Response

In the first European study with more than 10,000 face-to-face interviews, we showed that 1) 92% of women either overestimated the benefits of mammography screening (PSA screening) by an order of magnitude or more or did not know the benefits (89% of men overestimated the benefits of prostate-specific antigen screening or did not know the benefits), and 2) frequent consultation of physicians and health pamphlets tended to increase the overestimates. Brenner et al. expressed unsupported skepticism about whether the amount of overestimation is correct. However, as Table 1 shows, other studies have found that people were similarly misinformed. They also wonder why we asked participants to estimate the benefits for women aged 40 years or older rather than for those aged 50 years or older, which we find odd: If estimation for age 50 years or older were any different from that for age 40 years or older, it would likely be even higher because the relative risk reductions for the older age group are higher, meaning that overestimation would in fact increase.

The second point addressed by Brenner et al. is that the true benefits of mammography screening are “much larger” than reported in the randomized trials and the Cochrane summary (6). Yet once again, they provide no evidence.

Their third point is a fair one: In any survey, the response categories chosen can influence the judgments. This point is discussed in our article. We used six numerical categories: 0, 1, 10, 50, 100, and 200 (out of 1000). In general, midpoints in survey scales can serve as substitutes for "don’t know" answers (7). For this reason, we included a separate “don’t know” category, which was chosen by 31% of women and 30% of men. Not wanting to admit their lack of knowledge, some may have nonetheless chosen the

middle categories instead. However, contrary to what Brenner et al. assumed, this possibility cannot explain citizens' overestimations. The average estimates of cancer-specific mortality reduction were 69 fewer deaths per 1000 people screened among men and 82 fewer deaths per 1000 people screened among women, but the midpoint of the response scale was lower, between 10 and 50 (i.e., the two middle categories). Choosing midpoints would, in fact, have decreased, not increased overestimation.

In criticizing the response categories, Brenner et al. add that "0" is not a reasonable choice. Note that the US randomized prostate cancer screening trial cited in our article reported a cancer-specific mortality reduction of 0 in 1000 men.

The final but again unsubstantiated suggestion is that participants might not have understood that the questions referred to women and men in the general population. We had specified this reference group clearly and used face-to-face interviews in which individual participants could always ask the interviewer for clarification. If misunderstanding was a factor, one might expect participants' education levels to influence overestimation. Yet there were no differences with respect to education level.

All this evidence is inconsistent with the critique by Brenner et al. Rather than doubting the facts, it is time to investigate the reasons why the public is systematically misinformed about the benefits of prostate-specific antigen screening and mammography screening.

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NOTES

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Table 1. Overestimation of the benefit of mammography screening by the public and by gynecologists

Country	Sample (reference)	Main result
Does screening reduce or prevent breast cancer?		
Germany	Representative sample of 3226 women, 50 – 69 years old, in 2008 (1)	56% believed that screening prevents breast cancer
Germany	Representative sample of 1016 citizens, 18-92 years old, in 2006 (2)	46% of women and 42% of men believed that screening prevents breast cancer
Italy, Switzerland, United Kingdom, and United States	Representative sample of 4140 women (3)	81%, 65%, 69%, and 57% in Italy, Switzerland, United Kingdom, and the United States, respectively, believed that screening reduces or prevents breast cancer.
What is the cancer-specific mortality reduction associated with screening?		
Italy, Switzerland, United Kingdom, and United States	Representative sample of 4140 women (3)	94%, 91%, 96%, and 96% in Italy, Switzerland, United Kingdom, and the United States, respectively, estimated the benefit as 10 or more fewer deaths per 1000 people screened or did not know.
United States	145 women in their 40s with above-average education and income (4)	Average estimate: 60 of 1000
What does a 25% breast cancer mortality reduction mean in absolute numbers?		
Germany	Representative sample of 1016 citizens in 2006 (2)	General lack of understanding, median, and modal estimate 500 of 1000 women
Germany	150 gynecologists participating in continuing education (2)	1 of 1000 (66%); 25 of 1000 (16%); 100 of 1000 (3%) 250 of 1000 (15%)
Switzerland	15 gynecologists at a university hospital (5)	1–750 of 1000 (total range); 5–15 (majority of 10 gynecologists)