Understanding the various meanings of ‘scientific integrity’

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One discourse?

Article

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Perceptions That Influence the Maintenance of Scientific Integrity in Community-Based Participatory Research

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Abstract

Scientific integrity is necessary for strong science; yet many variables can influence scientific integrity. In traditional research, some common threats are the pressure to publish, competition for funds, and career advancement. Community-based participatory research (CBPR) provides a different context for scientific integrity with additional and unique concerns. Understanding the perceptions that promote or discourage scientific integrity in CBPR as identified by professional and community investigators is essential to promoting the value of CBPR. This analysis explores the perceptions that facilitate scientific integrity in CBPR as well as the barriers among a sample of 74 professional and community CBPR investigators from 25 CBPR projects in nine states in the southeastern United States in 2012. There were variations in perceptions associated with team member identity as professional or community investigators. Perceptions identified to promote and discourage scientific integrity in CBPR by professional and community investigators were external pressures, community participation, fundin quality control and supervision, communication, training, and character and trust. erceptions such as communication and training promoted scientific integrity whereas other perceptions, such as a lack of funds and

communication and training promoted scientific integrity

maintaining scientific integrity

of the most important perceptions e community participation, which enables a co-responsibility by scientists for scientific integrity. Credible CBPR science is crucial to empower the vulnerable communities to be heard by those in positions of power and policy making.

Keywords

community-based participatory research, conflict of interest, research integrity, scientific integrity

Scientific integrity is absolutely essential for the good practice of all scientific endeavors (Drenth, 2010). Although no simple definition captures the complexity of scientific integrity, the Panel on Scientific Responsibility and the Conduct of Research (1992) defines it as the "adherence by scientists and their institutions to honest and verifiable methods in proposing, performing, evaluating, and reporting research activities" (p. 4). Scientific integrity also reflects the ethical obligation for scientists and institutions:

> . . . integrity embodies above all the individual's commitment to intellectual honesty and personal responsibility . . . moral character and experience. For an institution, it is a commitment to creating an environment that promotes responsible conduct by embracing standards of excellence, trustworthiness, and lawfulness. (Institute of Medicine National Research Council of the National Academies, 2002, p. 4)

The European Science Foundation (2011) identified specific principles as the underpinning for scientific integrity, including honesty, reliability, objectivity, impartiality, open communication, duty of care, fairness, and responsibility for future science generations.

However, every investigator confronts threats to scientific integrity. Some threats are competition for funds, pressure to publish, commercialization, and career advancement (Drenth, 2010). The frequency of scientific misconduct, such as data falsification, fabrication, and plagiarism occurs from 0.1% to 1.0% in the literature (Steneck, 2006, 2007), and is suggested to be increasing (Drenth, 2010, 2007). In the

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Australian Government

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Research Integrity and Research Misconduct Policy

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Owner:	Strategy Branch

Research questions

How are the terms 'scientific integrity' and 'research integrity' used and understood in the scientific and public discourse?

How has this developed over time?

Descriptive study on the usage of 'integrity' in written documents

- Scientists
- Policymakers
- (Newspaper) journalists

Dimensions of definitions

Definitions of integrity and misconduct differ in various dimensions:

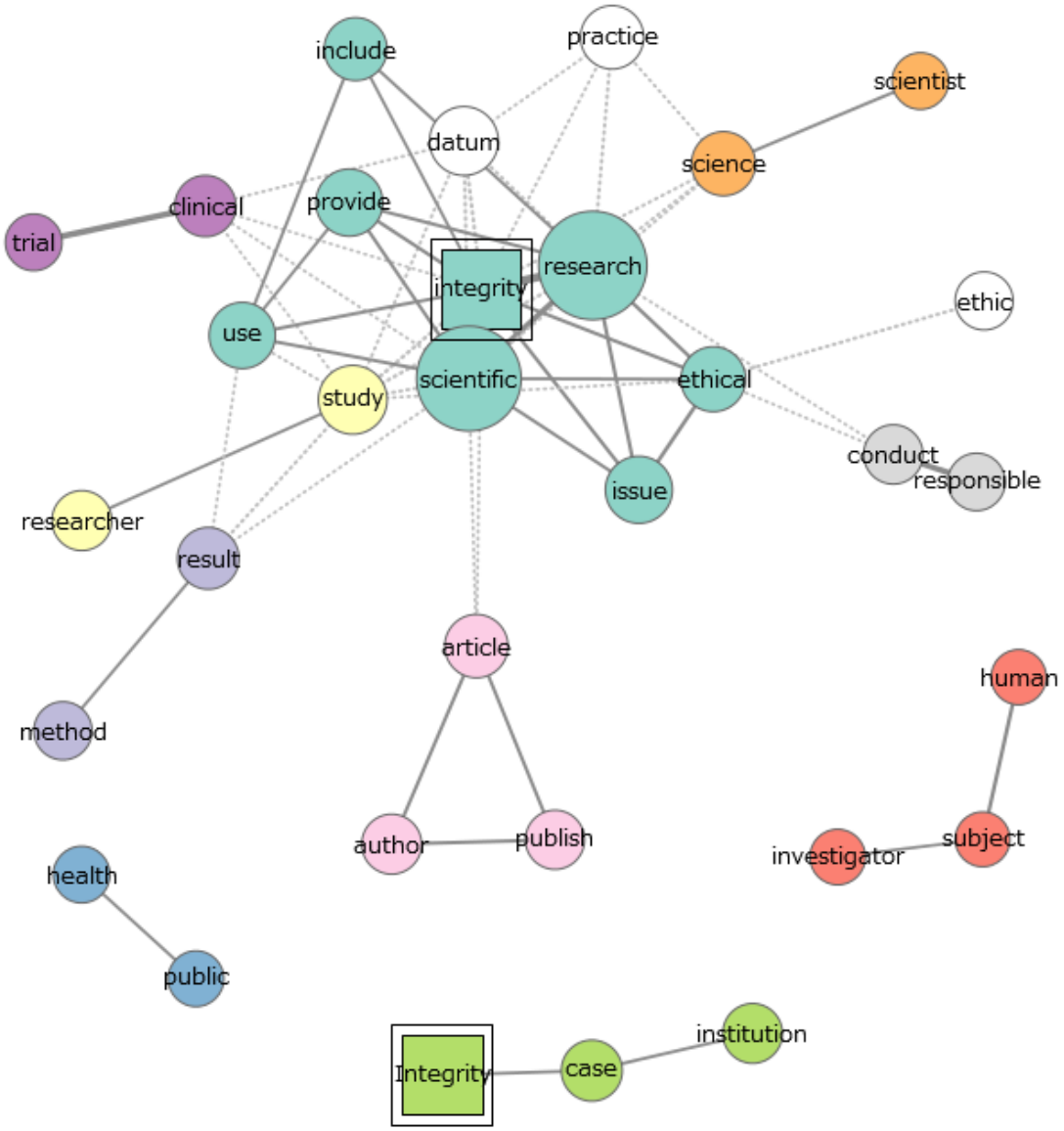
- Narrow vs. Broad
- Value-based vs. Norm-based
- Components of research

Methods

Scientometric- and content analysis techniques to study large amounts of texts

- Word-counts
- Co-occurrence analysis
- Theme recognition and co-occurrence

Co-occurrence network



Data

Scientific publications

- Web of Science (637 articles)
- Science and Nature (49 articles)

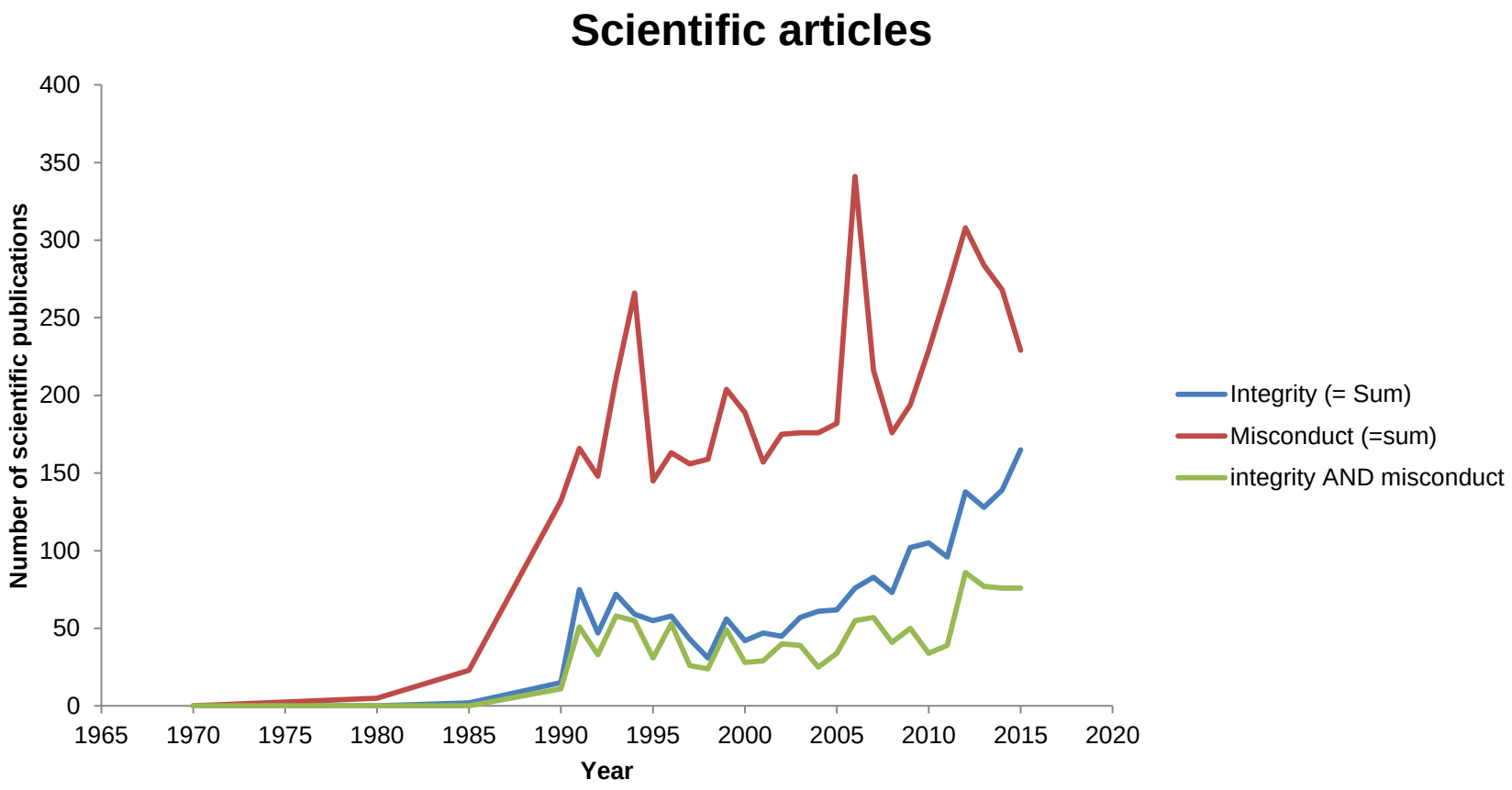
English newspaper articles

- LexisNexis (53 articles)

Policy documents

- Temporal division (20 documents)
- Geographical division (36 documents)

Results: Timing



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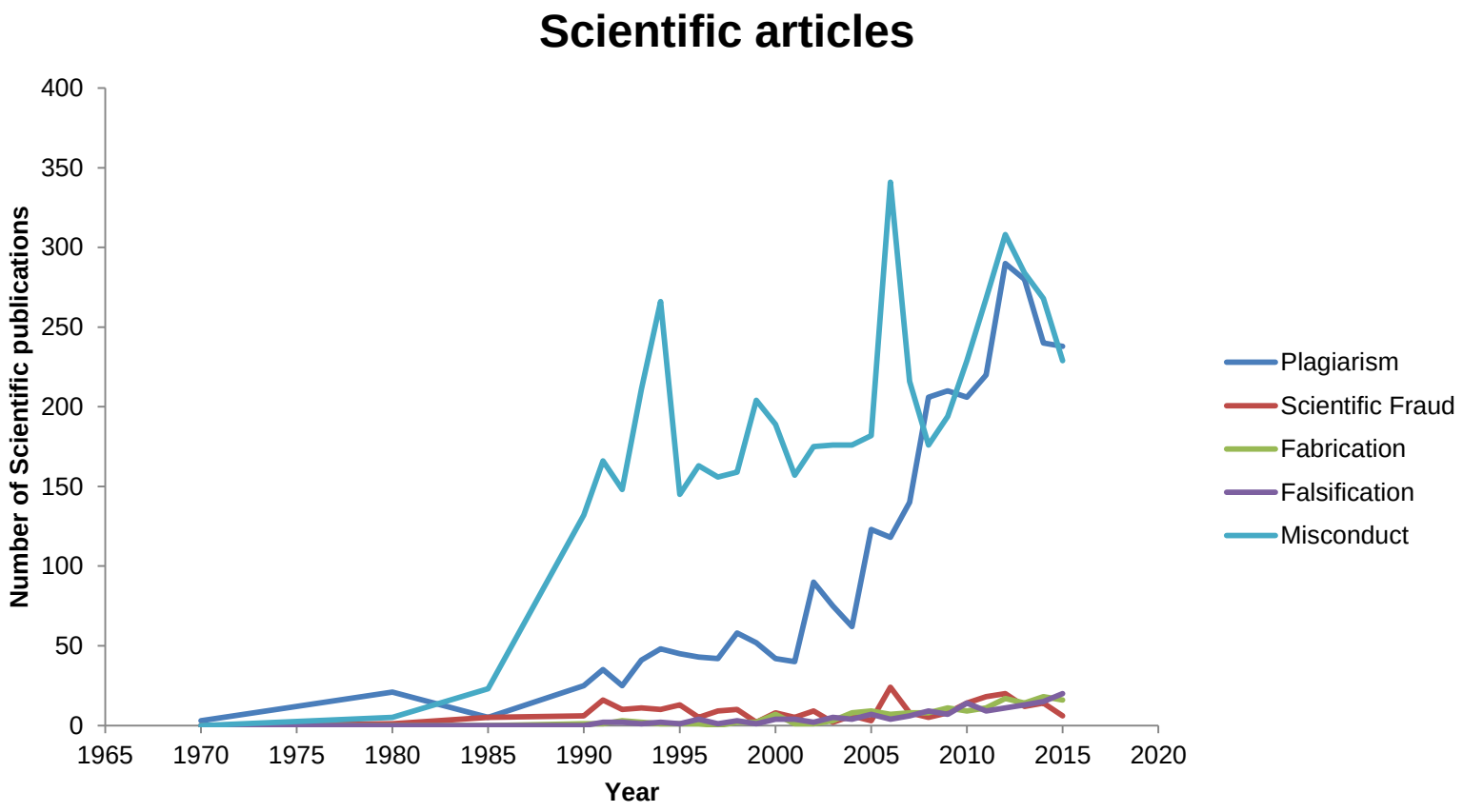

Results: usage and understanding

Documents	Narrow vs. Broad	Value-based vs. Norm-based	Components of research
Scientific publications	Broad	Value-based	Authorship Methodology Society
Old policy documents	Broad	Value-based	Society Methodology
Recent policy documents	Narrow	Norm-based	Finance
Newspaper articles	No clear indication for either	Minor shift from value- to norm-based	Shift from society towards finance

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Conclusion

‘Integrity’ in science has not always been subject to debate – only for several decades.

- Attention is growing rapidly

The discourse on scientific integrity is different in the scientific and the public domain

- Major differences between scientists’ and policymakers’ approach

  Narrow ← → Broad
  Value based ← → Norm based
  Different components of research