



## Comparative optimism in the spontaneous generation of future life-events

Vera Hoorens<sup>1\*</sup>, Tim Smits<sup>1</sup> and James A. Shepperd<sup>2</sup>

<sup>1</sup>Katholieke Universiteit Leuven, Leuven, Belgium

<sup>2</sup>University of Florida, Gainesville, Florida, USA

We examined whether comparative optimism characterizes the events people generate when they describe their future. In contrast to previous studies in which participants estimated the likelihoods of experimenter-generated events, our participants freely listed important events they believed were possible in their future versus the average person's future. They also provided desirability ratings, controllability ratings, and likelihood estimates for these self-generated events. Participants listed more desirable and fewer undesirable events in their future than in the average person's future. These differences were stronger for controllable than uncontrollable events. Comparative optimism was also observed in participants' ratings of the likelihood of positive and negative events. Taken together, these findings suggest that a comparative optimism characterizes future expectations about spontaneously generated events as well as the pre-selected events sampled in previous studies.

Numerous studies reveal that people are comparatively optimistic in their likelihood estimates, reporting that they are more likely than others to experience desirable events and less likely than others to experience undesirable events (Weinstein, 1980; for reviews see Chambers & Windschitl, 2004; Shepperd, Carroll, Grace, & Terry, 2002). For example, students report that they are more likely to earn a high starting salary and less likely to have a heart attack before the age of 40 than are their peers (Weinstein, 1980). The present study explores whether people truly expect that their future will be better than the future of other people or whether, as proposed by some, comparative optimism is an artifact of the way people assess comparative judgments.

### **Comparative optimism about event likelihoods**

Researchers examining comparative optimism typically generate a list of events and direct participants to provide likelihood estimates in one of two ways. In the *indirect* approach, participants separately estimate the likelihood the event will occur in their

\*Correspondence should be addressed to Vera Hoorens, Laboratorium voor Experimentele Sociale Psychologie, K.U. Leuven, Tiensestraat 102, Box 3727, 3000 Leuven, Belgium (e-mail: Vera.Hoorens@psy.kuleuven.be).

future and the future of someone else (i.e. absolute likelihood estimates). Researchers calculate for each event the difference between the two estimates. In the *direct* approach, participants estimate each event's likelihood in their future as compared with someone else's future (i.e. relative likelihood estimates). Comparative optimism is defined as reporting that one is more likely than others to experience desirable events and less likely than others to experience undesirable events. Using primarily the direct method, hundreds of studies have documented comparative optimism (for reviews see Chambers & Windschitl, 2004; Shepperd *et al.*, 2002), encouraging the view that it characterizes the way people generally think about the future.

Although demonstrations of comparative optimism appear in hundreds of studies, considerable evidence suggests that comparative optimism is not as ubiquitous as commonly believed. For example, numerous studies find comparative optimism for controllable events but not for uncontrollable events (for reviews see Harris, 1996; Klein & Helweg-Larsen, 2002). Other research suggests that personal experience with an undesirable event diminishes comparative optimism for that event (e.g. Covey & Davies, 2004; Harris, 2007; Helweg-Larsen, 1999; Higgins, St Amand, & Poole, 1997). Finally, whether people show comparative optimism for an event depends on the underlying base-rate for the event. For desirable events, people typically show comparative optimism when the event is common, but not, or to a lesser degree, when the event is rare. Conversely, for undesirable events, people typically show comparative optimism when the event is rare but not, or to a lesser degree, when the event is common (Covey & Davies, 2004; Klar, Medding, & Sarel, 1996; Madey & Gomez, 2003; Nezlek & Zebrowski, 2001; Price, Pentecost, & Voth, 2002; Weinstein, 1980, 1987; Whalen *et al.*, 1994).

Theoretically, one way to examine whether people are comparatively optimistic about the future is to have them estimate the likelihood of all possible events. Comparative optimism for the future is demonstrated if people show comparative optimism for the majority of events. However, the universe of imaginable desirable and undesirable events is unlimited and researchers cannot construct a list of events that contains all of them. One might argue that researchers have already sampled an acceptable variety of events and merely need to tabulate the results of the existing studies to determine whether comparative optimism characterizes the way people actually think about the future. It is clear that the vast majority of studies show comparative optimism (for a few exceptions, see Dolinski, Gromski, & Zawisza, 1987; Morrison, Ager, & Willock, 1999). In addition, whereas multi-event studies often include some events that fail to provoke comparative optimism, they typically report comparative optimism for the majority of events.

However, there is another reason to believe that comparative optimism may not be as ubiquitous as commonly believed, a reason grounded in the events investigators have typically sampled in their research. An examination of the literature suggests that researchers have particularly sampled common desirable events and rare undesirable events, the very kinds of events that are likely to produce comparative optimism. For example, in his seminal study on comparative optimism, Weinstein (1980) examined desirable future events that were likely common in his sample of college students, events such as owning your own home, liking your postgraduation job, and having a starting salary more than \$10,000. In contrast, he generally examined undesirable future events that were likely rare in his sample of college students, events such as having a drinking problem, attempting suicide, and experiencing a heart attack before age 40. In addition, some researchers have explicitly examined events known to elicit

comparative optimism, often because they were interested in examining causes or moderators of the effect rather than in demonstrating the generality of the effect (e.g. Darvill & Johnson, 1991; Davidson & Prkachin, 1997; Harris, Middleton, & Joiner, 2000; Kulik & Mahler, 1987; Perloff & Fetzer, 1986; Rothman, Klein, & Weinstein, 1996; Weinstein, 1983; Weinstein & Lachendro, 1982). An unintended side-effect may be an inflated perception of the robustness and ubiquity of comparative optimism.

When viewed collectively, these pieces of evidence have led some researchers to re-evaluate the pervasiveness of comparative optimism. As noted by Blanton, Axsom, McClive, and Price (2001), comparative optimism may only *seem* general because 'the social psychological literature, which focuses primarily on the common sources of optimism, has not adequately explored common sources of pessimism' (p. 1627). Similarly, Chambers and Windschitl (2004) stated that 'comparative optimism effects . . . are less global than once thought' (p. 834) and Kruger and Burrus noted that comparative optimism 'is not as ubiquitous as once thought' (p. 339). In their view, 'Perhaps the most important question . . . is whether people tend to be unrealistically optimistic about the future' (Kruger & Burrus, 2004, p. 339).

### **Re-examining future outlooks**

The traditional approach has one additional limitation. In most studies of comparative optimism, participants provide likelihood ratings for hypothetical events *generated by researchers*. Even if these events are representative for all possible events, they are not necessarily the ones people think about when they contemplate their future. As such, the traditional approach tells us whether people are comparatively optimistic about the events chosen by researchers but not whether people are comparatively optimistic about their personal future. To address the latter question, we need to know what events occupy people's thoughts and how they feel about those events.

To examine whether people expect that their future will be better than the future of other people, we used a novel method inspired by the work of Newby-Clark and Ross (2003). These authors examined the events participants generated when asked to list events that were likely to happen. Participants almost exclusively listed desirable events (Study 1) and desirable events came to mind more quickly than undesirable ones (Studies 2 and 3). In addition, when asked to generate events without the constraint that the events must be likely, people indicated that the desirable events they listed were more likely to occur in their life than were the undesirable events they listed (Study 4). Newby-Clark and Ross (2003), using their free-listing task, thus showed that people are generally optimistic about their personal futures. They did not, however, reveal whether people are *comparatively* optimistic.

The Newby-Clark and Ross (2003) study suggests two ways of addressing whether people are comparatively optimistic. First, we can ask participants to generate events that they believe may happen in their future versus in the average other's future, and ask them to indicate whether they view these events as desirable or undesirable. If people list more desirable and fewer undesirable events as possible in their future than the average person's future, then we have some evidence that comparative optimism characterizes the way people generally think about their future.

Second, we can have participants estimate the likelihood that the events they list will occur in their life and the average person's life. Just as with the traditional approach, we can examine whether people are comparatively optimistic in these likelihood estimates. However, the crucial difference from the traditional approach is that this

approach directs participants to provide likelihood estimates for events that they list spontaneously. If people show comparative optimism for these spontaneously listed events, then we have evidence that comparative optimism characterizes the likelihood estimates for events that people spontaneously think about when thinking of the future.

Together, the two procedures test whether people are generally comparatively optimistic about the future. If people list more desirable events and/or fewer undesirable events for themselves than for others and if they rate the desirable events as more likely and the undesirable events as less likely for themselves than the average person, then we would have a compelling evidence that people are truly comparatively optimistic about the future. If participants are directed to rate the self-generated events' controllability as well as their desirability, we could also test the ecological validity of the common finding that participants show greater comparative optimism for controllable than non-controllable events.

Three previous studies on comparative optimism directed participants to generate future events (Brinthaup, Moreland, & Levine, 1991; Higgins *et al.*, 1997; Zakay, 1996). However, each of these studies constrained the type of events participants could list and thus do not reveal the events participants spontaneously think about when asked to contemplate their future. Higgins *et al.* only examined undesirable events. Zakay had participants list events within specific categories (e.g. desirable/controllable) and had a second group of participants make likelihood estimates. Brinthaup *et al.* examined judgments about one specific behaviour – joining a campus group. None of these studies examined whether comparative optimism characterizes the way that people generally think about the future.

### **Overview of the study**

Participants listed 10 possible life-events in their future (self-listing) or in the future of the average person (other-listing) and then rated the controllability and the desirability of each event (on 7-point scales). Next, participants estimated the likelihood that the events would occur in their life or the life of the average student their age and sex. If comparative optimism characterizes how people think about the future, then participants should list more desirable events and fewer undesirable events in the self-listing condition than in the other-listing condition. Moreover, they should report that desirable events are more likely to happen to them than to the average other and that undesirable events are less likely to happen to them than to the average other.

## **Method**

### **Participants**

The participants were Belgian Dutch-speaking students (129 women, 25 men), aged 17–24 years ( $M = 18$ ) who took part to fulfil a course requirement and were randomly assigned to conditions.

### **Materials and procedure**

The study was run in groups of about 50 participants by an experimenter blind to conditions. The instructions directed participants to list 10 important life-events that could happen in their future (*self-listing* condition) or in the future of the average

student of the same age, sex, and major (*other-listing* condition). The instructions in the self-listing condition read: 'Your first task is to list 10 events that may occur in your future and that would strongly affect your life if you experienced them. We are interested in future events so please do not list events that have already happened to you and that you believe will not recur. Describe the events clearly and concisely'. The instructions in the other-listing condition read: 'Your first task is to list 10 events that may occur in the future of the average student of your age, gender, and major and that would strongly affect his or her life if he or she experienced them. We are interested in future events so please do not list events that have already happened to him or to her and that you believe will not recur. Describe the events clearly and concisely'.

After listing the events, participants rated the events' desirability and controllability using 7-points scales (desirability:  $-3 = \textit{undesirable}$ ,  $0 = \textit{neutral}$ ,  $3 = \textit{desirable}$ ; controllability:  $-3 = \textit{uncontrollable}$ ,  $0 = \textit{neither uncontrollable nor controllable}$ ,  $3 = \textit{controllable}$ ). Finally, participants reported the likelihood that each event would happen to them and to the average student of their age, gender, and major ( $0 = \textit{the event will certainly not happen}$ ;  $100 = \textit{the event will certainly happen}$ ).<sup>1</sup> The session lasted about 15 minutes.

We examined comparative optimism in the events listed using a between-subjects manipulation and in likelihood estimates using a within-subjects manipulation of the target individual (self-others). We did so for two reasons. First, we wished to avoid repetitiveness in the experimental tasks and hence avoid potential boredom and fatigue in the participants. Second, we wished to avoid demand characteristics leading participants to list identical events for themselves and others. It should be noted that the definition of comparative optimism by no means implies that the phenomenon should be studied within subjects. For instance, Harris and Middleton (1994) showed that comparative optimism in likelihood estimates occurs in between-subjects designs as well as in within-subjects designs.

Keeping with general practice, we counterbalanced the order such that half of the participants estimated likelihoods for the average student first and half estimated likelihoods for the self first. We kept the controllability-likelihood task order constant to avoid that participants were distracted by accidentally noticing that other participants were working on a different task. Previous studies typically do not find or report order effects of controllability and probability ratings (e.g. Darvill & Johnson, 1991), or suggest that rating another's control over events reduces rather than enhances comparative optimism for these events whereas rating personal control does not affect comparative optimism (Hoorens & Smits, 2001). If anything, therefore, rating the events' controllability before estimating their likelihood should reduce rather than enhance comparative optimism, thereby providing a more stringent test of our hypothesis.

## Results

### *Nature of the events*

Participants listed an impressive variety of events, many listed by only a single participant but some listed by multiple participants. Although differences in wording make it difficult to present a clear tally, among the most frequent events were variations

<sup>1</sup> A reviewer of a previous version of this manuscript suggested that the word 'average' may be interpreted as having pejorative connotations. However, the Dutch word that we used in this study ('gemiddeld') has no such connotations.

on themes that typically appear in studies involving experimenter-generated lists of events: desirable events such as graduating, getting married, having children, and travelling, and undesirable events such as divorcing, falling victim to crimes, illnesses, accidents or nature disasters, and suffering the loss of loved ones. Participants viewed the events that they listed as relatively likely. The mean likelihood ratings in their and the average other's future of the desirable and undesirable events they listed for them and for the average other ranged from 45.1 to 67.0 (with *SD* values ranging from 19.1 to 25.7).

### **Event ratings**

Did participants list events that were more desirable and less undesirable for themselves than for the average student? To answer this question, we analysed participants' desirability ratings. The findings were consistent with predictions. The participants rated the events they listed for their future as more desirable than the events they listed for the average person's future ( $t(152) = 2.64, p = .009, d = 0.4$ ). In addition, the average desirability rating in the self-condition was positive ( $M = 0.5, SD = 1.1$ ),  $t(76) = 3.53, p = .0007, d = 0.6$ , whereas the average desirability rating in the other-condition hovered close to neutral ( $M = 0.0, SD = 1.1$ ),  $t(76) = 0.17, p = .87, d = 0$ . We thus found comparative optimism in the events participants expected.

### **Exploring the nature of the events**

Merely showing that participants were comparatively optimistic in the events they listed does not reveal whether the optimism was due to participants listing more desirable and fewer undesirable events for themselves, or to participants simply rating the same events as more desirable when listing for themselves versus the average student. To examine whether participants listed more desirable and fewer undesirable events for themselves than for the average student, we used participants' desirability ratings to group events into three categories: undesirable events (rating  $< 0$ ), neutral events (rating = 0), and desirable events (rating  $> 0$ ). To examine whether any comparative optimism in the number of events participants listed depended on the controllability of the events, we also used the controllability ratings to group the events into three groups: uncontrollable events (rating  $< 0$ ), neutral events (rating = 0), and controllable events (rating  $> 0$ ). We then calculated the cell means of all desirability by controllability combinations and subjected these cell means to an ANOVA with desirability (desirable vs. neutral vs. undesirable) and controllability (controllable vs. neutral vs. uncontrollable) as within-subjects variables and with listing target (self vs. other) as a between-subjects variable.

The analysis revealed a target by desirability interaction ( $F(2, 304) = 7.8, p = .0005, \eta^2 = .05$ ). The means for this interaction appear in the bottom panel of Table 1. Consistent with predictions, participants in the self-listing condition listed more desirable events ( $t(152) = 3.52, p = .0006, d = 0.6$ ), fewer undesirable events ( $t(152) = 1.80, p = .07, d = 0.3$ ), and fewer neutral events ( $t(152) = 3.01, p = .003, d = 0.4$ ) than did participants in the other-listing condition. We thus found comparative optimism in the number of desirable, neutral, and undesirable events participants expected.

The target by desirability interaction was qualified by a three-way interaction with controllability ( $F(4, 608) = 3.2, p = .01, \eta^2 = .02$ ). Participants in the self-listing condition listed more controllable/desirable events ( $t(152) = 2.4, p = .02, d = 0.4$ ),

**Table 1.** Frequency of desirable, neutral, and undesirable events by condition

Listing condition	Desirable M (SD)	Neutral M (SD)	Undesirable M (SD)
Controllable			
Self-listing	3.8 (2.0)	0.3 (0.6)	0.6 (1.0)
Other-listing	3.0 (2.0)	0.7 (1.2)	1.2 (1.4)
Neither controllable, nor uncontrollable			
Self-listing	1.0 (1.1)	0.2 (0.4)	0.7 (1.1)
Other-listing	0.8 (1.0)	0.3 (0.6)	0.9 (1.4)
Uncontrollable			
Self-listing	0.8 (1.4)	0.1 (0.3)	2.5 (1.5)
Other-listing	0.6 (0.9)	0.1 (0.4)	2.3 (1.5)
Total			
Self-listing	5.6 (2.0)	0.6 (0.9)	3.8 (2.1)
Other-listing	4.4 (2.1)	1.1 (1.4)	4.4 (2.2)

fewer controllable/undesirable events ( $t(152) = 2.8, p = .006, d = 0.5$ ), and fewer controllable/neutral events ( $t(152) = 2.6, p = .01, d = 0.5$ ) than did participants in the other-listing condition. Participants in the self-listing and other-listing condition did not differ in the number of uncontrollable/desirable, uncontrollable/undesirable, uncontrollable/neutral, neutral/desirable, neutral/undesirable, and neutral/neutral events they listed, all  $t(152)$  values  $< 1.5$ , all  $p$  values  $> .1$ , and all  $d$  values  $< 0.2$ . These findings suggest that comparative optimism occurred among controllable but not among uncontrollable and neutral events.<sup>2</sup>

### Comparative optimism in likelihood estimates

To examine whether participants displayed comparative optimism in their likelihood estimates, we created difference scores that reflected comparative optimism: 'self minus other' for desirable events and 'other minus self' for undesirable events. Using one-sample  $t$  tests, we examined if these comparative optimism scores were significantly different from 0. Neutral events were dropped from the analysis.

We found comparative optimism in participants' ratings when we collapsed across listing target and the type of event ( $t(150) = 4.25, p < .0001, M = 3.9, SD = 11.3, d = 0.5$ ). Consistent with predictions, participants on an average reported that their future will be better overall than other people's future. Moreover, this comparative optimism occurred both for events that participants listed as possible in their future

<sup>2</sup>The ANOVA yielded some additional effects that were not relevant to our hypothesis: a main effect of desirability ( $F(2, 304) = 144.7, p < .0001, \eta^2 = .9$ ), a main effect of controllability ( $F(2, 304) = 63.9, p < .0001, \eta^2 = .4$ ), and an interaction of desirability with controllability ( $F(4, 608) = 122.9, p < .0001, \eta^2 = .8$ ). Because these were not directly relevant to our hypothesis and because they were hard to interpret due the narrow definition of the neutral categories, we do not discuss them further. However, it is noteworthy that controllable/desirable events (34.3%) and uncontrollable/undesirable events (24.0%) made up the majority of events listed, and that participants listed few controllable/undesirable events (9.2%) and uncontrollable/desirable events (7.1%). It is also noteworthy to consider the number of participants who did not list events for a given category. Confirming the preponderance of controllable positive events and uncontrollable negative events, 93% of all participants listed at least one controllable/desirable event and 92% listed at least one uncontrollable/undesirable event. Conversely, only 49% of participants listed at least one controllable/undesirable event and only 41% listed at least one uncontrollable/desirable event.

( $t(75) = 3.9, p = .0002, M = 5.5, SD = 12.5, d = 0.6$ ) and for those they listed as possible in the average other's future ( $t(74) = 2.0, p = .05, M = 2.3, SD = 9.9, d = 0.3$ ).

## Discussion

Are people comparatively optimistic about the future? Our study strongly suggests that they are. We found comparative optimism in the number of controllable desirable, neutral, and undesirable events participants listed as possible in their future and in the average person's future. Participants listed more desirable events and fewer neutral and undesirable events in their future than in the average other's future. At the same time, we found comparative optimism in participants' likelihood estimates for these events.

Our findings not only show that people are comparatively optimistic about the future, but also that people's optimism is not limited to comparative judgments. After reviewing the literature on comparative optimism, Chambers and Windschitl (2004) noted that 'One could argue that perhaps above-average and comparative-optimism beliefs (along with below-average and comparative-pessimism beliefs) exist only when a researcher asks a respondent to provide a comparative judgment, because the source of these biases are introduced only within the judgment process itself' (p. 832). Our study suggests that comparative optimism is not an artifact of a particular methodology or the events selected by researchers. Of course, our findings do not imply that comparative-optimism effects in studies of relative likelihood estimates may not be inflated by the events being presented and the type of responses being elicited. However, we suggest that comparative optimism cannot fully be reduced to such artifacts. It should be noted that participants frequently listed events often used in traditional studies of comparative optimism. As such, our findings strengthen the confidence researchers can place on previous studies.

### Limitations and directions for further research

Our study has several limitations that suggest directions for new research. First, like most studies of comparative judgments, we examined undergraduates and one may wonder whether the results generalize to other groups. It is noteworthy that a number of studies have shown comparative optimism in non-student samples (see Bauman & Siegel, 1987; Dalziel & Job, 1997; Finn & Bragg, 1986; Weinstein, 1987). However, these studies used the traditional approach to assessing comparative optimism. It remains to be seen whether comparative optimism characterizes the spontaneous future outlooks of non-student populations.

Second, we found comparative optimism when participants were instructed to think about important life-events (i.e. 'events that would strongly affect your life if you experienced them'). Of course, people are not always focused on important events when they think about the future and it is possible that our findings might be different had we not limited participants to think only about future events. It is also possible that the events participants list for themselves versus the average person may differ in importance and this difference might influence our findings.

Third, it is unknown to what degree the two forms of comparative optimism (in likelihood estimates and in event listing) represent the same latent construct. Research on how the two forms of comparative optimism are related may yield three patterns of results. First, it may show that the two forms are independent. Such a finding would add to the handful of studies suggesting that there are multiple, relatively

independent types of comparative optimism (Hoorens, 1996; Nezlek & Zebrowski, 2001). Second, it may show that the two forms of comparative optimism tap into the same construct. If so, then one could conceive of comparative optimism as an individual difference much like dispositional optimism. Even in this case, however, the measurement may affect the degree to which comparative optimism occurs and the variables that correlate with it (cf. Aucote & Gold, 2005; Chambers & Windschitl, 2004). Third, research may reveal a trade off between types of comparative optimism. If this is true, then the question is not who is comparatively optimistic and who is not, but who shows which type of comparative optimism. A trade off between different types of comparative optimism would also have implications for debiasing efforts because a reduction of comparative optimism in one area might lead to an increase in another area.

## Conclusion

The event-specificity of comparative optimism in likelihood estimates has prompted researchers to assume that there is no reason to think that people view their future in a relatively rosy manner. Using a new methodology, we found that people believe that desirable events will be more numerous and that undesirable as well as neutral events will be less numerous in their future than in the average other's future. They also think that the desirable events are more likely and that the undesirable events are less likely to happen to them than to others. These findings suggest that people are truly comparatively optimistic about the future.

## Acknowledgements

This research was supported by a grant of the Research Fund of the K.U. Leuven (project OT/00/06) awarded to the first author. The authors thank John Chambers, Hart Blanton and two anonymous reviewers for their useful comments on an earlier draft of this paper.

## References

- Aucote, H. M., & Gold, R. S. (2005). Non-equivalence of direct and indirect measures of unrealistic optimism. *Psychology, Health and Medicine, 10*, 376–383.
- Bauman, L. J., & Siegel, K. (1987). Misperception among gay men of the risk for AIDS associated with their sexual behavior. *Journal of Applied Social Psychology, 17*, 329–350.
- Blanton, H., Axsom, D., McClive, K. P., & Price, S. (2001). Pessimistic bias in comparative evaluations: A case of perceived vulnerability to the effects of negative life events. *Personality and Social Psychology Bulletin, 27*, 1627–1636.
- Brinthaup, T. M., Moreland, R. L., & Levine, J. M. (1991). Sources of optimism among prospective group members. *Personality and Social Psychology Bulletin, 17*, 36–43.
- Chambers, J. R., & Windschitl, P. D. (2004). Biases in social comparative judgments: The role of nonmotivated factors in above-average and comparative-optimism effects. *Psychological Bulletin, 130*, 813–838.
- Covey, J. A., & Davies, A. D. M. (2004). Are people unrealistically optimistic? It depends how you ask them. *British Journal of Health Psychology, 9*, 39–49.
- Dalziel, J. R., & Job, R. F. S. (1997). Motor vehicle accidents, fatigue and optimism bias in taxi drivers. *Accident Analysis and Prevention, 29*, 489–494.
- Darvill, T. J., & Johnson, R. C. (1991). Optimism and perceived control of life events as related to personality. *Personality and Individual Differences, 12*, 951–954.

- Davidson, K., & Prkachin, K. (1997). Optimism and unrealistic optimism have an interacting impact on health-promoting behavior and knowledge changes. *Personality and Social Psychology Bulletin*, *23*, 617-625.
- Dolinski, D., Gromski, W., & Zawisza, E. (1987). Unrealistic pessimism. *Journal of Social Psychology*, *127*, 511-516.
- Finn, B., & Bragg, W. E. (1986). Perception of the risk of an accident by younger and older drivers. *Accident Analysis and Prevention*, *18*, 289-298.
- Harris, P. (1996). Sufficient grounds for optimism?: The relationship between perceived controllability and optimistic bias. *Journal of Social and Clinical Psychology*, *15*, 9-52.
- Harris, P. (2007). The impact of perceived experience on likelihood judgments for self and others: An experimental approach. *European Journal of Social Psychology*, *37*, 141-151.
- Harris, P., & Middleton, W. (1994). The illusion of control and optimism about health: On being less at risk but no more in control than others. *British Journal of Social Psychology*, *33*, 369-386.
- Harris, P., Middleton, W., & Joiner, A. (2000). The typical student as an in-group member: Eliminating optimistic bias by reducing social distance. *European Journal of Social Psychology*, *30*, 235-253.
- Helweg-Larsen, M. (1999). (The lack of) optimistic biases in response to the 1994 Northridge earthquake: The role of personal experience. *Basic and Applied Social Psychology*, *21*, 119-129.
- Higgins, N. C., St Amand, M. D., & Poole, G. D. (1997). The controllability of negative life experiences mediates unrealistic optimism. *Social Indicators Research*, *42*, 299-323.
- Hoorens, V. (1996). 'Positive' and 'negative' self-favoring biases: Independent phenomena? *Journal of Social and Clinical Psychology*, *15*, 53-67.
- Hoorens, V., & Smits, T. (2001). Why do controllable events elicit stronger comparative optimism than uncontrollable events? *Revue Internationale de Psychologie Sociale/International Review of Social Psychology*, *14*(4), 11-43.
- Klar, Y., Medding, A., & Sarel, D. (1996). Nonunique invulnerability: Singular versus distributional probabilities and unrealistic optimism in comparative risk judgments. *Organizational Behavior and Human Decision Processes*, *67*, 229-245.
- Klein, C. T. F., & Helweg-Larsen, M. (2002). Perceived control and the optimistic bias: A meta-analytic review. *Psychology and Health*, *17*, 437-446.
- Kruger, J., & Burrus, J. (2004). Egocentrism and focalism in unrealistic optimism (and pessimism). *Journal of Experimental Social Psychology*, *40*, 332-340.
- Kulik, J. A., & Mahler, H. I. M. (1987). Health status, perceptions of risk, and prevention interest for health and nonhealth problems. *Health Psychology*, *6*, 15-27.
- Madey, S. E., & Gomez, R. (2003). Reduced optimism for perceived age-related medical conditions. *Basic and Applied Social Psychology*, *25*, 213-219.
- Morrison, V., Ager, A., & Willock, J. (1999). Perceived risk of tropical diseases in Malawi: Evidence of unrealistic pessimism and the irrelevance of beliefs of personal control? *Psychology, Health and Medicine*, *4*, 361-368.
- Newby-Clark, I. R., & Ross, M. (2003). Conceiving the past and the future. *Personality and Social Psychology Bulletin*, *29*, 807-818.
- Nezlek, J. B., & Zebrowski, B. D. (2001). Implications for the dimensionality of unrealistic optimism for the study of perceived health risks. *Journal of Social and Clinical Psychology*, *20*, 521-537.
- Perloff, L. S., & Fetzer, B. K. (1986). Self-other judgments and perceived vulnerability to victimization. *Journal of Personality and Social Psychology*, *50*, 502-510.
- Price, P. C., Pentecost, H. C., & Voth, R. D. (2002). Perceived event frequency and the optimistic bias: Evidence for a two-process model of personal risk judgments. *Journal of Experimental Social Psychology*, *38*, 242-252.
- Rothman, A. J., Klein, W. M., & Weinstein, N. D. (1996). Absolute and relative biases in estimations of personal risk. *Journal of Applied Social Psychology*, *26*, 1213-1236.

- Shepperd, J. A., Carroll, P., Grace, J., & Terry, M. (2002). Exploring the causes of comparative optimism. *Psychologica Belgica*, *42*, 65-98.
- Weinstein, N. D. (1980). Unrealistic optimism about future life events. *Journal of Personality and Social Psychology*, *39*, 806-820.
- Weinstein, N. D. (1983). Reducing unrealistic optimism about illness susceptibility. *Health Psychology*, *2*, 11-20.
- Weinstein, N. D. (1987). Unrealistic optimism about susceptibility to health problems: Conclusions from a community-wide sample. *Journal of Behavioral Medicine*, *10*, 481-500.
- Weinstein, N. D., & Lachendro, E. (1982). Egocentrism as a source of unrealistic optimism. *Personality and Social Psychology Bulletin*, *8*, 195-200.
- Whalen, C. K., Henker, B., O'Neil, R., Hollingshead, J., Holman, J., & Moore, B. (1994). Optimism in children's judgments of health and environmental risks. *Health Psychology*, *13*, 319-325.
- Zakay, D. (1996). The relativism of unrealistic optimism. *Acta Psychologica*, *93*, 121-131.

Received 19 April 2007; revised version received 4 August 2007