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## Temporal Trends of Corporate Sponsorship in Medical Research

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# Temporal Trends of Corporate Sponsorship in Medical Research

Elijah Bodey

## HONORS PROJECT

Submitted to the University Honors Program

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## **Abstract**

Data was collected from medical journals to assess changes in the nature and prevalence of corporate sponsorship. The journals that reviewed were the Journal of the American Medical Association (JAMA), the New England Journal of Medicine (NEJM), the British Medical Journal (BMJ), and the Lancet. These journals were chosen because of their high impact on medical research representing both American and British Medical editorials. It has been shown that corporate sponsorship has been associated with bias results (Kjaergard et al 2002). Changes in the nature of corporate sponsorship would be linked to changes in economic climate and changes in the policies regarding how research is done and published. Data collected from the four journals was used to determine several things: Significant changes in corporate sponsorship, differences between European and American editorials, and a potential association between subject and corporate sponsorship.

The consequences of temporal trends have a bearing on social policy because a bias in medical research affects many large decisions, such as allocation of research funds, what medicines to use on a personal level, and what research should be done in the future.

Similarities and differences were found in this study. American and British Periodicals both showed an increase in For-profit sponsorship of Articles. The percentage of corporate sponsorship has increased significantly more for the American periodicals. While American Periodicals have roughly equal percentages of Private and Public coauthor affiliations, British Periodicals show a stark difference. While American Periodicals are more likely to endorse a project, the difference is only around 10 percent.

## **The Problem**

There have been many allegations that corporate sponsorship has biased all fields of research through funding. Gathering data on temporal trends in reported medical research could add another dimension to the discussion of corporate sponsorship. If corporate sponsorship has taken on a major role only recently, then an analysis of changes in policy could be done to see what led to this change in funding. If recent changes in policies have led to a bias of research, then perhaps those policies should be reevaluated.

This study aimed to make note of major temporal trends in the corporate sponsorship of American and European editorials.

## **Background to the Problem**

Questions about the link between the corporate funding of research and a potential bias started with suspicions regarding studies funded by the tobacco industry (Turner and Spilich et al 1997). Questions about a potential conflict of interest then began to be raised about other subjects. Some of the first conversations regarding the need for financial disclosures and the role of potential bias came when scandals occurred at noted medical journals such as the NEMJ (Angell and Kassirer 1996) and the BMJ (Smith 1998).

In the following years many papers have been conducted which investigate the potential role of corporate sponsorship and bias. Epidemiological studies of randomized clinical trials published in various medical journals have shown that there is a distinct correlation between competing interests and authors' conclusions (Kjaergard et al 2002). Studies have also been done to determine if there is a difference between the methodology of tests funded by pharmaceutical

companies and those who list no competing interests. Articles were picked by well-defined medical article database searches (Lexchin and Bero et al 2003).

Many papers have been written that investigate the relationship between pharmaceutical companies and research. A paper by Resnik and Elliot identified five factors to determine whether financial relationships are likely to enhance, undermine, or have no impact on the credibility of research (Resnik and Elliot et al 2013). A paper by Wand and Murad offered possible suggestions by which industry can potentially exert effects and propose new directions for the future (Wand and Murad et al 2010).

The study I suggest would add to the collection of studies done by looking at a much larger timespan, compare and contrast American and European editorials, and gathering more variables than previous studies which may offer additional insights.

## **Research Design**

The journals that have been chosen for this study were selected based on their high impact on medical research. Two journals are American medical journals and two are British medical journals. This selection allows for a comparison between American and European editorials.

From these journals a sampling of each publication year selected will be taken. Two issues from a publication year will be selected – the first issue of the year and the first issue in July. From these issues, the articles selected for review will be of the following categories: original contributions, brief reports, reporting of cases, and laboratory technique notes. Articles that will be excluded from the study include: editorials, book reviews, special communications, corrections, letters, medical news, or any article that is not the result of data collection.

A rubric has been designed for this study that will gather the following data: number of coauthors, if the article is international, the lead author, the lead author's institute, the lead authors type of Institute (Hospital, University, Lab), whether the institute is public or private; the last author, the last author's Institute, type of Institute (Hospital, University, Lab, or Government Organization), whether the institute is public or private, coauthors collective affiliations; study design (Clinical Study, Data Review, Drug Review, Equipment Review, Questionnaire, Report of Case) , origin of funding (Public or Private), how funding was described (Grant, Chemicals, or Equipment), and study subject, and if the study was in support of the product (Negative, Neutral, or Positive).

Layout of the Rubric described above

Issue	International	Number of Coauthors	First Author	Lead Author's Institute	Institute Type	Public or Private

Last author	Last Author's Institute	Institute Type	Public or Private	Coauthors Affiliations

Study Design	Funding	How was Funding Defined	Study Subject	Is Subject Marketable	Endorsement of Product

## Results

Figures 1-9 were generated from the data gathered using the rubric and collected in tables 1,2,3, and 4 in the appendix. Figures 1-3 focused on the funding of articles. The figures went from most general to more specific. Figures 4-6 focused on coauthors affiliations to a public or private institute. Yet again the figures go from most general to most specific. Figures 7-9 focused on the endorsement or non-endorsement of marketable subjects. The figures went from their most general form to most specific. Figures 10 and 11 show the endorsement or lack of endorsement of marketable subjects based on type of funding.

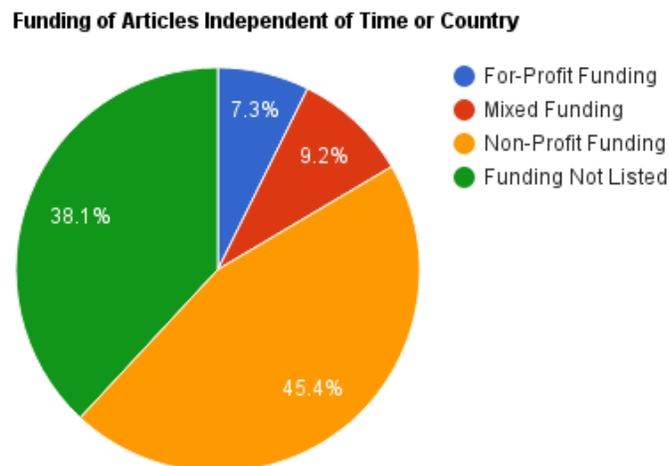


Figure 1. Pie chart representing the funding of articles from the year 1960-2015. This Pie chart is independent of Time or distinction of periodical's country.

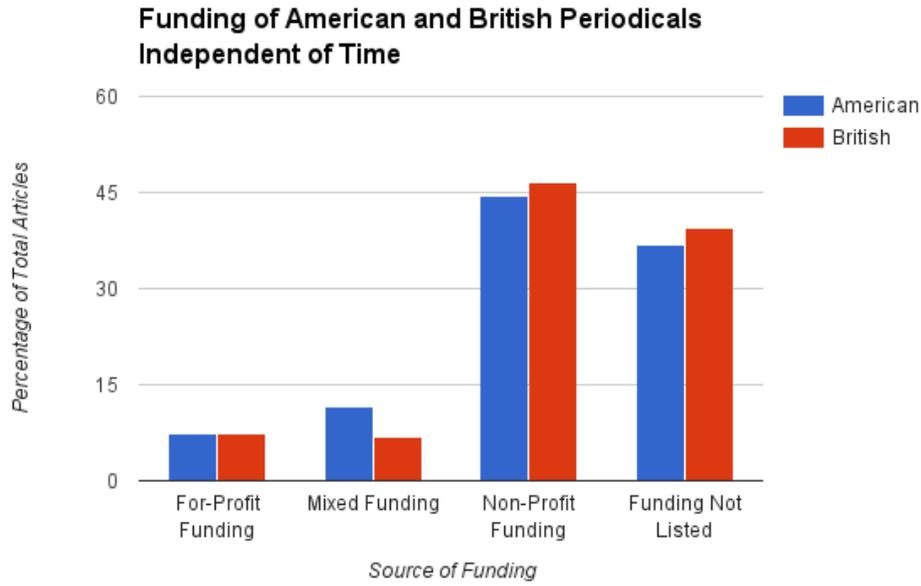


Figure 2. Percentage of Articles which have any source of Corporate Sponsorship Independent of Time.

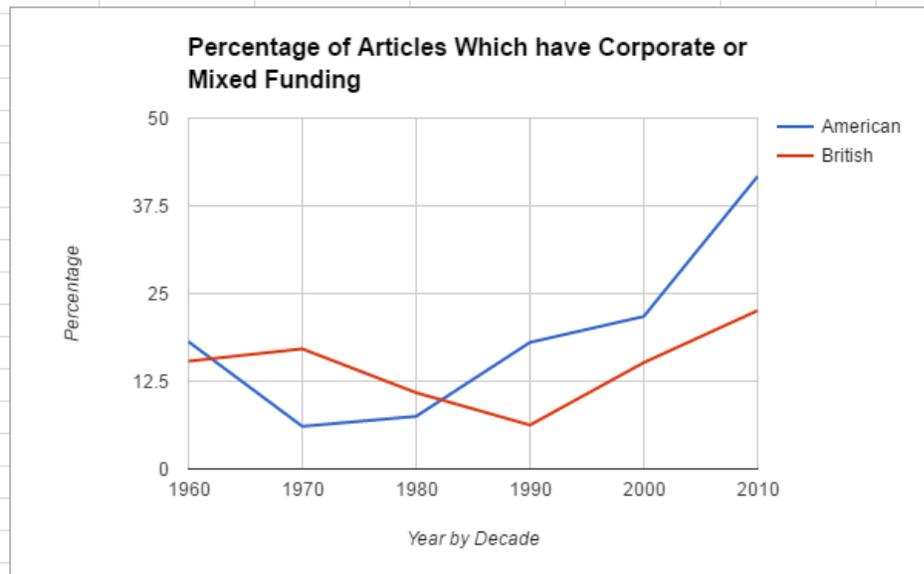


Figure 3. Percentage of Articles which have any source of Corporate Sponsorship

**Coauthors Affiliations Independent of Time**

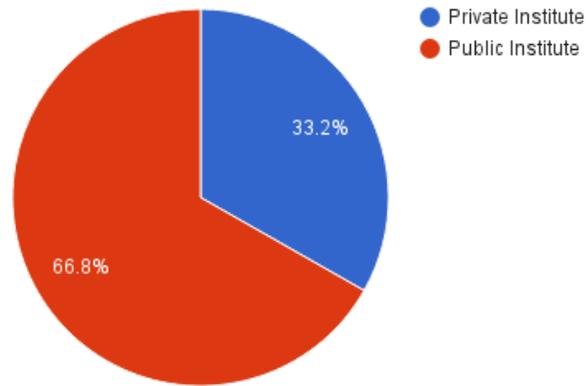


Figure 4. Percentage of Coauthors belonging to a Private or Public Institute from 1960-2015.

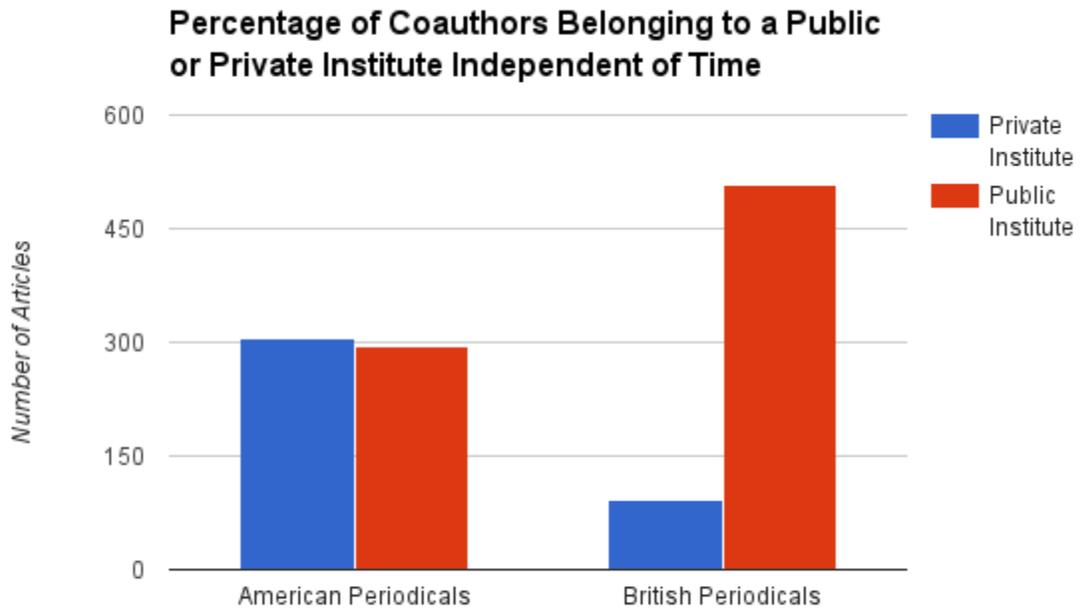


Figure 5. Percentage of Coauthors belonging to a Private or Public Institute Independent of Time

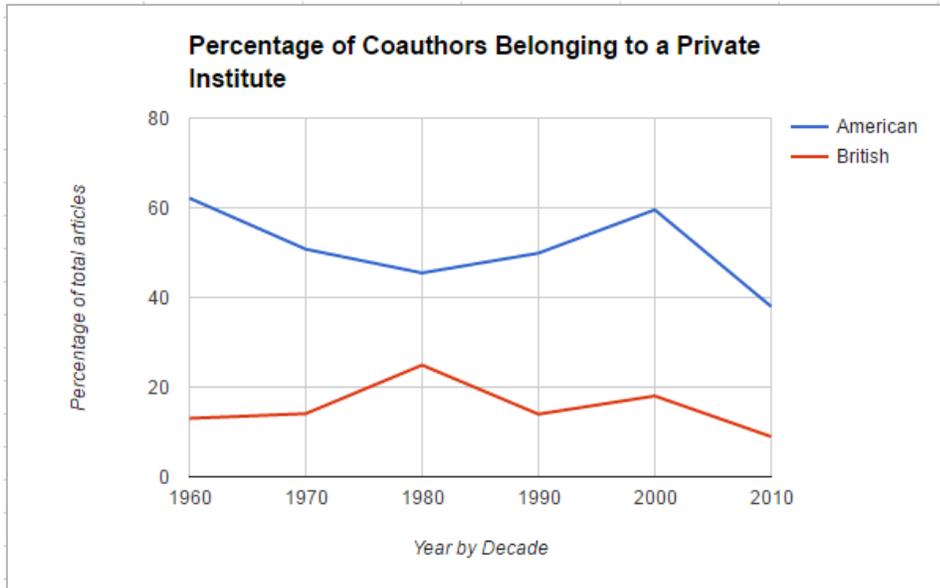


Figure 6. Percentage of Coauthor Affiliations which were Private or a mix of Private and Public.

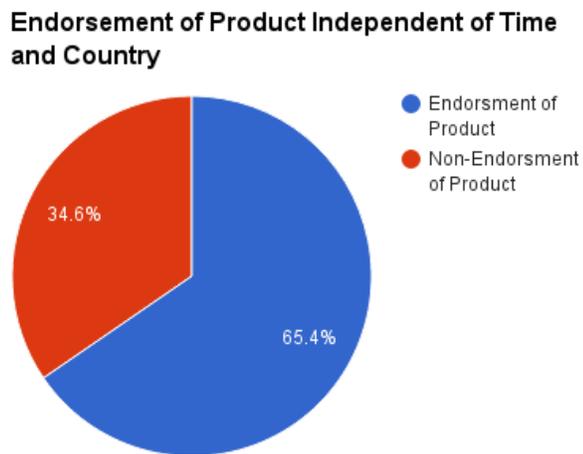


Figure 7. Percentage of marketable subjects that received or didn't receive Endorsement independent of Time or County

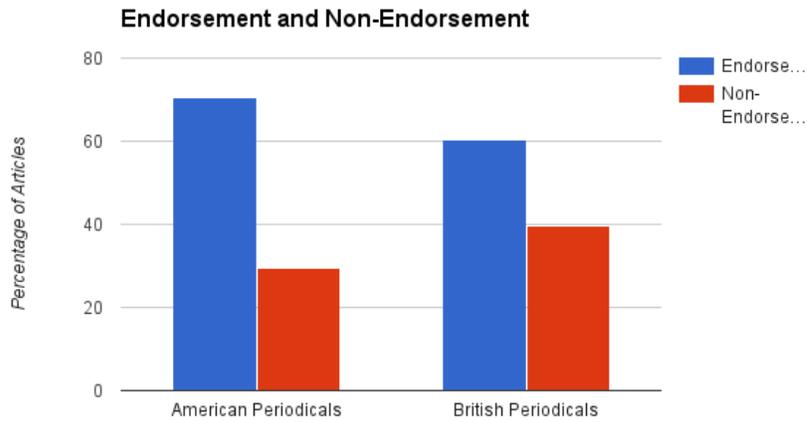


Figure 8. Percentage of marketable subjects that received or didn't receive Endorsement independent of Time

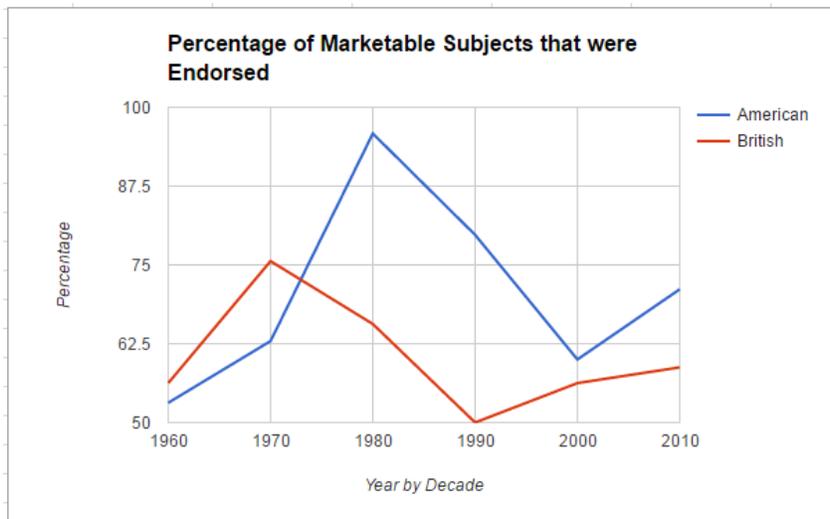


Figure 9. Percentage of marketable subjects that received or didn't receive Endorsement by the study reviewing them.

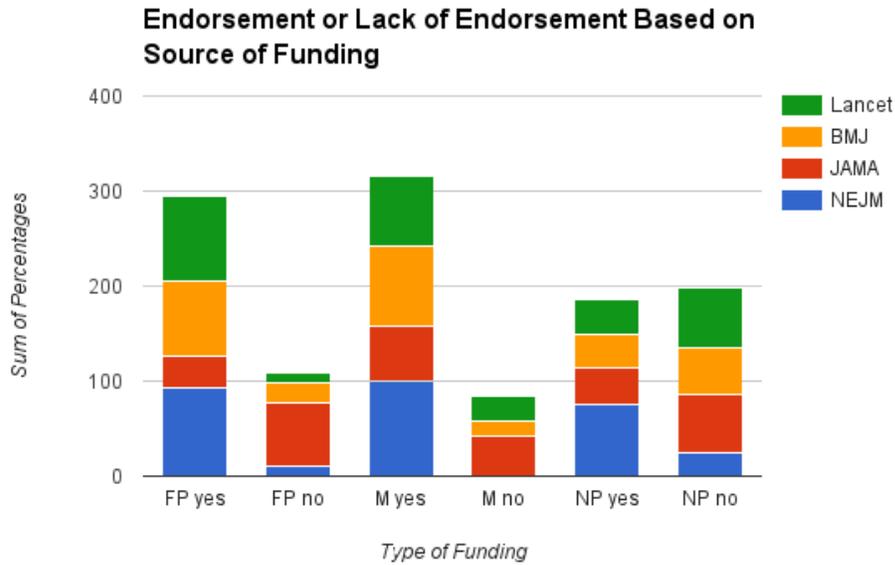


Figure 10. Sum of the endorsement or lack of endorsement of marketable subjects based on type of funding for all four periodicals independent of time.

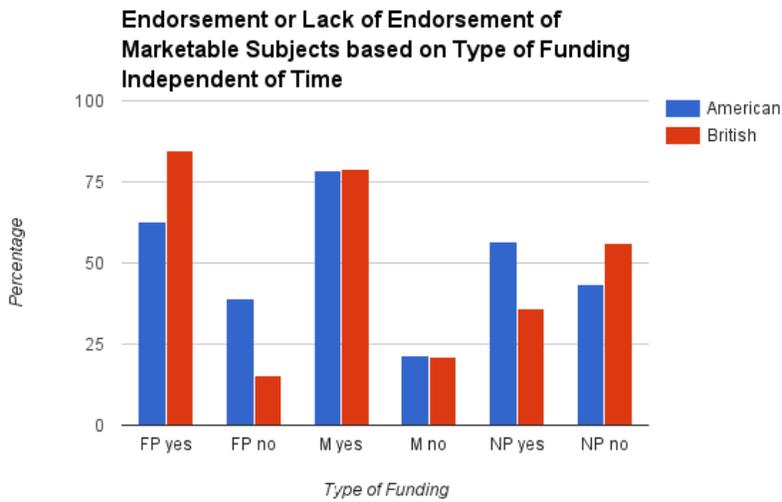


Figure 11. Endorsement or Lack of Endorsement of Marketable Subjects based on Type of Funding Independent of Time

## **Discussion and Conclusion**

As can be seen in Figure 3 two patterns are noticeable. The first trend is that the Percentage of Articles which have any source of corporate sponsorship has increased for both the British and American periodicals. The second trend is that the increase in the percentage of corporate sponsorship has increased significantly more for the American periodicals. Figure 2 shows that the types of Funding in American and British Articles were very similar. In fact for For-Profit funding, independent of time, the rate was the same.

Figure 4 shows that while American Periodicals have roughly equal percentages of Private and Public coauthor affiliations, British Periodicals show a stark difference. This pattern is expected as a majority of British universities and hospitals are publically funded. As can be seen in Figure 6 the British Periodical does not show a change over the decades in percentage of coauthor affiliations which were Private or a mix of Private and Public. Interestingly the American Periodicals show a steady decrease, with the exception of the decade of the 2000s, in the percentage of coauthor affiliations which were Private or a mix of Private and Public.

Figure 7 shows that a marketable subject which has an article written about it has a 65.4 percent chance to be endorsed. Figure 8 shows that while American Periodicals are more likely to endorse a project, the difference is only around 10 percent. Figure 9 shows that American Periodicals are more likely to endorse a marketable product which is being reviewed. The reason for this difference in percentage could be due to a number of factors such as: higher rates of corporate sponsorship, differences in selection of marketable subjects to review, or differences in concluding if a subject was successful or not.

Figures 10 and 11 are the strongest evidence of the biasing role of corporate sponsorship. It is clearly shown that any article funded by corporate sponsorship is likely to endorse a marketable subject. Additionally Figure 11 shows that American periodicals are more likely to have an endorsement of marketable subjects based on if they have a corporate sponsor.

## Annotated Bibliography

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  - Fifty years ago, the issue of conflict of interest in biomedical research appeared in the national spotlight and has remained in a state of constant evolution. Government legislation caused a boom in collaborations between physicians, researchers, academic institutions and industry. These relationships continue to advance medical science and make meaningful progress, yet they may threaten the integrity of physicians and researchers and the public's trust in medicine. This article will highlight the evolution of industry relationships and conflict of interest over time,

discuss methods by which industry can potentially exert effects and propose new directions for the future.