The impact of prior experience of an almost accident on comparative optimism

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Abstract

The first aim of this study was to examine comparative optimism (the difference between evaluation of one's own risk and the evaluation of other people's risk). Because research supports the notion that personal experience moderates the optimistic bias, the second aim of the present study was to test the impact of prior experience of an "almost accident". Real accidents are fortunately not too frequent, thus we wondered if the confrontation with an almost accident; which is a more frequent situation, could have the same impact on risk evaluation. Employees of a metallurgical plant in the Eastern part of France who have been confronted or not with an almost accident were asked to evaluate to what extent a work accident was likely to occur for them and/or one of their work colleagues.

We found that people more usually consider the risk of their colleague being a victim of a work accident than themselves. However, we found for employees who have had an almost accident in the last three months this phenomenon is opposite. They estimate that their own risk as higher than the risk to their colleague.

Introduction

Many health behavioural models point out the prevalence of perceiving one's own risk to develop prevention (Janz & Becker, 1984; Rogers, 1983). People become involved in a safety process (e.g., using personal protective equipment) only if they perceive that dangerous behaviour represents a risk for their own safety (Weinstein, 1998). When asked to evaluate their risk, people mostly consider that they are less likely than others to experience negative events (Weinstein, 1980). A person's assertion that they are less likely to undergo misfortune than someone else may be entirely valid. But if enough people in a group assess their chance of experiencing a negative event as below average, some of them must be wrong. It is logically and statistically impossible for most people to be better off than the average. Therefore this phenomenon is known as unrealistic optimism (Weinstein, 1980) or comparative optimism (Harris & Middleton, 1994). In the area of work, this comparative optimism could lead people to the conclusion that it is less probable for them than for others to be confronted with a work accident (Spitzenstetter, 2006). However, this systematic bias may then result in non-optimal decisions and behaviours because people perceive themselves to be relatively invulnerable to threat. In addition, it could affect risk-reduction motivation and activities (Weinstein, 1984; Weinstein & Lyon, 1999). For example, drivers perceive themselves less likely to be charged with penalties compared to other drivers who are likely to commit more traffic violations (Dionne, Desjardin, Ingabire, & Aqdim, 2001).

Though unrealistic optimism appears to be a robust phenomenon and has been demonstrated across a wide variety of events (Perloff & Fetzer, 1986) and samples (Spitzenstetter &

Moessinger, 2008), some research supports the notion optimistic bias could be moderated by personal experience (Burger & Palmer, 1992; Helweg-Larsen & Shepperd, 2001). Individuals who have already been confronted with a negative event tend to feel less optimistic compared to others when they evaluate their risk of being again confronted with this kind of event (van der Velde, Hooykaas, & van der Pligt, 1992). A negative event leaves the victim with an unusual and unpleasant sense of being vulnerable (Perloff, 1983). For example, it has been demonstrated that people who experienced an earthquake show no optimistic bias about this type of event (Helweg-Larsen, 1999); believing it may happen again. Or people who have had a prior experience with a sexually transmitted disease show less optimistic bias about AIDS risks (van der Velde, van der Pligt & Hooykaas, 1994).

A number of factors could account for the role of prior experience. It has been argued, for example, that experience with a detrimental event could lead to negative affects that would involve a more systematic analysis of the situation (Helweg-Larsen, 1999). People would be more able to consider their negative characteristics (e.g., not wearing their security gloves) and/or other peoples' positive characteristics (e.g., always wearing the safety gloves). A prior experience may also decrease the perception of personal control (Helweg-Larsen & Shepperd, 2001). People could perceive that they had no more control over events than others and thus could be equally likely to experience unwanted outcomes. In addition, a prior experience may lead to the availability of the event (Chambers, Windschitl, & Suls, 2003). People would be more able to imagine the negative event and therefore would judge it more likely to occur to them (Stapel & Velthuijsen, 1996). Whatever the explanation is, it has also been demonstrated that this impact is not systematic. In the area of driving for example, there was no evidence that prior experience of an accident reduces optimistic bias (McKenna & Albery, 2001; Rutter, Quine & Albery, 1998).

The first aim of the present research was to test the impact of prior experience on comparative optimism at work. When people have to evaluate their risk in a professional environment will they be influenced by their prior experience? The second aim is to consider an almost accident as a prior negative experience and to explore the fact that the confrontation with an almost accident could lead to a comparative optimism reduction. An almost accident can be defined as an identified critical situation that could have led to an accident. The accident has been notified and people are aware of the fact that they have been "lucky". Almost accidents are statistically more frequent and could be an interesting way to work on risk evaluation. We suppose that this type of prior experience could have a similar impact to a real accident because it has been shown that non-victims react like victims. For example Helweg-Larsen (1999) showed that indirect experience (e.g., people knowing someone who has experienced an event personally) alters the perception of risk as a direct experience (e.g., people experienced personally the event). Thus, we considered that an almost accident could be regarded as an indirect experience of an accident. Moreover, all the explanations about prior experience impact could also be valid for almost accidents.

Finally, we will investigate the impact of time proximity prior to the almost accident. Burger and Palmer (1992) showed that after three months the impact of the prior experience of an earthquake vanished; and that comparative optimism reappears. The memory of the negative event becomes less salient over time and "gives way" to the more usual mechanism of comparative optimism. It is very probable that the proximity will be particularly important for an almost accident, because this experience leads to no direct negative consequences.

Method

Participants

A total of 224 French workers (all male) completed the survey with 191 providing valid answers (age range of 23 to 56 years, *mean* 44 years). They were all employees of a metallurgical plant in the Eastern part of France and were randomly chosen within eight different work teams.

Procedure

In order to measure comparative optimism, we used the indirect method (Perloff & Fetzer, 1986). Participants estimated the likelihood that a work-accident would happen to them and

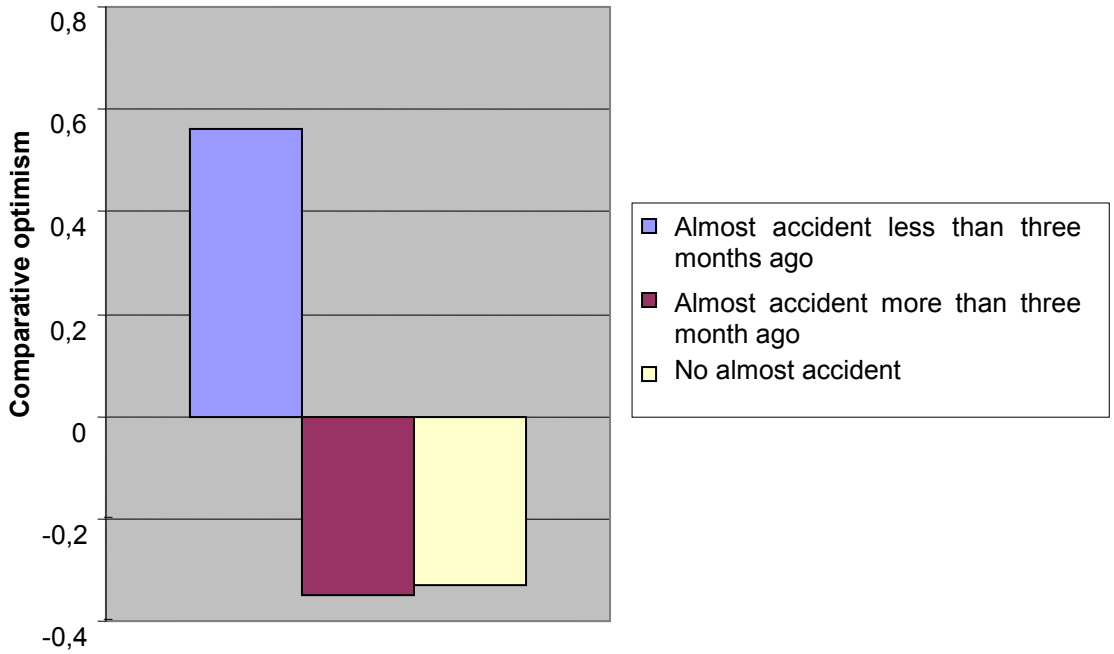
separately to one of their colleagues on a seven-point scale ranging from “1” (very unlikely) to “7” (very likely). Comparative optimism is then calculated by subtracting each participant’s estimate of the colleague’s risk from the estimate of their own risk of work accident. Difference scores could range from –6 to +6; negative scores indicating comparative optimism (perceiving oneself as less at risk than the colleague) and positive scores indicating comparative pessimism (perceiving oneself as more at risk than the colleague). Scores near 0 signify that the individual and the colleague see equally of risk. The order of these two questions (for individual and colleague) was randomised between the 40 questions of a safety climate survey. This article focuses on the questions related to comparative optimism.

The survey included questions that distinguished participants who had been confronted with an almost work accident from participants who had not. More precisely, because some research led to the conclusion that prior experience has a limited impact in time (Burger & Palmer, 1992), we distinguish participants who have had an almost accident less than three months ago from participants who have had an almost accident more than three months ago. These two groups were distinguished from participants who have never been confronted with an almost accident. These characteristics constitute a between participants factor with three modalities: a) workers without an almost accident; b) workers with an almost accident more than three months ago; and c) workers with an almost accident less than three months ago.

Results

Participants were divided into three groups: a) 23 workers who had not been confronted with an almost accident; b) 88 workers who had been confronted with an almost accident more than three months ago; and c) 80 workers who had been confronted with an almost accident less than three months ago.

Figure 1. Means of comparative optimism as a function of prior experience of an almost accident



Comparative optimism scores were calculated for each group by subtracting each participant’s estimate of the colleague’s risk from the estimate of their own risk of work accident and submitted them to a one-way ANOVA. As expected the ANOVA revealed an effect of prior experience of almost accident (F (2, 188) = 6.46, p < .001). Newman-Keuls post hoc analyses show that the “with almost accident less than three months ago” group (M = 0.56, SD = 0.23)

was significantly different from the "with almost accident more than three months ago" group (*M* = -0.35, *SD* = 0.12) and the "without almost accident" group (*M* = -0.33, *SD* = 0.12).

When the "with almost accident less than three months ago" workers evaluate their risk, they exhibit comparative pessimism. The t-test showed that the mean in this group was significantly higher than 0 ($p < .03$). They consider that their chance of being confronted with a work accident is higher than the probability of their colleague.

Whereas the "with almost accident more than three months ago" group did not have a different level of comparative optimism compared to those without prior experience of almost accident. Those participants' considered that their risk was below that of their colleagues. The t-test showed the two means were significantly below 0 (at $p<.00001$).

Discussion

The present results support previous work indicating that, relative to a typical other (Weinstein, 1980) or to a colleague (Spitzenstetter, 2006), people think that they are less at risk. In most cases our participants considered their risk of being confronted with a work accident lower than the risk of their colleagues. As other kinds of risks; comparative optimism is present about the likelihood of work accidents. This bias seems quite systematic as soon as a probability of accident is questioned; whatever the field in which the accident takes place.

However, when situational information (the almost accident) suggests that they may be at risk, people adjust their optimistic beliefs accordingly. Indeed, our results showed that this optimistic bias can disappear because of the impact of the particular prior experience of an almost accident. Congruent with Helweg-Larsen's results (1999), it seems that the experience of an almost accident (no direct consequences) can be as authentic as the experience of a real accident (direct consequences) in moderating the gap between one's own and other's risk.

Congruent with Burger and Palmer's (1992) research, our results also showed that prior experience has to be recent to be effective in the optimistic bias reduction. When participants had been recently confronted with an almost accident they showed a pessimistic bias. They perceived that their personal risk was higher than that of their colleague. But when people had been less recently confronted with an almost accident, they showed comparative optimism as if they have had no such prior experience. This observation confirms the robustness of comparative optimism. Thus, it seems that prior experience of an almost accident does not lead to a profound variation of risk perception but only to a transitive modification. People seem to be motivated to maintain their optimism whenever possible.

A limitation of this study is due to the difficulty with research into the role of personal prior experience. As Mc Kenna and Albery (2001) noticed it implies that observed findings may reflect pre-existing differences between the groups. Thus, more research is needed to thoroughly examine the potential impact of prior almost accident.

It is interesting to note that our results about prior almost accidents are very similar to the results obtained about prior direct experience. These findings have practical implications for accident prevention. As the rate of almost accidents is higher than the rate of real accidents, the data base in the plant could allow risk preventers to work on more significant figures. It is worth while for enterprises to be particularly attentive to almost accidents and to use this information to work on risk perception bias. This we encourage safety managers to collect information about every almost accident in order to maintain a realistic attitude toward risk. This information can be used in various ways. For example, workers who have experienced an almost accident in the last three months can take part in a specific training session focused on the way this perception bias can modify their risk perception. In this way the experience of an almost accident is made more salient to workers and the impact of this experience on their attitudes of risk assessment is explored.

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