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Dispositional optimism

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Optimism is a cognitive construct (expectancies regarding future outcomes) that also relates to motivation: optimistic people exert effort, whereas pessimistic people disengage from effort. Study of optimism began largely in health contexts, finding positive associations between optimism and markers of better psychological and physical health. Physical health effects likely occur through differences in both health-promoting behaviors and physiological concomitants of coping. Recently, the scientific study of optimism has extended to the realm of social relations: new evidence indicates that optimists have better social connections, partly because they work harder at them. In this review, we examine the myriad ways this trait can benefit an individual, and our current understanding of the biological basis of optimism.

Introduction to dispositional optimism

The personality dimension optimism versus pessimism has roots both in folk wisdom and in over a century of expectancy-incentive motive theories. Contemporary research into the correlates of this trait began nearly 30 years ago with the creation of the Life Orientation Test, a self-report measure of optimism, which was revised in 1994 [1] to focus its item content more closely on expectancies for one's future, the conceptual core of the trait. Optimism is one of a family of related constructs, including hope [2], attributional style [3], and self-efficacy [4]. It differs from those partly by being focused on positive versus negative expectations for the future without regard to the means by which such outcomes occur (you can, for example, be optimistic because you have great confidence in your abilities or because you believe other people like and look out for you). It differs from situational expectancies in terms of the range of situations to which the expectancy is applicable and its stability over time.

Although it is possible to disparage this construct as merely folk psychology, optimism turns out to be a case in which widespread intuition has a strong basis in reality. The optimism construct has proven to be useful and relevant to a range of topic areas, and this review addresses work in several of them. Given current interest among cognitive scientists in links between motivation and cognition (e.g., a special issue of Cognitive, Affective and Behavioral Neuroscience is in preparation addressing these links), examination of this cognitive-affective construct, which has important motivational overtones, seems timely.

Variations in personality have never been popular as predictors in the cognitive sciences. In part, this is probably because the desire to make causal statements precludes reliance on correlational variables. However, the fact that personality is an important determinant of many kinds of behavior [5] suggests that it deserves a closer look. The fact that optimism is a facet of personality that is inherently cognitive in nature (i.e., expectancies about the future) may make it especially appealing.

This review has some boundaries that should be noted at the outset. The term ‘optimism’ is used in diverse ways in various contexts, and not all of them are reviewed here. This review does not discuss contextualized (goal-specific) optimism [6], which can behave differently from generalized optimism under some circumstances [7]. It does not discuss so-called ‘unrealistic optimism’ [8], the idea that people on the whole expect better outcomes than are realistically justified (but see [9] for a critique of this view and [10] for evidence that the phenomenon is distinct from trait optimism). The review focuses on research in which optimism is assessed by face-valid self-reports, holding aside research in which optimism is inferred from patterns of causal explanation [11], in part because the measures used in the two literatures are not strongly correlated [12]. It is also noted that use of the labels ‘optimist’ and ‘pessimist’ is for convenience in description; most research examines the construct as a continuous distribution (although see Box 1 for an unresolved issue in that regard).

Locating optimism in the broad matrix of personality

Research on optimism began during the mid-1980s, before the 5-factor model of personality structure became the default frame of reference when discussing traits. The 5-factor model [13] distills personality to five broad traits: neuroticism, extraversion, agreeableness, conscientiousness, and what is generally labeled ‘openness to experience’. It has been suggested that optimism represents a blend of neuroticism and extraversion [14]. However, later work tends to support the view that optimism is distinct from those traits [15,16], while also having some overlap with agreeableness and conscientiousness [17]. In sum, it is not easy to capture optimism well within the 5-factor viewpoint.

Trait psychologists have always been contentious about how best to slice up personality, and disagreements have abounded over whether one way or another is fundamental.
Box 1. One dimension or two?

Some personality dimensions are bipolar, whereas others are unipolar. The logic behind the optimism construct assumes a bipolar dimension, with ‘substance’ at each end and a neutral point in the middle. However, there has been controversy about whether optimism is a bipolar dimension or there are two separable dimensions, one pertaining to affirmation versus disavowal of optimism, the other to affirmation versus disavowal of pessimism. This issue arises because the scale has both optimistically framed items (e.g., “I'm always optimistic about my future”) and pessimistically framed items (e.g., “I hardly ever expect things to go my way”) and responses to the two sets of items generally form two factors. Some people think that this means there are two substantive dimensions, whereas others think that the split is a product of method variance in responding. Sometimes separating those item subsets has led to better prediction of other outcomes from one or the other subset, whereas other times there has been no benefit. Several studies aimed at settling the issue have reached opposite conclusions: some that a unidimensional view is best (e.g., [78–80]), others that there are two dimensions that should be treated separately (e.g., [81,82]). This issue, which remains unresolved, pertains to virtually all bipolar trait scales, which typically form two factors if the scales contain subsets of items affirming both poles.

For the sake of simplicity, in this article, we treat optimism–pessimism as one dimension. However, it should be kept in mind that, in some studies, the extent to which people endorsed versus rejected a pessimistic outlook was what mattered most; in other studies, the extent to which people endorsed versus rejected an optimistic outlook was what mattered most. In yet other studies, this issue did not matter at all. Those who use the scale are encouraged to continue to examine the item subsets as well as the overall scale score, to gain further information on the issue.

One might think of the five factors as forming domains of content: the ‘what’ of human motives (extraversion as social influence, neuroticism as threat avoidance, and agreeableness as social bonds). One might think of the optimism dimension as part of the ‘how’ of human motives: how goals are turned into behavior (or fail to be turned into behavior) from an expectancy-based viewpoint.

As a practical matter, researchers using the optimism construct have largely ignored the issue of overlap with other traits, although they sometimes do include other traits for comparison with optimism in predictive power; optimism tends to hold up well in such comparisons [18–20]. Those studying optimism generally have instead simply developed their hypotheses within the framework of the expectancy-incentive motivational viewpoint, in which confidence is an important determinant of effort toward goals. That is how the construct is discussed here.

Optimism research reflects broader views of self-regulation

The general approach to self-regulation on which this operationalization of optimism rests [21] assumes that much of life concerns the approach of goals. Expectancies become important primarily when impediments appear. If the person is confident about eventual success, effort continues. If the person is doubtful, there is a tendency to disengage effort. Sometimes, disengagement of effort accompanies continued psychological engagement with the goal, yielding distress. Sometimes, the disengagement is from the goal itself, resulting in failure to attain it. Optimism versus pessimism reflects such expectancies on a broad scale.

Given the origin of the optimism construct in a broad view of motivation, it is natural that research has investigated its role in motivation-relevant outcomes in various life situations. Optimism has been linked to a greater likelihood of completing college [22]. One study found no association with first-semester law–school grades [23], but another found that optimism during the first semester of law school predicted higher salaries a decade later [24]. One interpretation of this pattern is that optimists are no more capable than those who are less optimistic, but are more persistent in their academic and professional efforts over time. This would be consistent with other evidence discussed below.

An important characteristic of real-life contexts is that people generally pursue multiple goals simultaneously. Research has also examined the role of optimism in outcomes relevant to the juggling of multiple goals. One study found that optimists who were pursuing multiple goals were better at balancing effort expenditures [25]. Another set of studies [26] found that optimists increase goal engagement for high-priority goals (and, thus, are more likely to attain them), and tend to decrease engagement for low-priority goals (Figure 1). These tendencies occurred in goal domains that included friendship formation, exercise, and scholastic performance. Optimists even display greater engagement in treatment programs (nutrition education and psychotherapy), but only if the need for the program was judged by the person to be important [27]. Optimists appear to pick and choose where to invest their self-regulatory resources, increasing efforts when circumstances are favorable (compared with pessimists) and tending to decrease them when circumstances are unfavorable [28]. Indeed, if they believe they are being undermined in the workplace, they report a greater intent to quit than do pessimists [29].

Optimism effects in relationships

The principles that apply to goal attainment in other domains also can be applied to the management of close relationships. This is a relatively new area of work on optimism. Optimists seem to work harder at relationships [23,24], consistent with their greater engagement in other high-priority tasks. One study of newlyweds [7] found that optimists engaged in more constructive problem solving than did pessimists, both in a lab discussion of marital issues with their partner, and outside the lab on days when there was relationship conflict (Figure 2). They also had less decline in marital well-being over the first year of their marriage.

Optimists report having greater social support than do pessimists [30–32], but there is some indication that it is the perception of support that matters rather than the actual provision of support [32]. Optimists thrive in a wide range of social conditions, with the result that optimism is related to greater network size, and to ties with others that cross age, educational, and racial boundaries [33]. There is also evidence that this association works in both directions: having strong social networks can enhance optimism [24]. The social effects of optimism can be far-reaching. In one study, optimism (assessed 10 years previously) predicted greater resilience to developing loneliness late in life [34].
Optimism is associated with a warm and slightly dominant interpersonal style, which among men results in greater relationship satisfaction not only for themselves, but also for their wives [35]. A similar effect has been found for caregiver burden among wives of men about to undergo coronary artery bypass surgery [36]. Optimists handle relationship crises more successfully than do pessimists [37] and they provide nurturant and involved parenting to their children [19,38], resulting in better adjustment of the children.

Optimism as mental orientation to experiences
As noted above, optimism is the expectation that one’s own outcomes will generally be positive. Indeed, it incorporates a belief that a stressful present can change to become better in the future [39]. It is a viewpoint about what the future will hold. However, it does not involve being oriented preferentially to the future rather than to the present [40].

However, when optimists do think toward the future, they are able to generate more vivid mental images of positive events than are pessimists, a stronger sense of ‘pre-experiencing’ those events (despite not having more vivid imaginations in general) [41]. Consistent with this, one imaging study found an association between dispositional optimism and greater activation of a brain area that is associated with imagining positive future events [42].

This frame of mind also has reverberations in the present. Optimists appear to be more able than less optimistic people to disengage mentally from, or inhibit, physical pain [43,44]. They are more responsive to suggestion about pain relief in the form of placebos [45]. By contrast, more pessimistic people are inclined to catastrophize pain experiences, thereby making the experiences subjectively worse [46,47]. Illness burden, assessed by medical evaluations, promotes greater anxiety among persons low in optimism, but not among those high in optimism [48].

If life turns seriously sour, as reflected in a lack of connection with others and perceiving that one has become a burden on others, suicidal ideation emerges among persons low in optimism, but not among those higher in optimism [49]. More generally, optimism reduces the magnitude of the association between rumination and suicidal ideation [50]. Given the adversity of an extended lack of employment, optimists manage to maintain higher life satisfaction, mediated partly by perceptions of family support [51]. Optimists report more finding of benefits in adversity than do pessimists [52], and there is evidence that this difference is mediated by differences in problem-focused coping [53,54].

Optimism and health
As noted above, research using the optimism construct began at the interface between personality psychology and health psychology. Given this, much of the work on optimism has taken place in health-related contexts, as people confront the transitions imposed by health crises. The early work largely addressed the question of whether optimists fare better emotionally and psychologically than do pessimists when confronting health problems, and confirmed that the answer is yes [55]. However, more recently, research has addressed the question of whether optimism also predicts physical health [56]. Many of these studies take the form of epidemiological research, looking at long-term prospective associations between optimism and health outcomes in large samples.

Some of this research examined health outcomes per se. As an example, one major study of cardiovascular disease, using data from the Women’s Health Initiative (WHI), examined quality of life, chronic disease, morbidity, and mortality among over 95,000 women across an 8-year period [18]. All of the women were free of cardiovascular disease and cancer at study entry. Optimists were less likely than pessimists to develop coronary heart disease (CHD), were less likely to die from CHD-related causes, and had lower total mortality due to all causes, across the 8 years of study. Other studies found that optimism was...
Where do individual differences in optimism and pessimism come from? Clearly, there is some sort of genetic involvement in this trait. Heritability estimates hover around 30%, depending on the study and the algorithm used to estimate heritability [83–85]. A family-pedigree paradigm has also yielded associations between optimism levels of parents and offspring in two separate cohorts [86]. More recently, evidence has been found that associations between optimism and longevity may also have genetic underpinnings [87].

Researchers have been trying (with mixed success) to identify specific genetic elements that might underlie variations in optimism and pessimism. One study [88] implicated the oxytocin receptor gene (rs53578), but this finding failed to replicate in another study [89]. A haplotype for the mineralocorticoid receptor gene, which helps to regulate stress arousal, has also been related to optimism in one study, but only among men [72]. The only published genome-wide study to date [90] failed to identify any correlate of optimism.

On the environmental side, early childhood experiences has also been linked to adult optimism. This research [91] measured optimism in a cohort of adults aged 24–27 years. The researchers also had access to socioeconomic status (SES) of the participants’ families during their early childhood (ages 3–6 years) as well as the participants’ current SES. Childhood SES predicted optimism in adulthood, even after controlling for adult SES.

An apparently unexamined possibility is whether optimism is cultivated directly through parental transmission (e.g., through parental modeling). Another possibility is that optimism could arise via instruction from parents to children on the use of adaptive coping strategies. Use of such strategies might lead to coping successes, thereby laying the foundation for future optimism. It would also be useful to explore these possibilities in future research.

Figure 3. Optimism is associated with more health-promoting and less health-impairing behavior. Optimists are less likely to smoke, more likely to exercise, and have more healthy diets compared with pessimists in the form of higher fruit and vegetable consumption (displayed are percentages of subjects who reported two or fewer servings per day). Adapted, with permission, from [61].

Is optimism ever bad?
A question that has been raised virtually from the inception of research on the optimism construct is whether there are circumstances in which optimism is undesirable. Are optimists ever worse off than pessimists? A common proposal is that a bad outcome disconfirms an optimist’s expectations so badly that the experience may be worse for the optimist than for a pessimist, who expected a bad outcome and had the expectation confirmed. Although this is a plausible argument, we know of no evidence that supports it. Rather, as noted above, optimists endorse the belief that a stressful present can change to a better future [39]. Put differently, the view that ‘things are bad now, but they will get better’ promotes better functioning than ‘things are bad now and they are going to stay that way.’

However, there are rare findings of adverse effects of optimism. Two recent findings come from contexts in which too much confidence and persistence might create problems. One is gambling. Research on gambling has found that optimists had more positive expectations for gambling than did pessimists, and were less likely to reduce their betting after poor outcomes [74]. Participants in that research were not people with actual gambling problems. However, the outcome suggests the possibility of a vulnerability to such problems.

In another recent study, lower levels of optimism among entrepreneurs (in combination with relatively high
entrepreneurial experience) predicted better performance in new ventures, defined as employment growth and revenue [75]. However, this study had an unusual sample: entrepreneurs who (as the authors pointed out) are especially optimistic as a group. The fact that less optimism predicted better outcomes in a subset of that sample led those authors to suggest that optimism has curvilinear effects in some contexts. Despite the infrequency of such reversals (and the abundance of positive associations between optimism and motivational outcomes), this possibility warrants study.

**Becoming more optimistic**

Given that optimism is beneficial in many life domains, a reasonable question is how to become more optimistic. Recent research has found that 2 weeks of daily 5-min sessions of imagining one’s best possible self can increase optimism, at least temporarily [76]. Others have trained people to make systematically more optimistic explanations for events [3]. Indeed, it might be argued that the broad range of cognitive-behavioral therapies used in clinical practice for conditions such as depression [77] typically involve efforts to induce people to approach their lives in more optimistic ways.

Still, optimism is a personality trait. Without manipulation, it generally remains relatively stable over extended periods, at least in the absence of major life transitions [55]. This raises questions about whether procedures such as mental simulations can be expected to have pervasive or long-lasting effects. (Indeed, questions about longevity and pervasiveness can also be raised about formal therapies.) Changing a person’s overall outlook on life can be done, but it is not a simple matter.

**Implications and concluding remarks**

The recent research reviewed here extends previous work in several directions: to consider more closely the role of optimism in prioritization of goals; to consider how optimists handle the demands of close relationships; and to examine how optimism relates to diverse markers of physical well-being. Most of the evidence, both old and new, suggests that optimism is a desirable property to have. Clearly, there are gaps in knowledge (Box 3). Research will continue to explore the possibility that optimism is problematic in certain domains, for example, and some work should test for curvilinear effects to determine more clearly what happens at the highest levels of optimism. It is likely that investigations of optimism and health will continue, with an emphasis on exploration of mechanisms of action.

Optimism is a construct that illustrates the importance of recognizing that cognitive, emotional, and motivational processes are intertwined. At its center, optimism is a cognitive construct, an expectancy. However, by virtue of its connotations of valence (expecting either good or bad), this dimension also has emotional overtones. Finally, the evidence reviewed here makes clear that this expectancy also has motivational implications. It seems impossible to untangle these threads from each other, and it seems wise to recognize their inextricability.

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**Box 3. Outstanding questions**

- Is the presence of optimism different from the absence of pessimism?
- Do effects of optimism overlap or differ from effects of other personal strengths?
- What are the origins of optimism?
- What neural processes subserve optimism?
- What biobehavioral mechanisms underlie optimism effects on health?
- What techniques might foster change from pessimism to optimism?
- How hard is it to change from a relative pessimist to a relative optimist?
- Under what circumstances might it be bad to be too optimistic?
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