulatory efforts on these flights of fancy. At present, however, the distinction between active and passive optimism, their relative prevalence, and their respective consequences are underexplored.

B. OPTIMISTIC REINTERPRETATION

Another way in which people may avoid the disappointment associated with the disconfirmation of their unrealistic expectations involves the reinterpretation of outcomes so as to minimize discrepancies between what was expected and what has been attained. Reinterpretation may be accomplished by biasing perceptions of what has been achieved as well as by biasing the recall of what was initially expected.

1. Reinterpreting Outcomes

Perhaps the most direct evidence of optimistic reinterpretation comes from a series of studies conducted by Klaaren, Hodges, and Wilson (1994), who found that people who expect a positive experience but actually experience a negative one (i.e., those who are unrealistically optimistic) will actively reinterpret the unexpectedly negative experiences so that their retrospective reports of these experiences are consistent with their initial (but disconfirmed) expectations. In one study, students' expectations about how much they would enjoy their winter vacations were found to influence their subsequent evaluations of their vacations, independent of how favorably they reported their actual vacation experiences to be. In a second study, in which both expectations and the actual pleasantness of experience were manipulated, the induction of favorable expectations caused people

to evaluate the experience more favorably (regardless of whether the actual experience was pleasant or not), and to report greater willingness to repeat the experience by participating in the study again. Taken broadly, these results are consistent with studies showing that people selectively encode, interpret, and recall information that is consistent with their expectations (for reviews, see Greenwald, 1980; Olson et al., 1996; Taylor & Brown, 1988). More specifically, the results suggest that those who are the most optimistic going into a situation may be the most likely to view their outcomes favorably, regardless of whether their predictions are ultimately fulfilled. These results are the opposite of what one would expect if unrealistic optimism provided a point of contrast against which any lesser outcome would be seen as disappointing.

2. *Shifting Standards of Comparison*

In addition to direct reinterpretations of outcomes and experiences, people can avoid the disappointment of disconfirmed expectations by shifting the standard against which attained outcomes are evaluated. There are at least four ways in which this may be done. First, people may simply forget their initial standard, thereby removing it as a basis for evaluation. This may be especially likely to occur when predictions and performance are temporally distant from one another, or when retrieval cues that might trigger the recollection of an initial prediction are absent or obscured in a later performance situation. Second, instead of (or in addition to) forgetting their initial standard, people may reevaluate the standard that they had set for themselves. In other words, people may respond to an apparent "failure" by questioning how reasonable their initial expectation had been. As Lewin et al. (1944) pointed out, people experience a typical shift in expectancies following failure (in which expectations for future success are lowered), and there is no a priori reason to suspect that this might not occur *retrospectively* as well as *prospectively*. Because people make predictions in states ranging from partial to complete uncertainty, they may be more likely to disregard their initial expectations (thereby lessening the diagnosticity of the prediction-performance discrepancy) than they would be to accept the discrepancy as a valid indicator of their skills and abilities. Such a strategy is logically justifiable because people have new information about the objective likelihood of the outcome, the difficulties involved in bringing about that outcome, and their own motives, qualities, and resources that may have been difficult (if not impossible) to assess at the time of the initial prediction. To the extent that this new information may influence our retrospective evaluations of our initial expectations, potential disappointment may fade with the newfound clarity of hindsight.

A third strategy for shifting standards involves the selection of a worse-off social comparison target that allows the individual to maintain a belief that his or her current status is not as bad as more objective standards might suggest it would be (Taylor & Lobel, 1989). As discussed previously, at-risk individuals may admit to being at greater risk than people who are not at risk, but will maintain that they are less vulnerable than similarly at-risk individuals (e.g., McKenna et al., 1993). Moreover, several studies with cancer and AIDS patients have suggested that people use social comparison standards even when more objective standards for self-evaluation are available (Taylor, Kemeny, Reed, & Aspinwall, 1991; Wood et al., 1985). Because people are often free to select their own worse-off social comparison target and to change that target at will, the use of social comparison information for maintaining positively biased perceptions of one's own outcomes lends considerable flexibility to efforts at biased reinterpretation. The results of studies with cancer patients, for example, have shown that patients at all levels of physical outcomes see themselves as somewhat better off than other cancer patients (except, perhaps, at the very end stages of the disease; e.g., Wood et al., 1985). This constant advantage across physical conditions can be achieved, of course, only by manipulating and continually shifting the person or group with which one compares oneself. So robust is this tendency that, if a worse-off social comparison target is not available, people will generate hypothetical others who are "doing worse" for the purposes of these comparisons (Taylor et al., 1983).

There is also evidence that the shift of social comparison targets may occur at the more general level of people's beliefs about groups or populations. For example, in a study in which participants were induced to believe that they had either succeeded or failed at a cognitive task, those in the failure condition were more likely to exaggerate estimates of the commonness of failure at the performed task in the general population (Agostinelli, Sherman, Presson, & Chassin, 1992).

Similar to the flexible and shifting standard of social comparison, a fourth means of shifting standards involves the manipulation of counterfactuals, or imagined alternates to reality (see Kahneman & Miller, 1986). To the extent that one can compare one's outcomes with a worse situation that could or perhaps should have happened, one can feel good about one's current outcomes despite an objectively poor performance or failure to meet initial expectations (Markman, Gavanski, Sherman, & McMullen, 1993; Taylor et al., 1983).

3. *Getting What You Want by Revising What You Had*

Another means by which people may effectively reinterpret their outcomes to be more in line with their initial expectations is by reinventing

the past (Conway & Ross, 1984; Ross, 1989). This "revision of personal history" can take place in several ways. In a classic demonstration, Conway and Ross (1984) found that students who had participated in an (ineffective) study-skills program misremembered their initial skills as being worse than they had initially reported them to be. These results have generally been interpreted as being mediated by people's naive theories of change in a situation of actual stability; the underestimation of past skills could thus be understood as a consequence of people assuming change when none occurred. To the extent that optimistic expectations imply an expectation of positive change, people may undermine their past in order to maintain a belief that they have achieved something in the present.

Another way in which the past may be reinvented involves the reconstruction of initial conditions for action. For example, in a study of renal transplantation patients, Wagener and Taylor (1986) found that those who had experienced transplant failure were more likely to perceive themselves as having had no choice but to undergo the procedure. Thus, when neither past nor present status is amenable to change, people may imagine constraints on their experience that minimize their responsibility for negative outcomes, thereby reducing the guilt—if not the disappointment—associated with unmet expectations.

4. Limits to Reinterpretation

It is important to note that the degree of positive reinterpretation expressed—like the expression of optimistic beliefs themselves (e.g., Klein & Kunda, 1993; Rothman et al., 1996)—is likely to be limited by the bounds of reasonability. For example, a student who had expected an "A" in a course might be able to convince herself that a "B" is still a good grade, but would probably be unlikely to be favorably disposed to a "D." Similarly, such positive reinterpretation may be made difficult by other factors beyond simple discrepancy, such as having made a public commitment to a specific goal (see Brown & Gallagher, 1992). More generally, the opportunity to convincingly reinterpret negative outcomes may be limited to the extent that a person is aware of the prediction–performance discrepancy. This awareness, in turn, is plausibly influenced by the extent to which predictions are specific, committed to, public, and/or personally meaningful.

Recent research by Armor and Taylor (1997) is consistent with this general claim, and suggests that the *verifiability* of an optimistic expectation may be an important factor in determining the limits of reinterpretation (cf. Dunning et al., 1989): Although these researchers found that general (and potentially unverifiable) predictions about performance on an upcoming task were associated with more favorable evaluations of performance

on that task, specific (and easily verifiable) performance predictions were found to be associated with *less* favorable evaluations of that performance. Thus, a potentially useful strategy for avoiding disappointment may be to set expectations at a general enough level so that they cannot be directly disconfirmed.

5. Alternates to Reinterpretation

In addition to reinterpreting outcomes so that they are perceived as being consistent with initial expectations, people may avoid the negative consequences of disconfirmation by providing excuses or by identifying "silver linings" (i.e., positive aspects) of an otherwise bad situation.

a. Explaining Away Failure. One well-documented strategy for avoiding the disappointment of disconfirmed expectations involves the generation of excuses (Buehler et al., 1994; Snyder, 1989; Snyder & Higgins, 1988; Weiner, 1992, 1995). Such a strategy is likely to be initiated automatically whenever expectations are disconfirmed, for several reasons. First, the disconfirmation of expectancies is surprising (by definition) and negative, and prompts a search for causal explanations (Crocker, Hannah, & Weber, 1983; Hastie, 1984; Kahneman & Miller, 1986; Pyszczynski & Greenberg, 1981; Weiner, 1985; Wong & Weiner, 1981). Second, disconfirmation focuses attention on the original (optimistic) hypothesis (e.g., Kahneman & Miller, 1986), which may help maintain its plausibility and, as a consequence, bias the explanation of the expectancy violation toward external and unstable causes (Buehler et al., 1994; Miller & Ross, 1975). People tend to discount failure, but to take credit for success (e.g., Bradley, 1978; Miller & Ross, 1975; Snyder, Stephan, & Rosenfield, 1976; Zuckerman, 1979); such attributional asymmetries may equip people with an apparent experiential rationale for continued optimism (i.e., if only successes are correspondent to my efforts, then I should expect continuing success; cf. Seligman, 1991). To the extent that past failures and recognitions of past failures at prediction are so promptly explained away, they are not likely to influence self-evaluations (Snyder, 1989) or future predictions (Buehler et al., 1994).

We are not always free to make excuses, however, and may refrain from making them when they fail to satisfy the demands of believability. For example, Shepperd, Arkin, and Slaughter (1995) found that excuse making following unexpected failure was less prevalent when people were led to believe that their performance (and the causal factors that their excuses claimed had undermined their performance) would be subjected to a second test. This pattern of responses suggests that the self-protective tendency to explain away failures will be moderated by the verifiability and ultimately

the believability of the excuses available for explaining the failure (cf. Snyder, 1989).

One factor that seems to boost people's abilities to make excuses for prediction failures is self-esteem. Research suggests, for example, that extreme negative reactions following failure may be limited to people who are low in self-esteem (e.g., Moreland & Sweeney, 1984; Shrauger & Sorman, 1977; but see Baumeister et al., 1993, 1996). Part of the "buffer" that high self-esteem individuals appear to have may be in the capacity to explain away or discount negative events: People high in self-esteem are less likely to perceive negative feedback as having implications for their general identity (Kernis, Brockner, & Frankel, 1989) and are more likely to have other aspects of themselves to reflect upon in order to maintain their high self-esteem (e.g., Linville, 1985, 1987; Steele, 1988).

b. Silver Linings: Finding Good Aspects of a Bad Situation. A final strategy for avoiding the disappointment of disconfirmed expectations is the "silver lining" strategy of focusing on the good aspects of a bad situation (e.g., Affleck & Tennen, 1996; Taylor, 1983). Thus, for example, instead of attending to the discrepancy between their expectations and outcomes, people may instead focus on the lessons they have learned for the future and experience disappointment less acutely in the context of the redeeming features of the failure. Conceivably, the silver lining strategy may avert disappointment in either of two ways: It may direct attention away from disappointment, thereby reducing its magnitude, or it may actually reframe the outcome so that the educational lessons obtained from the experience eliminate disappointment altogether. This may be somewhat of a last-ditch strategy, however.

6. *Optimistic Reinterpretation: A Comment*

In analyzing the ways that people minimize or distort the disconfirmation of their optimistic expectations, we implicitly present a portrait of a self-deceptive Panglossian who juggles perceptions to make the world seem better. There may be more to these strategies, however, than a naive desire to construe everything in a beneficial way. The ability to experience disconfirmation of one's hopeful expectations without disappointment or disillusionment may be the underpinning of an impressive human capacity to find meaning in tragedy, value in adverse circumstances, and the strength to survive and triumph in the worst of conditions (e.g., Frankl, 1963; Taylor, 1983).

C. PEOPLE ARE NOT INDISCRIMINATELY OPTIMISTIC

By and large, there is a tendency in our society to raise the level of aspiration toward the limit of the individual's ability. The principle of realism, on the other

hand, tends to safeguard the individual against failure and to keep ambition down to earth. How high the individual can set his goal and still keep in touch with the reality level is one of the most important factors for his productivity and his morale. (Kurt Lewin, 1948, p. 113)

Optimism, even unrealistic optimism, is not unreasonable so. There are sources of influence from the person and from the environment that appear to keep optimistic expectations within reasonable bounds.

1. *Sources of Reasonability*

As mentioned in our examination of the expressions and causes of optimism, there appear to be natural limits on the expression of optimistic expectancies. Mental simulations, which a cognitive analysis of prediction would put at the root of optimistic bias, are constrained by the limits of reasonability: Throughout this review, optimistic biases have been found in those people who, under appropriate circumstances, could justifiably imagine the outcomes they desired as coming to fruition. Thus, perceptions of relative invulnerability are less optimistically biased in samples that are actually at risk, unless those individuals can compare themselves with others from a similar or worse-off risk category. Similarly, expectations for specific outcomes are less optimistically biased in situations where the attainment of those outcomes is less controllable. Unrealistic optimism is not, as F. Scott Fitzgerald once wrote about optimism more generally, "the content of small men in high places." Optimistic expectations appear to derive from people's knowledge of their situations, even though the extrapolations people make from this knowledge reliably tend to err in the optimistic direction. Similar conclusions can be drawn from a motivational analysis of optimistic expectations. Studies that manipulated threats to people's perceptions of their future (by presenting others as being better off in comparison) have found that people change reports of their own behavior so that they appear less threatened; however, in none of these studies were people willing to distort their self-impressions further than the demands of reasonability would allow. An implication of this inherent reasonability is that optimistic expectations may be unrealistic primarily when we can get away with it, but realistic (or at least more reasonable) when we cannot.

2. *Getting Away with Optimism*

One way in which people can hold unrealistically optimistic expectations while still living within the bounds of reasonability is to carve up the error of unrealistic optimism into different pieces, none of which in themselves depart heavily from reality. Specifically, as noted previously, several studies that have assessed the accuracy of people's predictions for themselves and

for others relative to a common criterion have shown a clear *pessimistic* bias in the perception of others. For example, Buehler et al. (1994) and Filyer et al. (1994) found observers to judge others as pessimistically as those others saw themselves optimistically, relative to attained outcomes. Similar findings have been obtained in designs utilizing within-subject comparisons, where people have been found to overestimate the experience of negative events for other people but not for themselves (e.g., Whitley & Hern, 1991). Although a strong comparative optimism effect results, it is at least as determined by the tendency to see others as more at risk for negative events as by the tendency to see the self as less at risk.

The fact that people hold a pessimistic bias for others may represent a mechanism by which people maintain comparatively optimistic outlooks for themselves without introducing significant distortions into their appreciation of reality. To the extent that an individual "allocates" one portion of the comparative optimistic bias to inflated self-ratings and another portion to pessimistic other ratings, neither ratings for the self nor ratings for others will be as distorted as they would be if the bias were maintained solely by positive expectations for the self or negative expectations for others. Although the overall comparative optimistic bias may be quite strong, the deviation of each of its component pieces from a realistic standard may be quite modest.

Another source of evidence on the reasonableness of people's predictions comes from findings that optimistic biases tend to be greatest when made under conditions of maximal uncertainty—that is, optimistic errors appear to be more prevalent when there is more room for error in prediction. Early research on optimistic bias (e.g., Irwin, 1953; Marks, 1951), for example, revealed that the tendency to unreasonably expect success on a task determined purely by chance was greatest when the objective odds for success or failure were closest to 50:50. When the objective odds for success over failure were more extreme (i.e., either very high or very low), optimistic biases were considerably reduced in magnitude. Implicit support for this analysis is provided by conceptually similar work by Dunning on ambiguity (e.g., Dunning et al., 1989); this work has found that people show a greater tendency to self-enhance when the traits in question are ambiguous rather than concrete and objectively verifiable (see also Goethals, Messick, & Allison, 1991). It appears, then, that people will be most optimistic when the objective odds for success or failure give them the greatest leeway to be so.

Another set of factors that may influence the extremity of people's expectations is the extent to which people expect that their predictions may be disconfirmed. To the extent that the disconfirmation of an expectation is unlikely (e.g., as may be true when the outcome itself is not clearly defined),

or when either the prediction or the performance is made in private as opposed to public, people will be free to be optimistic without the risk of being disappointed. Note that expectancy disconfirmability will also be influenced by the individual's capacity to shift standards of comparison, as discussed previously. A potential implication of this is that expressions of *comparative* optimism may be especially difficult to disconfirm (e.g., Tyler & Cook, 1984; Weinstein & Klein, 1995), as people may always be able to imagine worse-off others with which to compare themselves (e.g., Taylor et al., 1983).

3. *The Harbingers of Reality*

Most studies of unrealistic optimism have been conducted in settings in which predictions were made anonymously and without regard to their consequences; thus participants in these studies have been free to indulge in self-enhancing estimates of what could be done in the situations that were described to them (Rothman et al., 1996). Many situations will not provide such a psychological safe haven, however. Recently, social psychologists have begun to explore the situational constraints on optimistic expectancies that enhance the salience or press of reasonability demands.

a. Temporal Proximity. Several researchers have examined the effects of temporal distance between prediction and outcome (Gilovich, Kerr, & Medvec, 1993) and prediction and evaluation (Shepperd et al., 1996) on the expression of optimism in specific situations. For example, Gilovich et al. (1993) obtained performance predictions for a number of laboratory-based tasks (e.g., a memory test) once well before and then again immediately before these tasks were completed; results revealed that performance expectations were less optimistic as the time to perform the task grew near. (Notably, however, even the "proximal" predictions appeared to be optimistically biased, as the means of the estimated percentile rankings for all tasks were above .50.) In another study, the effect of proximity on optimistic expectancies was even found to occur retrospectively: In this study, college graduates estimated that they could have taken additional courses during college without much added difficulty, whereas current students estimated that such an addition to their curriculum would cause considerable difficulty. By using the expectations of current students as a proxy for what former students would have predicted had they still been attending college, Gilovich et al. reasoned that their estimates of what they could have done were unrealistically optimistic.

In a conceptually similar set of studies that was described earlier, Shepperd et al. (1996) found that people's expectations not only became less optimistic when the time to perform a task grew near, but became *pessimistic*

(relative to actual performance) immediately prior to receiving feedback on that performance. Participants in these studies thus appear to be expressing optimism and pessimism strategically by changing their expectations as the demands of the situation change. Although strategic optimism and defensive pessimism are well known to be effective strategies for coping with potentially stressful performance situations, these strategies have been normally described as stable tendencies within persons (e.g., Norem & Cantor, 1986).

The results of Gilovich et al. (1993) and Shepperd et al. (1996) suggest that these strategies may be less bound to an individual's personality than bound to the individual's interaction with his or her environment (see also Shepperd & Arkin, 1991). The very awareness that one's predictions will be publicly tested may motivate people to try to be more accurate in their predictions; in this view, people may feel accountable to their own performance and then respond to this accountability by critically evaluating the basis of their predictions (Gilovich et al., 1993; Tetlock, 1992).

b. Mindset. There is also reason to suspect that optimism will be minimized exactly when it would be most likely to be disadvantageous—that is, before decisions are made to implement plans that are based on potentially biased assessments, expectations, and predictions. Recent research suggests that temporal positioning with respect to decisions—that is, whether one is in a predecisional state of deliberation or in a postdecisional (but still preactional) state marked by thoughts of implementation—will influence how people evaluate themselves, the tasks they are considering, and their expectancies for success (Armor & Taylor, 1997; Gollwitzer & Kinney, 1989; Taylor & Gollwitzer, 1995). This research has found that optimistic biases are attenuated when people deliberate goals and attempt to select appropriate behavioral courses to attain those goals, but exaggerated once a particular goal is selected and the individual begins thinking about implementing particular plans for action. For example, Taylor and Gollwitzer (1995) found that people who had deliberated about an unresolved personal problem perceived themselves to be less invulnerable to a variety of risks than did people who had not engaged in deliberation; in contrast, those who had imagined how they might implement a particular course of action tended to see themselves as even less vulnerable on the same risks. Similarly, Armor and Taylor (1997) found that those who had been asked to deliberate the pros and cons of participating in a particular task were less optimistic about how they might perform on that task as compared to people who were asked to imagine that they were about to complete the task. In this study, participants in the deliberative condition estimated that it would take them nearly twice as long to complete a given task to criterion, expected lower scores on objective measures of that performance, and anticipated poorer evaluations of their performance on both absolute and relative

indexes, than participants in the implementation condition; control participants who had not been placed into either mindset typically scored in between.

4. The Pragmatic Optimist: A Conceptual Integration

In summarizing the various factors that may function to keep unrealistic optimism within reasonable bounds, it is useful to consider Schlenker's (1980, 1985) pragmatic analysis of belief. According to this analysis, beliefs will be maintained to the extent that they are (1) *personally beneficial* (i.e., "the extent to which [these beliefs] serve the holder's goals and values"), and (2) *believable* (i.e., "the extent to which the belief is a reasonably accurate construal of the salient evidence"). These two factors—which are not constants but which wax and wane in relative dominance according to the particular situation that the person finds him- or herself in—can neatly account for much of the contextual variability in expressions of optimistic expectations. Furthermore, Schlenker's pragmatic analysis embraces Lewin's paradox described at the outset of this chapter. In Lewin's words:

Where the individual places his goals will be determined fundamentally by two factors, namely, by the individual's relations to certain values and by his sense of realism in regard to the probability of reaching the goal. (1948, p. 113)

The "certain values" of which Lewin spoke will surely consist of success and favorable expectancies (Schlenker's "beneficial" beliefs); the sense of realism ("believability") will be anchored in what one knows about the self, the environment, and their interaction. Fundamentally, this analysis suggests that people's optimistic expectancies will not be outlandish but firmly grounded in reality. Just how grounded these beliefs are will depend on the constraints of situation. When predictions are public and verifiable, believability demands will be high, and thus optimistic bias should be reduced (and this is what is found). When predictions are private and difficult to verify, believability demands will not quite be so demanding, and the resultant optimism is free to be self-serving (and again, this is the case). The essence of situated optimism, then, is the ability to achieve a balance between personal needs and environmental constraints that provides accurate-enough knowledge of the environment and its risks without compromising affect and motivation.

V. Summary and Conceptual Issues

Specific expectations about the future tend to be optimistically biased. By whatever criterion they are assessed, there is robust evidence that people's

expectations are optimistic, often unrealistically so. Evidence for these assertions has been particularly common in two domains. First, people have been found to overestimate their likelihood of doing well on personal projects and of completing them with a minimum of resources and within a short period of time. Second, with respect to perceived personal vulnerability to threatening events, people reliably see themselves as less at risk and others as more at risk compared with standards derived from objective risk assessments. Both cognitive and motivational factors appear to foster these perceptions. From the cognitive standpoint, overly optimistic expectations may be a natural by-product of the process of making predictions: Imagining a pathway for reaching a goal enhances the belief that one will achieve it, and imagining how one can avoid threatening events enhances the perception that one will be able to do so. From a motivational standpoint, optimistic expectations may be in service of the need to maintain a positive sense of one's talents, abilities, resources, and outcomes. Optimistic expectations may also be driven affectively, in that positive affect tends to prime related material and may elicit or maintain positive expectations.

Despite their unrealistic quality, these optimistic expectations appear to have a number of benefits. When generated with respect to personal projects, optimistic expectations have been found to promote persistence and to facilitate performance on tasks. The literature on coping with trauma suggests that unrealistic optimism can be associated with successful adjustment to those threatening events. With respect to threats that have not yet occurred, unrealistic optimism may keep those threats from looming too large in consciousness.

Some theorists have expressed concern that unrealistic optimism has the potential to lead to disappointment, disillusionment, and even personal endangerment. With respect to disappointment, there is only modest evidence that disconfirmation of unrealistic optimism produces disappointment and reduces optimism for future events. To the extent that readjustment of expectations occurs in the face of disconfirmation, it may be limited to the specific task and be relatively short in duration (although evidence suggests that even within these narrow constraints, disconfirmation does not necessarily reduce optimism for highly similar tasks, see Buehler et al., 1994). Moreover, unrealistic optimism for subsequent unrelated projects appears to resurface relatively quickly, unqualified by previous disconfirmations. Although failure to recognize personal vulnerability has been regarded as a reason why people fail to undertake necessary health habits, evidence suggesting that unrealistic optimism may lead to personal endangerment is somewhat modest. Longitudinal evidence, for the most part, has failed to support a model by which unrealistic optimism leads to poorer

health habits. Indeed, some evidence suggests a facilitatory role of unrealistic optimism in planning for the avoidance of self-relevant risks.

We have suggested that at least three factors guard against the disappointment that might otherwise be produced by unrealistic optimism. The first is that even unrealistically optimistic assessments tend to show a high degree of relative accuracy. Thus, for example, although individuals' assessments of how quickly they can complete a personal project may be relatively off-base, they nonetheless correlate quite well with actual completion times. A second reason why unrealistic optimism may not be as problematic as, by all rights, it should be, is that unrealistic optimism is strategic and most evident in situations where it is least likely to be directly disconfirmed or troublesome. A third reason why unrealistic optimism may not be very problematic is because it is frequently tied to the existence of a potentially implementable action plan (what we have called active optimism) that may facilitate the attainment of the expected outcome.

Conclusions regarding the relative benefits over liabilities of unrealistic optimism, however, must be qualified by the fact that the majority of studies in this area have simply documented the existence of unrealistic optimism, but failed to go on to identify its consequences in experimental or longitudinal studies where the direction of causality may be inferred. Consequently, our assessment that the consequences of unrealistic optimism are largely positive rather than negative must be qualified by the concern that there are insufficient numbers of outcome studies to maintain this conclusion firmly. Particularly lacking are experimental studies that manipulate unrealistic optimism or prospective longitudinal studies that can help address the causal role that unrealistic optimism may play in producing positive or negative consequences.

Cautions notwithstanding, to the extent that unrealistic optimism has relatively few negative consequences, a dilemma of optimism is raised: Why is the disconfirmation of unrealistic optimism not more psychologically problematic than it seems to be? One possible explanation is that the expression of optimistic expectancies appears to be limited by their appropriateness within a person's immediate situation (i.e., they are "situated"): Unrealistic optimism is more likely to be found when expectations are stated at a general, rather than at a specific level; when situational outcomes are rare, rather than common; when personal assessments are subjective (as in the case of social comparisons or the generation of counterfactuals) as opposed to objective; when the outcome is far off or not immediately disconfirmable; when criteria for success are ambiguous rather than clear-cut; when disconfirmation is unlikely rather than likely; and when people are implementing chosen alternatives (so that optimism can fuel these efforts) rather than deliberating between options. Thus, the circumstances

in which unrealistic optimism is most likely to be expressed are those in which the disconfirmation of unrealistic optimism is unlikely or unlikely to be troublesome.

A second line of defense with respect to the disconfirmation of unrealistic optimism is the ability of people to reframe their outcomes in terms of their expectations after the fact, so as to obscure a potentially debilitating perception of failure. People selectively encode, interpret, and recall information that is consistent with their expectations and, as a consequence, they may somewhat distort their outcomes so as to match what they had expected to achieve. People may forget their initial unrealistic expectations, as may occur when there is a long gap between the expression of the expectation and the judgment of success of a project. People may augment their estimates of what they have achieved by revising what they had initially estimated. People may adjust downward the subjective referent with which they are evaluating their outcomes, such as a social comparison or a counterfactual situation, so that their achievements continue to look better than those of other people or situations. Under circumstances when it is difficult to explain away or misperceive failure, people may make excuses for their performance, attributing negative outcomes to short-term, unstable, or external factors that do not have implications for the self. In short, there are a variety of strategies involving reinterpretation, both of initial expectations and of outcomes, that may protect people from the perception that their unrealistic expectations have been disconfirmed. Notably, however, these strategies appear to be bound by the same demands for reasonability that constrain the expression of optimistic expectations.

These strategic aspects of optimism, especially unrealistic optimism, are useful for understanding the interplay between needs for self-enhancement and needs for accuracy more generally. In recent reviews of self-relevant motives, a number of theorists have suggested that self-enhancement and the need for accuracy need not be in conflict (e.g., Epstein, 1990; Schlenker, 1980, 1985; Sedikides & Strube, 1997; Taylor, Neter, & Wayment, 1995). In the spirit of this synthesis, the strategic aspects of optimism suggest a general pattern by which optimism may fulfill both sets of needs simultaneously. On one hand, by being optimistically biased, optimism satisfies self-enhancement needs, while on the other hand, relative accuracy may be sufficient for a useful sense of one's talents, one's limitations, and the probability of succeeding on any particular task (satisfying needs for accurate self-evaluation). Moreover, optimistic expectations appear to be quite flexible, to change as situations change and as the relative demands for esteem or accuracy wax and wane as a function of the individual's relation with the environment. Such flexibility may allow people to be realistic when they need to be (as when a performance is immediately forthcoming, an

audience is present, or a decision must be made), but optimistic when these accountability pressures are lessened. As a consequence, people can be adept at regulating their behavior in a way that maintains a positive sense of self while, at the same time, maintaining a high degree of relative accuracy with respect to the demands of the environment. To the extent that this pattern is indicative of a general way in which unrealistically positive perceptions are maintained without being maladaptive, one can make similar arguments for other types of perceptions. For example, people's self-perceptions of weaknesses and talents may show a high degree of relative accuracy, while nonetheless being marked by a robust tendency toward inflation. Similarly, estimates of personal control, which have been argued to be unrealistic (e.g., Taylor & Brown, 1988), may nonetheless incorporate a high degree of relative accuracy regarding which situations and tasks lend themselves to efforts at control (cf. Thompson, Armstrong, & Thomas, in press).

In summary, although there may be particular circumstances in which unrealistic optimism may get people into trouble, the risks of optimism may have been somewhat overstated. The evidence to date does not provide a strong evidentiary basis for the cautions that have been voiced, and research consistently suggests that unrealistic optimism is relatively strategic, emergent in circumstances when people can get away with it and abating considerably in contexts in which unrealistic optimism might be readily disconfirmed or intrapersonally or interpersonally debilitating.

1. When Optimism May Be Problematic

The fact that optimistic expectations may be less debilitating than theorists have assumed does not imply that unrealistic optimism is never troublesome. For example, optimistic expectations that do *not* respond to the demands of the situation (i.e., are not strategic or situated) may get people into trouble when situations call for more accurate appraisals of likely outcomes. Davidson and Prkachin's (1997) operationalization of unrealistic optimism as an aggregate of expectations averaged across a variety of outcome domains may provide a good measure for such a construct. Similarly, unrealistic optimism may have maladaptive consequences when it is naive or passive (Epstein & Katz, 1992; Epstein & Meier, 1989), that is, when it represents a belief that everything will be fine without that belief being tied to any reasonable course of action or expectation. This type of unrealistic optimism may be related to defense mechanisms, such as repression or denial, and has been found to be more common in individuals who are predisposed to use these coping styles (e.g., Gladis et al., 1992).

More research is needed on the circumstances in which naive or passive optimism may arise, creating a genuine dilemma of optimism.

It is also possible that, like other positive perceptions, unrealistic optimism has the potential to become extreme in some people, analogous to the risk of narcissism at extremely high levels of self-esteem (cf., John & Robins, 1994). But just as the documentation of narcissism does not constitute a general indictment of self-esteem, so extreme optimism, to the extent that it is rare, should not constitute a general indictment of unrealistic optimism. Although it is important to realize that more optimism is not necessarily better, it is also important to recognize that more optimism is unusual, both statistically and psychologically. As our review has shown, optimistic biases typically stay within relatively modest bounds, leading to relative accuracy, and so in those infrequent cases when they exceed those boundaries, one must question the intrapersonal or social dynamics that have produced that state.

In addition to intrapsychic factors that may contribute to dangerous levels of optimism, there may be a number of situations in which unrealistically optimistic beliefs reliably get people into trouble. One such situation may be when people are collectively undertaking a task in which they are serially dependent on one another's efforts (e.g., Goleman, 1989). Construction projects, which are notorious examples of unrealistic optimism (see Buehler et al., 1994, for a discussion of this issue), are often thrown off because each work unit depends on the other groups being done before they can do their work, and to the extent that early estimates are unrealistically optimistic, that optimism concatenates, throwing off each step along the way. This characteristic is likely to be true of any serially dependent effort.

Collective undertaking more generally may be prone to unrealistic optimism, as there are features of group decision making that may promote overly optimistic predictions. For example, Janis (1972) suggests that groupthink may foster unrealistic optimism by suppressing demoralizing pessimism. Competition over organizational resources may lead work units to adopt overly ambitious plans that promise high returns (see Kahneman & Lovallo, 1993, for a discussion). In our judgment, collective and serially dependent projects merit continued investigation as the arenas most likely to demonstrate the debilitating effects of optimism, but there may be other, as-yet-unidentified conditions or circumstances in which troublesome unrealistic optimism also emerges.

2. Implications for Future Research

Research on the consequences of unrealistic optimism merits high priority. In this context, at least three methodological cautions should be noted.

First, it is important to recognize that people may pursue unrealistically optimistic projects that fail for reasons having little, if anything, to do with unrealistic optimism. Any of a number of parameters of a project may be misjudged for reasons not necessarily indicative of unrealistic optimism. For example, it is essential to distinguish unrealistic optimism from simple misinformation and from reliable biases in risk estimation that are unrelated to unrealistic optimism. If people underestimate their vulnerability to a specific outcome (such as breast cancer), and that underestimation occurs because of lack of awareness of the base rates of the threat in the population, that perception should not be construed as unrealistic optimism. The fact that people are less unrealistically optimistic about relatively common events (such as the likelihood that they may catch a cold) and overly pessimistic about infrequent but highly salient events (such as the risk of developing AIDS), as compared with base rates, reveals the importance of methodologies that control for typical misestimations of high- and low-frequency events having nothing to do with unrealistic optimism.

A second methodological caution concerns the need to establish the direction of causality in studies that relate optimism, particularly unrealistic optimism, to outcome variables. As noted earlier, behavior can be an impetus for self-justifying attitudes. Merely because people who engage in threatening health practices hold attitudes that would appear to be unrealistically optimistic does not mean that unrealistic optimism is the cause of these health practices. For example, most people smoke initially because of peer pressure, and later because they are addicted to nicotine, not because they are unrealistically optimistic about the effects of smoking. Theorists who regard unrealistic optimism as a cause of behavior, especially health-compromising behavior, must be cognizant of the limitations of such a perspective.

A third methodological caution has to do with how unrealistic optimism is defined operationally. Even though unrealistic optimism can be identified by different criteria, it does not follow that each of these criteria is assessing exactly the same construct. For example, the consequences of being unrealistically optimistic may be quite different depending on whether this optimism is identified by comparing people's estimates of how likely an event will befall themselves to their estimates of how likely that event will befall others (comparative optimism), or whether optimism is identified by comparing people's estimates to more absolute standards (such as their own eventual outcomes or objective estimates of their likely outcomes). It may be, for example, that comparative optimism serves primarily as an emotional buffer in light of potentially threatening information, but that absolute expectations (i.e., those made without regard to the imagined outcomes of others) serve more directly as a basis for subsequent behaviors.

We have already suggested the need for research that identifies when unrealistic optimism may be especially problematic, targeting the dynamics of naive or passive optimism and the collective enhancement of optimism in the context of group projects. Additional areas for future investigation concern the functions of unrealistic optimism, the interplay of dispositional and situated optimism, and cultural issues with respect to optimism.

a. Functions of Unrealistic Optimism. Unrealistic optimism has been primarily observed in two forms: a self-protective form leading to underestimation of personal vulnerability to a variety of threats, and a self-regulatory form that facilitates performance with respect to personal goals and projects. The latter form of optimism, and at least some forms of the former type of optimism, seem to be tied directly to the perceived controllability of undertakings, specifically the ability of individuals to envision action sequences that will address threat in the former case, and personal goals in the latter case. Whether unrealistic optimism may be reliably identified in other general life domains, and whether its functions may be expanded beyond these self-regulatory tasks identified to date is a task for future research. For example, one direction for future endeavors involves the possibility, noted earlier, that optimism may be a fundamental underpinning of the human resilience that is often observed in response to tragedy (Taylor, 1983).

b. Interplay of Dispositional and Situated Optimism. Research to date suggests that the relation between dispositional and situated optimism is fairly modest, and it is not clear how these expectations work together in self-regulation. One possibility is that dispositional optimism, as a measure of generalized expectancy, is especially useful for predicting generalized outcomes, whereas specific optimistic expectations will be better predictors of specific outcomes (see, e.g., Carver & Scheier, 1989; Scheier et al., 1989). From a methodological standpoint, then, deciding which level of expectation to study may depend on the generality or complexity of the outcome being investigated. Dispositional optimism may also provide emotional tone during people's self-regulatory efforts, which carries them through the ups and downs of the confirmations and disconfirmations of their specific expectations. It may be a source of situated optimism under some circumstances. For example, social learning theorists (e.g., Rotter, 1954) suggest that specific expectations will be influenced by generalized expectancies to the extent that the prediction being made is novel. It is important to note, however, that the direction of influence between specific and general expectancies might flow both ways.

Regularities in the different predictors of dispositional and situational optimism, and regularities in the consequences of dispositional and situational optimism merit continued examination. It is possible that dispositional optimism conveys to people the general belief that their resources

will be adequate to face new tasks that may be difficult, and that their talents will be sufficient to overcome obstacles; situated optimistic expectancies may be determined by the specific parameters of the situation within which expectations are estimated. If true, such a pattern would resolve the conceptual question of how dispositional and situational optimism are related and also account for the often surprising low correlations between measures of the two constructs.

c. Cultural Differences. It has become commonplace to recommend that cultural differences in social psychological phenomena be studied in the future, but in the case of optimistic expectancies this recommendation is especially valuable. Americans are widely regarded as the most optimistic people on earth (Lasch, 1978; Seligman, 1991), and recent studies have found the expression of optimism (Lee & Seligman, 1997) and optimistic bias (Heine & Lehman, 1995) to be greater in Western than in Eastern samples. This raises a question as to whether the levels of unrealistic optimism observed in North American and other Western samples have a self-presentational or response-bias quality that makes optimism appear more extreme than may actually be the case, or whether the self-regulatory functions that have been ascribed to unrealistic optimism are served by other perceptions or beliefs in other cultures. Clearly, all people need to protect themselves against the realization of threat and need to muster the motivation and persistence to pursue projects to their completion. Unrealistic optimism is argued to be an important ingredient in those tasks, but, to the degree that this is a culturally limited observation, those functions may be served by other mechanisms in other cultures.

The issue of culture highlights another intriguing issue for further study. To the extent that unrealistic optimism is a normal by-product of the cognitive processes that are used for planning and for generating estimates of activities and time constraints, one would expect the expression of unrealistic optimism to exhibit some universality. Research conducted to date, however, has found that the tendency for individuals in the West to expect their future to be more rewarding than the futures of others is virtually nonexistent (if not reversed) in the East (Heine & Lehman, 1995). It remains to be seen whether optimistic biases as identified by other criteria (such as attained outcomes or the expectations of others) will similarly be reduced in eastern samples, or whether the cognitive processes by which goals are set, timetables estimated, and plans formed will maintain these biases as they appear to do in western respondents.

3. Implications for Intervention

Theorists and critics of unrealistic optimism have long called for the development of debiasing strategies that enhance realistic assessments of

people's undertakings. This call is based on the logical argument that, if people become more realistic, they will be in a better position to make better decisions and to choose courses of action based on more accurate assessments of the risks and opportunities they face. Thus, for example, a realistic sense of one's vulnerability to potential future negative events should make people appropriately cautious, because they will have an accurate sense of their risks. Similarly, making personal goals and the timetables for meeting them more realistic should improve people's abilities to bring appropriate goals to fruition within a projected period of time.

However, the prospects for making accurate predictions in complex, uncertain, and ever-changing environments are rather low. Often, the specific factors that undermine people's efforts to meet their expectations are not ones that could have realistically been anticipated. At the time of prediction, the causal significance of relevant factors might not be reasonably discernable given the uncertainty and fundamental unknowability of a multiply-determined future. Similarly, the initial (objective) probability of an eventual cause of failure may be so slight at the outset as to be "realistically" negligible, even if it is recognized. In other words, what is realistic at the time of prediction may not be accurate by the time outcomes are attained. In the context of prediction, then, realism and accuracy may not be synonymous.

But perhaps a pessimistic shift in expectations is all that is needed to improve self-regulation. Building in a margin of error by anticipating that something may go wrong (without knowing exactly what that something is) may constitute a sufficient correction. Specific accuracy as to the nature of the problems to be encountered may not be essential to this process. We suggest that substituting relatively pessimistic (or conservative) assessments for unrealistically optimistic ones may simply make people more unhappy and less enthusiastic about their undertakings, less persistent in pursuing them, and more concerned about the future, without necessarily improving the accuracy of their assessments. Support for this position is provided by the planning fallacy studies by Buehler et al. (1994). In their investigations, manipulations designed to enhance realism made people more pessimistic, but they did not enhance their accuracy about the timing and completion of their projects. If realism simply slows down people's goal-directed activities or makes them more concerned about external risks without giving them more accurate information about what will go wrong and how to compensate if it does, then, on the whole, realism may be less adaptive in the self-regulatory sense than critics of unrealistic optimism have assumed. To the extent that unrealistic optimism enhances performance, persistence, and positive mood, and to the extent that unrealistic optimism is relatively, if not absolutely, accurate, it may have more self-regulatory

benefits than costs, and more self-regulatory benefits than realism has. This will be true primarily if unrealistic optimism is relatively accurate, and the preceding review provides evidence that it is.

These remarks should not be construed to suggest that we should refrain from educating people about risk. As noted earlier, being misinformed is not the same as being unrealistically optimistic, and optimism without a solid basis for that optimism will not likely confer the benefits that optimism has been found to have. Moreover, the prevalence of high-risk behaviors and preventable negative outcomes is reason enough to maintain educational efforts to reduce their prevalence. However, in efforts to reduce risky behavior, there may be less need to worry excessively about people's perceived invulnerability than some theorists have assumed. To the extent that unrealistic optimism is based on an active consideration of what actions an individual has taken or will undertake to prevent a negative event, the expression of personal optimism may indicate not only that one is aware of a particular risk, but that one is knowledgeable about things that can be done to reduce that risk. This analysis is consistent with research demonstrating that people are often pessimistic about the likely outcomes of others, while believing that they are relatively less vulnerable to these same negative outcomes (e.g., Buehler et al., 1994; Whitley & Hern, 1991), and with the finding that these contrasts are exaggerated following informational campaigns about the prevalence of risk (e.g., Tyler & Cook, 1984). Rather than targeting unrealistic optimism, such interventions might better highlight the factors that promote self-protective behavior. Targeting unrealistic optimism per se has not, to date, proven to be effective in promoting appropriate behavior change (Weinstein, Sandman, & Roberts, 1990, 1991), and some studies that have been designed to reduce optimism have simply undermined performance (e.g., Buehler et al., 1994). Rather than attempting to reduce optimism, then, promoting the practice of behaviors that make optimism more warranted may be a better strategy.

4. Conclusion

In the *Devil's Dictionary*, Ambrose Bierce defines optimism as "the doctrine or belief that everything is beautiful, including what is ugly, everything good, especially the bad, and everything right that is wrong." Our review suggests that this definition is only partly correct. 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. Although specific predictions tend to be optimistically biased, these predictions are not out of touch with reality; people seem to maintain expectations that are as favorable as they can get away with,

given the demands of the current situation and the state of their own self-knowledge. Most of the flagrant (and potentially worrisome) displays of unrealistic optimism are found in situations in which that optimism may be unlikely to have negative implications for self-regulation. When optimistic expectations can be tested or challenged, expressions of optimism and optimistic bias are much reduced. Optimistic expectancies thus appear to be quite flexible, serving the needs of both esteem and accuracy. This flexibility allows people to be realistic when they need to be, but optimistic when they do not: as a consequence, people can be adept at self-regulating their behavior while cheerfully maintaining optimistic expectations that are seen as unrealistic only in the eyes of others.

Acknowledgments

Preparation of this manuscript was supported by a grant from the National Science Foundation (SBR-9507642) and by funds from the MacArthur Foundation's Network on SES and Health to S. Taylor. We would like to thank the following people for their comments on earlier drafts: Lisa Aspinwall, Charles Carver, Gregg Gold, Regan Gurung, Brian Lewis, Sonja Lyubomirsky, Brett Pelham, Lien Pham, Inna Rivkin, Vanessa Robin Weersing, and Neil Weinstein.

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