

# CORRUPTED SCIENCE

## Funding Effect in Science



## The Source of Funding & Objectivity

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- Does the source of funding affect the quality of outcome of research?
- Is serious academic science independent of who happens to sponsor the research?
- Is there an explicit or implicit message to the researcher that he or she should in whatever way either through designing the protocol, collecting the data, or interpreting the data, favor the for-profit sponsor of a study?
- There is a body of scholarly literature that gives a partial answer to these questions for certain fields of inquiry. A summary of the results follow:

## Tobacco Science

For over 50 years tobacco companies have

- Placed articles in the medical literature without revealing their support for the research.
- Financed a large number of studies, literature reviews, and scientific conferences conducted by front organizations or consultants
- Financed a large number of studies intended to show that studies by the International Agency for Research on Cancer (IARC) were flawed.
- Sought to create an ostensibly independent coalition of scientists to criticize studies that linked tobacco to disease.
- Placed articles in the medical literature without revealing their support for the research.

## Manufactured Tobacco Science

The Tobacco Industry funded international seminars involving other industries to develop “good” epidemiological standards of scientific proof that would serve cigarette manufacturers when they lobbied to prevent increased restrictions on tobacco.\*

\* T. Zeltner, M.D., D.A. Kessler, M.D., A. Martiny, Ph.D., F. Randerer, M.D. Report of the Committee of Experts on Tobacco Industry Documents. Tobacco Company Strategies to Undermine Tobacco Control Activities at the World Health Organization. July 2000. [www.who.int/tobacco/media/en/who\\_inquiry.pdf](http://www.who.int/tobacco/media/en/who_inquiry.pdf)



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## Does the source of funding make a difference in tobacco research?

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“Scientists acknowledging tobacco industry support reported typically that nicotine or smoking improved cognitive performance while researchers not reporting the financial support of the tobacco industry were more nearly split on their conclusions.”\*

\* Christina Turner & George J. Spilich. Research into smoking or nicotine and human cognitive performance: does the source of funding make a difference? *Addiction* 92:1423-1426 (1997).

## Relationship between Conflict of Interest (COI) and Research Results

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“authors with COI were 10-20 times less likely to present negative findings than those without COI.” The relationship was strongest among studies investigating drug treatments. COI is widespread among the authors of published manuscripts and these authors are more likely to present positive findings.”

“...the existence of a possible bias in the published literature according to funding source must be given serious consideration.” \*

\* Les. S Friedman and Elihu D. Richter. Relationship between conflict of interest and research results. *Journal of General Internal Medicine* 19:54 (2004).



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## Source of Funding and Outcome of Clinical Trials

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- “in no case was a therapeutic agent manufactured by the sponsoring company found to be inferior to an alternative product manufactured by another company.”
- Studies funded by pharmaceutical companies were more likely to favor the new therapy. \*

\* R.A. Davidson. Source of funding and outcome of clinical trials. *Journal of General Internal Medicine* 1:155-158 (1986).



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## Association of Funding and Conclusions in Randomized Drug Trials

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“conclusions of trials were significantly more likely to recommend the experimental drug as the treatment of choice if trials were funded by for-profit organizations.” \*

\* Bodil Als-Nielsen et al. Association of funding and conclusions in randomized drug trials. *Journal of the American Medical Association* 290:921-925 (2003)



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## Scope and Impact of Financial Conflicts of Interest in Biomedical Research

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“Evidence suggests that financial ties that intertwine industry, investigators, and academic institutions can influence the research process. Strong and consistent evidence shows that industry-sponsored research tends to draw pro-industry conclusions.” (p. 463)\*

\* Justin E. Bekelman et al. Scope and impact of financial conflicts of interest in biomedical research. *Journal of the American Medical Association* 289:454-463 (2003).

## COI in Economic Analyses of New Oncology Drugs

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“...studies funded by pharmaceutical companies were nearly 8 times less likely to reach unfavorable qualitative conclusions than nonprofit funded studies and 1.4 times more likely to reach favorable qualitative conclusions.” \*

\* Mark Frieberg et al. Evaluation of conflict of interest in economic analyses of new drugs used in oncology. *Journal of the American Medical Association* 282:1453-1455 (1999).

## Association Between Competing Interests and Authors' Conclusions

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“...authors' conclusions ...significantly favoured experimental interventions if financial competing interests were declared.”

“...other competing interests were not significantly associated with authors' conclusions.” \*

\* Lisa J. Kjaergard et al. Association between competing interests and authors' conclusions: epidemiological study of randomized clinical trials published in the British Medical Journal. *British Medical Journal* 325:249(2002).

## COI in Book Reviews

The editor of the journal *Addiction* discovered that a book sent to his journal for review, arguing that nicotine is not addictive, received financial backing from the tobacco industry. The editor expects all books reviewed by the journal to disclose their funding sources.\*

\* Lila Guterman. Conflicts of interest between the lines. *Chronicle of Higher Education*, February 8, 2002.

## COI and Calcium Channel Antagonists

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“Our results demonstrate a strong association between authors’ published positions on the safety of calcium-channel antagonists and their financial relationships with pharmaceutical manufacturers.” \*

\* H.T. Stelfox, G. Chua, K. O’Rourke, & A.S. Detsky. Conflict of interest in the debate over calcium-channel Antagonists. *New England Journal of Medicine* 338:101-106 (Jan. 8, 1998).

## Competing Interests and Authors' Conclusions

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“Authors’ conclusions in randomized clinical trials significantly favoured experimental interventions if financial competing interests were declared. Other competing interests were not significantly associated with authors’ conclusions.” \*

\* L.L. Kjaergard & B. Als-Nielsen. Association between competing interests and authors’ conclusions: epidemiological study of randomized clinical trials published in British Medical Journal. *British Medical Journal* 325:249-252 (Aug. 3, 2002).

## Bias and Industry-Sponsored Research

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“...studies funded by non-profit organizations maintained equipoise favouring new therapies over standard ones (47% vs 53%)...to a greater extent than randomized trials supported solely or in part by profit-making organizations (74% vs 26%)...” \*

\* B. Djulbegovic, M. Lucevic, A. Cantor et al. The uncertainty principle and industry-sponsored research. *Lancet* 356:635-638 (Aug. 19, 2000).



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## Pharmaceutical Industry Sponsorship and Research Outcome

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“Systematic bias favours products which are made by the company funding the research. Explanations include the selection of an appropriate comparator to the product being investigated and publication bias.” \*

\* J. Lexchin, L.A. Bero, B. Djulbegovic, & O. Clark. Pharmaceutical Industry sponsorship and research outcome and quality: systematic review. *British Medical Journal* 326:1167-1170 (May 31, 2003).



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## Funding by Commercial Interests and Study Outcome

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“An association was found between the source of study support and the published outcome” in a study of randomized controlled drug trials in five general interest medical journals over a 2-year period. \*

\* J. Yaphe, R. Edman, B. Knishkowsky & J. Herman. The association between funding by commercial interests and study outcome in randomized controlled drug trials. *Family Practice* 18:565-568 (2001).

## Cell Phone Safety and Funding

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*Toronto Star* reports:

“An analysis of 252 published studies worldwide on cellular radio frequencies out of the University of Washington, obtained by the *Toronto Star*, shows a clear difference in results between independent research and studies directly funded by industry...

Among the peer-reviewed, published studies with no direct industry funding, biological effects from cellphone frequencies were noted 81 per cent of the time, according to researcher Henry Lai. When corporate money is directly funding the science, effects are noted only 19 per cent of the time.” \*

\* Robert Cribb and Tyler Hamilton. Is her cellphone safe? *Toronto Star*, July 10, 2005

## Toxicology of Bisphenol A

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**Table 1: Biased outcome of low-dose bisphenol A research \***

Source of Funding	Reported Study Outcome	
	Positive [Adverse Effects]	Negative [No Adverse Effects]
Government	94 (90.4%)	10 (9.6%)
Chemical Corporations	0 (0%)	11 (100%)

\* F. vom Saal & C. Hughes. An extensive new literature concerning low-dose effects of bisphenol A shows the need for a new risk assessment. *Environmental Health Perspectives* 113:929 (2005).