

# Did a misquotation warp the concussion narrative?

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On 28 February 2022, the *British Journal of Sports Medicine* (BJSM) retracted 'The time lords—measurement and performance in sprinting' by McCrory, because of 'unlawful and indefensible breach of copyright.' McCrory was editor-in-chief of the BJSM from 2001 to 2008 and authored or coauthored approximately 200 articles, reviews and editorials in BJSM between 2000 and 2021.

Within days of the retraction, a blog post by Brown revealed many other McCrory publications requiring investigation in light of detailed evidence Brown presented that he interpreted as plagiarism or 'text recycling'.<sup>1</sup> McCrory himself had decried 'redundant publication' in a BJSM editorial titled 'Fraud and Misconduct in Publication,' writing that authors did it 'in the guise of boosting their curriculum vitae'.<sup>2</sup> We have no way of knowing whether the portions of multiauthored articles that McCrory repurposed were originally written by him or by colleagues, and (if the latter) whether these colleagues knew of the recycling.

## MISQUOTATION WORSE THAN PLAGIARISM?

Plagiarism, however, may not be the most serious breach that could concern BJSM readers. Let us illustrate with an example from an editorial not accused of plagiarism, 'When to retire after concussion?'<sup>3</sup> In this 2001 editorial, McCrory fundamentally changed a quote from sports medicine pioneer Thorndike, in an egregious warping of Thorndike's published words.<sup>3</sup>

In a 1952 *New England Journal of Medicine* article, Thorndike had written unequivocally that '(p)atients with cerebral concussion that has recurred more

than three times or with more than momentary loss of consciousness at any one time should not be exposed to further body-contact trauma.' (emphasis added)<sup>4</sup>

However, in his editorial, McCrory purported to 'quote' Thorndike's 1952 article as having advised that after 'three concussions, which involved loss of consciousness for any period of time, the athlete should be removed from contact sports for the remainder of the season.'<sup>3</sup> (emphases added)

The main point of McCrory's editorial was that clinicians and sports organisations should shun 'arbitrary exclusion periods after injury' in favour of an 'individualised clinical assessment.' But McCrory changed and weakened Thorndike's actual recommendation in two different ways. First, he changed a guideline for *permanent* exclusion from contact into a temporary one, by fabricating the words 'for the remainder of the season.' Second, and perhaps worse, he changed the 'OR loss of consciousness' to 'three concussions which involved loss of consciousness.' The expert he had 'quoted' recommended permanent cessation of contact following a single concussion with loss of consciousness, but readers of the editorial were led to believe that Thorndike had advised only a temporary hiatus, and one only applicable after three concussions that had also involved loss of consciousness.

Weakening the recommendation in two major respects would have been egregious enough, but in context it appears McCrory concocted this 'straw man' argument in order to criticise it for being *too strict*. Thorndike did not offer any language for an 'arbitrary exclusion period' of the kind McCrory decried; McCrory created this position for Thorndike. He changed a strict—perhaps arguably too strict—guideline into a weaker one, in order to *then* argue that the weak guideline was 'arbitrary'. Readers of his editorial had no way of knowing, without going back 49 years in the historical record, that Thorndike's exclusion period was the opposite of arbitrary. Thorndike believed that one

episode of traumatic loss of consciousness, or three concussions, should result in permanent cessation of contact sport. McCrory 'quoted' him as recommending that only on the third concussion with loss of consciousness should the athlete take some time off.

## WHAT WAS THE IMPACT OF THE FALSIFIED QUOTE ON THE CONCUSSION NARRATIVE?

Anyone who follows sports medicine brain injury research will know that McCrory has adopted a sceptical view about the dangers of concussions, the potential problems of chronic traumatic encephalopathy (CTE),<sup>6</sup> and the occurrence of second impact syndrome.<sup>7</sup> He has invoked<sup>8</sup> the spectre of 'confounding' to cast doubt on epidemiological findings, without suggesting how additional factors might influence both exposure and outcome; he has argued that genetic susceptibility could somehow be a 'cause' of CTE<sup>8,9</sup>; and he has declared that a National Football League career somehow protects against suicide risk,<sup>10</sup> without considering the 'healthy worker effect' that makes comparisons to general-population rates precarious. Given this context, the misquotation above, whether sloppily or intentionally deceitful, points to a potentially larger problem.

McCrory led four iterations (2005, 2009, 2013, 2017) of the consensus statement on concussion in sport. While those statements were said to be informed by systematic reviews (some of which McCrory was part of or led) and include many coauthors who also contributed to the consensus guidelines, readers may question how McCrory's misquotation or the possible mindset it reveals on his part, especially when considered together with McCrory's plagiarism and the possibility of other misrepresentations, may have altered the interpretation of concussion science and thus shaped the content of consensus statements on concussion.

On the surface, what a single man thought in the 1950s may seem to have little relevance to modern science. But the history of traumatic brain injury and neurodegenerative disease in sport is replete with examples where the scientific literature has been used to abet denial. Thorndike called attention to 'punch drunk', the historic term for CTE, as his justification for removing athletes from further body-contact

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trauma. The warping of Thorndike's recommendation was an attempted erasure of a warning about potentially foreseeable and worrying consequence of head impacts.

But that is only one effect that concerns us. It's possible that this misquotation was also used to represent Thorndike's views in internal discussions by sports organisations regarding concussion science. In such a case, it would have also misled those sports organisations, their chief medical officers and other important office-holders who owe a duty of care to the sportspeople within and served by those organisations. Such persons would naturally have taken McCrory's statements at face value. They would have had no reason to dig out Thorndike's article to see what he had actually recommended.

According to Google Scholar, the 2001 McCrory editorial has been cited 53 times to date. This raises the additional question whether the authors who have referenced this paper might have approached their research or stated their results differently if they had been provided with the original Thorndike recommendation instead of an erroneous facsimile thereof.

Beyond this, what is the broader legacy of McCrory's editorship at the *BJSM*? In light of his conduct in the 2001 editorial, is it not unreasonable to ask whether he might also have distorted the scientific record by unduly favouring papers which fit with his view of concussion and excluding work that did not?

If these concerns prove valid, it is important to consider how badly contaminated at least one corner of the sports medicine literature may have become. Plagiarism is an offence against a colleague who deserves attribution; it is theft. Concocting words that a scientist never wrote, in order to undermine his arguments and promote your own, is worse: it is an offence against science. Furthermore, and perhaps most importantly, it is possible that such distortions have created victims beyond the academic fraternity and contributed to a false narrative regarding the interpretation of concussion research.

**Correction notice** This article has been corrected since it published Online First. The article type has been changed.

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