

## EXPLORING THE CAUSES OF COMPARATIVE OPTIMISM

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We review explanations offered by researchers for optimism in comparative risk judgments – the belief that one is at lower risk than other people for negative events. Our review organizes the explanations into four categories. The categories reflect a) the desired end-states of comparative judgments, b) the cognitive processes that guide judgments, c) the information people have or use in making judgments, and d) the underlying affect. For each explanation we review relevant studies. We conclude by discussing whether comparative optimism reflects a distortion in personal risk judgments or judgments of the average person's risk, by addressing the interplay of the various accounts of comparative optimism, and by discussing directions for future research.

Psychics and astrologers sustain a steady business by appealing to people's desire to predict the future. People want to know whether they will be lucky in love or at risk for cancer or other debilitating illnesses. Yet people are not just interested in how their future will unfold in an absolute sense; they are interested in knowing how their future will compare with that of other people, and for good reason. In a variety of domains (sports competitions, admissions to competitive graduate schools, job promotions), success and failure are defined by how people measure up to others because those others provide a standard against which people can evaluate themselves (Festinger, 1954). Of course, the future is uncertain, and unlike psychics and astrologers, laypeople lack a crystal ball for predicting what lies ahead. They must instead weigh their knowledge of themselves and their knowledge of others to forecast the future. Importantly, over two decades of research on comparative risk judgments suggest that people systematically tip the scale in their own favor, predicting their outcomes will be brighter than that of their peers.

Comparative optimism refers to the tendency for people to believe that they are less likely to experience negative events and more likely to experience positive events than are other people (Weinstein, 1980, 1983, 1987). People display comparative optimism for a wide range of events including automobile accidents, unwanted pregnancies, alcoholism, weight gain, sui-

cide, divorce, and illnesses such as cancer, diabetes, and hypertension (Burger & Burns, 1988; McKenna, 1993; Perloff & Fetzter, 1986; Regan, Snyder, & Kasson, 1995). Comparative optimism appears both pervasive and persistent (Shepperd, Helweg-Larsen, & Ortega, in press).

We explore the question of why people consistently report their futures are brighter than the futures of others. In examining this question, we focus specifically on comparative risk judgments for negative events for several reasons. First, although researchers demonstrate comparative optimism for both positive and negative events (elsewhere called gains and losses; Shepperd, Findley-Klein, Kwavnick, Walker, & Perez, 2000), the evidence suggests that the effect is stronger for negative events than for positive events (Hoorens, 1996). Second, Hoorens proposes that comparative optimism can have different consequences depending on whether the event is positive or negative. For positive events, the consequences may more often be feelings of well being and self-esteem; for negative events, the consequences may more often be instrumental behavior such as engaging in risky behavior or failing to take precautions. Third, the majority of studies examining comparative risk judgments focus exclusively on negative events, perhaps because distortions in judgments for negative events pose greater health problems and, as just noted, thus may be more consequential. Fourth, Hoorens (1996) suggests that comparative optimism for positive versus negative events may arise from different psychological processes, perhaps because negative events often represent a loss of resources whereas positive events represent a gain, and research shows that people view losses and gains quite differently (see Shepperd et al., 2000). Importantly, although we occasionally present explanations for comparative optimism in terms of how people respond to negative events, every process we describe can be applied to both positive and negative events.

#### A Clarification of Terminology

Before we discuss possible causes of comparative optimism, it is important to first clarify terminology. As noted earlier, comparative optimism describes a belief that one is less likely to experience negative events and more likely to experience positive events than are other people. Three other terms used in the literature to describe the same phenomenon are *unrealistic optimism* (Weinstein, 1980), *optimistic bias* (Weinstein, 1980) and *illusions of unique invulnerability* (Perloff, 1987). Each of these terms implies that the difference between risk judgments made for the self and the risk judgments made for the average person arises from a distortion of personal judgments. That is, each term suggests that people are realistic in their judgments about

the average person but are unrealistic, biased or harbor illusions regarding their personal judgments. Indeed, it is notable that researchers have *not* coined terms such as “pessimistic bias”, “unrealistic pessimism” and “illusions of common vulnerability” to describe the relative difference in risk estimates. As will become apparent in our review, it is possible that people may distort either their judgments of their personal risk or their judgments about the risk of the average person. Moreover, a recent literature review suggests that the belief that one faces lower risk for negative events than do other people arises primarily (though not entirely) from distortions in the estimates made regarding other people’s risk rather than from a distortion in the estimates of one’s personal risk (see Shepperd, 2001). As such, people seem to display unrealistic pessimism, or a pessimistic bias, or illusions of common vulnerability when estimating the risk of others.

The terms “unrealistic optimism” and “illusions of unique invulnerability” are additionally problematic in that they imply a comparison between personal judgments and an objective criterion such as actual outcomes. There certainly are many instances where people display optimism relative to some objective criterion. For example, a student may believe that she or he will receive an “A” in a course when the actual grade received is a “C”. Indeed, much of the research on the planning fallacy seems an illustration of this form of unrealistic optimism (Buehler, Griffin, & Ross, 1994). Yet, researchers who have used these terms often have concentrated exclusively on the comparison between judgments about one’s own future and judgments made about the futures of other people. We prefer the term comparative optimism to refer to optimism that arises from social comparisons because it does not imply that the comparison standard is an objective criterion and because it does not imply that the bias originates specifically from a distortion of personal risk or the average person’s risk.

Finally, we also are careful to distinguish comparative optimism from dispositional optimism. Dispositional optimism refers to a dispositional belief that one’s outcomes will be positive rather than negative (Scheier & Carver, 1985). People scoring high in dispositional optimism are more likely than people scoring low to believe that good outcomes are attainable and bad outcomes are avoidable. Comparative optimism does not refer to general beliefs regarding whether positive outcomes are more attainable, or more likely to occur than are negative outcomes, but rather to specific beliefs about whether positive and negative outcomes are more likely to occur for oneself than for other people. Thus, comparative optimism differs from dispositional optimism both in specificity and in whether the optimism reflects a social comparison (Armor & Taylor, 1997). In addition to being conceptually distinguishable, the preponderance of empirical evidence suggests little or no correlation between comparative and dispositional optimism (Davidson &

Prkachin, 1997; Fitzgerald et al., 1993; Fontaine, 1994; Goodman, Chesney, & Tipton, 1995; although see Radcliffe & Klein, 2002). It is noteworthy that research finds a close correspondence between personal judgments and judgments of others (Klar & Giladi 1999) and between comparative risk judgments across events (Shepperd et al., 2002), suggesting that these sorts of judgments may be driven by some underlying trait. However, the low correlation between comparative risk judgments and dispositional optimism suggests that dispositional optimism is not that trait. Dispositional optimism contributes little to the occurrence of comparative optimism.

### Why Comparative Optimism Matters

Part of the interest in comparative optimism stems from its potential consequences for mental health and health-related behavior. For example, Taylor and Brown (1988) have proposed that comparative optimism is a type of positive illusion associated with mental well-being. They argue that a positively biased view of one's future carries a variety of psychological benefits such as self-reports of happiness and contentment, increased motivation and persistence, and ultimately better performance and greater success. More importantly, Taylor and Brown argue that normal individuals possess unrealistically positive views of the future and that accurate self-knowledge may be negatively related to psychological health. According to this argument, being unrealistic about one's personal risk is normal and good for mental health. However, this argument has not gone unchallenged (e.g., Colvin & Block, 1994). Moreover, some researchers have argued that comparative optimism is not beneficial to mental health; rather comparative pessimism is harmful to mental health (Schulz, Bookwala, Knapp, Scheier, & Williamson, 1996).

Regarding health-related behaviors, a common perception is that underestimating one's risks is problematic because it may induce people to engage in risky behavior or to take inadequate health precautions (e.g., Weinstein, 1982, 1984, 1987). Indeed, a component of most health behavior models is that people must perceive that they are personally vulnerable to a negative event before they take precautionary action (Becker, 1974; Rogers, 1975; Rosenstock, 1974; Weinstein, 1988). Several studies of comparative optimism provide evidence consistent with these models. For example, people led to believe that they were more likely than the average person to cause an automobile accident were more likely to report intentions to take precautions when driving and to make use of public transportation (Klein, 1997; McKenna, Stainer, & Lewis, 1991). Conversely, Burger, and Burns (1988) found that women who believed their risk of an unwanted pregnancy was

less than the risk of others were also less likely to use appropriate contraceptive methods. These findings suggest that comparative optimism may be more than a distortion in judgment. It may place people at an increased risk for negative outcomes.

### Overview

Our goal in this article is to review research bearing on the cause of the systematic optimism in comparative risk judgments. Although some researchers have addressed this topic in the past (Armor & Taylor, 1998; Perloff, 1987), our review is intended to be more comprehensive by exploring the litany of explanations offered by researchers for comparative optimism, including explanations that, while seeming reasonable, have received empirical challenge. We also identify gaps in our knowledge and provide direction for future research. This is not an exhaustive review of the literature on comparative optimism nor do we cite every study bearing on the causes of comparative optimism. The studies we cite serve as illustrations intended to explicate the various explanations discussed.

### *Theoretical Briar Patches*

As is typical of many efforts to explore the processes underlying biases in thinking, researchers examining comparative risk judgements must grapple with some thorny conceptual issues that encompass both the antecedent and consequence sides of the theoretical relationship. Although a complete survey or equivocal resolution of these conceptual issues falls outside the purview of this paper, we feel it important to acknowledge certain key theoretical briar patches that continue to ensnare theorists. The first is how we conceptualize comparative optimism, and the second is the relative contributions of cognitive and motivational forces in producing comparative optimism.

With respect to the first theoretical briar patch, the thorns reside primarily in how we conceptualize the continuum of comparative risk judgments. At first blush, the continuum would seem straight-forward, ranging from comparative optimism (e.g., negative outcomes are less likely for oneself than for others) to comparative pessimism (e.g., negative outcomes are more likely for oneself than for others). Yet as noted by Peeters, Cammaert, and Czapinski (1997), for the typical event the full continuum exists in theory but not fact. For most events, people vacillate between comparative optimism and realism. Peeters et al. suggest that comparative pessimism does

not even fall on the same psychological dimension as comparative optimism let alone serve as its opposite. Instead, pessimism may function as a separate unipolar dimension that characterizes people who are less mentally healthy, and that is endorsed more broadly only when the events examined are uncontrollable (Peeters et al., 1997; Peeters, Czapinski, & Hoorens, 2001). Our interest, however, is in comparative optimism. For convenience sake we may imply that comparative pessimism represents the opposite of comparative optimism. However, we are quick to recognize that is often not the case. We refer the interested reader elsewhere for a more thorough treatment of this issue (e.g., Peeters et al., 1997; Peeters et al., 2001).

A second theoretical briar patch in research on comparative risk judgments is the relative contributions of motivated and cognitive processes. That is, does comparative optimism reflect a hot, motivational process undertaken to reach desired conclusions about the self, or does it represent a cold, cognitive process that arises purely from the way people process information and form judgments? Teasing apart empirically cognitive and motivational explanations for behavior is notoriously difficult (Tetlock & Levy, 1982). In our review, however, we discuss explanations for comparative optimism that are decidedly motivational, as well as explanations that are purely cognitive. We recognize, however, that comparative optimism is most likely multi-determined, representing an interplay of both cognitive and motivational processes (Kunda, 1990; Pyszczynski & Greenberg, 1987). That is, like other biases, comparative optimism likely reflects a warm, cognitive-motivational phenomenon, with motivational factors perhaps supplying the desired end-state or goal, and cognitive factors supplying the means of achieving the goal.

### *Structure of Review*

We organize explanations for comparative optimism into four broad groups. First, we discuss explanations that are primarily motivational and reflect desired end-states of comparative judgments. Within this group we are self-enhancement, self-presentation, and the need for control. We argue that these desired end-states have prompted the development of a motivation-based heuristic, the better-than-average heuristic (Alicke, Klotz, Breitenbecher, Yurak, & Vredenburg, 1995), which reflects the automatic expression of these end-states. Second, we discuss explanations for comparative optimism that reflect cognitive mechanisms that guide judgments. Within this group we discuss three cognitive mechanisms: representativeness heuristic, singular-target focus, and the transformation of interpersonal distance into risk differences. Third, we address the possibility that compar-

ative optimism arises from the fact that people have different information about themselves and the average person. Explanations within this group include the person-positivity bias, egocentric thinking, and underestimation of other people's control over events. Fourth, we examine explanations that suggest that comparative optimism originates in mood and by extension, mood-congruent cognitions. While the four groups of explanations we review reflect alternative pathways to comparative optimism, there is some overlap in the explanations. Moreover, several of the mechanisms we review likely work in tandem to pave the psychological road to comparative optimism. As just noted, we ultimately believe that comparative optimism is borne out of the lively interface of the different explanations, a point we return to later. After reviewing the various explanations for comparative optimism, we conclude by addressing whether comparative optimism reflects a distortion in personal risk judgments or judgments of the average person's risk, and by discussing directions for future research.

### Causes of Comparative Optimism

#### *Desired End-States of Comparative Judgments*

Several explanations for comparative optimism originate in the goals or end-states that people desire. Accordingly, people are motivated to perceive or portray their risk as less than the risk of others because this is what they want to believe or want others to believe. Indeed, we noted earlier that some have argued that comparative optimism may have benefits for mental health and for health related behaviors. It is possible that these potential benefits may be a driving force underlying comparative optimism. In this section, we review three explanatory accounts for comparative optimism.

*Self-enhancement.* The first desired end-state is purely hedonistic and reflects a desire for self-enhancement: optimistic predictions are gratifying. It simply feels good to think that positive events will happen (or at least are more likely to happen for oneself than for others), and reduces anxiety to believe that negative events will not happen (or at least are less likely to happen to oneself than to others). In short, people can regulate anxiety and other forms of negative affect by concluding that they are better off than others are.

Considerable evidence suggests that how people feel about themselves, at least people in individualistic cultures such as in North America and Western Europe, is governed in part by how they compare with other people (Brickman & Bulman, 1977; Buunk, Collins, Taylor, VanYperen, & Dakof,

1990; Gibbons, 1986; Pleban & Tesser, 1981). Self-worth is judged in terms of one's standing or accomplishments (or those of one's group) on important dimensions relative to other individuals or groups (James, 1890; Tesser, 1988). Moreover, research confirms that people derive considerable satisfaction from favorable social comparisons (Alicke, 1985; Klein, 1997; Weinstein, 1982). People may thus estimate that their risk is less than the risk of others because doing so allows them to be better than average; it allows people to enjoy the affective spoils of a favorable social comparison (Alicke et al., 1995).

Additional evidence that comparative optimism may be motivated by self-enhancement or hedonistic concerns is the finding that people tend to focus on what they want to happen rather than on what might or will happen (Cantril, 1938; Sherman, 1980). Moreover, as the desirability of an event increases, so too does the perceived likelihood that the event will occur (Biner, Angle, Park, Mellinger, & Barber, 1995). For events that are undesirable, the perceived likelihood decreases. For example, college students who regarded divorce as particularly stressful and unpleasant were less likely to perceive that their own marriage would end in divorce (Perloff, 1987). Likewise, people who regarded a disease as serious were more likely to perceive their own chances of getting the disease as less than average (Kirscht, Haefner, Kegeles, & Rosenstock, 1966). The effect of desirability on comparative optimism seems particularly true for events that are personally important (Perloff & Fetzer, 1986).

Finally, evidence suggesting that comparative optimism may be motivated by self-enhancement concerns comes from studies that have manipulated the information people receive about the risk level of the average person (i.e., the baseline risk; Chandler, Greening, Robison, & Stoppelbein, 1999; Greening & Chandler, 1997; Klein, 1996, 1997; Klein & Kunda, 1993; Rothman, Klein & Weinstein, 1996). The typical finding is that receiving information that the average person's risk is low leads people to lower their personal risk estimates. For instance, participants in one study (Rothman et al., 1996) received either a) accurate information about the average person's risk of experiencing various negative events, b) false information indicating that average person's risk was low (50% lower than the true risk for the average person), or c) false information indicating that average person's risk was high (50% higher than the true risk for the average person). Participants receiving information suggesting that the average person's risk was low supplied personal risk estimates that were lower than those supplied by participants receiving accurate information about the average person's risk. These latter participants in turn rated their personal risk as lower than did participants receiving information that inflated the average person's risk. It is important to note that participants did not use the information they received



as an anchor and simply adjust from that anchor to find their own risk. Although participants in the low target risk condition responded by supplying lower personal risk judgments, their personal risk judgments were nevertheless higher than the false baseline information they received about the average person (although see Greening & Chandler, 1997; Klein, 1996 study 2). Thus, they displayed no comparative optimism. These findings suggest that participants may have some sense of their actual risk. Although they adjust their personal risk judgments somewhat in response to baseline information, reality constraints appear to keep them from supplying comparative risk judgments that exceed credibility (see Kunda, 1990).

*Self-presentation.* A variation on the notion that comparative optimism is driven by self-enhancement concerns is the idea that it reflects self-presentational concerns. The self-presentational perspective (Schlenker, 1980) asserts that people attempt to establish and maintain a desired personal image in social life. This perspective maintains that the "socialness" of the psychological research setting is no less (and perhaps greater) than any other social setting. As in any other social context, participants in research settings are motivated to present themselves in a desired fashion. Accordingly, the measured expression of comparative optimism would represent an outcome of self-presentational processes -- the need to present oneself as better off than others are. It is worth noting that the self-presentational account does not restrict the emergence of comparative optimism to deliberative conscious processes. Consistent with Abelson's Script theory (Abelson, 1981), the self-presentation account asserts that the expression of comparative optimism may occur with little thought (Schlenker, 1985). In fact, people may automatically apply an ingrained cognitive script to relative estimates and express it as comparative optimism. That is, a motivation to perceive oneself as better than others may lead people to reflexively present their personal risk as less than the risk of other people.

Support for the self-presentation perspective comes from four studies. In the first two studies participants believed their driving skills would be tested (either in a driving simulator [Study 1] or in an actual driving test [Study 2]) or would not be tested. Participants who anticipated that their driving skills would be tested were more modest in their ratings of their driving skills, displaying less comparative optimism than were participants who anticipated no such test of their driving skills (McKenna et al., 1991). Thus, participants presented a favorable identity, but tempered their self-presentations based upon accountability constraints. Of course, an alternative interpretation is that participants were more modest in their ratings of their driving skills to regulate anxiety that might arise from disappointment or potential failure (i.e., bracing for potential bad news; Shepperd, Oullette & Fernandez, 1996).

The third and fourth studies examined how people respond to others who display comparative optimism (indicating that their risk for several events is less than the risk of others) versus comparative pessimism (indicating that their risk for several events is greater than the risk of others) in their self-reports. The results revealed that a person who displayed comparative *pessimism* was less socially accepted, and that this lack of acceptance originated in the presumption that the person was also hopeless, sad, and depressed (Helweg-Larsen, Sadeghian, & Webb, 2002). These findings suggest that people may display comparative optimism because to do otherwise prompts social rejection and stigma.

The evidence for a self-presentational basis for comparative optimism is preliminary and only suggestive, and more research is clearly needed.

*Personal control.* Several researchers have offered a third motivational account suggesting that comparative optimism stems from a *comparative control illusion* – the motivated tendency for people to believe that they are better able than are others to control outcomes (McKenna, 1993). Several studies demonstrate that people display a comparative control illusion, perceiving that they have more control over events than does the average person (e.g., Quadrel, Fischhoff, & Davis, 1993; Hoorens & Smits, 2001). This overestimation of personal control may stem from two sources. First, people have a fundamental need for control that may lead to an exaggerated belief in personal control (Perloff, 1987; see also Weinstein, 1984), or perhaps even an objectively unwarranted illusion of control, such as for chance events (Langer, 1975). The net result is that people may overestimate their level of personal control in securing positive and avoiding negative outcomes. Because people do not have a need for others to enjoy control, they are unlikely to extend their unrealistic perception of control to other people. As such, people overestimate their personal control over events but do not overestimate the control that other people have over these same events. A second reason people may overestimate their personal control stems from research on the better than average effect (Alicke, 1985). Specifically, a need to be better than average may extend to perceptions of control such that people believe they are better able than are other people to control life experiences and thus can better facilitate the occurrence of desirable events and avoid the occurrence of undesirable events (Klein & Kunda, 1994; McKenna, 1993).

Supporting the notion that the comparative control illusion accounts for comparative optimism is the finding that higher judgments of perceived control over outcomes corresponds to greater comparative optimism (Harris, 1996). Likewise, people who score high on dispositional measures of control (such as a locus of control scale) display greater comparative optimism than do people who score low on dispositional measures of control (Hoorens

& Buunk, 1993; see Harris, 1996 for a review).

Although researchers have suggested that the comparative control illusion can precipitate comparative optimism in risk judgments, the data are indirect and correlational. Moreover, direct tests of the hypothesis have failed to provide support for the comparative control illusion-optimism causal link (Harris & Middleton, 1996; Hoorens & Smits, 2001). For example, in one study participants displayed the comparative control illusion, believing that they could better control important outcomes than could other people. In addition, participants displayed comparative optimism in their risk judgments. However, the comparative control illusion and comparative optimism were uncorrelated; participants who displayed the greatest comparative control illusion did not necessarily display the greatest comparative optimism (Hoorens & Smits, 2001). Thus, the comparative control illusion lacks empirical support as an explanation for comparative optimism.

*Summary.* The three desired end-states we have described are not independent of one another and may in fact overlap considerably. Moreover, these end-states may be so powerful and pervasive that people have developed a mechanism for concluding them automatically, a possibility we alluded to in our discussion of self-presentation and personal control. Indeed, some investigators have argued that judgments of comparative standings have an heuristic quality, with people responding reflexively and with little thought when making such judgments (Alicke et al., 1995). Accordingly, judgments of comparative risk are made globally without reference to diagnostic information and without much contemplation or deliberation (Klein, 2001). Stated otherwise, people may have developed an almost knee-jerk tendency to perceive themselves as better than average irrespective of the trait or event under investigation. The tendency functions as a decision rule or heuristic (i.e., the *better-than-average heuristic*) when people make judgments about the self relative to a generalized target such as the average person. This heuristic may amount to nothing more than establishing a set distance between personal risk estimates and estimates of risk for the average person. Yet it permits the speedy conclusion that others are at greater risk. It is notably different from other heuristics such as the representativeness heuristic in that it reflects a directional conclusion rather than a shortcut for determining frequency or for organizing one's perceptual world.

Of course, it is possible that the better-than-average heuristic may originate in the recurring message from parents and teachers to children that they are better than average, with children eventually internalizing this message into their self-views. The belief that they are better than average may in turn prompt people to perceive the "average" as something undesirable. Indeed, the mental representation of the term "average" may incorporate a negative

connotation (no one wants to be average). When rating the average person, people may automatically think of someone who is worse than them because they are accustomed to viewing themselves as above average. Regardless of how it developed, the better-than-average heuristic, once in place, serves as a shortcut for making social judgments and reaching desired conclusions. When evaluating their risk, people may be fuzzy about their true risk level and fuzzy about the risk of the average person. However, people are clear and confident and thus can make quick decisions with little contemplation about how they measure up to other people – they are better!

### *Cognitive Mechanisms that Guide Judgment*

So far we have described potential motivational end-states that can elicit comparative optimism and have even suggested that these motivational end-states may have prompted the development of a cognitive heuristic specifically designed to permit automatic expression of the end-states. It is also possible that comparative optimism is not primarily motivated by a desire to believe or have others believe certain things about oneself, but instead arises primarily from the cognitive mechanisms that guide judgments. Three cognitive mechanisms can lead people to conclude that their risk is less than the risk of others: the representativeness heuristic, having a singular-target focus, and the tendency to transform interpersonal distance into risk differences.

*The representativeness heuristic.* The representativeness heuristic is a decision shortcut in which estimates of likelihood are based on how closely an event or entity matches a person's prototype for the event or entity (Tversky, 1977). The more the features of a person represent or correspond to people's prototype of a particular category, the more people will assume the person is a member of the category. Because the representativeness heuristic is such a powerful and useful shortcut, people often use it over statistical or base-rate information when making judgments.

Weinstein (1980) proposed that this simple cognitive short-cut can be blamed as the chief source of comparative optimism. According to Weinstein, judgments of personal risk relative to the average target begin with a definition of the average target. The vague and general nature of the "average" target may prompt people to unwittingly invoke or create an inappropriate comparison target. Left to their own cognitive devices, people appear to select a stereotyped exemplar or general prototype of the risk category rather than a literal average target. This prototypical "average" target falls well short of an objective statistical average. Indeed, the prototype is

often characterized by risk-consistent rather than risk-inconsistent or irrelevant attributes. Having summoned the prototypical target into subjective foreground, people may then employ a feature-matching strategy in which they evaluate how similar they are to the prototype (Tversky, 1977). According to the representativeness heuristic, people will judge their risk as lower than the risk of the average person to the extent that they are dissimilar to the prototypical target.

For example, being asked to judge the likelihood that the average person will experience a car accident may prompt people to think not of a typical driver, but instead of a reckless driver. Moreover, accompanying the prototype are a variety of target consistent attributes (e.g., drives too fast, runs red lights, passes other cars in no passing lanes, is inattentive to other drivers). In judging their comparative risk, people then evaluate the extent to which they are similar to the reckless driver on these attributes. To the extent that they view themselves as *dissimilar*, they rate their personal risk as less than average. Support for an overuse of the representativeness heuristic as a cause of comparative optimism comes from research conducted by Weinstein (1980) in which participants displayed greater comparative optimism when prompted to generate a clear mental image of a prototypical victim representative of the risk category.

Additional evidence comes from a study by Perloff and Fetzer (1986, study 2) in which participants received instructions to think about one of their friends and then to estimate their own vulnerability and the vulnerability of their friend for several events (e.g., heart attack, drinking problem). Participants showed comparative optimism in their risk judgments. More importantly, participants chose a different friend for each event, and the friend they chose tended to be vulnerable for the event. Although the selection of a different friend for each event may be motivated by a self-serving wish to view oneself as not at risk, an explanation we elaborated on earlier, Perloff and Fetzer (1986) suggest that the selection of a high risk friend more likely reflects an overuse of the representativeness heuristic. Specifically, Perloff and Fetzer propose that each negative event prompted thoughts of the prototypical person who seems particularly susceptible to experiencing the event. The prototype in turn primed participants to choose from their array of friends a specific friend that resembled the prototype. Participants then judged their risk relative to this friend. Thus, when evaluating their risk of a heart attack, participants first thought of the prototypical heart attack victim. The prototype in turn primed participants to imagine a friend that resembled the prototypical heart attack victim. Participants then judged their risk of heart attack relative to this specific, high-risk friend. The process repeated when participants judged their comparative risk for other negative events.

*Singular-target focus.* Klar and his colleagues (Klar & Giladi, 1997; 1999; Klar, Medding, & Sarel, 1996) have proposed an alternative judgment mechanism in explaining comparative optimism. When making comparative risk judgments, people mainly focus on the perceived qualities of the singular target (such as the self) and do not sufficiently consider those of the generalized target. Comparative judgments thus reflect the absolute evaluation of the singular target's risk rather than the difference between the evaluations of the singular and generalized target's risk. For example, rather than judging their risk relative to others, people simply judge their personal risk, thereby transforming the comparative judgment into a personal risk judgment in which the self is evaluated with no clear counterpart or reference group. When circumstances demand that they evaluate the generalized target, such as when people are directed to judge personal and target risk separately, people rely on distributional information such as the base rate to form judgments about the target.

Evidence supporting the notion that people rely primarily on the qualities of the singular target when making judgments comes from several studies (Eiser et al., 2001; Klar & Giladi, 1997; 1999; Kruger, 1999). For example, students in one study rated on a single item how content they were compared with the average student. Students also separately estimated how content they were and how content the average student was. Analyses revealed that participants displayed comparative optimism in response to the comparative item, reporting that they were more content than the average student. More importantly, students' estimates of their personal contentment correlated strongly with the comparative item, whereas their estimates of the average student's contentment did not. The findings suggest that people generally ignore the average person when making comparative judgments; that is, comparative judgments are grounded in how people feel about themselves and are unrelated to their estimates of the average person.

*Transforming interpersonal distance into a perception of risk differences.* Drawing from self-categorization theory (Turner, Hogg, Oakes, Reicher, & Wetherell, 1987), Harris, Middleton and Joiner (2000) propose a third cognitive mechanism underlying comparative optimism, one that captures the context in which people make social judgments. Specifically, asking people to evaluate their risk relative to a target such as the average person prompts an interpersonal comparison in which interpersonal distances (such as the degree of psychological closeness or shared features with the target) are transformed into perceived risk differences. The greater the perceived interpersonal distance between the self and the comparison target, the greater the perceived difference in risk. People judge their risk as less than that of the average person because interpersonal distance is relatively high. The per-

ception of differences declines to the extent that the perception of interpersonal distance diminishes.

Support for this explanation for comparative optimism comes from a study by Harris et al. in which students first evaluated their personal risk and then evaluated the risk of two targets: the typical student from their university (an in-group target) and the typical student from another similar university (an out-group target). Some students evaluated the in-group target before the out-group target, whereas other students evaluated the out-group target before the in-group target. According to self-categorization theory, rating the out-group member first would prompt a perception (via a contrast effect) of less interpersonal distance between the self and the in-group target when participants subsequently rated the in-group target. The result would be less comparative optimism when the in-group target was rated second rather than first. The results supported the predictions. Participants judged the risk of the average student at their university as greater than their own risk only when they judged this student's risk prior to judging the risk of the average student from another university.

*Summary.* While each of the accounts described in this section provide a compelling explanation for comparative optimism, they each are also quite flexible in explaining results that on the surface would seem to offer challenges. For example, Harris et al. noted that their findings are not incompatible with the better-than-average heuristic or singular-target focus explanation for specific versus generalized targets. Recall in that study that students judged the risk of an in-group target differently (equal to versus greater than their own risk) depending on whether they made this judgment prior to or following making a judgment for an out-group member. Regarding the better-than-average heuristic, rating the out-group target first may have made the in-group target more individuated, thereby disengaging the heuristic. Regarding the singular target focus account, rating the out-group target first may have made the in-group target more concrete, prompting a singular judgment framework. Although it is possible that one of these decision rules ranks supreme over the others, it is also possible that each of these explanations accounts for a modicum of unique variance in comparative risk judgments. The relative contributions of each of these decision rules to comparative optimism awaits additional study.

### *Information About the Self versus the Target*

So far we have discussed the possibility that comparative optimism in risk judgments is motivated by desired end-states and the possibility that com-

parative optimism stems from the cognitive mechanisms that guide judgments. A third possibility is that people have an impoverished view of the average person compared with the information they have about themselves, and this difference in the type or amount of information people have about themselves versus the average person leads to different conclusions about risk. We are quick to distinguish this third category of causes of comparative optimism from the representativeness heuristic described earlier. With the representativeness heuristic, people gravitate toward selecting or creating a high-risk target for comparison. As such, the distortion in risk judgments comes entirely from a misperception of the target's risk. By contrast, in the present category, people are not selecting or creating a high-risk target. Rather, the availability of different information about the self versus the average person leads to different judgments about risk. Depending on the information available or missing, people may err in their personal risk judgments, their target risk judgments, or both.

Researchers have proposed three different accounts for how a difference in the amount and type of information available about the self versus the average person can lead to optimism in comparative risk judgments: the person positivity bias, egocentric thinking and underestimating the average person's control.

*Person-positivity bias.* The person-positivity bias is the tendency to evaluate an object more favorably the more the object resembles an individual human being (Sears, 1983). According to Sears, people possess and evaluate others on a *personhood* continuum that is anchored on one end by specific human beings and on the other end by inanimate objects. The more that the target of evaluation resembles a specific person, the more people will perceive the object to be similar to them and the more favorably they will perceive the target. Because groups of people are amorphous and abstract, they are not evaluated as specific human beings, but as somewhere on the continuum between specific person and inanimate object. Groups of people are thus judged less favorably than are specific individuals. In terms of comparative optimism, when people compare themselves with a target such as the average person, or most other people, or even a same-sex person their age, the target is viewed as less human, and thus less favorably, than the self.

Some researchers have dismissed the person positivity bias as an explanation of comparative optimism. Specifically, Regan, Snyder, and Kassir (1995) had participants compare their risk for various negative events with the risk of a close friend, an acquaintance and a stranger. Presumably, participants would view the stranger less favorably and thus at greater risk than the acquaintance because a stranger is more amorphous and abstract, and less like a specific human being. However, the results revealed a similar



degree of comparative optimism regardless of the target. Regan et al. thus concluded that the person-positivity bias was without merit. It is noteworthy, however, that the means of their study were in the direction supporting the person-positivity bias, suggesting that their null effect may have arisen from inadequate power to test their hypothesis. Moreover, numerous other studies have found that more concrete, individuated targets are rated as less at risk than abstract targets (Alicke et al., 1995; Harris & Middleton, 1994; Hoorens & Buunk, 1993; Klar et al., 1996; Perloff & Fetzer, 1986; Quadrel et al., 1993; Whitley & Hern, 1991; Zakay, 1984; Zakay, Zur, & Tsal, 1996). Thus, the person-positivity bias remains a viable explanation of comparative optimism.

*Egocentric thinking.* Several researchers have suggested that comparative optimism stems from a tendency for people to be egocentric in their thinking (Kruger, 1999). When making judgments about their future, people typically have a rich, detailed pool of knowledge from which they can draw and form judgments. They have information about their risk factors such as their prior experience, current risk behavior and their family history, as well as information about their precautionary behavior and intentions. Thus, a woman judging her risk of a coronary event is aware of her diet, weight, exercise pattern, past experience with heart problems, and family history of heart disease. She also is aware of her future intended behavior, such as plans to change her diet, lose weight and exercise more. Indeed, when judging their personal risk, people may focus on behaviors and actions that lead to desired outcomes (achieving some goal, avoiding a negative outcome) and fail to consider adequately impediments and potential obstacles. In support of this notion is evidence on the planning fallacy, the tendency to underestimate how long it will take to complete tasks (Kahneman & Tversky, 1979). Studies of the planning fallacy demonstrate that people underestimate their completion time on a variety of tasks including how long it will take to complete a class assignment and how soon they will complete their income taxes (Beuhler, Griffin, & MacDonald, 1997; Byram, 1997; Griffin & Buehler, 1999; Koole & van't Spijker, 2000; Newby-Clark, Ross, Buehler, Koehler, & Griffin, 2000). Research on the planning fallacy finds that people overwhelmingly focus on factors that will facilitate the occurrence of a desired outcome and fail to consider factors that will impede the occurrence of a desired outcome (Buehler et al., 1994)

While people have considerable, case-specific knowledge about their own risk factors, precautionary behavior and intentions for the future, they lack this information about the average person. In the absence of case specific information, people must rely on distributional or population base-rate information. Indeed, several researchers have argued that the tendency to view the

self as different from the average person stems primarily from the use of different information (Epley & Dunning, 2000; Kruger, 1999; Reeves & Lockhart, 1993). When evaluating singular, familiar targets (such as the self or a close friend), people use case specific information such as personal history, precautionary behavior and intentions. When evaluating vague, generalized targets (such as the average person), people have no case specific information and instead use distributional or the population base-rate.

We acknowledge overlap between egocentric thinking as an explanation for comparative optimism and Klar's idea that people use different judgment rules when evaluating singular versus generalize targets. According to Klar (Klar & Giladi, 1997; 1999; Klar et al., 1996), when people make comparative judgments, they insufficiently attend to the generalized target, focusing instead on the singular target to form their judgments. The fact that people systematically conclude that the singular target is better off (e.g., less at risk) than the generalized target may arise from additional information people have (or perhaps create) when contemplating singular targets that is not present with generalized targets.

Evidence that egocentric thinking and the use of different judgment mechanisms to evaluate single versus general targets can account for comparative optimism comes from a study by Weinstein (1980) in which one group of participants listed all factors that influenced their chances of experiencing a variety of events, and a second group read the list. Participants who read the list, and thus were induced to consider the behaviors of others, showed less comparative optimism in their own reports. Likewise, in a second study (Weinstein & Lachendro, 1982; see also Weinstein, 1983), participants who received detailed, personalized information about the risk status of five other students, displayed less comparative optimism in their risk judgments than did participants who did not receive this information. Indeed, participants who merely received instructions to imagine they were a typical same-sex student and then generated a list of personal risk factors as if they were that student displayed less comparative optimism than did participants who did not engage in this exercise.

The egocentric explanation would seem to suggest that comparative optimism stems primarily from a distortion in personal judgments rather than judgments for the average person because people consider actions and circumstances that will facilitate desired outcomes and fail to consider adequately impediments they are likely to encounter. It is important to note, however, there is also reason to expect that egocentric thinking may also lead people to distort their judgments of the average person's risk to the extent that they fail to adequately consider other people's intentions and goal directed behavior. For example, in one study observers who received

detailed information about a student nevertheless overestimated how long it would take the student to complete a task (Buehler et al., 1994, study 5).

*Underestimating the average person's control.* A variation on the ego-centric bias explanation suggests that people specifically err in their thoughts about the amount of control the average person has or will exercise over future outcomes. Earlier we discussed how comparative optimism might arise from the comparative control illusion whereby people have an exaggerated perception of personal control. We also noted that this explanation has failed to receive empirical support. The explanation we discuss here differs in that the focus is on misperceptions regarding the average person's control. The astute reader may have noticed that the distinction of whether comparative optimism reflects a distortion of personal judgments versus judgments of the average person cuts across many of the explanations we have reviewed. We will return to this issue later.

This control-based explanation has two forms. One form is that people underestimate the extent to which other people will exert control in their lives (Weinstein, 1980). To illustrate, smokers recognize that they are at greater risk for smoking-related illnesses than are nonsmokers (McKenna, Warburton, & Winwood, 1993). However, smokers rate their risk for smoking-related illnesses as less than other similar smokers. Why? Smokers may believe they are more likely than the average person who smokes a similar amount to cease smoking in the future; they believe they will take action, whereas other people will not. Importantly, people are not inattentive to their personal risk behavior. Indeed, reminding people to consider their personal risk factors does not diminish comparative optimism (Weinstein & Klein, 1995), presumably because people recognize their current risk factors, but nevertheless evaluate their risk based upon what they intend to do in the future to reduce their risk.

The second misperception of control is that people do not merely underestimate the personal control that other people have over events. Rather, they completely overlook or neglect the fact that other people have some personal control over their outcomes. Hoorens and Smits (2001) coined the term *control neglect* to refer to this alternative idea. Accordingly, people fail to think about the fact that others have control over events in their lives. If they thought about it, they would realize that others also have control. Smokers, for example, might neglect to consider that other smokers can also control their smoking behavior in the future. These alternative perspectives on control differ from the comparative control illusion in that the misperceptions of control do not originate from exaggerations or distortions of personal judgments of control. Rather, they originate from misperceptions of how much control other people have or will exercise (Hoorens & Smits, 2001).

Two studies offer support for the notion that, when making comparative risk judgments, people neglect or underestimate the control that others have in their lives. In both studies, prompting people to think about the control that other people have in their lives reduced comparative optimism. Specifically, participants who rated the extent to which the average person can control the occurrence of various controllable events in their lives subsequently displayed less comparative optimism than did participants who did not first make these ratings (Hoorens & Smits, 2001, Studies 2 and 3). Moreover, prompting people to consider how much control the average person has affects judgments of the average person's risk but not judgments of personal risk.

### *Underlying Affect*

A final category of explanations suggests that comparative optimism is grounded in affective experience. According to this explanation, affective states facilitate access to mood-congruent memories and cognitions (see Gilligan & Bower, 1984). Happy moods prompt happy memories and cognitions, and sad moods prompt sad memories and cognitions. The mood-congruent cognitions in turn color subsequent judgments such as evaluations of comparative risk. For most people, the ambient mood is positive. Accordingly, their ambient positive mood facilitates the availability of positive memories and cognitions, and these memories and cognitions prompt judgments of low personal risk, perhaps focusing attention on desired outcomes of personal efforts to achieve desired outcomes.

A variety of studies provide support for the effect of affective states in comparative risk (see Helweg-Larsen & Shepperd, 2001, for a review). For example, a number of studies find that positive moods increase comparative optimism and that negative moods such as sadness and anxiety decrease comparative optimism (Abele & Hermer, 1993; Butler & Mathews, 1987; Dewberry, Ing, James, Nixon, & Richardson, 1990; Dewberry & Richardson, 1990; Drake, 1984, 1987; Drake & Ulrich, 1992; Salovey & Birnbaum, 1989; Taylor & Shepperd, 1998). Other studies find that people who score high on measures of trait anxiety and dysphoria, and for whom presumably negative memories and cognitions are chronically accessible, display less optimism in comparative risk judgments than people who do not score high on these measures (Alloy & Ahrens, 1987; Butler & Mathews, 1987; Eysenck & Derakshan, 1997; Pietromonaco & Markus, 1985; Pyszczynski, Holt, & Greenberg, 1987).

*Phantom Causes of Comparative Optimism*

Our review of the causes of comparative optimism would be incomplete if we did not note two explanations for comparative optimism that have failed to receive empirical support. First, some researchers have suggested that comparative optimism is an artifact of the samples that researchers have examined (e.g., Colvin & Block, 1994). In the typical study of comparative optimism, participants (usually college students) compare their risk with the risk of the average person. Yet in many domains, college students are not average. The average represents a broad array of people, some who attend college, but many who do not. Compared with the average, college students are reasonably likely to face lower risks. College students likely are better educated, from a higher socio-economic tier, and are likely to engage in fewer risk behaviors such as smoking than the average person their age. In short, the average college student *is* different from the average person. Although this explanation represents a reasonable criticism of some of the early studies of comparative optimism, it is noteworthy that the bias continues to emerge even when the comparison target is constrained to be similar to the target making the judgment (e.g., Whitley & Hern, 1991).

Second, Armor and Taylor (1998) proposed that comparative optimism might have a biological basis, citing studies showing that activation of the left versus right hemisphere of the brain produced differences in comparative optimism (Drake, 1984, 1987; Drake & Ulrich, 1992). In these studies, some participants received instructions to turn their heads leftward while gazing to the far right, thereby activating the left hemisphere, while other participants received instructions to turn their heads rightward while gazing to the far left, thereby activating the right hemisphere. Participants displayed greater comparative optimism when the left hemisphere was activated than when the right hemisphere was activated. Although Armor and Taylor interpreted these findings as evidence of a possible biological basis for comparative optimism, a more compelling interpretation is that the brain activation procedures were merely a novel way to manipulate mood. According to Drake, activation of the left hemisphere is related to positive emotions whereas activation of the right hemisphere is related to negative emotions. And, as we noted earlier, people display greater comparative optimism when in a positive mood than when in a negative mood. Thus, there is evidence yet that comparative optimism is biologically caused.

*Summary*

Our review of possible causes of comparative optimism reveals several causes that have garnered support, several causes that have garnered no support, and several causes that remain largely untested. Regarding the explanations that involve desired end-states, it appears clear that hedonistic/self-enhancement concerns play some role in comparative optimism, either directly or as a goal that cognitive strategies are then recruited to pursue. A self-presentational explanation may also play a role in comparative optimism. However, we are quick to note that the evidence is circumstantial, and a clear empirical test of the role of self-presentational concerns awaits further research. The evidence seems to suggest that an exaggeration or illusion of one's own personal control is not responsible for comparative optimism.

Regarding the cognitive mechanisms that guide judgments, the representativeness heuristic has received considerable empirical support as an explanation for comparative optimism. Likewise, evidence also supports the ideas that comparative optimism arises from a singular-target focus of attention and from people transforming interpersonal distance into risk differences.

Regarding the differences in the information people have about the self versus the target, considerable evidence suggests that people do not give adequate consideration to the average person, either because their knowledge of the average person is impoverished or less accessible than information about the self or because they choose to neglect such information. In short, several studies now show that comparative optimism can result from egocentric thinking, from underestimation of the average person's control, and perhaps a person-positivity bias.

Regarding affect as an explanation for comparative optimism, affective states clearly influence comparative risk judgments, with positive mood inductions leading to an increase in comparative optimism and negative mood inductions leading to a decrease in comparative optimism. The fact, however, that comparative optimism can vary independent of affect suggests that affect is not the sole, or perhaps even the primary cause of comparative optimism. Instead, the findings suggest that the tendency to favor the self when making comparative risk judgments is not exclusively the result of motivational and cognitive processes.

Finally, we note that there is no support for the idea that comparative optimism is a methodological artifact of the sample or that comparative optimism is biologically caused.

### Does Comparative Optimism Reflect Personal Optimism or Interpersonal Pessimism?

As we noted earlier, whether the bias originates in distortions of personal risk judgments or distortions of risk judgments made for the average person is important because it has implications for intervention strategies as well as the basic issue of whether comparative optimism is a reason for concern. The terms used by researchers to describe personal favoritism in personal risk judgments (unrealistic optimism, optimistic bias, illusion of unique invulnerability) imply that the optimism originates from a bias or distortion in personal risk judgments. However, our review of the explanations for comparative optimism suggests that the optimism may originate from either a distortion of personal estimates, thereby representing personal optimism, or a distortion of estimates for others, thereby representing interpersonal pessimism.

Several of the explanations for comparative optimism propose that people distort the risk judgments they make for the average person. As summarized in Table 1, the representativeness heuristic, the person-positivity bias, and underestimating other people's control propose that people are interpersonally pessimistic rather than personally optimistic. With the representativeness heuristic, estimates of the average person's risk are based on a prototype that may stray dramatically from the average person, representing instead a stereotype of the high-risk person. With the person-positivity bias, people perceive vague targets such as the average person as less human and thus more negatively. For the control underestimation explanation, people fail to consider the extent to which other people also have control over important outcomes.

Theorizing about the influence of affect on comparative optimism suggests that positive mood produces a distortion in personal risk judgments. The distortion arises from people's ambient positive moods facilitating access to mood congruent memories and cognitions, which in turn color subsequent risk judgments. Of note, a recent review provided considerable evidence that negative affective states influence comparative risk judgments by affecting personal estimates (Helweg-Larsen & Shepperd, 2001). The review also revealed that positive mood surprisingly affected risk estimates for the average person rather than personal risk estimates. That is, when in a positive mood, personal risk estimates remained unchanged whereas risk estimates for the average person increased. Clearly, the question of how an ambient, positive mood affects comparative risk judgments requires further empirical and theoretical attention.

The illusion of personal control explanation also suggests that comparative optimism stems from a bias in personal rather than target judgments.

Table 1. *Explanations for Comparative Optimism*

Explanation	Definition	Evidence*	Distortion in personal versus target judgments
<b>Desired end-states</b>			
Self-enhancement	It is gratifying to perceive personal risk as lower than the risk of other people.	Yes	Either
Self-presentation	Comparative optimism helps people present a desired image.	Yes	Either
Personal control	People overestimate their personal control over outcomes.	No	Personal
<b>Cognitive mechanisms guiding judgments</b>			
Representativeness heuristic	The prototype of the average person possesses high-risk attributes.	Yes	Target
Singular-target focus	People inadequately attend to the generalized target, focusing instead on characteristics of the individual target.	Yes	Either
Transforming interpersonal distance into risk differences	Judgments of relative risk prompt people to transform interpersonal distances into perceived risk differences.	Yes	Either



Different information about the Self versus the average person			
Person-positivity bias	People evaluate the average less favorably because the average is less like a person than is a specific target.	Yes	Target
Egocentric thinking	People use case specific information to judge singular, familiar targets and base-rate information to judge general targets.	Yes	Either
Underestimating others' control	People underestimate or neglect the control that other people have over their outcomes.	Yes	Target
Underlying affect			
Positive affect	Ambient positive mood primes mood-congruent cognitions that color subsequent judgments.	Yes	Personal
Phantom causes			
Sampling bias	Most participants in comparative risk studies truly are at less risk than is the average person.	No	Neither
Biology	People are biological predisposed to perceive their risk as less than that of other people.	No	Either

\* "Yes" means the explanation has received empirical support; "No" means the explanations has not received empirical support.

However, as we noted earlier, this explanation has so far not received empirical support.

Finally, several of the explanations for comparative optimism suggest or leave open the possibility that the optimism can come from either a distortion of personal risk judgments or a distortion of risk judgments for the average person. These include self-enhancement, self-presentation, singular-target focus, transforming interpersonal distance into risk differences, and egocentric thinking. The self-enhancement and self-presentation explanations specify an end state that people wish to achieve – a judgment of lower personal risk -- but do not specify how people achieve this end state. Indeed, in both cases the conclusion that personal risk is lower than the average risk may occur automatically with little forethought. The remaining explanations (egocentric bias, singular-target focus, and transforming interpersonal distance into risk differences) do not specify whether the bias reflects a distortion in personal judgments or target judgments. The bias may reflect a distortion in personal risk judgments, target risk judgments or both.

#### The Multiple Determinacy Account of Comparative Optimism

Although we have outlined four categories of explanations for comparative optimism, as noted earlier, we recognize considerable overlap between categories and acknowledge that comparative optimism likely has multiple causes. Indeed, an evolving sentiment has emerged in the literature that comparative optimism, as well as other self-related judgments, represents the end product of a vigorous interplay between causal mechanisms. The explanatory models borne out of this growing sentiment eschew monistic accounts that reduce comparative optimism to a single causal mechanism. These pluralistic models propose an extremely flexible perceptual system in which different causal mechanisms can exert independent and interdependent effects in the production of comparative optimism. For example, Kunda (1990) proposes that much human judgement results from a dynamic interplay of cognitive and motivational forces. Although people may be motivated to believe certain (typically positive) things about themselves (a directional motive), external reality constrains them toward accuracy in their judgments (an accuracy motive). Importantly, directional motives influence reasoning through a biased memory search and belief construction model. The role of directional motives may simply entail the generation of a directional hypothesis. That is, people do not ask, "How does my risk compare to the risk of other people", rather they ask, "Is my risk less than that of other people?" The standard hypothesis testing procedures are biased toward seeking confirmatory information. Thus, people spontaneously search for con-

firming rather than disconfirming evidence when evaluating their naive hypotheses (Sanitioso, Kunda, & Fong, 1990).

The foregoing example represents only one of many pluralistic models of self-judgments. Other examples include the tool-box theory proposed by Kahneman and Tversky (1973) and the cognitive-experiential self theory proposed by Epstein, Lipson, Holstein, and Huh (1992). The common thread running through these models is their emphasis on the context dependency of different causal mechanisms in human reasoning. These models do not view different causal mechanisms as mutually exclusive, but rather depict a flexible perceptual system able to exchange inferential tactics in response to changing goals and situational demands. Depending on the immediate context, pluralistic models can allow for the possibility of unique (e.g., the better-than-average heuristic or representativeness heuristics) and interactive (the better-than-average heuristic plus the representativeness heuristic) effects of cognitive mechanisms in the expression of judgments such as judgments of relative risk. The biased memory search and belief construction account constitutes a case example of the progressive trend to abolish the lines between as well as within categories of cognition and motivation. Comparative optimism thus represents the best effort of motivational forces given the demands of the situation and the cognitive tools at the individual's disposal. These pluralistic models imbue coherence to findings of comparative optimism not captured in monistic accounts.

### Conclusions and Future Directions

There are now several hundred studies demonstrating comparative optimism in risk judgments and there seems little need to further demonstrate the phenomenon. On the other hand, our review of the causes of comparative optimism reveals gaps in our knowledge and suggests directions for future research. First, we have identified a variety of viable explanations for comparative optimism, several of which have yet to receive adequate test. For example, self-presentation concerns remains largely untested as an explanation for comparative optimism. Clearly, more research is needed to explore this and other explanations. Particularly useful would be research programs that flesh out the relative explanatory value of one theoretical explanation over another, thereby providing an empirical examination of which explanation(s) best account for comparative optimism. For example, a simple test of the better-than-average heuristic would be to vary cognitive antecedents presumed to precipitate the operation of heuristic versus deliberative processes.

Second, the development sequence of comparative optimism constitutes a

ripe and unexplored domain for future inquiry. Researchers know little about when (developmentally) comparative optimism emerges and whether this emergence is universal. Alternatively, future research could examine to what extent and in what ways non-adults differ from adults in their expression of comparative optimism. For example, does comparative optimism become more generalized or situated over the course of development? If comparative optimism follows a developmental pattern, is that pattern linear or curvilinear? What environmental or personality variables modify the patterns?

Third, the consequences of comparative optimism continue to represent an area sorely in need of exploration. The dearth of research exploring the consequences may be partially due to the difficulty of conceptually and empirically distinguishing comparative optimism from related measures of optimism (Radcliffe & Klein, 2002). Moreover, efforts to explore the consequences are hampered by the difficulty in establishing temporal precedence. For example, short of manipulating comparative risk judgments, it is difficult to determine whether judgments of comparative risk lead to health-related behavior. In naturalistic settings, it is often just as likely that people display comparative optimism because they take precautions rather than the reverse. However, sufficient resolution now exists to move on to rather than forestall analysis of their effects. Although some investigators have responded to this need (Radcliffe & Klein, 2002), further programs of systematic research are needed to fully understand the psychological and behavioral effects of comparative optimism.

Finally, we echo the call of a recent review of moderators of comparative optimism that researchers should include separate measures of both personal risk judgments and risk judgments (Helweg-Larsen & Shepperd, 2001). We add that researchers also include objective indicators of risk. Separate measures of risk judgments coupled with objective indicators of risk permit a finer examination of whether comparative optimism originates from a distortion of personal risk judgments or risk judgments made for others.

We noted at the outset that, when estimating their outcomes relative to others, people lack a crystal ball by which they can foretell the future and must therefore rely on their knowledge of themselves and their knowledge of others to make predictions. Our review reveals that there are multiple motivational, cognitive and affective accounts for why people overwhelmingly prophesize that their future will be better than the future of others. The processes proposed by the various accounts, whether working individually or in tandem, insure that people will conclude that the stars are aligned well for them and that their futures will be comparatively brighter.

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