Protecting science from the Dark Side: Commercial funding of research

Commercial, or corporate, determinants of health are now high on the health policy agenda (Maani Hessari et al., 2019; McKee and Stuckler, 2018; Millar, 2013). Kickbusch and colleagues have defined the commercial determinants of health as *"strategies and approaches used by the private sector to promote products and choices that are detrimental to health".* One manifestation of corporate influence is the way that research funded by organisations with vested interests can influence the dominant narrative on health. For example, the tobacco industry long sought to portray second hand smoke as no more than an irritation, concealing their own research showing the health harms (Barnes, 1995). More recently, a growing body of evidence has revealed how soft drinks manufacturers have sought to shift the focus of those seeking to prevent childhood obesity away from high energy intake and towards inadequate physical activity. For this reason, journal editors must exercise extreme caution when considering papers that this industry funds.

We have recently processed a manuscript reporting research funded by several organisations, one of which is Coca-Cola; that paper will appear in volume 16 (de Moraes Ferraria et al., 2019). The authors list their many funders, and also indicated that the funders played no role in the design, conduct or interpretation of the study, in writing the manuscript, nor in the decision to publish. That said, Coca-Cola did fund the work, and the conclusion that *"promoting and providing the right infrastructure for active commuting could translate in increasing the population overall levels of physical activity in Latin America"* appears aligned with the corporation's physical inactivity messaging. The message that physical activity is important in obesity is a scientifically valid message, which this Journal fully endorses. However physical activity messaging is used by Coca-Cola in lobbying that seeks to promote the brand with an undertone that we would not endorse – that physical activity is more important than diet and that attention should be paid to physical activity rather than to controls on the food and drink industry. We believe both to be equally important.

This manuscript produced extensive discussion by the journal's Board. We initially focused on the possible ethical and paradoxical qualities of Coca-Cola's involvement in health research. Some of us shared concerns about Coca-Cola's role in the privatization of local water resources, particularly in the global south, environmental dispossession, and pollution (Raman, 2007). We also discussed how this example should perhaps cause us to pause and reflect upon how we are all, to varying degrees, implicated in similar research processes, reliant on capital, pooled together through various means, to support research activities.

There is little doubt, however, that this case is different, and so we wondered about the relationship between brand enhancement and the use of research partnerships to support a corporate social responsibility agenda designed to attenuate any critique of the negative impact(s) of business practices (Foster, 2014).

Coca-Cola has a lengthy relationship with physical activity, and, includes “sports drinks” among its contemporary products. It has a long history of sports marketing relationships (see https://www.coca-colacompany.com/coca-cola-sports-over-the-years#), dating to the late 19th century when it was first produced. Not only hailed as the ideal beverage for the sport’s spectator, it was also promoted as a recovery drink for high performance athletes, and is still offered to athletes at the end of endurance sports activities. As an example, consider Coca-Cola’s marketing relationship with one of cycling’s greatest road races, Le Tour de France. Even today, you can find some cyclists with a small can of Coke in their musette. But these are individuals burning thousands of calories over the course of an event. What about its role, and the broader role in general of soda beverages, in affecting population health outcomes, and what – if any - role should Coca-Cola play in research located at the transport–health nexus? To inform our response to these questions, we have looked at parallel conversations regarding research funding, ethics, and transparency.

All reputable universities refuse funding from the tobacco industry (Cancer Research UK, 2015); reputable journals do not publish research funded by the tobacco industry (Godlee et al., 2013; Rutter, 1996; The PLoS Medicine Editors, 2010). This is mostly because cigarettes are among the few legal products that are lethal when used as intended by the manufacturer. But it is also because of the distortions that arise from tobacco-funded research (Barnes and Bero, 1997, 1996; Bero, 2005). For example, in a study of review articles about passive smoking, the only factor associated with concluding that it was not harmful was an author’s affiliation with the tobacco industry – with the extraordinarily high odds ratio of 88.4 (95% CI 16.4-476.5) (Barnes, 1998). Tobacco is the only product for which there is a global treaty on health grounds, the Framework Convention on Tobacco Control (World Health Organization, 2003).

Advocating physical activity is not on a par with this – indeed it may help counter the promotion of car dependency which can be seen in the same light (Douglas et al, 2011). In transport and health research, we are not participating in the same sort of high stakes endeavours as bio-medical research and/or clinical trials that could hold substantial commercial and more immediate individual health outcomes. At the same time, stories from other scientific domains should serve as ample food for thought. Similar ethical questions remain concerning how we are funded and by whom, and to what extent do we agree to, or

are we forced to, discount, neglect or forego academic freedom entirely for the sake of acquiring research funding, a process which of course is incentivised by a contemporary academic performance culture that uses research income as a metric to validate the quality of individual scholars, departments, and entire institutions.

In 2003, Parascandola wrote: *"While Big Tobacco does not have a monopoly on impure science, it is the undeniable leader in organised subterfuge and manipulation of the scientific process.."* (Parascandola, 2003). Bauld has recently highlighted the range of ways that commercial interests may distort science. These include focusing on healthy populations or short-term impacts, reducing adverse health outcomes; preferentially funding researchers whose topics or findings support the industry's messages; personal contacts and informal conversations at conferences that may affect researchers' thinking; and involvement of commercial interests in policy-making (Bauld, 2018).

One of the most serious biases of the scientific body of knowledge is the distortion of what research is undertaken, so that it is directed most at certain areas. Commercial organisations can therefore influence the agenda by not funding some types of research, leaving what they fund to dominate. Prevention suffers from this because of the tendency for biomedical research to focus on treatment rather than prevention, and on specific diseases rather than holistic health. One reason is the impact of pharmaceutical R&D, although it is not the only reason. Research on obesity has tended to focus on diet and, insofar as it has addressed physical activity, that has tended to address sport and recreation rather than active travel.

Bero has described the six strategies used by Big Tobacco to distort science (Bero, 2005). As well as funding and publishing research that supports their position, commercial interests also suppress and criticise unwanted findings, and use helpful findings (or their own interpretation of risk) for advocacy via the media or directly to policy-makers. Multinationals selling unhealthy products have learned from the tactics used by Big Tobacco. Coca-Cola funded a Global Energy Balance Network (GEBN). Internal industry documents show that this funding was in order to be *a "weapon"* to *"change the conversation"* about obesity. GEBN was designed to hijack advocacy to advance Coca-Cola's corporate interests: to *"promote practices that are effective in terms of both policy and profit"* (Barlow et al., 2018). Thus it is not only the funding of research that should concern us but also the funding of 'scientific' and health organisations and think tanks, and their roles in advocacy and lobbying. Uluncanlar and colleagues have described a 'policy dystopia model' to understand the political strategies of unhealthy corporations (Ulucanlar et al., 2016). In Coca-Cola's case this may balance other distortions in opposite directions – how far does that change the situation?

Coca-Cola finances research into physical activity, both directly and through foundations. The research questions may be scientifically valid, and on important topics. The funding could be said to distort research in that direction for commercial reasons, but probably only to a degree which compensates for biases elsewhere. However, even if that is the case, there are three other issues: transparency of funding and use in advocacy – both of the findings and the funded researchers, and quite frankly, the symbolic message this sort of funding relationship produces.

Respected researchers assure us that Coca-Cola does not interfere with the scientific process, although we cannot verify their claims. However, there is growing evidence that such funding does influence both what research is conducted, and how results are used for advocacy (Steele et al., 2019b).

A 2018 paper compared studies that reported funding from Coca-Cola (398 articles by 907 authors, published in 169 journals) with a list provided by Coca-Cola of researchers they fund. Only 42 of the authors (4.6%) were acknowledged in that list (Serôdio et al., 2018). Of even greater concern, 38% of researchers listed by Coca-Cola had not revealed their commercial funding (Tseng et al., 2018). Coca-Cola has also listed giving funding to 74 health organisations in Spain, mostly with a nutrition or cardiology focus. Of the 20 papers published, none mentioned this funding; 14 papers focussed on physical inactivity as the main cause of obesity (Rey-López and Gonzalez, 2018).

The car lobby actively opposes measures to reduce car use (Douglas et al., 2011). Indeed, many of the tactics used by multinational companies selling products detrimental to health follow those used for decades by ‘Big Tobacco’ (Mindell, 2001; Mindell et al., 2012). Whether committed to improving the health of the public or to ensuring that commercial interests do not distort science, we need to be aware of the activities of multinational companies. They are required by law to put the interests of share-holders above those of the public. As scientists, we must ensure that the science we produce – and publish – remains free of commercial bias. But beyond that, those of us working to improve the public’s health and reduce inequalities need to be aware of commercial determinants of public health (Mindell et al., 2012). Knai et al have proposed using a systems approach for tackling corporate influences on non-communicable diseases (Knai et al., 2018).

We have deep concerns about the distortion of research agendas by commercial funding of research. However, the presence of this manuscript has produced an opportunity for this Journal’s editorial board, and the authors of this editorial, to have a thoughtful and fulsome conversation about research funding and research ethics in transport and health research.

We recognise that the biggest commercial distortion of research is away from prevention, and we know that Coca-Cola is not motivated altruistically. Companies such as Coca-Cola have used findings from research into physical (in)activity to lobby against public health measures to tackle obesity such as taxes or marketing restrictions on unhealthy food and drink products (Barlow et al., 2018).

While Coca-Cola's behaviour does not appear to be causing the blatant scientific distortion implicit in the behaviour of the motor and oil industry, the tobacco industry, or the pharmaceutical industry, as Parascandola pointed out: *"Public health scientists should be aware of the motives of research sponsors and their potential impact on health"* (Parascandola, 2003). More worrying is what commercial sponsors choose to fund and what they then do with the findings afterwards, to further their own agenda. In this sense, a policy of scientific non-interference is only half true, as access to corporate funding draws attention to particularly convenient slices of much broader research questions concerning, in this case, physical activity, diet, and population health.

Rennie described the changing context for ethics in publishing and research misconduct (Rennie, 2010). Very recently, there has been a call for journals to supplement their conflict of interest statements with provision of agreements with funders. This is because some companies have signed agreements with researchers in North America that give the company the right to review research prior to publication; control over study data; control over disclosure of results; control over revealing the funding; and, in some cases, the final decision about publication in peer-reviewed journals - Coca-Cola has done this in North America, although there is no evidence that it has exercised this 'right' (Steele et al., 2019a).

Cullerton and colleagues have recently sought to build consensus on the relationship between commercial sponsors in the food sector and public health researchers, with the aim of developing international guidelines for this relationship. In their systematic review, Cullerton et al (2019a) addressed the meaning of 'conflict of interest', pointing out the general focus on financial gain (Thompson, 1993) but also identifying a range of subtler influences. However, we see practical difficulties with their view that journal editors have a major role in maintaining standards for transparency and publication. While most reputable journals follow the International Committee of Medical Journal Editors (ICMJE) guidance on requirements for authorship (http://www.icmje.org/recommendations/browse/roles-and-responsibilities/defining-the-role-of-authors-and-contributors.html, acknowledging affiliation, and full disclosure of funding sources and conflicts of interest (http://www.icmje.org/recommendations/browse/roles-and-responsibilities/author-responsibilities--conflicts-of-interest.html), it is hard to see how journals can ensure what

control the researchers or the funders had over the manuscript or the right of researchers to publish their findings regardless of what they were. This is, however, another reason for researchers to document their protocols and research questions at the start of a study in one of the many online registers.

This journal will continue to review its policy on commercial funding of scientific research. After much thought and not without some misgivings, we have decided that for the time being, where there is no involvement at all in the research and publication nor evidence of misuse of findings, we will continue to consider manuscripts funded by Coca-Cola and other non-tobacco commercial interests on their relevance and scientific quality, as with all submitted manuscripts, but we will continue to ask the questions we have posed in this editorial.

Evidence of registering the planned research at the start of a project and explanations for any divergence from the registered plans will help reassure editors, reviewers and readers. Making the research data available to other researchers, whether through the authors' institution, Elsevier's data repository (https://www.elsevier.com/about/policies/research-data), or any other well-managed data repository, will help increase transparency.

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Conflict of interest statement

JM was involved (several decades ago) in a randomised clinical trial of a statin. The pilot study was funded by a drug company, whose role was limited to funding the study and to providing the active and placebo tablets; the company was not involved in any other way, including no involvement in the idea of the study, its design, its conduct, data collection and interpretation, nor writing up the study nor the decision to publish. Oversight was provided by a data management committee comprising academics from other universities. RB is involved in a project on play and childhood disability funded by Jumpstart, Canadian Tire Corporation's sport and physical activity charity. XSW has no conflicts of interest to report.

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