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*J Health Psychol* 2009; 14; 372
DOI: 10.1177/1359105308101675

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Assessing Unrealistic Optimism

Impact of Different Approaches to Measuring Susceptibility to Diabetes

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Abstract

The effects of measurement method on levels of unrealistic optimism for developing diabetes were examined in 323 UK adults. A mixed factorial design comprised direct and indirect measures of unrealistic optimism as the within-subjects variable, and between-subjects manipulations of the order of direct versus indirect assessment, the order of self–other comparison, the number of response options used and the polarity of the ratings. More unrealistic optimism was obtained using the direct method and using unipolar scales, and/or with the self–other order in the indirect method. The results indicate that levels of unrealistic optimism depend on its assessment method.

Keywords

- assessment
- diabetes
- risk perception
- unrealistic optimism

COMPETING INTERESTS: None declared.

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**Introduction**

PEOPLE tend to estimate their own probability of experiencing adverse outcomes or health problems to be lower than that of the average person (e.g. Weinstein, 1984). Although such ‘unrealistic optimism’ may be beneficial in promoting or maintain positive affect (Taylor & Brown, 1988), it may inhibit motivation to change health behaviours. High levels of unrealistic optimism have been associated both with low interest in adopting precautionary health behaviour (Dillard, McCaul, & Klein, 2006; Kulik & Mahler, 1987) and poorer health behaviour profiles (Radcliffe & Klein, 2002).

**Assessment**

Unrealistic optimism is typically assessed using either a direct or indirect elicitation method. In the direct approach respondents provide a single comparative rating (e.g. ‘Compared with a person the same age and gender as you, how likely are you to experience [a negative health outcome]’). The indirect approach requires the respondent to make two judgements. One judgement relates to the typical other’s risk level (e.g. ‘How likely is the average person to experience …’) and this is compared with a rating for own risk level (e.g. ‘How likely are you to experience …’). The difference between these two risk ratings is the comparative risk level.

Although Weinstein (1989) argued that the elicitation methods were interchangeable, subsequent studies reported low to moderate correlations between the methods based on individuals completing both methods. Hahn and Renner (1998) reported correlations of \( r = .35 \) to \( r = .62 \) for six health-related problems in 154 adults, Sutton (2002) reported a correlation of \( r = .52 \) between both methods in relation to lung cancer risk among 564 adult smokers, and Welkenhuysen, Evers-Kiebooms, Decruyenaere and van den Berghe (1996) reported a correlation of \( r = .22 \) for the risk of having a newborn child with a genetic illness among 166 adolescents. Covey and Davies (2004) compared levels of optimism regarding six health problems produced by direct and indirect methods in 425 adults. There was a high degree of variability in the correlation values for each of the health problems: a correlation of \( r = .44 \) was reported between the methods for lung cancer risk, whereas a correlation of \( r = .003 \) was reported for HIV infection.

The different measures may yield different levels of unrealistic optimism, raising concerns over the extent to which reported levels of unrealistic optimism may be artefacts of the methods employed. Otten and van der Pligt (1996) reported that the direct method was associated with higher levels of optimism for negative life events than the indirect method in a sample of students. In contrast, Sutton (2002) found that the direct method revealed a pessimistic bias among adult smokers rating their risk of lung cancer, whereas the indirect method revealed an optimistic bias.

**Does order impact on ratings?**

The comparative judgements in the indirect method may be based on the self as standard (rate self’s probability first and then rate other’s probability: self–other order) or using the other as standard (rate the other’s probability first and then rate self’s probability: other–self order). Otten and van der Pligt (1996) reported higher levels of unrealistic optimism for negative life events, including negative health outcomes, if the participant’s own probability was rated after rating the others’. However, the effect was related to the elicitation method used. Comparing the self to others yielded higher unrealistic optimism in the direct elicitation method only. Similarly, using a direct elicitation approach among older adolescents, Hoorens (1995) reported that comparing the self to others yielded higher levels of unrealistic optimism than comparing others to the self. However, this finding applied to positive events (e.g. having a successful career) but no difference was found for negative events (e.g. getting some form of cancer). Therefore the standard (self or other) used in the comparison, the elicitation method and the valence of target event (positive or negative) interact to affect ratings of unrealistic optimism.

**Does response format impact on ratings?**

Two aspects of numerical response categories require consideration: the numerical range and the polarity of the ratings. Otten and van der Pligt (1996) found that higher levels of optimism were found for participants responding on a nine-point scale than participants responding on a 101-point scale. Studies on unrealistic optimistic bias have used a mixture of scale categories, ranging from seven (e.g. Weinstein, 1987) to 201 (e.g. Otten & van der Pligt, 1996). The polarity of the response options may also impact on ratings: is a seven-point unipolar scale (1 to 7) equivalent to a bipolar one (–3 to +3) if the scalepoint...
labels stay the same? The effect of polarity of response options has not been investigated in the context of unrealistic optimism.

The present study examines the impact of experimental manipulations of assessment on ratings of risk for developing diabetes. Unrealistic optimism for developing diabetes has been reported in healthy populations (Weinstein, 1987), in offspring of those with diabetes (Pierce, Harding, Ridout, Keen, & Bradley, 2001), and in physicians (Walker, Kalten, Metr, & Flynn, 2003). Patients with Type I diabetes reported unrealistic optimism in relation to experiencing a variety of negative health events (de Ridder, Fournier, & Bensing, 2004). Diabetes is associated with microvascular (including retinopathy, nephropathy and neuropathy) and macrovascular (including coronary heart disease, cerebrovascular disease and peripheral vascular disease) complications. Thus assessing perceptions of risk for diabetes is an important topic as unrealistic optimism may result in failure to perform appropriate health behaviours with consequent adverse health outcomes.

**Method**

**Participants**

A total of 323 adults were recruited by mail from 10 locations around England. No payment was offered and consent was obtained through return of the questionnaire. Respondents comprised 168 (52%) females and 155 (48%) males, who were between 22 and 60 years of age ($M = 44.7, SD = 9.0$). There were no significant differences between the experimental groups in relation to age, gender or educational qualification.

**Design**

This study employed a mixed subjects experimental design. The within-subjects factor was the direct versus indirect measures of unrealistic optimism. There were between-subjects manipulations of the order of direct versus indirect assessment, the order of self–other comparison for the indirect method, the number of response options used and the polarity of the ratings.

Each participant made a direct comparison (‘Compared with a typical person your age and sex, how likely do you think you would be to develop diabetes at some stage of your life?’), and a subsequent indirect comparison, or an indirect followed by direct comparison. In the indirect elicitation procedure, participants made a self-judgement (‘How likely do you think it would be that you will develop diabetes at some stage of your life?’) and a subsequent judgement for others (‘How likely do you think it would be that a typical person the same age and sex as you will develop diabetes at some stage of their life?’), or a judgement for others followed by a self-judgement. The response options were either a seven-point or a 101-point scale, and either unipolar (1 to 7, 0 to 100) or bipolar (−3 to +3, −50 to 50).

**Data analysis**

In order to compare the responses on the different scale formats, all responses were transformed to a unipolar 101-point scale, with a group mean score of 51–101 representing optimistic bias, a score of 50 representing a neutral response, and a score of 0–49 representing a pessimistic bias. A mixed factorial ANOVA was performed and Tukey ‘b’ post hoc analyses conducted. A one-sample $t$-test tested the statistical significance of the difference between the experimental condition mean and expected mean of 50 in each condition. Effect sizes (ES) were determined by the difference between the mean of the condition and the expected neutral mean of 50 divided by the standard deviation of the condition. Chi-square analysis assessed the association between elicitation method and categorization of participants as optimistic, neutral or pessimistic.

**Results**

Analysis revealed significant main effects of elicitation method (Direct $M = 51.6$ vs Indirect $M = 47.7$; $F(1, 295) = 4.7$, $p = .03$), of polarity (Unipolar $M = 52.2$ vs Bipolar $M = 47.1$; $F(1, 295) = 11.6$, $p = .001$) and of indirect comparison order (Self–Other $M = 51.3$ vs Other–Self $M = 47.9$; $F(1, 295) = 4.8$, $p = .03$). One sample $t$-tests revealed that significant optimistic bias was shown by Unipolar response format ($t(161) = 2.04$, $p < .05$, ES = 0.16), whereas significant pessimistic bias was shown by the indirect method ($t(310) = 3.94$, $p < .001$, ES = 0.22), the Bipolar response format ($t(148) = 2.71$, $p < .01$, ES = 0.22) and the Other–Self order ($t(153) = 1.98$, $p < .05$, ES = 0.16). No significant effects were found in relation to the number of scale response options ($F(1, 295) = 0.7$, $p = .42$) or order of elicitation ($F(1, 295) = 0.63$, $p = .43$). Two statistically significant interactions were detected:
between direct versus indirect method and polarity ($F(1, 295) = 5.2, p = .02$), and between direct versus indirect method and indirect comparison order ($F(1, 295) = 4.9, p = .03$).

The mean unrealistic optimism score for the direct method unipolar condition ($M = 56.2$) was significantly different from the means for direct bipolar ($M = 47.0$), indirect unipolar ($M = 48.1$) and indirect bipolar ($M = 47.2$). The direct method providing respondents with a unipolar rating scale produced the highest levels of unrealistic optimism. One sample t-tests revealed that the direct unipolar condition showed a significant optimistic bias ($t(161) = 2.9, p < .005, ES = 0.23$), whereas significant pessimistic bias was shown in the indirect unipolar condition ($t(161) = 2.35, p < .05, ES = 0.18$), the indirect bipolar condition ($t(148) = 3.3, p < .005, ES = 0.25$) and the direct bipolar condition ($t(148) = 3.3, p < .005, ES = 0.27$).

The mean unrealistic optimism score in the self–other direct elicitation condition ($M = 55.2$) was significantly different from the means for the other–self direct elicitation condition ($M = 47.9$), the self–other indirect condition ($M = 47.3$) and the other–self indirect bipolar condition ($M = 47.9$). One sample t-tests revealed that the direct Self–Other condition showed a significant optimistic bias ($t(156) = 2.4, p < .05, ES = 0.19$), whereas the indirect Self–Other condition showed a significant pessimistic bias ($t(156) = 3.3, p < .005, ES = 0.26$), as did the indirect Other–Self condition ($t(153) = 2.5, p < .05, ES = 0.20$).

A correlation of $r = .27 (p < .001)$ was found between the direct and indirect methods. A statistically significant association was found between the method and classification status, ($X^2 (4) = 35.2, N = 313, p < .001$), with the direct method being more likely to classify people as optimists, and the indirect method being more likely to classify people as neutral. Cohen’s kappa of 0.21 indicated a low level of agreement between the direct and indirect methods in classifying participants as optimistic, neutral or pessimistic.

**Discussion**

More unrealistic optimism was obtained using the direct method, unipolar scales, and with the self–other order in the indirect method. The present study shows for the first time that the polarity of the rating scales had a systematic effect on ratings of unrealistic optimism, with higher levels of optimism provided by responses on a unipolar rating scale. Schwarz (1999) argued that the numeric anchors provide information to respondents. It is plausible that respondents were reluctant to endorse negative numbers on the bipolar versions as negative numbers may have made more salient to respondents that they were indicating below average risk. Further research using think-aloud methods to investigate how participants interpret risk questions may illuminate the processes whereby polarity impacts on responses (e.g. Boeije & Janssens, 2004).

Similar to Otten and van der Pligt (1996), direct elicitation produced higher levels of optimism. This contrasts with Sutton’s (2002) finding that the direct method yielded a pessimistic bias among smokers, whereas the indirect method indicated an optimistic bias. Of note, in Sutton’s study the indirect method employed a unipolar 101-point scale, whereas the direct method employed a bipolar seven-point scale. The present study reports that polarity has a bigger effect than number of scale points on levels of unrealistic optimism, highlighting the importance of the independent manipulation of features of the assessment procedure.

The order of self–other comparison had a significant effect: estimating the other’s probability after estimating the self’s probability produced higher levels of unrealistic optimism than the alternative order. Similar order effects on unrealistic optimism have been reported in relation to health outcomes (Eiser, Pahl, & Prins, 2001). Using the self as anchor may amplify perceived differences with the other in a manner that promotes the uniqueness of self (Codol, 1987) or may represent a socially desirable self-presentation (Hoorens, 1995). Further research using manipulations of these factors is required to determine the extent to which order influences ratings.

Although the correlation ($r = .27$) between the direct and indirect methods was statistically significant it corresponds to shared variance of only 7 per cent. The variability in correlations reported in the literature indicates that the direct and indirect methods of assessing unrealistic optimism are not interchangeable and may mirror different judgmental processes (e.g. Klar, 2002; Price, Pentecost, & Voth, 2002). Furthermore, the discrepancies between the methods in terms of classification of optimism and pessimism, and low agreement support the conclusion that the direct and indirect methods do not consistently produce similar findings for any one individual.

The results relate to the health threat of developing diabetes and the extent to which the findings can
generalize to other health threats requires examination. People tend to underestimate not only their own probability of developing diabetes (Pierce et al., 2001), but also the severity of the condition (Farmer, Levy, & Turner, 1999). Such perceptions may inhibit motivation to engage in precautionary health behaviours, which may place people at increased risk for negative health outcomes. The accuracy of respondents’ risk perceptions cannot be ascertained due to the absence of data on risk factors; future research should include such assessment.

The interaction between method and polarity revealed that using the direct method and providing respondents with a unipolar rating scale produced the highest levels of unrealistic optimism. As many studies have adopted this approach in assessing unrealistic optimism, the extent to which observed unrealistic optimism is an artefact of this procedure requires careful consideration.

The present findings demonstrate that levels of unrealistic optimism are influenced by the measurement choices. Accurate assessment of health beliefs is essential not only for testing theories but to inform interventions to challenge maladaptive beliefs. Schwarz (1999) argued that researchers need to be more sensitive to the different response patterns elicited by variation in measurement methods to avoid erroneous conclusions about the substantive issue under study. Such cautionary words are applicable in the context of unrealistic optimism.

References


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