

**Parallel Session 25: Communicating biotechnology and biomedical sciences (B)**

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## **Reporting contested science: comparing media coverage of genetic explanations for sexuality and intelligence.**

The 'Reporting Contested Science' Project is an Open University funded initiative that aims to document the relationship between the production, content and reception of media coverage of contested science. This paper presents findings from one aspect of this project; content analysis of newspaper coverage of genetic research. More specifically, the research compared media coverage of scientific research on genetic explanations for sexuality and intelligence through analysis of a range of newspapers, including tabloid, mid-market and broadsheet examples. This sample reflects the current diversity in the UK newspaper marketplace.

The central questions that this presentation will address include: how was the scientific research on genetic explanations for sexuality and intelligence represented in this sample?; were there common themes in the coverage?; what were the key differences?; which interviewees and sources were cited in this media coverage and how were they represented?; and were there challenges made to the claims made?

The results illustrate how representations which contested genetic explanations for sexuality and intelligence introduced a range of challenges to the evidence presented (e.g. by introducing environmental explanations) or to the credibility of the research and the researchers involved. The paper will conclude by considering the influence of media coverage of contested science on public perceptions of science.

### **Introduction**

This paper presents results from the 'Reporting Contested Science' Project, which is an Open University (UK) funded initiative. This project examines media coverage of contested science by exploring representations, documenting production issues, examining interpretations and considering media influence. The research is theoretically underpinned by the *Circuit of Mass Communication*, a model developed at the Glasgow University Media Group (see Miller et al. 1998; Miller 1999; Philo 1999). As such, this research examines the production, content and reception of media coverage and the influence of four sets of actors, the public, the media, decision makers and social institutions, in influencing these elements. Building on previous studies of media coverage of genetic research (for example, see Miller 1995; Henderson and Kitzinger 1999), here we present the initial results of our analysis of media content.

### **Contested science and the media**

The UK news media play continue to play an important role in disseminating scientific research to a wide variety of audiences (H.M.S.O. 2000). As such, analyses of media content can be a first step to informing debates which examine the relationship between representations of science and media influence. This research examines this relationship by considering media coverage of contested science. In essence, we have defined contested science as knowledge that is open-ended, uncertain and contingent (Macnaghten and Urry 1998). It therefore has the potential to be contested in several ways:

- within the scientific community which validates (or rejects) research via formal academic practice,

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- within academic discourse (for example, the continuing debate concerning genetic determinism – see, Dawkins (1988) and Rose and Rose (2001)),
- and in the public sphere (for example, in media representations and by the public (for example, see Holliman 2000; Holliman 1999).

We note that these areas are not always mutually distinct. Hence, academic debates that consider the relative merits of scientific research can be played out in the public sphere, and, in particular, in media coverage. Indeed, the potential for conflict and controversy that is often associated with contested science can make these issues newsworthy and generate media coverage, making the media an important site for these issues to be contested. However, it is not the processes that mediate the selection and construction of science news that is the focus of this paper. Rather, here we present the results from analyses of these contested representations.

This research starts from the premise that media representations do influence interpretations, but that the process of interpretation and contextualisation is complex. Analysis of media content therefore facilitates analysis of these processes by constructing evidence of how media coverage represents contested science. The results of these analyses can then inform studies of media influence (for example, by providing stimulus materials in audience reception work).

#### **The case studies**

The project focuses on newly published scientific research that examines gender and sexuality, and scientific research which considered a link between genetics and intelligence. For example, we have analysed media coverage of scientific research which concluded that there is a link between finger length and sexual orientation (see, Williams et al. 2000). This study reported on research conducted at University of California, Berkeley. The paper, published in the scientific journal *Nature*, argued that a study of 720 people from San Francisco had produced a possible correlation between finger-length and sexual orientation.

The second case study examined media coverage of scientific research which concluded that there is a link between genes and intelligence (for example, see Tang et al. 1999; Chorney, 1998).

#### **Methods**

Examining media content is the first step to analysing the wider context within which this coverage is constructed and interpreted. By addressing the language and visuals in media content, this can provide insights into how science news is represented, who does and does not appear and where the emphases within the coverage lie. The results of these analyses can then be used to examine why the media coverage appeared as it did (for example, by conducting production analyses) and how it was interpreted and contextualised (for example, by conducting reception analyses) (for example, see Philo 1990; Kitzinger 1993; Holliman and Scanlon 2002).

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We have used content analysis to begin our study of this wider context for media coverage of genetic research. Content analysis is defined as:

‘[...] an accepted method of textual investigation, particularly in the field of mass communications. It involves establishing categories and then counting the number of instances when those categories are used in a particular item of text, for instance in a newspaper report.’  
(Silverman 1993, p.59)

We examined the distribution of newspaper coverage of genetics explanations for sexuality and intelligence, taking account of the distribution of interviewees and themes in the coverage. The aim was to compare media coverage for similarities, whilst acknowledging the differences across and within media outlets.

The sample consisted of eight national daily newspapers and their Sunday equivalents (when these fell within the sample period). Four were broadsheets, two were ‘mid-market’ tabloids and two were tabloids. These are shown in Table 1.

**Table 1: The newspapers in the print media sample, grouped by ‘type’ of newspaper**

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‘Red-top’	Tabloid

Initially, the data collection involved searches of UK national newspapers available on CD-ROM. We used the following search terms: gen\* and intelligence, gen\* and sexuality, gen\* and gender. We then collected ‘hard copy’ of these newspaper articles and searched those newspaper not available on CD-ROM ‘by hand’.

The newspaper archive was entered into an *Access 97* database to provide the basis for the content analysis. The coding frame was designed to facilitate searching for particular dates in the coverage, the name of the newspaper, the page number of the article, to acknowledge the use of pictures or graphics and their captions, to document directly quoted interviewees, and to list the name and type of journalist.

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## Results and discussion

We collected and analysed 22 newspaper articles. Of these, 12 reported the fingerlength and sexuality research from April 2000. The other 10 reported on research that discussed a possible link between genes and intelligence with six reporting research published in September 1999 (see, Tang et al. 1999). The following sub-sections present the results of the content analysis for each case study.

### Fingerlength and Sexuality

The 12 newspaper articles collected are reported in seven of the eight newspapers in the fingerlength and sexuality sample. Seven articles were published on the 30<sup>th</sup> March and five on the 31<sup>st</sup> March 2000. Of the 12 articles in the sample, *Nature* is mentioned as the source of the research in nine articles.

Four articles were written by science journalists (all broadsheet articles), the remainder being written by non-specialist journalists or having no byline. This highlights a key difference in the coverage as the articles that frame the research in terms of popular interest, often including multiple images of celebrities, are tabloids. By contrast, all but one of the broadsheet articles are written by science journalists. These articles do not provide detailed comment on the quality of the research or its implications. Rather, they report the announcement of the publication of this research, how it was conducted and the broad conclusions. For example:

‘Homosexuality is linked today to the relative length of two fingers on the right hand. Men and women with somewhat shorter index fingers in proportion to their ring fingers are more likely to be gay, claims a report,’ in ‘FINGER LENGTH MAY INDICATE TENDENCY TO HOMOSEXUALITY<sup>1</sup>’ (*Daily Telegraph* 30 March 2000, p.9)

A further three articles are more critical of the research. One is a front-page banner advertisement, which links to an article published further inside this edition. It asks the question:

CAN YOUR INDEX FINGER REALLY DETERMINE YOUR SEXUALITY? (*Daily Mail* 31 March 2000, p.1).

This links to a further article, published on pages 32-33 which answers this question in the headline:

‘THAT’S HANDY – THE PICTURES THAT PROVE YOUR INDEX FINGER DOESN’T DETERMINE YOUR SEXUALITY’ (*Daily Mail* 31 March 2000, p.32-33).

The text on page 32 begins by reporting the findings, but develops to suggest the results may be contested:

‘Despite being derided as far-fetched by many, some in the scientific community rushed to

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<sup>1</sup> The headlines of the articles are formatted in capital letters.

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support Dr Breedlove. Dr Nick Neave, a biological psychologist from Northumbria University, said: 'Dr Breedlove's findings mirror research we have been doing,' in 'THAT'S HANDY – THE PICTURES THAT PROVE YOUR INDEX FINGER DOESN'T DETERMINE YOUR SEXUALITY' (*Daily Mail* 31 March 2000, p.32-33).

The text finishes by stating that the research will be put to the test so that readers can make their own decisions. This involves a series of pictures of celebrities holding their hands up to the camera. These celebrities have all been chosen on the basis of their sexuality, for example: 'self-confessed lesbian, tennis champion Martina Navratilova [...]' and '[...] notorious womaniser Rod Stewart [...]'. Almost all the pictures and captions challenge the proposed theory about fingerlength and sexuality.

By contrast, a further article also asks readers to consider the research findings by providing pictures of celebrities' hands.

*'In the interests of research of course, we have taken the matter in hand. Here we put some well-known celebrities to the test.'* (Sun 31 March 2000, p15 – emphasis in original)

The difference between this and the earlier example, however, is in the selection of pictures and captions. Here, only one image challenges the findings and one is used to reinforce the idea that a politician is homosexual.

Of the remaining articles, one is a 'human interest' story, reporting on a retired insulation engineer who has 10 fingers and two thumbs (*Daily Mirror* 30 March 2000, p.9) and one is a cartoon showing parents questioning their son about his sexuality (*Daily Mail* 31 March 2000, p.15).

There is an emphasis on the scientific research, particularly in the broadsheets which is reflected in the analysis of citations. There are 13 direct citations. Of these 11 are from scientists (for example, seven are from Dr. Marc Breedlove who led the team which conducted the research). A further three are quotes from 'non-scientists' including, two from the *Pink Paper*<sup>2</sup> and Godfrey Hill, a retired insulation engineer who has 10 fingers and two thumbs. Of these, both the representatives from the *Pink Paper* challenge the research findings.

#### Genetic explanations for intelligence

There are 10 articles in the genetics and intelligence archive covering six of the eight newspapers in the sample. Two Sunday editions also feature in the sample (the *Independent on Sunday* and the *Sunday Times*). Five were written by science journalists and one by the scientist Professor Susan Greenfield. All consider genetic explanations for intelligence with the articles written by science journalists reporting the results of the research. These articles do not provide detailed comment on the quality of the research. However, they do discuss this implications of the work (see below).

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<sup>2</sup> The *Pink Paper* is a free weekly UK-based newspaper for gay men and lesbians.

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Several articles refer to discussions of nature versus nurture, in particular the article written by Professor Susan Greenfield (*Independent on Sunday* 19 October 1997). Another notes the controversial nature of the nature/nurture debate, referring to the work of Charles Murray (*Daily Mirror* 18 September 1998). Six report on research published in *Nature* in September 1999 (see, Tang et al. 1999)<sup>3</sup>. As such, this small sample covers a longer time period than the fingerlength and sexuality sample.

Several aspects of the fingerlength coverage also feature in the coverage of genetics and intelligence. For example, there are several images of celebrities in the tabloids, in this instance of celebrities associated with being extremely intelligent (for example, Albert Einstein), or whose intelligence is contested (for example, the footballer Paul Gascoigne is quoted as 'lacking in conventional wisdom, [but] he is incredibly gifted in the bodily kinaesthetic department' (*Daily Mirror*, 18 September 1998)).

One of the notable differences from the coverage of fingerlength and sexuality are the consistent references to the implications of research into genetics and intelligence. For example, references are made to the prospect for 'designer children':

'The discovery could enable doctors to test the potential intelligence of newborn babies to find which are Einsteins in the making. It could even help them develop ways of genetically engineering IQ levels before birth,' in THE GENIUS GENE (*Daily Mail* 10 August 2000, p.23).

In addition, references are made to the prospect of developing therapeutic treatments:

'In the short term the study will also be of major interest to researchers trying to understand and treat human disorders, notably dementia,' in SCIENTISTS FIND GENE TO CREATE SMART MICE (*Daily Telegraph* 2 September 1999, p.10).

As with the fingerlength and sexuality sample, an emphasis on scientific research findings is reflected in the analysis of citations. There are 23 direct citations, more per article than the fingerlength sample. Of these 20 are from scientists (for example, five are from Dr. Joe Tsien who led the team which conducted the research published in September 1999). For example:

'Will it be possible to genetically enhance humans in learning, memory, or intelligence? Well, only the future may provide us with the answer.' Joe Tsien quoted in SCIENTISTS FIND GENE TO CREATE SMART MICE (*Daily Telegraph* 2 September 1999, p.10).

A further three are quotes from 'non-scientists' including Jeremy Rifkin, who is described as 'an America biotechnology critic and author' (*Daily Mail* 10 August 2000). Rifkin is not quoted challenging the results of the study, but rather the implications, in this case the desirability of designer children:

'In the next ten or twenty years we could have eugenics with a smiling face. We will no longer require the lower classes to have fewer babies - we will just have them have better babies as we

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<sup>3</sup> These articles make references to the fictional character Doogie Howser M.D. because the mouse in the experiment was called Doogie.

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learn to do gene therapy', in THE GENIUS GENE (*Daily Mail* 10 August 2000, p.23).

This is also reflected in a further article, also published in the *Daily Mail*, which goes on to quote Dr. Vivienne Nathanson, head of ethics at the British Medical Association and Nuala Scarisbrick of the anti-abortion NGO Life. Both are critical of the idea that producing designer children is ethically acceptable:

'News of the research triggered widespread alarm that it could pave the way for the horrifying creation of 'designer babies' with massive IQs. There were warnings that genetic engineering is out of control and demands for an immediate public debate', in GENETIC SUPER BABIES STORM (*Daily Mail* 2 September 1999).

This highlights that the implications of the Tang et al. (1999) were contested by the *Daily Mail*, but that these challenges were associated with the implications for designer children and not the scientific research presented.

### **Conclusion**

This study examined the reporting of contested science in a range of UK newspapers. Two case studies were chosen to represent representations of contested science. The first reported on the publication of scientific research that concluded that it had found a correlation between finger length and sexual orientation. The second examined media coverage the reported genetic explanations for intelligence.

We noted some differences between the coverage of the two issues. For example, we noted that when compared the reporting of these two issues makes links to very different implications. The reporting of genetics and intelligence often links the research findings to the potential of developing therapeutic treatments for diseases such as dementia, Alzheimer's or Parkinson's disease. There are also references to the potential of screening embryos for intelligence. In effect, the potential of developing 'designer children'. This latter issue is contested in terms of the implications for designer children and not the scientific evidence presented.

The coverage of the fingerlength and sexuality research is very different. There are no references to how this work might be used. Instead, several tabloid articles either ask the reader to check their own sexuality on the basis of a series of images and therefore consider the research in terms of the evidence they generate themselves. Hence, the reader is asked to compare their own anecdotal evidence with the research findings and then come to a conclusion on the findings themselves. In doing so, these examples contest the scientific research and not the implications.

We also noted that there are contested issues which are completely absent from the coverage. For example, there is virtually no discussion of the complexities of conceptualising sexuality or intelligence and how this could impact on subsequent research findings.

The results also show that several features were common to reporting of the two stories. In particular, we note a distinction between reporting in the broadsheet newspapers by specialist journalists and in the tabloid press. The former report the findings of the research without commenting on the quality of the work. The latter use

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a range of techniques to frame the research in ways that can either challenge or support the findings of the research. Both rely largely on scientific experts to either support or challenge the research and, where discussed, its implications. This analysis raises several issues for those considering the reporting of contested science. For example, the tabloid articles that report the fingerlength and sexuality study frame the coverage by including images of celebrities and by references to humour. In opting to use these framing devices these articles draw on wider cultural perceptions that are powerful because they refer to the prior knowledge and experiences of their audience.

In conclusion, we note that the evidence presented here illustrates that scientific research can be contested in media representations in a number of different ways. The results indicate that both scientific research and its implications can be contested by a number of different actors, including scientists, media professionals, NGOs and activists, and the public. The influence of these representations is subject to further research. Our initial findings (for example, see Holliman and Scanlon 2002) suggest evidence of media influence.

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